# Chapter 15: Transportation

## A. INTRODUCTION

As described in detail in Chapter 1, "Project Description," the Applicant is seeking a number of discretionary approvals (the proposed actions) to support and permit a mixed-use development on several parcels near the waterfront in Astoria, Queens. The proposed project would include 2,644 units of residential space (market-rate and affordable), approximately 69,000 square feet of retail space (including supermarket use), and approximately 1,400 accessory parking spaces (including 1,347 garage parking spaces and 53 on-site surface parking spaces). The proposed project would also create 2.35 acres of new publicly accessible open space, including a waterfront esplanade. The project site would contain eight building sites on which new development would occur pursuant to the proposed project. Seven of the building sites would be developed as part of the Applicant's proposal and one would be developed as part of a future request for proposals (RFP) by the New York City Housing Authority (NYCHA).

As also discussed in Chapter 1, the proposed project would be built out over an approximately 10-year period; therefore, the Environmental Impact Statement (EIS) uses 2022 as an analysis year. The transportation analyses consider this year to identify potential impacts and determine feasible mitigation measures that would be appropriate. Because an additional 71 dwelling units of affordable housing and 25 accessory parking spaces were added shortly prior to certification of the Draft EIS (DEIS), after substantial transportation-related analysis work had been completed and reviewed, the analyses and conclusions presented in this chapter are based on a slightly smaller version of the development program than that described above. These programming changes represent a less than 3-percent increase in the number of dwelling units and a comparable level of increase in trip-making. These changes are not expected to alter the overall conclusions of the transportation analyses but could result in new or worsened impacts at specific analysis locations. Between the DEIS and Final EIS (FEIS), the transportation and transportation-related analyses will be updated to reflect the proposed project's programming changes, as well as background changes associated with other projects and the addition of new study area traffic intersections. These changes could result in new, different, or worsened significant adverse impacts, all of which will be further detailed in the FEIS.

It should also be noted that the analysis of future conditions without the proposed project accounts for the proposed Astoria Cove project, which is in the planning stages and will require discretionary land use approvals and its own environmental review. However, because it is located in close proximity to the project site, the portion that is assumed to be completed by the 2022 Build year has been incorporated into the future without the proposed project for conservative impact analysis. Given the size of the proposed Astoria Cove project, it is expected that its environmental review will identify significant adverse impacts and the need for mitigation measures. These measures are not accounted for in this analysis. As more information about the Astoria Cove project becomes available, it will be incorporated into this analysis as appropriate.

This chapter examines the potential effects of the proposed project on nearby transportation systems in and around Astoria, Queens. Presented in the following sections are a description of the proposed project, an overview of the analysis methodology, a projection of site-generated trips and assignments, the results of the capacity analysis for existing and future conditions without and with the proposed project (the No Build and Build conditions), and findings of potential significant adverse transportation impacts. The travel demand projections, trip assignments, and capacity analysis were conducted pursuant to the methodologies outlined in the June 2012 *City Environmental Quality Review (CEQR) Technical Manual.*

This chapter is organized as follows:

- Section B, "Preliminary CEQR Screening Assessment," presents screening analyses that determine if quantified analyses of transportation conditions are warranted and provides information on the study locations for the quantified analyses determined to be warranted (i.e., traffic, transit, and pedestrians).
- Section C, "Transportation Analyses Methodology," presents a summary of the methodologies used to analyze those transportation areas that are analyzed in detail (i.e., traffic, transit, and pedestrians).
- Section D, "Detailed Traffic Analysis," presents a quantified analysis of traffic conditions at 25 analysis locations.
- Section E, "Detailed Transit Analysis," presents a quantified analysis of transit conditions; specifically, an analysis of subway station elements at two area subway stations—the 30th Avenue Station (N,Q lines) and the 21st Street-Queensbridge Station (F line), and a bus line-haul analysis of three area bus routes—the Q18, Q102, and Q103 routes.
- Section F, "Detailed Pedestrian Analysis," presents a quantified analysis of pedestrian conditions at various sidewalks, crosswalks, and corners in the study area.
- Section G, "Vehicular and Pedestrian Safety Evaluation," presents accident data for the study area intersections and provides an evaluation of whether increases in vehicular and pedestrian activity due to the proposed project would affect accident rates at the study area's high accident locations.
- Section H, "Parking Conditions Assessment," presents information about on- and off-street parking supply and evaluates whether increased parking demand from the proposed project would result in a shortfall of parking spaces in the study area.
- Section I, "Detailed Analysis Results Tables," presents detailed tables for the traffic and pedestrian analyses.

## PRINCIPAL CONCLUSIONS

As detailed in this chapter, the preliminary CEQR screening determined the need for quantified analyses of traffic, transit, and pedestrian conditions as well as an evaluation of vehicular and pedestrian safety and an assessment of parking conditions. These analyses are summarized here.

### *TRAFFIC*

As part of this analysis, an estimate of the vehicular traffic expected to be generated by the proposed project was developed. In the weekday AM peak hour, it would generate 166 vehicle trips arriving at the project site and 514 vehicle trips leaving the site, for a total of 680 vehicle trips. In the weekday midday peak hour, it would generate 213 inbound vehicle trips plus 209

outbound vehicle trips for a total of 422 vehicle trips. In the weekday PM peak hour, it would generate 480 inbound vehicle trips plus 289 outbound vehicle trips for a total of 769 vehicle trips.

Of the 25 study area intersections analyzed, the proposed project would result in significant traffic impacts at 18 intersections in the weekday AM peak hour, 10 in the midday peak hour, and 17 in the PM peak hour, as summarized in **Table 15-1**. Traffic capacity improvements that would be needed to mitigate these significant impacts are addressed in Chapter 22, "Mitigation." As requested by the New York City Department of City Planning (DCP), two additional intersections will be analyzed for the FEIS and may result in additional significant impacts. The findings of this additional analysis will be documented in the FEIS.

*TRANSIT*

The preliminary screening assessment summarized below concluded that a detailed examination of subway line-haul analysis is not warranted. However, bus line-haul analyses and a detailed analysis of station elements at the 30th Avenue subway station (N and Q lines) and the 21st Street-Queensbridge subway station (F line) were prepared. Based on the results of the transit analysis, the proposed project would not result in any significant adverse impacts at the 30th Avenue station or the 21st Street-Queensbridge station during any analysis peak periods.

As summarized in **Table 15-2**, the proposed project would result in significant adverse impacts for bus line-haul levels on the eastbound and westbound Q18, the eastbound and westbound Q102, and the southbound Q103 during the AM peak period, and the eastbound and westbound Q18, the eastbound and westbound Q102, and the northbound and southbound Q103 during the PM peak period. Potential measures to mitigate the projected significant adverse bus line-haul impacts are described in Chapter 22, "Mitigation."

As discussed in Chapter 1, "Project Description," the proposed project would also include a bus layover facility along 2nd Street adjacent to Building 1 for the Q18, Q102, and Q103 bus routes, and potentially other routes in the future. Although this layover facility would not affect the bus line-haul analysis, it would be an important transit amenity for the area. preliminary discussions have taken place between the Applicant and the Metropolitan Transportation Authority (MTA) Bus Company about the anticipated need to improve existing service on the Q18, Q102, and Q103, as well as the possible extension of the Q19 to the waterfront to serve the additional demand that is expected to occur over time with the development of this and other projects.

*PEDESTRIANS*

Weekday peak period pedestrian conditions were evaluated at key sidewalk, corner reservoir, and crosswalk elements at six area intersections. It was concluded that the proposed project would not result in any significant adverse pedestrian impacts at any of the analysis locations. However, as detailed in Chapter 22, "Mitigation," one of the recommended traffic mitigation measures is expected to result in a pedestrian crosswalk impact, which could be mitigated by coupling the traffic mitigation measure with the necessary crosswalk widening.

**Table 15-1**
**Summary of Significant Adverse Traffic Impacts**

| Intersection | | AM | Midday | PM |
|---|---|---|---|---|
| **EB/WB Street** | **NB/SB Street** | **Peak Hour** | **Peak Hour** | **Peak Hour** |
| 27th Avenue | 8th Street | EB-TR<br>WB-LT | EB-TR<br>WB-LT<br>NB-R | EB-TR<br>WB-LT<br>NB-R |
| Vernon Boulevard/<br>Main Street | 8th Street/<br>Welling Court | EB-LT<br>SB-R | EB-LT | EB-LT |
| Astoria Boulevard | 8th Street | EB-LR | | NB-LT |
| Astoria Boulevard | 21st Street | EB-L<br>EB-TR<br>WB-L<br>NB-LTR<br>SB-LTR | WB-L | WB-L<br>NB-LTR<br>SB-LTR |
| Astoria Boulevard | 23rd Street | EB-LT | | EB-LT |
| Astoria Boulevard | Crescent Street | EB-TR<br>WB-LT | WB-LT | EB-TR<br>WB-LT |
| Astoria Boulevard | 31st Street | EB-LTR | EB-LTR | EB-LTR |
| Astoria Park South/<br>Hoyt Avenue South | 21st Street | SB-LTR | | NB-LTR<br>SB-LTR |
| Hoyt Avenue South | 31st Street | EB-LT | | |
| Hoyt Ave S/Astoria Blvd | 33rd Street | EB-LT | EB-LT | EB-LT |
| Hoyt Avenue North | 21st Street | WB-L<br>NB-T | WB-L | WB-L<br>NB-T |
| Hoyt Avenue North | 29th Street | SB-R | | |
| Hoyt Ave N/GCP Ramp | 32nd Street | WB-T | WB-T | WB-T |
| 24th Avenue | 21st Street | | | NB-LTR |
| Broadway | Vernon Boulevard/<br>11th Street | WB-LTR<br>SB-LTR | WB-LTR | WB-LTR<br>SB-LTR |
| Broadway | 21st Street | EB-LTR<br>WB-LTR<br>SB-LTR | EB-LTR<br>WB-LTR | EB-LTR<br>WB-LTR<br>NB-LTR |
| 27th Avenue | 2nd Street | SB-LR | | SB-LR |
| 27th Avenue | 4th Street | EB-LT<br>WB-TR | | WB-TR |
| Astoria Boulevard | 18th Street | SB-LR | | SB-LR |

**Notes:** EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; L = Left Turn; T = Through; R = Right Turn

**Table 15-2**
**Summary of Significant Adverse Bus Impacts**

| Route | Direction | Load Point | AM Peak Hour | PM Peak Hour |
|---|---|---|---|---|
| **Q18** | **East** | 30th Avenue East of 31st Street | X | X |
| | **West** | 30th Avenue West of 31st Street | X | X |
| **Q102** | **East** | 30th Avenue West of 31st Street | X | X |
| | **West** | 30th Avenue West of 31st Street | X | X |
| **Q103** | **North** | 41st Avenue and 21st Street | | X |
| | **South** | 41st Avenue and 21st Street | X | X |

**Notes:** X = Impacted

*VEHICULAR AND PEDESTRIAN SAFETY*

Crash data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between January 1, 2009 and December 31, 2011. During this period, a total of 161 reportable and non-reportable accidents, one fatality, 79 injuries, and 7 pedestrian/bicyclist-related accidents occurred at the study area intersections. A rolling total of the 2009-2011 accident data indicates that the number of vehicular and pedestrian/bicyclist-related accidents at the study area intersections is well below the CEQR

thresholds for high-accident locations. Although the proposed project is expected to result in significant adverse traffic impacts at some of these locations, given the low accident frequencies, the proposed project would not have the potential to result in any significant adverse vehicular and pedestrian safety impacts.

*PARKING*

The proposed project would include the construction of 1,375 off-street parking spaces and is estimated to add approximately 28 on-street parking spaces with the extension of Astoria Boulevard, but would remove 14 on-street spaces on 1st Street. The total overall project parking demand would be accommodated in the provided accessory spaces except during overnight hours where there would be a shortfall of up to 169 parking spaces. Much of this shortfall could likely be accommodated by available on-street parking within the parking study area, and would be more easily accommodated by on-street availability within an extended ½-mile radius. Therefore, the proposed project would not result in a significant adverse parking impact.

The proposed project (specifically, the development of Buildings 6, 7, and 8) would also displace approximately 144 existing NYCHA resident permit parking spaces on the Astoria Houses Campus. However, 178 new NYCHA resident permit parking spaces would be provided within the Astoria Houses campus to replace those displaced by the proposed project.

## B. PRELIMINARY CEQR SCREENING ASSESSMENT

The 2012 *CEQR Technical Manual* recommends a two-tier screening procedure for the preparation of a "preliminary analysis" to determine if quantified analyses of transportation conditions are warranted. The *CEQR Technical Manual* recommends that a preliminary analysis begin with a trip generation analysis (Level 1) to estimate the volume of person and vehicle trips attributable to the proposed project. If the proposed project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, the 2012 *CEQR Technical Manual* recommends that detailed trip assignments (Level 2) be performed to estimate the incremental trips at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed project would result in 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a pedestrian element, then further quantified analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrians, parking, and vehicular and pedestrian safety.

### LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of person and vehicle trips by mode expected to be generated by the proposed project during the weekday AM, midday, and PM peak hours. These estimates were then compared to the *CEQR Technical Manual* thresholds to determine if a Level 2 screening and/or quantified operational analyses would be warranted. As demonstrated in this section, the Level 1 Screening Assessment indicated the need to undertake a Level 2 screening assessment and quantified operational analyses.

The Level 1 screening assessment relies on the project's proposed uses; as described above, the proposed project would include residential, retail (including local retail and supermarket use), and open space uses (see **Table 15-3**).

**Table 15-3**
**Halletts Point Program**

| Land Use | Programming |
|---|---|
| Residential | 2,573 DU |
| Local Retail | 38,563 gsf |
| Supermarket | 30,100gsf |
| Parkland | 2.2 acres |
| Accessory Parking | 1,375 spaces |

*TRANSPORTATION PLANNING ASSUMPTIONS (TRAVEL DEMAND FACTORS)*

*Modal Split and Auto Occupancy Factors*

*2006-2010 American Community Survey (ACS)* journey-to-work data from Queens census tracts 81, 83, 91, 97, 101, 103, and 105 were used to develop modal split and auto occupancy factors for the residential use. The census tracts were identified in coordination with DCP to be appropriate for representing travel by future residents of the proposed project. **Table 15-4** presents the ACS journey-to-work data.

**Table 15-4**
**ACS Journey-to-Work Data**

| | Modal Split | | | | | Auto | Auto Ownership | | |
|---|---|---|---|---|---|---|---|---|---|
| Data Source | Auto | Taxi | Subway | Bus | Walk | Occupancy | Owner | Renter | Average |
| 2006-2010 ACS[1] | 31.2% | 1.7% | 54.0% | 6.2% | 6.9% | 1.12 | 79% | 54% | 60% |
| **Notes:** | | | | | | | | | |
| 1. Census Tracts 81, 83, 91, 97, 101, 103, 105 | | | | | | | | | |

*Travel Demand Projections*

Trip estimates developed for the proposed project's land uses are based on the travel demand factors summarized in **Table 15-5**. The references used for these estimates include the 2012 *CEQR Technical Manual, 2006-2010 ACS* data, and other established sources and approved studies.

*Travel Demand Projection Summary*

As summarized in **Table 15-6**, the proposed project would result in a total of 2,416, 2,750, and 3,363 person trips during the weekday AM, midday, and PM peak hours, respectively. Approximately 680, 422, and 769 vehicle trips would be generated during the same respective time periods.

As per the criteria established in the 2012 *CEQR Technical Manual*, a quantified transportation analysis may be warranted if a proposed project is expected to result in 50 or more vehicle trips, 200 or more transit trips (200 or more peak hour transit riders at any given subway station or 50 or more peak hour bus trips on a particular route in one direction), and/or 200 or more pedestrian trips during a given peak hour.

## Table 15-5
## Travel Demand Factors

| Land Use | Residential | | | Local Retail | | | Supermarket | | | Parkland | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Person Trips:** | (1) | | | (1,2) | | | (2,3) | | | (1) | | |
| Daily Trip Rate | 8.075 / DU | | | 205.0 / KSF | | | 205.0 / KSF | | | 139.0 / acre | | |
| Trip Linkage Credit | 0% | | | 25% | | | 25% | | | 0% | | |
| Net Trip Rate | 8.075 / DU | | | 153.8 / KSF | | | 153.8 / KSF | | | 139.0 / acre | | |
| | (1) | | | (1) | | | (3) | | | (1) | | |
| Temporal | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM |
| Distribution | 10% | 5% | 11% | 3% | 19% | 10% | 3% | 12% | 10% | 7% | 10% | 7% |
| | (4) | | | (4) | | | (3) | | | (6) | | |
| In | 20% | 51% | 65% | 50% | 50% | 50% | 45% | 46% | 47% | 55% | 50% | 45% |
| Out | 80% | 49% | 35% | 50% | 50% | 50% | 55% | 54% | 53% | 45% | 50% | 50% |
| Modal Split | (5) | | | (4) | | | (3) | | | (6) | | |
| Auto | 31.2% | | | 2.0% | | | 4.0% | | | 5.0% | | |
| Taxi | 1.7% | | | 3.0% | | | 3.0% | | | 0.0% | | |
| Subway | 54.0% | | | 6.0% | | | 5.0% | | | 5.0% | | |
| Bus | 6.2% | | | 6.0% | | | 5.0% | | | 5.0% | | |
| Walk | 6.9% | | | 83.0% | | | 83.0% | | | 85.0% | | |
| Vehicle Occupancy | (5,7) | | | (4) | | | (3) | | | (6) | | |
| Auto | 1.12 | | | 2.00 | | | 1.65 | | | 2.80 | | |
| Taxi | 1.12 | | | 2.00 | | | 1.40 | | | 2.80 | | |
| **Delivery Trips:** | (1) | | | (1) | | | (3) | | | (6) | | |
| Daily Trip Rate | 0.06 | | | 0.35 | | | 0.35 | | | 0.02 | | |
| | (1) | | | (1) | | | (3) | | | (6) | | |
| Delivery Temporal | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM |
| Distribution | 12% | 9% | 2% | 8% | 11% | 2% | 10% | 8% | 5% | 6% | 6% | 1% |
| In | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% |
| Out | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% |

**Sources:**
(1) 2012 *CEQR Technical Manual*.
(2) Assumed 25% trip linkage per 2012 *CEQR Technical Manual*.
(3) *The Food Retail Expansion to Support Health (FRESH) Food Store Program*, DCP, 2009.
(4) *Dutch Kills Rezoning and Related Actions FEIS*, CEQR #08DCP021Q (2008).
(5) 2006-2010 ACS data for Queens census tracts 81, 83, 91, 97, 101, 103, 105.
(6) *Hunters Point South FEIS*, CEQR #08DME006Q (2008).
(7) Taxi vehicle occupancy assumed to equal that of autos.

## Table 15-6
## Trip Generation Summary

| Peak Hour | In/Out | Person Trip | | | | | | Vehicle Trip | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Auto | Taxi | Subway | Bus | Walk | Total | Auto | Taxi | Delivery | Total |
| **AM** | In | 135 | 12 | 234 | 35 | 163 | 579 | 118 | 37 | 11 | 166 |
| | Out | 525 | 33 | 907 | 113 | 259 | 1,873 | 466 | 37 | 11 | 514 |
| | Total | 660 | 45 | 1,141 | 148 | 422 | 2,416 | 584 | 74 | 22 | 680 |
| **Midday** | In | 187 | 34 | 334 | 81 | 727 | 1,363 | 159 | 46 | 8 | 213 |
| | Out | 183 | 35 | 325 | 82 | 762 | 1,387 | 155 | 46 | 8 | 209 |
| | Total | 370 | 69 | 659 | 163 | 1,489 | 2,750 | 314 | 92 | 16 | 422 |
| **PM** | In | 480 | 41 | 832 | 122 | 535 | 2,010 | 423 | 55 | 2 | 480 |
| | Out | 267 | 30 | 463 | 81 | 512 | 1,353 | 232 | 55 | 2 | 289 |
| | Total | 747 | 71 | 1,295 | 203 | 1,047 | 3,363 | 655 | 110 | 4 | 769 |

*Traffic*

Since the projected incremental vehicle trips would be greater than the 2012 *CEQR Technical Manual* analysis threshold of 50 peak hour vehicle trips, a Level 2 screening assessment is warranted to determine if there is a need for additional quantified traffic analyses and identify the potential intersections warranting analysis. The Level 2 screening assessment for traffic is provided in the next section, "Level 2 Screening Assessment."

*Transit*

The proposed project would result in a total of approximately 1,141, 659, and 1,295 person trips by subway and 148, 163, and 203 person trips by bus during the weekday AM, midday, and PM peak hours, respectively. Since the net incremental bus trips would be greater than 200 during the PM peak hours, and the net incremental subway trips would be greater than 200 during all three peak hours, a Level 2 screening assessment is warranted to determine if there is a need for additional quantified transit analyses. The Level 2 screening assessment for transit is provided in the next section, "Level 2 Screening Assessment."

*Pedestrians*

With the exception of auto trips made directly to on-site parking facilities, all trips made to and from the project sites would traverse area sidewalks, corner reservoirs, and crosswalks. Since the proposed project would result in more than 200 pedestrian trips in all three peak hours, a Level 2 screening assessment is warranted to determine if there is a need for additional quantified pedestrian analyses. The Level 2 screening assessment for pedestrians is provided in the next section, "Level 2 Screening Assessment."

## LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the distribution and assignment of project-generated trips to the transportation network and the determination of whether specific locations are expected to experience volumes in excess of the CEQR thresholds. Predictions of project-generated trips were allocated to the area's roadways, transit facilities, and pedestrian elements so as to identify the various study areas for which detailed analyses of potential impacts would be prepared. As previously stated, more quantified analyses to assess the potential impacts of the proposed project on the transportation system are warranted if the trip assignments result in 50 or more peak hour vehicles trips or pedestrian elements incurring 200 or more peak hour pedestrian trips. Similarly, for transit elements, the projected trips were considered in determining the likely transit facilities requiring a detailed analysis of potential impacts.

### *TRAFFIC*

As shown above, incremental vehicle trips resulting from the proposed project would exceed the CEQR Level 1 screening threshold during the weekday AM, midday, and PM peak hours. These vehicle trips were assigned to area intersections based on logical and direct travel routes to and from the project site. Traffic assignments for autos, taxis, and deliveries are discussed in detail later in this chapter under Section D, "Detailed Traffic Analysis."

**Figures 15-1** to **15-3** depict the projected vehicle trip increments. In coordination with DCP and the New York City Department of Transportation (NYCDOT), 25 intersections were identified for analysis. This includes a primary traffic study area of intersections closest to the project site and through which most project-generated traffic would pass. In general, the primary study area includes potentially critical intersections within the Halletts Point project area and along the primary routes to/from the development area along Astoria Boulevard, Hoyt Avenue North and




2022 Proposed Project Net Increment Vehicle Trips
Weekday AM Peak Hour

**HALLETTS POINT**

**Figure 15-1**




2022 Proposed Project Net Increment Vehicle Trips
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-2**

2022 Proposed Project Net Increment Vehicle Trips
Weekday PM Peak Hour

**HALLETTS POINT**

**Figure 15-3**

South, and other nearby intersections. The secondary traffic study area includes potentially critical intersections further away from the site at which a significant volume of project-generated traffic can be expected to pass and/or where background traffic conditions are heavily trafficked or are known congestion points. The following intersections have been identified for analysis within the primary and secondary study areas (see **Figure 15-4**):

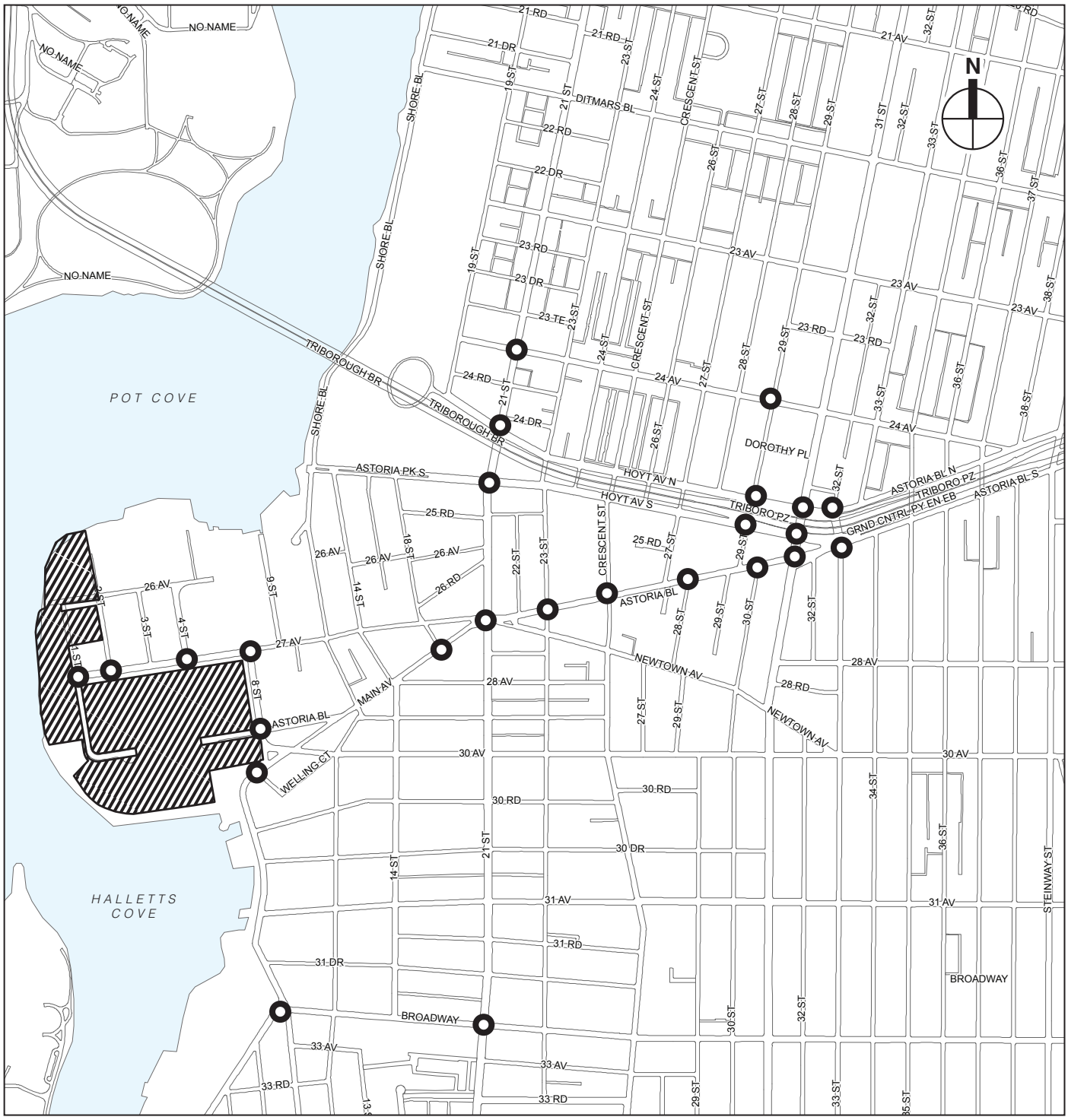
1. 27th Avenue and 1st Street (unsignalized)
2. 27th Avenue and 2nd Street (unsignalized)
3. 27th Avenue and 4th Street (unsignalized)
4. 27th Avenue and 8th Street (signalized)
5. Vernon Boulevard/Main Avenue and 8th Street/Welling Court (signalized)
6. Astoria Boulevard and 8th Street (signalized)
7. Astoria Boulevard and 18th Street (unsignalized)
8. Astoria Boulevard and 21st Street (signalized)
9. Astoria Boulevard and 23rd Street (signalized)
10. Astoria Boulevard and Crescent Street (signalized)
11. Astoria Boulevard and 28th Street (unsignalized)
12. Astoria Boulevard and 30th Street (unsignalized)
13. Astoria Boulevard and 31st Street (signalized)
14. Astoria Park South/Hoyt Avenue South and 21st Street (signalized)
15. Hoyt Avenue South and Triborough/RFK Bridge Off-Ramp/29th Street (signalized)
16. Hoyt Avenue South and 31st Street (signalized)
17. Hoyt Avenue South/Astoria Boulevard and 33rd Street (signalized)
18. Hoyt Avenue North and 21st Street (signalized)
19. Hoyt Avenue North and 29th Street (signalized)
20. Hoyt Avenue North and 31st Street (signalized)
21. Hoyt Avenue North/Astoria Boulevard North and 32nd Street (signalized)
22. 24th Avenue and 21st Street (signalized)
23. 24th Avenue and 29th Avenue (signalized)
24. Broadway and Vernon Boulevard/11th Street (signalized)
25. Broadway and 21st Street (signalized)

Subsequent to this traffic study, DCP requested the addition of two more study intersections: 27th Avenue at 12th and 14th Streets. These intersections will be studied between Draft and Final certification and will be included in the FEIS.

*TRANSIT*

As discussed above under "Level 1 Screening," the proposed project's peak hour subway trip estimates exceed the 200 peak hour subway trip threshold during the weekday peak hours. As further discussed in Section E, "Detailed Transit Analysis," these trips were assigned to available subway lines in the area; and based on the assignment of the projected subway trips, it was determined that circulation elements and control areas at the following two subway stations would require detailed analysis (see transit map shown on **Figure 15-5**):

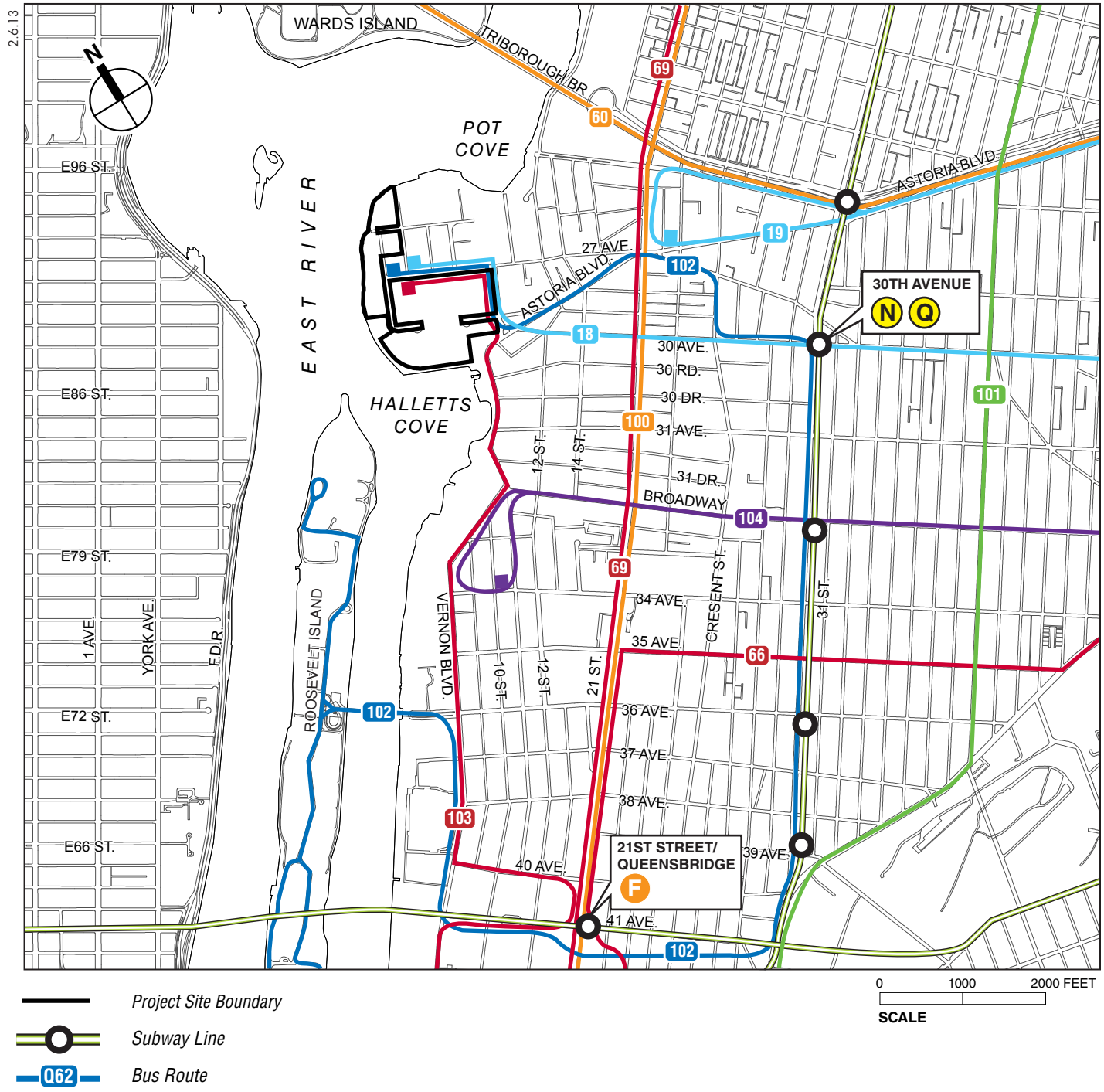
11.27.12




Traffic Analysis Locations

**HALLETTS POINT**

**Figure 15-4**




**HALLETTS POINT**

Transit Map
**Figure 15-5**

1. 21st Street-Queensbridge (F) Station
2. 30th Avenue (N, Q) Station

To determine whether a subway line-haul analysis is warranted, the estimated incremental ridership for the F, N, and Q subway lines by direction was compared with the peak period service frequencies to determine the increase in subway riders per subway car, as shown in **Table 15-7**. Population data from the 2010 Census and origin-destination data from the 2000 Census Transportation Planning Package (CTTP) were reviewed, together with the latest available MTA-New York City Transit (NYCT) station registration data, to develop the assignment patterns used in the allocation of projected subway trips. Based on MTA-NYCT data, the 30th Avenue (N, Q) Station serves nearly twice as many riders on a typical weekday as the 21st Street-Queensbridge (F) Station. The assignments were further adjusted to account for the fact that the 30th Avenue Station is located closer to the project site and more buses provide service from the project site to that station. Therefore, accounting for the two stations' proximity and connectivity to the project sites, it was assumed that 25 percent of project-generated subway trips would travel to the 21st Street-Queensbridge Station, while 75 percent would access the subway system at the 30th Avenue Station.

**Table 15-7**
**Subway Line Haul Screening Analysis**

| Subway Line | Projected Riders | No. of Cars * | No. Riders/Car | Screening Result |
|---|---|---|---|---|
| AM Peak Hour | | | | |
| **To Site** | **234** | | | |
| N – Queens Bound | 81 | 80 | 1.01 | Screened out |
| N – Manhattan Bound | 7 | 70 | 0.10 | Screened out |
| Q – Queens Bound | 81 | 70 | 1.15 | Screened out |
| Q – Manhattan Bound | 7 | 70 | 0.10 | Screened out |
| F – Queens Bound | 54 | 130 | 0.41 | Screened out |
| F – Manhattan Bound | 4 | 150 | 0.03 | Screened out |
| **From Site** | **907** | | | |
| N – Queens Bound | 27 | 80 | 0.34 | Screened out |
| N – Manhattan Bound | 313 | 70 | 4.47 | Screened out |
| Q – Queens Bound | 27 | 70 | 0.39 | Screened out |
| Q – Manhattan Bound | 313 | 70 | 4.47 | Screened out |
| F – Queens Bound | 18 | 130 | 0.14 | Screened out |
| F – Manhattan Bound | 209 | 150 | 1.39 | Screened out |
| PM Peak Hour | | | | |
| **To Site** | **832** | | | |
| N – Queens Bound | 287 | 60 | 4.78 | Screened out |
| N – Manhattan Bound | 25 | 70 | 0.36 | Screened out |
| Q – Queens Bound | 287 | 60 | 4.78 | Screened out |
| Q – Manhattan Bound | 25 | 60 | 0.42 | Screened out |
| F – Queens Bound | 191 | 150 | 1.28 | Screened out |
| F – Manhattan Bound | 17 | 120 | 0.14 | Screened out |
| **From Site** | **463** | | | |
| N – Queens Bound | 14 | 60 | 0.23 | Screened out |
| N – Manhattan Bound | 160 | 70 | 2.28 | Screened out |
| Q – Queens Bound | 14 | 60 | 0.23 | Screened out |
| Q – Manhattan Bound | 160 | 60 | 2.66 | Screened out |
| F – Queens Bound | 9 | 150 | 0.06 | Screened out |
| F – Manhattan Bound | 106 | 120 | 0.89 | Screened out |

**Note:** * Number of cars available for each line during the peak hour was obtained from 2011 cordon counts

According to the *CEQR Technical Manual*, an incremental ridership of fewer than five riders per subway car is unlikely to result in the potential for a significant subway line-haul impact. The detailed subway trip assignments showed that the F, N, and Q subway lines would incur fewer than five additional riders per car in all directions and time periods. Since the projected peak ridership increment would be below this threshold, a detailed subway line-haul analysis is not warranted. Project-generated peak hour bus trips would also exceed the *CEQR Technical Manual* analysis thresholds (in the PM peak hour). In addition, as the project site is located at significant distances from the nearest subway stations, the majority of the estimated project-generated subway trips would also use the Q18, Q102, and Q103 local bus routes, which have stops near the analyzed subway stations, to connect with the N, Q, and F subway lines. Therefore, a detailed bus-line haul analysis is warranted for all three of the area bus routes.

*PEDESTRIANS*

As discussed above under "Level 1 Screening," the proposed project's peak hour pedestrian trip estimates exceed the *CEQR Technical Manual* threshold during the AM, midday, and PM peak hours. These pedestrian trips were assigned to area pedestrian elements based on logical and direct travel routes to and from the project site. Based on the pedestrian trip increments shown in **Figures 15-6** to **15-8**, corner reservoirs and crosswalks, as well as connecting sidewalks, at six intersections were selected for a detailed analysis (see **Table 15-8** and **Figure 15-9**).

**Table 15-8**
**Pedestrian Analysis Locations**

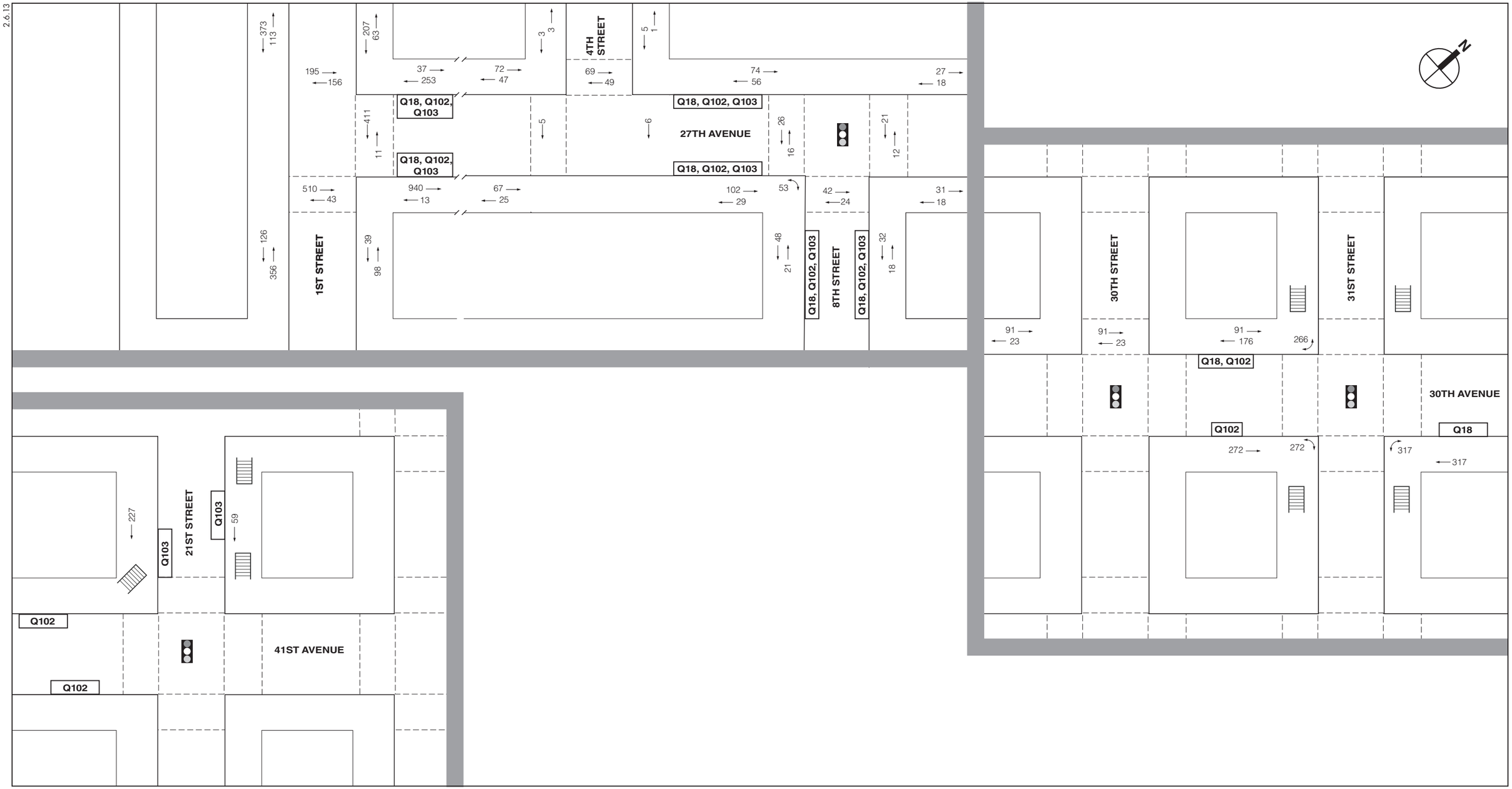
| Intersection No. | Location | Elements |
|---|---|---|
| 1 | 30th Avenue and 31st Street | Northwest corner/ Southwest corner/ Southeast corner |
| | | West sidewalk of 31st Street between 30th Avenue and Newtown Avenue |
| | | East sidewalk of 31st Street between 30th Avenue and 30th Drive |
| | | West sidewalk of 31st Street between 30th Avenue and 30th Drive |
| | | South sidewalk of 30th Avenue between 31st Street and 32nd Street |
| 2 | 30th Avenue and 30th Street | North sidewalk of 30th Avenue between 30th Street and 3st Street |
| | | South sidewalk of 30th Avenue between 30th Street and 31st Street |
| 3 | 27th Avenue and 8th Street | South crosswalk |
| | | West crosswalk |
| | | Southwest corner/ Southeast corner |
| | | North sidewalk of 27th Avenue between 4th Street and 8th Street |
| | | South sidewalk of 27th Avenue between 4th Street and 8th Street |
| 4 | 27th Avenue and 4th Street | North sidewalk of 27th Avenue between 4th Street and 3rd Street |
| 5 | 27th Avenue and 1st Street | North sidewalk of 27th Avenue between 1st Street and 2nd Street |
| | | South sidewalk of 27th Avenue between 1st Street and 2nd Street |
| | | East sidewalk of 1st Street between 27th Avenue and 26th Avenue |
| | | West sidewalk of 1st Street between 27th Avenue and 26th Avenue |
| | | East sidewalk of 1st Street between 27th Avenue and Astoria Boulevard |
| | | West sidewalk of 1st Street between 27th Avenue and Astoria Boulevard |
| 6 | 41st Avenue and 21st Street | East sidewalk of 21st Street between 41st Avenue and 40th Avenue |
| | | West sidewalk of 21st Street between 41st Avenue and 40th Avenue |

## C. TRANSPORTATION ANALYSIS METHODOLOGY

### TRAFFIC OPERATIONS

The operation of all signalized and unsignalized intersection analysis locations were assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the

2.6.13



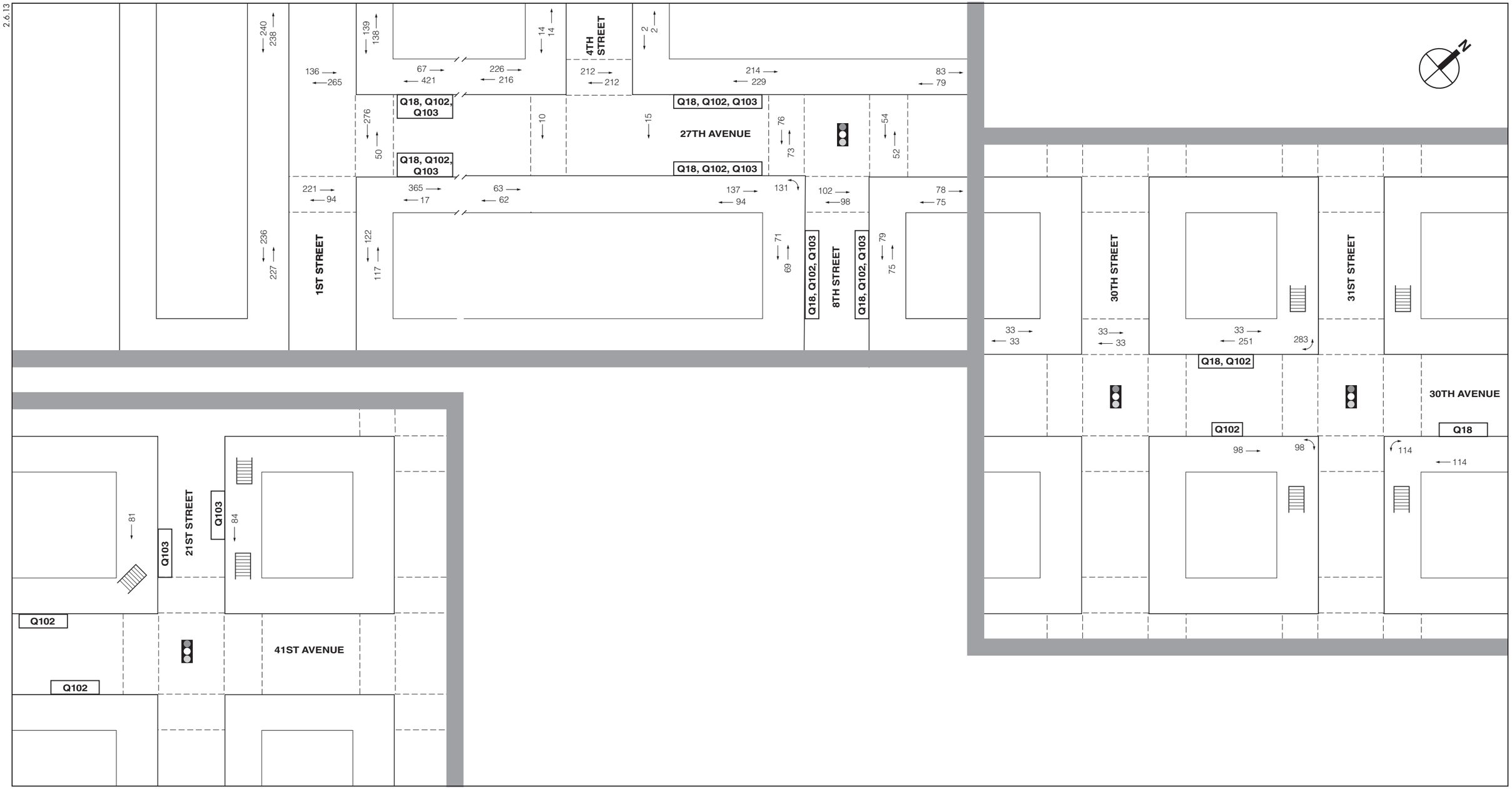

*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

2022 Proposed Project Generated Pedestrian Trips
Weekday AM Peak Hour
**Figure 15-6**

2.6.13




*Signalized Intersection*

*Subway Station Entrance*

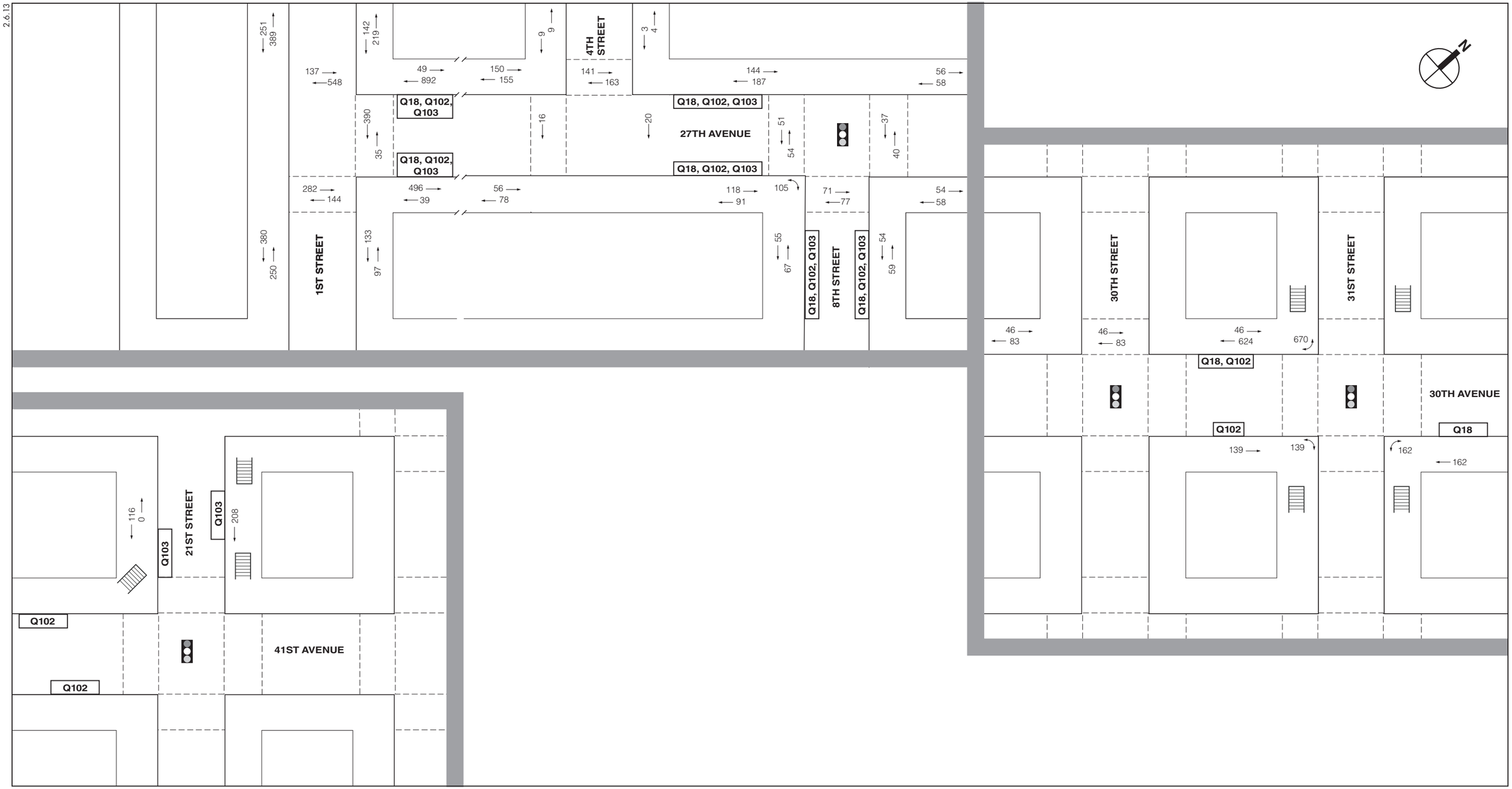
Q103 *Bus Stop and Bus Route*

2022 Proposed Project Generated Pedestrian Trips
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-7**

2.6.13




*Signalized Intersection*

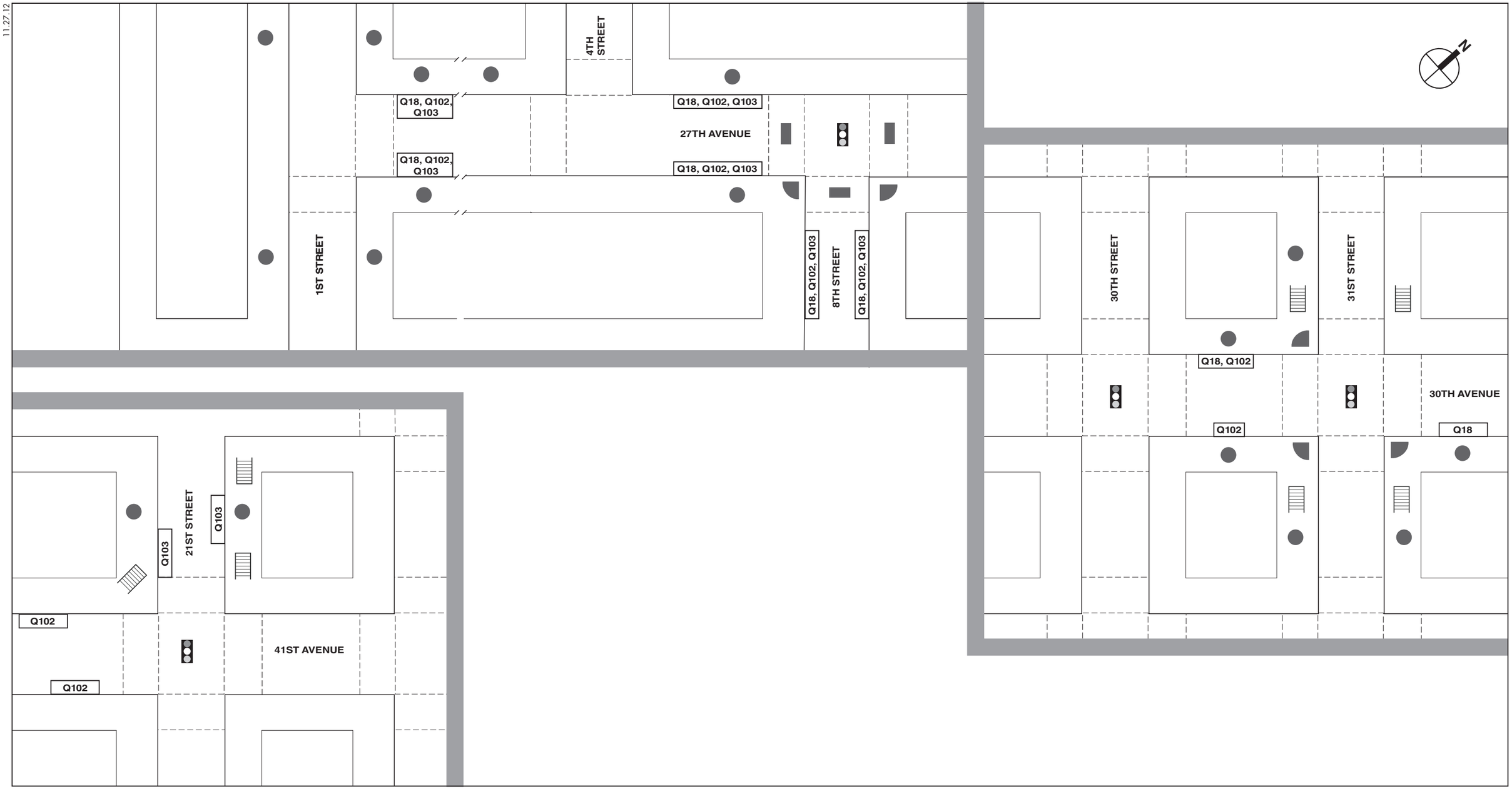
*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

2022 Proposed Project Generated Pedestrian Trips
Weekday PM Peak Hour
**Figure 15-8**

**HALLETTS POINT**

11.27.12




**HALLETTS POINT**

Pedestrian Analysis Locations
**Figure 15-9**

*Highway Capacity Software (HCS+ 5.5)*, which is the analysis methodology approved for use by NYCDOT. The *HCM* procedures evaluate the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

*SIGNALIZED INTERSECTIONS*

The average control delay per vehicle is the basis for determining levels of service for individual lane groups (grouping of movements in one or more travel lanes), the overall approaches to each intersection, and the overall intersection itself. LOS are defined in **Table 15-9**.

**Table 15-9**
**LOS Criteria for Signalized Intersections**

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

LOS A describes operations with low delays, i.e., an average control delay of 10.0 seconds or less per vehicle. This occurs when signal progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all.

LOS B describes operations with delays in excess of 10.0 seconds up to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.

LOS C describes operations with delays in excess of 20.0 seconds up to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is noticeable at this level, although many still pass through the intersection without stopping.

LOS D describes operations with delays in excess of 35.0 seconds up to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.

LOS E describes operations with delays in excess of 55.0 seconds up to 80.0 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios.

LOS F describes operations with delays in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios with cycle failures. Poor progression and long cycle lengths may also contribute to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

Based on *CEQR Technical Manual* guidelines, LOS A, B, and C are considered acceptable, LOS D is considered marginally acceptable up to mid-LOS D (45 seconds of delay for signalized intersections) and unacceptable above mid-LOS D, and LOS E and F indicate congestion. These

guidelines are applicable to individual traffic movements and overall intersection levels of service.

*UNSIGNALIZED INTERSECTIONS*

For unsignalized intersections, the average control delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. The level of service criteria for unsignalized intersections are summarized in **Table 15-10**. For unsignalized intersections, LOS E is considered the limit of acceptable delay, while LOS F is considered unacceptable to most drivers. LOS F conditions exist when there are insufficient gaps of suitable size in a major vehicular traffic stream to allow side street traffic to cross safely.

**Table 15-10**
**LOS Criteria for Unsignalized Intersections**

| LOS | Average Control Delay |
|---|---|
| A | ≤ 10.0 seconds |
| B | > 10.0 and ≤ 15.0 seconds |
| C | > 15.0 and ≤ 25.0 seconds |
| D | > 25.0 and ≤ 35.0 seconds |
| E | > 35.0 and ≤ 50.0 seconds |
| F | > 50.0 seconds |

**Source:** Transportation Research Board. *Highway Capacity Manual*, 2000.

*SIGNIFICANT IMPACT CRITERIA*

The assessment of potential significant traffic impacts of a proposed project is based on significant impact criteria defined in the *CEQR Technical Manual*. No Action LOS A, B, or C conditions that deteriorate to unacceptable LOS D, E, or F in the future With Action condition are considered a significant traffic impact. For future No Action LOS A, B, or C conditions that deteriorate to unacceptable LOS D, mitigation to mid-LOS D (45.0 seconds of delay for signalized intersections and 30.0 seconds of delay for unsignalized intersections) needs to be considered to fully mitigate the impact. For a No Action LOS D, an increase of delay by five or more seconds in the With Action condition is considered a significant impact if the With Action condition delay meets or exceeds 45.0 seconds. For a No Action LOS E, the threshold is a four second increase in With Action condition delay; for a No Action LOS F, a three second increase in delay in the With Action condition is significant. For unsignalized intersections, for the minor street to generate a significant impact, 90 passenger car equivalents (PCEs) must be identified in the With Action condition in any peak hour.

## TRANSIT OPERATIONS

*SUBWAY STATION ANALYSIS*

The methodology for assessing station circulation (stairs and escalators) and fare control (regular turnstiles, high entry/exit turnstiles, and high exit turnstiles) elements compares the user volume with the analyzed element's design capacity, resulting in a v/c ratio. For stairs, the design capacity considers the effective width of a tread, which accounts for railings or other obstructions, the friction or counter-flow between upward and downward pedestrians (up to 10 percent capacity reduction is applied to account for counter-flow friction), surging of exiting pedestrians (up to 25 percent capacity reduction is applied to account for detraining surges near platforms), and the

average area required for circulation. For escalators and turnstiles, capacities are measured by the number and width of an element and the NYCT optimum capacity per element, also account for the potential for surging of exiting pedestrians. The estimated v/c ratio is compared with NYCT criteria to determine a LOS for the operation of an element, as shown in **Table 15-11**.

**Table 15-11**
**LOS Criteria for Subway Station Elements**

| LOS | V/C Ratio |
|---|---|
| A | 0.00 to 0.45 |
| B | 0.45 to 0.70 |
| C | 0.70 to 1.00 |
| D | 1.00 to 1.33 |
| E | 1.33 to 1.67 |
| F | Above 1.67 |

**Source:** New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual* (February 2012).

At LOS A ("free flow") and B ("fluid flow"), there is sufficient area to allow pedestrians to freely select their walking speed and bypass slower pedestrians. When cross and reverse flow movement exists, only minor conflicts may occur. At LOS C ("fluid, somewhat restricted"), movement is fluid although somewhat restricted. While there is sufficient room for standing without personal contact, circulation through queuing areas may require adjustments to walking speed. At LOS D ("crowded, walking speed restricted"), walking speed is restricted and reduced. Reverse and cross flow movement is severely restricted because of congestion and the difficult passage of slower moving pedestrians. At LOS E ("congested, some shuffling and queuing") and F ("severely congested, queued"), walking speed is restricted. There is also insufficient area to bypass others, and opposing movement is difficult. Often, forward progress is achievable only through shuffling, with queues forming.

*Significant Impact Criteria*

The determination of significant impacts for station elements varies based on their type and use. For stairs, significant impacts are defined in term of width increment threshold (WIT) based on the minimum amount of additional capacity that would be required either to mitigate the location to its service conditions (LOS) under the No Build levels, or to bring it to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Significant impacts are typically considered to occur once the WITs in **Table 15-12** are reached or exceeded.

**Table 15-12**
**Significant Impact Guidance for Stairs**

| No Build V/C Ratio | WIT for Significant Impact (inches) | |
|---|---|---|
| | Stairway | Passageway |
| 1.00 to 1.09 | 8.0 | 13.0 |
| 1.10 to 1.19 | 7.0 | 11.5 |
| 1.20 to 1.29 | 6.0 | 10.0 |
| 1.30 to 1.39 | 5.0 | 8.5 |
| 1.40 to 1.49 | 4.0 | 6.0 |
| 1.50 to 1.59 | 3.0 | 4.5 |
| 1.60 and up | 2.0 | 3.0 |

**Note:** WIT = Width Increment Threshold
**Source:** New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

For escalators and control area elements, impacts are significant if the proposed project causes a v/c ratio to increase from below 1.00 to 1.00 or greater. Where a facility is already at or above its capacity (a v/c of 1.00 or greater) in the No Build condition, a 0.01 increase in v/c ratio is also significant.

*BUS LINE-HAUL ANALYSIS*

The assessment of bus line-haul conditions involves analyzing bus routes at their peak load points and, if necessary, also their bus stops closest to the project site to identify the potential for the analyzed routes to exceed their guideline (or practical) capacities. NYCT and the MTA Bus Company operate three types of buses: standard and articulated buses, and over-the-road coaches. During peak hours, standard buses operate with up to 54 passengers per bus, articulated buses operate with up to 85 passengers per bus, and over-the-road coaches operate with up to 55 passengers per bus.

*Significant Impact Criteria*

An increase in bus load levels greater than the maximum capacity at any load point is defined as a significant adverse impact. While subject to operational and fiscal constraints, bus impacts can typically be mitigated by increasing service frequency. Therefore, mitigation of bus line-haul capacity impacts, where appropriate, would be recommended for NYCT's approval.

## PEDESTRIAN OPERATIONS

The adequacy of the study area's sidewalks, crosswalks, and corner reservoir capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 2010 *HCM*, pursuant to procedures detailed in the *CEQR Technical Manual*.

Sidewalks are analyzed in terms of pedestrian flow. The calculation of the average pedestrians per minute per foot (PMF) of effective walkway width is the basis for a sidewalk LOS analysis. The determination of walkway LOS is also dependent on whether the pedestrian flow being analyzed is best described as "non-platoon" or "platoon." Non-platoon flow occurs when pedestrian volume within the peak period is relatively uniform, whereas, platoon flow occurs when pedestrian volumes vary significantly with the peak period. Such variation typically occurs near bus stops, subway stations, and/or where adjacent crosswalks account for much of the walkway's pedestrian volume.

Crosswalks and street corners are not easily measured in terms of free pedestrian flow, as they are influenced by the effects of traffic signals. Street corners must be able to provide sufficient space for a mix of standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner). The *HCM* methodologies apply a measure of time and space availability based on the area of the corner, the timing of the intersection signal, and the estimated space used by circulating pedestrians.

The total "time-space" available for these activities, expressed in square feet-second, is calculated by multiplying the net area of the corner (in square feet) by the signal's cycle length. The analysis then determines the total circulation time for all pedestrian movements at the corner per signal cycle (expressed as pedestrians per second). The ratio of net time-space divided by the total pedestrian circulation volume per signal cycle provides the LOS measurement of square feet per pedestrian (SFP).

Crosswalk LOS is also a function of time and space. Similar to the street corner analysis, crosswalk conditions are first expressed as a measurement of the available area (the crosswalk width multiplied by the width of the street) and the permitted crossing time. This measure is expressed in square feet-second. The average time required for a pedestrian to cross the street is calculated based on the width of the street and an assumed walking speed. The ratio of time-space available in the crosswalk to the total crosswalk pedestrian occupancy time is the LOS measurement of available square feet per pedestrian. The LOS analysis also accounts for vehicular turning movements that traverse the crosswalk. The LOS standards for sidewalks, corner reservoirs, and crosswalks are summarized in **Table 15-13**.

**Table 15-13**
**Level of Service Criteria for Pedestrian Elements**

| LOS | Sidewalks | | Corner Reservoirs and Crosswalks |
|---|---|---|---|
| | Non-Platoon Flow | Platoon Flow | |
| A | ≤ 5 PMF | ≤ 0.5 PMF | > 60 SFP |
| B | > 5 and ≤ 7 PMF | > 0.5 and ≤ 3 PMF | > 40 and ≤ 60 SFP |
| C | > 7 and ≤ 10 PMF | > 3 and ≤ 6 PMF | > 24 and ≤ 40 SFP |
| D | > 10 and ≤ 15 PMF | > 6 and ≤ 11 PMF | > 15 and ≤ 24 SFP |
| E | > 15 and ≤ 23 PMF | > 11 and ≤ 18 PMF | > 8 and ≤ 15 SFP |
| F | > 23 PMF | > 18 PMF | ≤ 8 SFP |

**Notes:** PMF = pedestrians per minute per foot; SFP = square feet per pedestrian.
**Source:** New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

*SIGNIFICANT IMPACT CRITERIA*

The determination of significant pedestrian impacts considers the level of predicted deterioration in pedestrian flow or decrease in pedestrian space between the No Build and Build conditions. For different pedestrian elements, flow conditions, and area types, the CEQR procedure for impact determination corresponds with various sliding-scale formulas, as further detailed below.

There are two sliding-scale formulas for determining significant sidewalk impacts. For non-platoon flow, the increase in average pedestrian flow rate (Y) in PMF needs to be greater or equal to 3.5 minus X divided by 8.0 (where X is the No Build pedestrian flow rate in PMF [$Y \geq 3.5 - X/8.0$]) for it to be a significant impact. For platoon flow, the sliding-scale formula is $Y \geq 3.0 - X/8.0$. Since deterioration in pedestrian flow within acceptable levels would not constitute a significant impact, these formulas would apply only if the Build pedestrian flow exceeds LOS C in non-Central Business District (CBD) areas or mid-LOS D in CBD areas. **Table 15-14** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts. According to CEQR guidelines, the proposed project is located in a non-CBD area. For informational purposes, the tables below present the significant impact guidance for CBD and non-CBD areas. The determination of significant corner and crosswalk impacts is also based on a sliding scale using the following formula: $Y \geq X/9.0 - 0.3$, where Y is the decrease in pedestrian space in SFP and X is the No Build pedestrian space in SFP. Since a decrease in pedestrian space within acceptable levels would not constitute a significant impact, this formula would apply only if the Build pedestrian space falls short of LOS C in non-CBD areas or mid-LOS D in CBD areas. **Table 15-15** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant corner reservoir and crosswalk impacts.

## Table 15-14
## Significant Impact Guidance for Sidewalks

| Non-Platoon Flow | | | | Platoon Flow | | | |
|---|---|---|---|---|---|---|---|
| **Sliding Scale Formula:** *Y ≥ 3.5 – X/8.0* | | | | **Sliding Scale Formula:** *Y ≥ 3.0 – X/8.0* | | | |
| Non-CBD Areas | | CBD Areas | | Non-CBD Areas | | CBD Areas | |
| No Build Ped. Flow (X, PMF) | Build Ped. Flow Incr. (Y, PMF) | No Build Ped. Flow (X, PMF) | Build Ped. Flow Incr. (Y, PMF) | No Build Ped. Flow (X, PMF) | Build Ped. Flow Incr. (Y, PMF) | No Build Ped. Flow (X, PMF) | Build Ped. Flow Incr. (Y, PMF) |
| 7.4 to 7.8 | ≥ 2.6 | – | – | 3.4 to 3.8 | ≥ 2.6 | – | – |
| 7.9 to 8.6 | ≥ 2.5 | – | – | 3.9 to 4.6 | ≥ 2.5 | – | – |
| 8.7 to 9.4 | ≥ 2.4 | – | – | 4.7 to 5.4 | ≥ 2.4 | – | – |
| 9.5 to 10.2 | ≥ 2.3 | – | – | 5.5 to 6.2 | ≥ 2.3 | – | – |
| 10.3 to 11.0 | ≥ 2.2 | 10.3 to 11.0 | ≥ 2.2 | 6.3 to 7.0 | ≥ 2.2 | 6.3 to 7.0 | ≥ 2.2 |
| 11.1 to 11.8 | ≥ 2.1 | 11.1 to 11.8 | ≥ 2.1 | 7.1 to 7.8 | ≥ 2.1 | 7.1 to 7.8 | ≥ 2.1 |
| 11.9 to 12.6 | ≥ 2.0 | 11.9 to 12.6 | ≥ 2.0 | 7.9 to 8.6 | ≥ 2.0 | 7.9 to 8.6 | ≥ 2.0 |
| 12.7 to 13.4 | ≥ 1.9 | 12.7 to 13.4 | ≥ 1.9 | 8.7 to 9.4 | ≥ 1.9 | 8.7 to 9.4 | ≥ 1.9 |
| 13.5 to 14.2 | ≥ 1.8 | 13.5 to 14.2 | ≥ 1.8 | 9.5 to 10.2 | ≥ 1.8 | 9.5 to 10.2 | ≥ 1.8 |
| 14.3 to 15.0 | ≥ 1.7 | 14.3 to 15.0 | ≥ 1.7 | 10.3 to 11.0 | ≥ 1.7 | 10.3 to 11.0 | ≥ 1.7 |
| 15.1 to 15.8 | ≥ 1.6 | 15.1 to 15.8 | ≥ 1.6 | 11.1 to 11.8 | ≥ 1.6 | 11.1 to 11.8 | ≥ 1.6 |
| 15.9 to 16.6 | ≥ 1.5 | 15.9 to 16.6 | ≥ 1.5 | 11.9 to 12.6 | ≥ 1.5 | 11.9 to 12.6 | ≥ 1.5 |
| 16.7 to 17.4 | ≥ 1.4 | 16.7 to 17.4 | ≥ 1.4 | 12.7 to 13.4 | ≥ 1.4 | 12.7 to 13.4 | ≥ 1.4 |
| 17.5 to 18.2 | ≥ 1.3 | 17.5 to 18.2 | ≥ 1.3 | 13.5 to 14.2 | ≥ 1.3 | 13.5 to 14.2 | ≥ 1.3 |
| 18.3 to 19.0 | ≥ 1.2 | 18.3 to 19.0 | ≥ 1.2 | 14.3 to 15.0 | ≥ 1.2 | 14.3 to 15.0 | ≥ 1.2 |
| 19.1 to 19.8 | ≥ 1.1 | 19.1 to 19.8 | ≥ 1.1 | 15.1 to 15.8 | ≥ 1.1 | 15.1 to 15.8 | ≥ 1.1 |
| 19.9 to 20.6 | ≥ 1.0 | 19.9 to 20.6 | ≥ 1.0 | 15.9 to 16.6 | ≥ 1.0 | 15.9 to 16.6 | ≥ 1.0 |
| 20.7 to 21.4 | ≥ 0.9 | 20.7 to 21.4 | ≥ 0.9 | 16.7 to 17.4 | ≥ 0.9 | 16.7 to 17.4 | ≥ 0.9 |
| 21.5 to 22.2 | ≥ 0.8 | 21.5 to 22.2 | ≥ 0.8 | 17.5 to 18.2 | ≥ 0.8 | 17.5 to 18.2 | ≥ 0.8 |
| 22.3 to 23.0 | ≥ 0.7 | 22.3 to 23.0 | ≥ 0.7 | 18.3 to 19.0 | ≥ 0.7 | 18.3 to 19.0 | ≥ 0.7 |
| > 23.0 | ≥ 0.6 | > 23.0 | ≥ 0.6 | > 19.0 | ≥ 0.6 | > 19.0 | ≥ 0.6 |

**Notes:** PMF = pedestrians per minute per foot; Y = increase in average pedestrian flow rate in PMF; X = No Build pedestrian flow rate in PMF.
**Sources:** New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

## Table 15-15
## Significant Impact Guidance for Corners and Crosswalks

| **Sliding Scale Formula:** *Y ≥ X/9.0 – 0.3* | | | |
|---|---|---|---|
| Non-CBD Areas | | CBD Areas | |
| No Build Pedestrian Space (X, SFP) | Build Pedestrian Space Reduction (Y, SFP) | No Build Pedestrian Space (X, SFP) | Build Pedestrian Space Reduction (Y, SFP) |
| 25.8 to 26.6 | ≥ 2.6 | – | – |
| 24.9 to 25.7 | ≥ 2.5 | – | – |
| 24.0 to 24.8 | ≥ 2.4 | – | – |
| 23.1 to 23.9 | ≥ 2.3 | – | – |
| 22.2 to 23.0 | ≥ 2.2 | – | – |
| 21.3 to 22.1 | ≥ 2.1 | 21.3 to 21.5 | ≥ 2.1 |
| 20.4 to 21.2 | ≥ 2.0 | 20.4 to 21.2 | ≥ 2.0 |
| 19.5 to 20.3 | ≥ 1.9 | 19.5 to 20.3 | ≥ 1.9 |
| 18.6 to 19.4 | ≥ 1.8 | 18.6 to 19.4 | ≥ 1.8 |
| 17.7 to 18.5 | ≥ 1.7 | 17.7 to 18.5 | ≥ 1.7 |
| 16.8 to 17.6 | ≥ 1.6 | 16.8 to 17.6 | ≥ 1.6 |
| 15.9 to 16.7 | ≥ 1.5 | 15.9 to 16.7 | ≥ 1.5 |
| 15.0 to 15.8 | ≥ 1.4 | 15.0 to 15.8 | ≥ 1.4 |
| 14.1 to 14.9 | ≥ 1.3 | 14.1 to 14.9 | ≥ 1.3 |
| 13.2 to 14.0 | ≥ 1.2 | 13.2 to 14.0 | ≥ 1.2 |
| 12.3 to 13.1 | ≥ 1.1 | 12.3 to 13.1 | ≥ 1.1 |
| 11.4 to 12.2 | ≥ 1.0 | 11.4 to 12.2 | ≥ 1.0 |
| 10.5 to 11.3 | ≥ 0.9 | 10.5 to 11.3 | ≥ 0.9 |
| 9.6 to 10.4 | ≥ 0.8 | 9.6 to 10.4 | ≥ 0.8 |
| 8.7 to 9.5 | ≥ 0.7 | 8.7 to 9.5 | ≥ 0.7 |
| 7.8 to 8.6 | ≥ 0.6 | 7.8 to 8.6 | ≥ 0.6 |
| 6.9 to 7.7 | ≥ 0.5 | 6.9 to 7.7 | ≥ 0.5 |
| 6.0 to 6.8 | ≥ 0.4 | 6.0 to 6.8 | ≥ 0.4 |
| 5.1 to 5.9 | ≥ 0.3 | 5.1 to 5.9 | ≥ 0.3 |
| < 5.1 | ≥ 0.2 | < 5.1 | ≥ 0.2 |

**Notes:** SFP = square feet per pedestrian; Y = decrease in pedestrian space in SFP; X = No Build pedestrian space in SFP.
**Sources:** New York City Mayor's Office of Environmental Coordination, *CEQR Technical Manual*.

### VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

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

### PARKING CONDITIONS ASSESSMENT

The parking analysis identifies the extent to which on-street 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 actions. Typically, this analysis encompasses a study area within ¼-mile of the project site.

## D. DETAILED TRAFFIC ANALYSIS

### EXISTING CONDITIONS

*ROADWAY NETWORK AND TRAFFIC STUDY AREA*

As detailed above in "Level 2 Screening Assessment," 25 key intersections near the project site were identified that would most likely be affected by project-generated traffic.

The roadway network around the project site is generally a grid of local streets through the neighborhood of Astoria, Queens which also contains access points to major regional roadways, including the Grand Central Parkway (GCP) and the Triborough/RFK Bridge (RFK Bridge). Key north-south roadways within the study area include Vernon Boulevard, 21st Street, and 31st Street. Key east-west roadways in the study area include the GCP, Hoyt Avenue (North and South), Astoria Boulevard, and 27th Avenue.

Vernon Boulevard is a north-south street that travels adjacent to the waterfront in Western Queens, and has a mix of industrial, transportation/utilities, commercial, residential, and open space/recreational uses. It extends from Borden Avenue in Hunter's Point in the south to Main Avenue in Astoria in the north. Within the study area, the road operates with one travel lane and one striped (Class II), buffered bike lane in each direction. There is also curbside parking in the northbound direction. Vernon Boulevard also has local bus service and is a local truck route.

8th Street serves as a local north-south street in the study area and is the eastern border of the Astoria Houses Campus. The roadway operates as a two-way street with one travel lane, one Class II bike lane and parking in each direction, and is characterized by residential use.

21st Street is a north-south arterial that spans between Astoria to the north and Hunter's Point to the south, and provides direct access to the Ed Koch/Queensboro Bridge and the Queens-Midtown Tunnel. Within the study area, the roadway has two travel lanes and a parking lane in each direction south of the RFK Bridge and one travel lane and a parking lane in each direction north of it. Motorists are prohibited from making left turns from 21st Street along much of the corridor during weekday AM and PM peak periods. Multiple local bus routes operate along 21st Street, and it is a designated through truck route. North of Hoyt Avenue South/Astoria Park South, the roadway has a Class II bike lane in both directions.

31st Street extends from Northern Boulevard to the north end of Queens. It is a two-way street and typically has one travel lane and one parking lane in each direction. It is a residential and commercial street and is characterized by the elevated N/Q subway line that operates above it. 31st Street intersects Hoyt Avenue North and South and Astoria Boulevard North and South which feed traffic from nearby RFK Bridge and GCP ramps.

Hoyt Avenue acts as a service road to the GCP west of 31st Street, operating as Hoyt Avenue North in the westbound direction and Hoyt Avenue South going eastbound. The roadway is typically three to four lanes wide in each direction, and has extra lanes available for traffic entering and exiting the GCP at merge/diverge locations. There is typically one parking lane and a Class II bike lane in each direction along the right curb; however, there are some locations with parking along both curbs.

The GCP is a major east-west highway with three travel lanes in each direction that extend from the RFK Bridge in the northwest corner of Queens to the Queens-Nassau County border where it becomes the Northern State Parkway. It is a major carrier of traffic between Manhattan and the Bronx, and eastern Queens and Long Island. The roadway provides access to the study area via the 31st Street exit. As it transitions to the RFK Bridge (west of 27th Street), the roadway widens to four travel lanes in each direction.

Astoria Boulevard is a key east-west thoroughfare through southern Astoria. West of 31st Street, it is an east-west street with typically one travel lane and one parking lane in each direction and serves as a residential and commercial street. Astoria Boulevard currently terminates in the west within the Astoria Houses Campus, just west of 8th Street. East of 31st Street, Astoria Boulevard is one way eastbound and merges with Hoyt Avenue South, becoming the eastbound service road to the GCP.

27th Avenue is the primary east-west access to the Halletts Point peninsula and to the project site. It extends from the East River in the west to 21st Street in the east where it merges with Astoria Boulevard. It operates as a two-way commercial and residential street with one travel lane and parking in each direction except for the block between 18th Street and Astoria Boulevard where it operates one-way westbound. To continue east, vehicles can transition to Astoria Boulevard via 18th Street.

24th Avenue serves as a local east-west street in the study area north of the RFK Bridge and is a two-way street with one travel lane and a parking lane in each direction characterized by residential and commercial use.

New York City-designated truck routes in the study area include Vernon Boulevard, 21st Street, 29th Street, 24th Avenue, Hoyt Avenue North and South, Astoria Boulevard, and the GCP (between the RFK Bridge and the Brooklyn-Queens Expressway [BQE] only), the RFK Bridge, and Broadway.

The overall traffic study area addressed in this EIS encompasses 25 intersections within a primary traffic study area generally bounded by 24th Avenue to the north, 33rd Street to the east, Broadway to the south, and the East River to the west. Nineteen of the study intersections are signalized and six are unsignalized.

*TRAFFIC VOLUMES*

Traffic data were collected for weekday AM, midday, and PM peak periods using manual intersection counts and 24-hour Automatic Traffic Recorder (ATR) machine counts. These volumes were used along with field observations of traffic conditions to determine levels of service for the weekday 7:30 to 8:30 AM, 12:00 to 1:00 PM midday, and 4:30 to 5:30 PM peak hours.

Traffic counts were originally conducted for this EIS in June 2008 before the project was put on a temporary hiatus. When the study recommenced in 2011, these volumes were validated by a subsequent ATR data collection program which determined that, overall, the 2011 traffic volumes were the same or lower than in 2008. Therefore (in consultation with DCP and NYCDOT), the original 2008 volumes were retained for the 2011 existing conditions analysis; however, any street network changes (e.g., lane width changes, installation of bike lanes, reduced number of travel lanes, turn prohibitions, new traffic signals or new signal timing plans) that occurred between 2008 and 2011 were reflected in the existing conditions traffic analysis.

Traffic volumes within the immediate project site vicinity are generally low. North-south roads such as 1st, 2nd and 4th Streets have approximately 25 to 100 vehicles per hour (vph) per direction during all peak hours. 27th Avenue, the primary east-west street through this area, has 100 to 300 vph during peak hours.

Vernon Boulevard between Broadway and 30th Avenue is traveled by approximately 250 to 350 vph in the northbound direction in the weekday AM and midday peak hours, and 350 to 550 vph in the PM peak hour. In the southbound direction, Vernon Boulevard is traversed by 300 to 450 vph in the AM peak hour and 200 to 300 vph in the midday and PM peak hours.

Volumes along 8th Street range from approximately 200 to 300 vph during all weekday peak hours.

Between Broadway and Hoyt Avenue, 21st Street has northbound traffic volumes of approximately 500 to 650 vph in the AM peak hour, 550 to 1,000 vph in the midday peak hour, and 950 to 1,100 vph in the PM peak hour. Southbound volumes range from 1,200 to 1,500 vph during the AM peak hour, 750 to 850 vph during the midday peak hour, and 800 to 1,000 vph during the PM peak hour. North of Hoyt Avenue the volumes on 21st Street decrease to a range of 350 to 700 vph in the northbound direction and 250 to 450 vph in the southbound direction during weekday peak hours.

Volumes along 31st Street generally range from approximately 200 to 450 vph per direction during the weekday peak hours. At Triborough Plaza, where 31st Street intersects ramps to and from the RFK Bridge and GCP, traffic volumes increase to 550 to 750 vph in the northbound direction and 600 to 1,100 vph in the southbound direction during all peak hours.

Hoyt Avenue South, which is one-way eastbound, has volumes ranging from approximately 350 to 750 vph west of the 29th Street which increase to 1,050 to 1,450 vph between 29th Street and 33rd Street where it merges with Astoria Boulevard. Volumes on westbound Hoyt Avenue North are approximately 2,800 vph in the weekday AM peak hour and 2,100 vph in the midday and

PM peak hours, between 31st Street and 29th Street/RFK Bridge on-ramp. West of 29th Street/RFK Bridge on-ramp, volumes range from 950 to 1,600 vph during the AM peak hour and 650 to 1,400 vph during the midday and PM peak hours.

Volumes along Astoria Boulevard are approximately 200 to 500 vph in the eastbound direction and 125 to 375 vph in the westbound direction between the project site and 21st Street. Between 21st Street and 31st Street, traffic volumes increase to 400 to 700 vph in the eastbound direction and 250 to 750 vph in the westbound direction. East of 31st Street, Astoria Boulevard operates as a service road to the GCP. Astoria Boulevard South (eastbound) has volumes of 800 to 1,075 vph during all peak hours while Astoria Boulevard North (westbound) has volumes of 2,700 to 3,750 vph.

Other key east-west streets in the study area such as Broadway and 24th Avenue are generally traveled by 150 to 350 vph per direction during all weekday peak hours with the exception of 24th Avenue which is traversed by as many as 500 vph in the eastbound direction during the PM peak hour.

The existing traffic volumes for the weekday AM, midday and PM peak hours are presented in **Figures 15-10** to **15-12**.

*LEVELS OF SERVICE*

**Tables 15-16** and **15-17** provide an overview of the levels of service that characterize existing "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Detailed descriptions of existing traffic levels of service are provided in Section I, "Detailed Analysis Results Tables," **Tables 15-50** and **15-51**. Overall, the capacity analysis indicates that most of the study area's intersection approaches/lane groups operate acceptably—at mid-LOS D (delays of 45 seconds or fewer per vehicle for signalized intersections and 30 seconds or fewer per vehicle for unsignalized intersections) or better for the peak hours.

**Table 15-16**
**2011 Existing Traffic Level of Service Summary—Overall Intersections**

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Intersections at Overall LOS A/B/C | 17 | 22 | 20 |
| Intersections at Overall LOS D | 8 | 3 | 4 |
| Intersections at Overall LOS E | 0 | 0 | 1 |
| Intersections Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes the 25 analyzed intersections (19 signalized and 6 unsignalized). | | | |

**Table 15-17**
**2011 Existing Traffic Level of Service Summary—Traffic Movements**

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Traffic movements at LOS A/B/C and acceptable LOS D | 70 | 86 | 78 |
| Traffic movements at unacceptable LOS D | 10 | 5 | 7 |
| Traffic movements at LOS E | 9 | 1 | 7 |
| Traffic movements at LOS F | 3 | 1 | 0 |
| Number of individual traffic movements* | 92 | 93 | 92 |
| * Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements | | | |




Existing Traffic Volumes
Weekday AM Peak Hour

**HALLETTS POINT**

**Figure 15-10**




Existing Traffic Volumes
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-11**




Existing Traffic Volumes
Weekday PM Peak Hour

**HALLETTS POINT**

**Figure 15-12**

This summary overview of existing conditions indicates that:

- In the AM peak hour, none of the 25 intersections analyzed are operating at overall LOS E or F, and eight intersections are operating at marginally acceptable/unacceptable LOS D. "Overall" LOS E or F means that serious congestion exists—either one specific traffic movement has severe delays or two or more of the specific traffic movements at the intersection are at LOS E or F with very significant delays (the overall intersection LOS is a weighted average of all the individual traffic movements). Twelve individual traffic movements out of approximately 92 such movements analyzed are at LOS E or F (e.g., left turns from one street to another, through traffic on one street passing through the intersection, etc.) while ten movements are at unacceptable LOS D.
- In the midday peak hour, none of the intersections operate at overall LOS E or F, and three intersections operate at marginally acceptable/unacceptable LOS D. Two individual traffic movements operate at LOS E or F while five movements are at unacceptable LOS D.
- In the PM peak hour, one intersections analyzed operate at overall LOS E, and four intersection operates at marginally acceptable/unacceptable LOS D. Seven individual traffic movements operate at LOS E or F, and seven are at unacceptable LOS D.

Only one of the 25 intersections—Hoyt Avenue South/Astoria Boulevard at 33rd Street—operates at overall LOS E during any peak hour. This intersection operates at LOS E during the weekday PM peak hour.

All of the six unsignalized intersections analyzed are operating at LOS A, B, or C during all peak hours analyzed.

Thirteen intersections have at least one movement operating at unacceptable level of service during at least one peak hour. Traffic movements operating at unacceptable levels of service (unacceptable LOS D, LOS E or LOS F) are listed below:

*Vernon Boulevard/Main Avenue and 8th Street/Welling Court*

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

*Astoria Boulevard and 21st Street*

- Eastbound Astoria Boulevard shared left-turn/through (AM)
- Eastbound Astoria Boulevard shared through/right-turn (AM and PM)
- Westbound Astoria Boulevard left-turn (AM, midday, and PM)
- Westbound Astoria Boulevard shared through/right-turn (PM)
- Northbound 21st Street shared left-turn/through/right-turn (midday)
- Southbound 21st Street shared left-turn/through/right-turn (AM and midday)

*Astoria Boulevard and Crescent Street*

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

*Astoria Boulevard and 31st Street*

- Eastbound Astoria Boulevard shared left-turn/through/right-turn (PM)

*Astoria Park South/ Hoyt Avenue South and 21st Street*

- Eastbound Astoria Park South/ Hoyt Avenue South shared through/right-turn (AM)

*Hoyt Avenue South and 31st Street*

- Eastbound Hoyt Avenue South shared left-turn/through (AM)
- Eastbound Hoyt Avenue South right-turn (AM)

*Hoyt Avenue South/Astoria Boulevard and 33rd Street*

- Eastbound Astoria Boulevard shared left-turn/through (AM and PM)
- Northbound 33rd Street shared through/right-turn (AM and PM)
- Northbound 33rd Street right-turn (AM and PM)

*Hoyt Avenue North and 21st Street*

- Eastbound Hoyt Avenue North right-turn (AM)
- Northbound 21st Street through (AM and PM)
- Southbound 21st Street shared through/right-turn (AM)

*Hoyt Avenue North and 29th Street*

- Southbound 29th Street right-turn (AM and PM)

*Hoyt Avenue North and 31st Street*

- Westbound Hoyt Avenue North left-turn (AM and midday)
- Southbound 31st Street right-turn (AM)

*Hoyt Avenue North and 32nd Street*

- Westbound GCP Off-ramp through (AM)

*Broadway and Vernon Boulevard/11th Street*

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

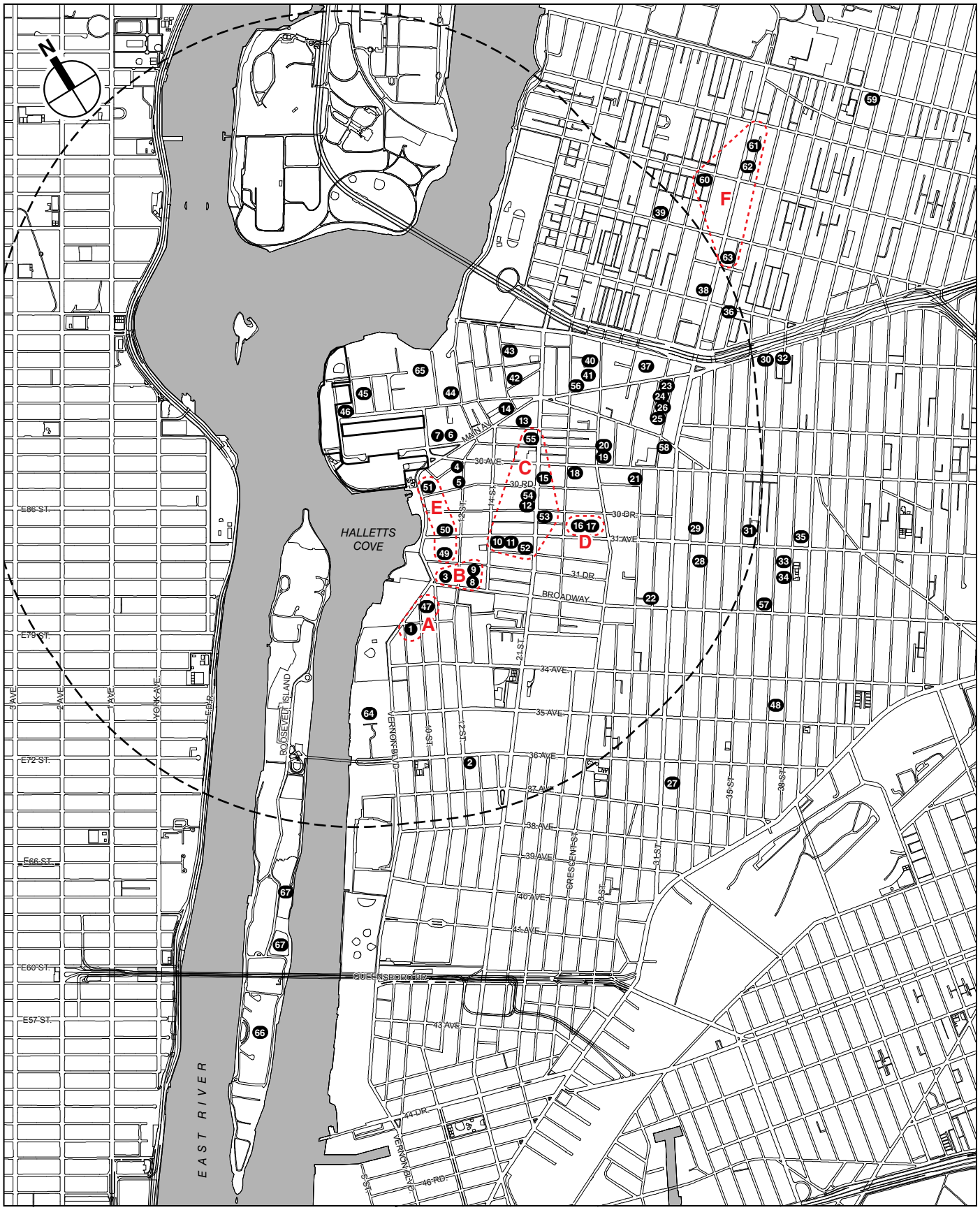
*Broadway and 21st Street*

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

## FUTURE WITHOUT THE PROPOSED PROJECT (2022 NO BUILD CONDITION)

The 2022 No Build condition was developed by increasing existing traffic volumes by the expected growth in overall travel through and within the study area. As per *CEQR* guidelines, an annual background growth rate of 0.5 percent was assumed for the first five years and then 0.25 percent for the remaining years to the year 2022. In addition, planned or proposed background projects were researched within the study area. A total of 67 projects are planned or proposed within or just outside the traffic study area. **Table 15-18** and **Figure 15-13** summarize the projects that were included in the future 2022 baseline; some smaller projects that would generate a very modest volume of traffic were considered as part of the general study area background traffic growth rate.

2.6.13




Project Site Boundary

1-Mile Study Area Boundary

1 No Build Project (See Table 15-6 for Reference)

A Cluster Location

0 1000 FEET

SCALE

Future Development Projects in the No Build Condition

**Figure 15-13**

**HALLETTS POINT**

## Table 15-18
## 2022 No Build Projects

| Map ID No.[1] | Address | Description | Transportation Assumptions | Status/Build Year[2] |
|---|---|---|---|---|
| 1 | 9-04 33 Road | 3 residential units | Assumptions from *Dutch Kills Rezoning and Related Actions FEIS* (2008) with updated modal splits and vehicle occupancies based on 2006-2010 ACS Estimates | 2013 |
| 2 | 36-11 12 Street | Hour Children: 20,000 sf community facility with 18 beds | Included in background growth | 2013 |
| 3 | 11-15 Broadway | 82 residential units, 43 parking spaces | Same assumptions as Site 1 | Completed |
| 4 | 30-18 12 Street | 2 residential units | Included in background growth | 2022* |
| 5 | 30-20 12 Street | 2 residential units | Included in background growth | 2022* |
| 6 | 8-03 Astoria Blvd | 5 residential units | Included in background growth | 2011 |
| 7 | 8-13 Astoria Blvd | Reality House—community facility with 30 beds | Included in background growth | Completed |
| 8 | 12-07 Broadway | 190 residential units | Same assumptions as Site 1 | 2022* |
| 9 | 12-20 31 Drive | 6 residential units | Same assumptions as Site 1 | 2013 |
| 10 | 14-18 31 Ave | 6 residential units | Same assumptions as Site 1 | 2017 |
| 11 | 14-34 31 Drive | 14 residential units; 8 parking spaces | Same assumptions as Site 1 | 2013 |
| 12 | 30-50 21 Street | 65 residential units; 18 parking spaces | Same assumptions as Site 1 | 2012 |
| 13 | 14-31 28 Ave | 8 residential units; 400 sf commercial | Included in background growth | 2013 |
| 14 | 14-35 Astoria Blvd | 3 story addition with 9 new residential units | Included in background growth | 2022* |
| 15 | 30-11 21 Street | 33 residential units | Same assumptions as Site 1 | 2012 |
| 16 | 23-12 30 Drive | 20 residential units | Same assumptions as Site 1 | 2012 |
| 17 | 23-20 30 Drive | 22 residential units | Same assumptions as Site 1 | 2012 |
| 18 | 30-05 23 Street | 4 residential units | Included in background growth | 2022* |
| 19 | 27-59 Crescent Street | 7 residential units; 1800 sf community facility | Included in background growth | 2013 |
| 20 | 27-57 Crescent Street | 7 residential units; 1800 sf commercial | Included in background growth | 2013 |
| 21 | 30-16 29 Street | 10 residential units | Included in background growth | 2022* |
| 22 | 31-84 30 Street | 3 residential units; 1000 sf commercial (medical office) | Included in background growth | 2022* |
| 23 | 26-28 30 Street | 8 residential units | Included in background growth | 2012 |
| 24 | 26-50 30 Street | 7 residential units | Included in background growth | 2012 |
| 25 | 26-60 30 Street | 8 residential units | Included in background growth | 2013 |
| 26 | 26-58 30 Street | 8 residential units | Included in background growth | 2013 |
| 27 | 36-31 32 Street | 2,447 sf warehousing/light manufacturing; 1719 sf office space | Included in background growth | 2022* |
| 28 | 31-30 33 Street | Hanac Senior Housing - 66 units | Included in background growth | 2022* |
| 29 | 30-83 32 Street | 7 residential units | Included in background growth | 2022* |
| 30 | 35-16 Astoria Blvd | 15 residential units; 1600 sf community facility; 7 parking spaces | Included in background growth | 2013 |
| 31 | 30-86 36 Street | 8 residential units | Included in background growth | 2012 |
| 32 | 25-09 36 Street | 6 residential units; 8 parking spaces | Included in background growth | 2022* |
| 33 | 31-16 38 Street | 7 residential units | Included in background growth | 2022* |
| 34 | 31-32 38 Street | 10 residential units; 1760 sf community facility | Included in background growth | 2011 |
| 35 | 30-89 38 Street | 10 residential units; 3275 sf community facility | Included in background growth | 2012 |

## Table 15-18 (cont'd)
## 2022 No Build Projects

| Map ID No.[1] | Address | Description | Transportation Assumptions | Status/Build Year[2] |
|---|---|---|---|---|
| 36 | 31-12 24 Ave | 22 residential units; 4600 sf commercial; 4600 sf community facility | Residential: Same assumptions as Site 1. Retail: trip rates and temporal distributions from the *2012 CEQR Technical Manual*; modal splits and vehicle occupancies from *Dutch Kills Rezoning and Related Actions FEIS* (2008). Community Facility: Trip rates, modal splits, vehicle occupancies, and temporal distributions from *Jamaica Plan FEIS* (2007) | 2022* |
| 37 | 27-18 Hoyt Ave South | 34 residential units; 5300 sf community facility; 26 parking spaces | Same assumptions as Site 36 | 2022* |
| 38 | 23-88 31 Street | 28 residential units; 9000 sf commercial; 1200 sf community facility; 14 parking spaces | Residential and community facility: same assumptions as Site 36. Modal splits and vehicle occupancies for commercial from *Dutch Kills Rezoning and Related Actions FEIS* (2008) | 2022* |
| 39 | 27-07 23 Ave | 12 residential units | Included in background growth | 2013 |
| 40 | 25-50 Crescent Street | 12 residential units | Included in background growth | 2011 |
| 41 | 25-54 Crescent Street | 5 residential units | Included in background growth | 2011 |
| 42 | 18-15 26 Road | Accessory community facility kitchen | Included in background growth | 2012 |
| 43 | 25-27 18 Street | 14 residential units | Included in background growth | 2022* |
| 44 | 26-28 12 Street | 8 residential units | Included in background growth | 2022* |
| 45 | 26-27 2 Street | 28 residential units; 3000 sf community facility | Same assumptions as Site 36 | 2013 |
| 46 | 26-46 2 Street | Urban Pathways, 50 beds | Trip rates, modal splits, taxi occupancy, and directional trip distribution from *30-30 Northern Boulevard Dormitory Project EAS* (2010); Auto occupancy from 2006-2010 American Community Survey 5 Year Estimates. Temporal distribution from *2012 CEQR Technical Manual* (Residential use) | Completed |
| 47 | 32-01 Vernon Blvd[3] | 261 market-rate residential units and 52 affordable units within 3 buildings | Same assumptions as Site 1 | 2022* |
| 48 | 38 Street bet. 34 & 35 Ave[4] | 63 residential units, 2651 sf retail, 81 parking spaces in new building; 43 residential units in conversion and enlargement of existing commercial bldg | Included in background growth | 2022* |
| 49 | Astoria Rezoning RWCDS Site 101 | 15 residential units | Same assumptions as Site 1 | 2019 |
| 50 | Astoria Rezoning RWCDS Site 102 | 174 residential units, 16,367 sf retail | Residential: Same assumptions as Site 1. Retail: Trip rates and temporal distribution from the *2012 CEQR Technical Manual*; Modal splits, vehicle occupancies, and directional trip distribution from *Dutch Kills Rezoning and Related Actions FEIS* (2008) | 2019 |
| 51 | Astoria Rezoning RWCDS Site 103 | 2 residential units, 13,430 sf retail | Same assumptions as Site 50 | 2019 |
| 52 | Astoria Rezoning RWCDS Site 104 | 40 residential units, 9,017 sf retail | Same assumptions as Site 50 | 2019 |
| 53 | Astoria Rezoning RWCDS Site 106 | 66 residential units, 15,037 sf retail | Same assumptions as Site 50 | 2019 |
| 54 | Astoria Rezoning RWCDS Site 108 | 9 residential units, 10,455 sf retail | Same assumptions as Site 50 | 2019 |
| 55 | Astoria Rezoning RWCDS Site 109 | 28 residential units | Same assumptions as Site 1 | 2019 |

## Table 15-18 (cont'd)
## 2022 No Build Projects

| Map ID No.[1] | Address | Description | Transportation Assumptions | Status/Build Year[2] |
|---|---|---|---|---|
| 56 | Astoria Rezoning RWCDS Site 110 | 6 residential units, 6423 sf retail | Included in background growth | 2019 |
| 57 | Astoria Rezoning RWCDS Site 112 | 12 residential units, 3,060 sf retail | Included in background growth | 2019 |
| 58 | Astoria Rezoning RWCDS Site 113 | 24 residential units, 450 sf retail | Included in background growth | 2019 |
| 59 | Astoria Rezoning RWCDS Site 115 | 4 residential units | Included in background growth | 2019 |
| 60 | Astoria Rezoning RWCDS Site 118 | 51 residential units, 5,664 sf retail | Same assumptions as Site 50 | 2019 |
| 61 | Astoria Rezoning RWCDS Site 119 | 31 residential units | Same assumptions as Site 1 | 2019 |
| 62 | Astoria Rezoning RWCDS Site 121 | 24 residential units | Same assumptions as Site 1 | 2019 |
| 63 | Astoria Rezoning RWCDS Site 122 | 25,200 sf community facility | Trip rates, modal splits, vehicle occupancies, and temporal distributions for community facility from *Jamaica Plan FEIS* (2007) | 2019 |
| 64 | 34-20-50 Vernon Blvd | 350 residential units, 20,000 sf community facility, and 295 parking spaces | Same assumptions as Site 36 | 2022* |
| 65 | Astoria Cove (portion that would be completed by 2022)[5] | 1,135 residential units (including 340 affordable), 85,000 gsf local retail (including 25,000 gsf supermarket), 756 parking spaces, 71,000 sf of publicly accessible open space (active/passive) | Residential and retail: Same assumptions as Site 50. Supermarket: assumptions from *The Food Retail Expansion to Support Health (FRESH) Food Store Program*, DCP, 2009; Parkland: assumptions from the *2012 CEQR Technical Manual* and *Hunters Point South EIS* (2008) | 2022[7] |
| 66 | Cornell NYC Tech - Roosevelt Island (Phase 1)[6] | 200,000 gsf of academic space; 100,000 gsf of partner research and development space, approximately 300,000 gsf of residential space (442 units), and 170,000 gsf for an academic-oriented hotel with conference facilities. Up to another 20,000 gsf could be developed as a central utility plant, and up to 250 parking spaces could be provided. | Assumptions from the *Cornell NYC Tech DEIS* (2012) | 2018 |
| 67 | Roosevelt Island Southtown: Main Street | 540 Residential Units in Southtown Buildings 8, 9, 10 | Trip rates and temporal distribution from the *2012 CEQR Technical Manual*; Modal splits and vehicle occupancies from 2006-2010 American Community Survey (ACS) 5 Year Estimates; Directional trip distribution from *Dutch Kills Rezoning and Related Actions FEIS* (2008) | 2018 |

**Notes:**
* Projects for which build year is unknown were assumed to be complete by the 2022 analysis year.
gsf = gross square feet; all gsf are approximate.
(1) See **Figure 15-13** for Map ID numbers and the location of the No Build projects.
(2) As indicated, some of these projects were completed and occupied subsequent to the baseline data collection and therefore are included in the No Build condition for this EIS.
(3) Includes rezoning from R5 to R7A/C1-3 and R6B.
(4) Includes rezoning from M1-1 and M1-5 to R6A/C1-2 and M1-5/R7-A.
(5) This is a proposed project that will require discretionary land use approvals; however, because it is located in close proximity to the project site, the portion that would be completed by the 2022 Build year has been incorporated into the future without the proposed project for conservative impact analysis.
(6) Cornell NYC Tech Phase 2 commences construction in 2024.
(7) The proposed Astoria Cove project would be complete by 2023. This development program reflects that portion of the project that would be complete by the 2022 analysis year.
**Sources:** AKRF, October 2012; DCP, April 2012.

After reviewing the development programs for each of the 67 No Build projects, it was determined that background growth will address the increase in traffic and pedestrian levels for 36 of the small projects in the study area. These small projects are dispersed throughout the study area and are not clustered together on a single block. As a result, these sites would not add a noticeable amount of traffic to any single block and have been screened out; they are considered as part of the general background growth rate. Person and vehicle trips generated by the remaining 31 projects were then determined, their traffic assigned, and their trips added to background growth to form the 2022 No Build traffic volumes.

It should be noted that the analysis of No Build condition accounts for the proposed Astoria Cove project, which is in the planning stages and will require discretionary land use approvals and its own environmental review. However, because it is located in close proximity to the project site, the portion that is assumed to be completed by the 2022 Build year has been incorporated into the future without the proposed project for conservative impact analysis. Given the size of the proposed Astoria Cove project, it is expected that its environmental review will identify significant adverse impacts and the need for mitigation measures. These measures are not accounted for in this analysis. As more information about the Astoria Cove project becomes available, it will be incorporated into this analysis as appropriate.

Overall, the volume of vehicle trips that would be generated by these developments is estimated to be 279 inbound and 625 outbound in the AM peak hour, 386 inbound and 359 outbound in the midday peak hour, and 621 inbound and 449 outbound in the PM peak hour. The growth of existing traffic volumes and addition of these trips to the traffic network are the basis of the 2022 No Build traffic volumes, which are discussed below and shown in **Figures 15-14** through **15-16**.

Traffic volumes along Vernon Boulevard between Broadway and 8th Street/Welling Court are expected to increase by approximately 25 to 70 vph in the northbound direction and 30 to 70 vph in the southbound direction during the weekday AM, midday, and PM peak hours.

Volumes along 8th Street are expected to increase by approximately 30 vph in the northbound direction and 80 vph in the southbound direction in the weekday AM peak hour. During the midday and PM peak hours, northbound and southbound volumes are expected to increase 45 to 65 vph per direction.

Traffic volume increases along 21st Street between Broadway and Hoyt Avenue are expected to increase by approximately 90 to 140 vph in the southbound direction and 50 to 100 vph in the northbound direction during the weekday AM and midday peak hours. In the PM peak hour, volume increases are in the range of 80 to 170 vph in the northbound direction and 110 to 200 vph in the southbound direction. Along 21st Street north of Hoyt Avenue North, traffic volume increases are expected to be approximately 20 to 55 vph per direction in the northbound and southbound directions for all peak hours.

31st Street's traffic volumes are expected to increase by fewer than 35 vph in the northbound and southbound directions for all peak hours. At Triborough Plaza, where 31st Street intersects Hoyt Avenue North and South, the volumes along 31st Street are expected to increase by 10 vph or less in the northbound direction and 25 to 50 vph in the southbound direction during peak hours.

Volumes along Hoyt Avenue South are expected to increase by 40 to 110 vph during all peak hours.

2022 No Build Traffic Volumes
Weekday AM Peak Hour

**HALLETTS POINT**

**Figure 15-14**




2022 No Build Traffic Volumes
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-15**




2022 No Build Traffic Volumes
Weekday PM Peak Hour

**HALLETTS POINT**

**Figure 15-16**

Along Hoyt Avenue North, traffic volumes are expected to increase by 220 to 270 vph in the weekday AM and midday peak hours and approximately 330 in the PM peak hour between 31st Street and 29th Street/RFK Bridge on-ramp. West of the ramp, traffic volumes are expected to increase by 110 to 150 vph in the AM and midday peak hours and 200 to 240 vph in the PM peak hour. East of 32nd Street, where Hoyt Avenue North becomes Astoria Boulevard North, traffic volumes are expected to increase by 220 to 270 vph in the weekday AM and midday peak hours and approximately 335 vph in the PM peak hour.

Volumes along Astoria Boulevard between the project site and 21st Street are expected to increase by 35 to 65 in each direction during each peak hour. Between 21st Street and 31st Street, volumes are expected to increase by similar increments in the westbound direction; however in the eastbound direction, volumes are expected to increase by approximately 175 vph in the AM peak hour and 80 to 120 vph in the midday and PM peak hours. East of 31st Street, where Astoria Boulevard acts as a service road to the GCP, volumes are expected to increase by approximately 200 vph in the AM peak hour and by 100 to 140 vph in the midday and PM peak hours.

On 27th Avenue, volumes are expected to increase by up to up to 120 vph in the eastbound direction during the weekday AM peak hour and up to 160 vph in the westbound direction in the PM peak hour. Otherwise, traffic increases are expected to be up to 80 vph per direction during peak hours. These increases are mostly due to the partial buildout of the proposed Astoria Cove project on 26th Avenue between 4th Street and 9th Street.

Volumes on Broadway between Vernon Boulevard and 21st Street, are expected to increase by 45 to 105 vph in the eastbound direction and by 35 to 50 vph in the westbound direction for all peak hours.

Along 24th street, volumes are expected to increase by 35 vph or less in each direction during all peak hours.

*TRAFFIC IMPROVEMENTS*

Traffic operations at some study intersections are expected to change in the future as a result of the implementation of traffic mitigation measures identified in the *Cornell NYC Tech Campus DEIS* (2012) for its initial phase of development by its Phase I-2018 Build year. Traffic mitigation measures from the Cornell study at intersections that overlap with this study are as follows:

*Broadway & 21st Street*

- Modify signal timing (shift one second of green time from the northbound/southbound phase to the eastbound/westbound phase).

*Astoria Boulevard & 21st Street*

- Modify signal phasing—add a new lag phase for eastbound/westbound exclusive left turns.

*Hoyt Avenue South & 21st Street*

- Restripe eastbound Hoyt Avenue South from one 11-foot-wide exclusive left turn lane and one 11-foot-wide shared through-right lane to two 11-foot-wide shared left-through-right lanes for 250 feet.

- Modify signal timing (shift one second of green time from the eastbound phase to the northbound/southbound phase).

These improvements are assumed to be in place by the proposed project's 2022 Build Year and have been incorporated into the No Build traffic analysis. However, the *Cornell NYC Tech Campus EIS* is currently under review for Final certification. Any changes made to the proposed 2018 traffic mitigation between Cornell NYC Tech's DEIS and FEIS for these locations will also be reflected in the No Build analysis for this study's FEIS.

*LEVELS OF SERVICE*

Based on the traffic increases and traffic improvement measures mentioned above, 2022 No Build traffic levels of service were determined for the 25 analysis locations. **Tables 15-19** and **15-20** provide an overview of the levels of service that characterize 2022 No Build "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Detailed descriptions of the 2022 No Build traffic levels of service are provided in Section I, "Detailed Analysis Results Tables," **Tables 15-52** and **15-53**.

**Table 15-19**
**Traffic Level of Service Summary Comparison - Overall Intersections: Existing vs. No Build Conditions (2022)**

| | Existing | | | 2022 No Build | | |
|---|---|---|---|---|---|---|
| | AM | Midday | PM | AM | Midday | PM |
| Intersections at Overall LOS A/B/C | 17 | 22 | 20 | 12 | 20 | 15 |
| Intersections at Overall LOS D | 8 | 3 | 4 | 6 | 4 | 4 |
| Intersections at Overall LOS E | 0 | 0 | 1 | 7 | 1 | 2 |
| Intersections at Overall LOS F | 0 | 0 | 0 | 0 | 0 | 4 |
| Note: Includes 25 analyzed intersections (19 signalized and 6 unsignalized). All 6 unsignalized intersections operate at overall LOS A or B during all three traffic analysis hours | | | | | | |

**Table 15-20**
**Traffic Level of Service Summary Comparison - Traffic Movements: Existing vs. No Build Conditions (2022)**

| | Existing | | | 2022 No Build | | |
|---|---|---|---|---|---|---|
| | AM | Midday | PM | AM | Midday | PM |
| Traffic Movements at LOS A/B/C and acceptable LOS D | 70 | 86 | 78 | 60 | 82 | 71 |
| Traffic Movements at Unacceptable LOS D | 10 | 5 | 7 | 3 | 2 | 5 |
| Traffic Movements at LOS E | 9 | 1 | 7 | 12 | 5 | 5 |
| Traffic Movements at LOS F | 3 | 1 | 0 | 16 | 3 | 10 |
| Number of individual traffic movements* | 92 | 93 | 92 | 91 | 92 | 91 |
| * Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements | | | | | | |

The summary overview of 2022 No Build condition indicates that:

- In the weekday AM peak hour, seven of the 25 study area intersections analyzed would operate at overall LOS E, and six intersections would operate at marginally acceptable/unacceptable LOS D. Thirty-one individual traffic movements out of

approximately 91 movements analyzed would operate at unacceptable levels of service compared to 22 under existing conditions.

- In the weekday midday peak hour, one of the 25 intersections would operate at overall LOS E, and four intersections would operate at LOS D. Ten individual movements would operate at unacceptable levels of service compared to seven under existing conditions.
- In the weekday PM peak hour, six intersections would operate at LOS E or LOS F, and four intersections would operate at marginally acceptable/unacceptable LOS D. Twenty individual movements would operate at unacceptable levels of service compared to 14 under existing conditions.

All six of the unsignalized study intersections would continue to operate at overall LOS B or better during all peak hours.

Based on the analysis results, the majority of traffic movements would continue to operate at acceptable levels of service; however, 17 intersections would have at least one movement operating at unacceptable levels of service during at least one peak hour as compared to 13 under existing conditions. Traffic movements operating at unacceptable levels of service are listed below:

*27th Avenue and 8th Street*

- Westbound 27th Avenue shared left-turn/through (AM)

*Vernon Boulevard/Main Avenue and 8th Street/Welling Court*

- Eastbound Vernon Boulevard shared left-turn/through (AM, midday, and PM)
- Southbound 8th Street right-turn (AM)

*Astoria Boulevard and 21st Street*

- Eastbound Astoria Boulevard left-turn (AM)
- Westbound Astoria Boulevard left-turn (AM, midday, and PM)
- Northbound 21st Street shared left-turn/through/right-turn (PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM and PM)

*Astoria Boulevard and Crescent Street*

- Eastbound Astoria Boulevard shared through/right-turn (AM and PM)
- Westbound Astoria Boulevard shared left-turn/through (AM, midday, and PM)
- Southbound Crescent Street shared left-turn/through/right-turn (AM, midday, and PM)

*Astoria Boulevard and 31st Street*

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

*Astoria Park South/Hoyt Avenue South and 21st Street*

- Northbound 21st Street shared left-turn/through/right-turn (PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM and PM)

*Hoyt Avenue South/31st Street*

- Eastbound Hoyt Avenue South shared left-turn/through (AM)
- Eastbound Hoyt Avenue South right-turn (AM)

*Hoyt Avenue South/Astoria Boulevard and 33rd Street*

- Eastbound Astoria Boulevard shared left-turn/through (AM, midday, and PM)
- Northbound 33rd Street shared through/right-turn (AM and PM)
- Northbound 33rd Street right-turn (AM and PM)

*Hoyt Avenue North and 21st Street*

- Eastbound Hoyt Avenue North right-turn (AM)
- Westbound Hoyt Avenue North left-turn (AM)
- Northbound 21st Street through (AM and PM)
- Southbound 21st Street shared through/right-turn (AM)

*Hoyt Avenue North and 29th Street*

- Southbound 29th Street right-turn (AM and PM)

*Hoyt Avenue North and 31st Street*

- Westbound Hoyt Avenue North left-turn (AM and midday)
- Southbound 31st Street right-turn (AM)

*Hoyt Avenue North and 32nd Street*

- Westbound GCP Off-Ramp through (AM and PM)

*24th Avenue and 21st Street*

- Northbound 21st Street shared left-turn/through/right-turn (PM)

*Broadway and Vernon Boulevard/11th Street*

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

*Broadway and 21st Street*

- Eastbound Broadway shared left-turn/through/right-turn (AM, midday, and PM)
- Westbound Broadway shared left-turn/through/right-turn (AM, midday, and PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM)

*Astoria Boulevard and 18th Street*

- Southbound 18th Street shared left-turn/right-turn (AM)

*Astoria Boulevard and 28th Street*

- Northbound 28th Street shared left-turn/right-turn (AM)

## PROBABLE IMPACTS OF THE PROPOSED PROJECT (2022 BUILD CONDITION)

As discussed above in "Level 2 Screening Assessment," in Section B, "Preliminary CEQR Screening Assessment," the proposed project would generate 166 vehicle trips arriving at the project site and 514 vehicle trips leaving the project site in the weekday AM peak hour, for a total of 680 vehicle trips. In the weekday midday peak hour, it would generate 213 inbound vehicle trips plus 209 outbound vehicle trips for a total of 422 vehicle trips. In the weekday PM

peak hour, it would generate 480 inbound vehicle trips plus 289 outbound vehicle trips for a total of 769 vehicle trips. The assignment of these vehicle trips are shown in **Figures 15-1** to **15-3**, and impacts on levels of service are presented in this section.

*TRIP DISTRIBUTION AND ASSIGNMENT*

*Autos*

*Residential*

Residential auto assignments were based on U.S. Census 2000 journey-to-work data. Most residential trips would occur within Queens (54 percent) with the remaining trips being made to Manhattan (23 percent), Brooklyn (10 percent), Long Island (5 percent), New Jersey (4 percent), the Bronx and Westchester County (3 percent), and Connecticut (1 percent).

Of the 54 percent of trips within Queens, approximately 35 percent were assigned to points east and south via the GCP and the BQE. The remaining 19 percent were assigned to local Queens routes (2 to 5 percent per route) which include Vernon Boulevard, 21st Street (to points north and south), Broadway, and 30th Avenue.

Of the 23 percent of trips traveling to Manhattan, approximately 12 percent were assigned to the Queensboro/Ed Koch Bridge (via Vernon Boulevard and 21st Street), 7 percent were assigned to the RFK Bridge, 3 percent were assigned to the Williamsburg Bridge (via the BQE), and 1 percent assigned to Roosevelt Island (via Vernon Boulevard) which is jurisdictionally within Manhattan.

All Brooklyn trips (10 percent) were assigned to the BQE via the GCP.

Of the 4 percent of trips to New Jersey, half were assigned to the BQE via the GCP (destined for the Verrazano-Narrows Bridge) and half were assigned to the RFK Bridge (destined to the George Washington Bridge).

All Long Island trips (5 percent) were assigned to the GCP.

All Bronx, Westchester County, and Connecticut trips (4 percent total) were assigned to the RFK Bridge.

Reverse trips are expected to return along the same general routes on which they departed. Residential auto trips were assigned to the accessory parking garages included as part of the proposed development plan.

*Local Retail/Food Store*

Local retail and food store auto trips are expected to be generated within the neighborhood and immediate surrounding neighborhoods. These trips were generally assigned from local residential streets within the area bound by Astoria Park South to the north, 21st Street to the east, and Broadway to the south.

*Taxis*

Taxi pick-ups and drop-offs for all development components were assigned to pick up and drop off along the building frontages on 1st Street, 2nd Street, 27th Avenue, and Astoria Boulevard.

*Deliveries*

Truck delivery trips for all land uses were assigned to NYCDOT-designated truck routes. Trucks were assigned to the study area from regional origins via the BQE and RFK Bridge and then distributed along local truck routes as long as possible until reaching the project site.

*PROPOSED ROADWAY NETWORK AND TRAFFIC CIRCULATION IMPROVEMENTS*

As part of the proposed project, a "one-way loop" would be created to improve traffic flow through the project site by converting 1st Street, 2nd Street, and 26th Avenue from two-way traffic to one-way as follows: between 26th and 27th Avenues, 1st Street would become one-way northbound and 2nd Street would become one-way southbound; between 1st and 2nd Streets, 26th Avenue would become one-way eastbound. These streets are too narrow as two-way roadways to safely and adequately provide the capacity needed to accommodate the traffic expected to be generated by the proposed project. The resulting traffic diversions due to the roadway changes are shown in **Figures 15-1** to **15-3**.

Additionally, an extension of Astoria Boulevard through the NYCHA Parcel is proposed in order to provide a second route to the waterfront development (besides 27th Avenue). Between 1st Street and 8th Street, Astoria Boulevard (which is currently mapped but unconstructed) would be a two-way roadway with one lane in each direction. A traffic calming plan is being developed for this segment; however it is expected that parking would be added along this street, depending on required street widths and the location of existing mature trees.

Also, short, dead-end portions of 27th Avenue (currently fenced off and used for private parking) and 26th Avenue west of 1st Street would also be demapped and transformed into a pedestrian waterfront access corridor. This change would have no effect on existing traffic circulation.

These measures would better accommodate access and circulation throughout the area. These improvements are shown on Figure 1-12 in Chapter 1, "Project Description."

*TRAFFIC VOLUME INCREMENTS*

Project-generated auto trips were assigned to project site off-street parking facilities located along 27th Avenue, 1st and 2nd Streets, and Astoria Boulevard.

Along 1st Street, which runs through the project site, volumes would increase by approximately 25 to 50 vph per direction during weekday peak hours, south of 27th Avenue. North of 27th Avenue, 1st Street would be converted to one-way northbound as part of the project, and would have volume increases of 75 to 100 vph during the weekday AM and midday peak hours, and up to 240 vph in the PM peak hour.

Volumes along 2nd Street (proposed one-way southbound) would increase by approximately 250 vph during the weekday AM peak hour, and 100 to 150 vph in the midday and PM peak hours.

Along 8th Street, traffic volumes would increase by approximately 50 to 100 vph in the southbound direction and 25 to 75 vph traveling northbound during all peak hours.

Vernon Boulevard volumes would increase by approximately 20 to 70 vph per direction in the peak hours, with the exception of the southbound direction during the weekday AM peak hour which would increase by up to 100 vph.

Project-generated increases on 21st Street south of Astoria Boulevard/27th Avenue would be approximately 15 to 60 vph in each direction during peak hours. North of 27th Avenue, northbound increases would be approximately 20 vph for all peak hours and southbound increases would be approximately 75 vph in the weekday AM and midday peak hours and 200 vph in the PM peak hour. North of Hoyt Avenue North, volumes would increase by less than 30 vph per direction for all peak hours, except in the northbound direction during the weekday AM peak hour which is expected to increase by approximately 50 vph.

Along Hoyt Avenue South, volumes would increase by approximately 75 vph in the weekday AM peak hour and 25 to 40 vph in the midday and PM peak hours.

Traffic volumes along Hoyt Avenue North would increase by 80 to 125 vph in the weekday AM and midday peak hours and approximately 225 to 275 vph in the PM peak hour.

Volumes along Astoria Boulevard west of 18th Street are expected to increase by approximately 50 to 100 vph per direction, except in the westbound direction during the AM peak hour where volumes would increase by up to 150 vph. East of 18th Street, eastbound volumes on Astoria Boulevard would increase by approximately 250 vph during the AM hour, and 75 to 125 during the midday and PM peak hours. In the westbound direction, traffic volumes would increase by 25 to 50 vph in the weekday AM and midday peak hours, and by 50 to 100 vph during the weekday PM peak hour.

27th Avenue volumes would increase in the eastbound directions by as much as 350 vph between the project site and 8th Street, and by as much as 250 vph east of 8th Street during the weekday AM peak hour. During the midday and PM peak hours, eastbound volumes would increase by 150 to 200 vph between the project site and 8th Street, and by 65 to 150 vph east of 8th Street. In the westbound direction, traffic volumes would increase by approximately 75 to 125 vph in the weekday AM and midday peak hours, and by 225 to 325 vph in the PM peak hour.

Volume increases along Broadway and along 24th Avenue would be under 35 vph per direction for all peak hours.

The total 2022 Build traffic volumes for weekday AM, midday, and PM peak hours are provided in **Figures 15-17** to **15-19**.

*LEVELS OF SERVICE AND SIGNIFICANT IMPACTS*

Based on the 2022 Build traffic volumes, traffic levels of service were determined for the 25 analysis locations. Significantly impacted locations and traffic movements were identified according to the criteria presented in the *CEQR Technical Manual* and discussed previously in Section C, "Transportation Analyses Methodology."

**Tables 15-21** and **15-22** provide an overview of the levels of service that characterize 2022 Build "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Also summarized within each table are the number of intersections and movements that would have significant impacts. Detailed descriptions of the 2022 Build condition traffic levels of service are provided in Section I, "Detailed Analysis Results Tables," **Table 15-54** and **15-55**, where significant adverse impacts are identified by the shaded rows in the analysis summary tables.




2022 Build Traffic Volume
Weekday AM Peak Hour

**HALLETTS POINT**

**Figure 15-17**




2022 Build Traffic Volume
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-18**




2022 Build Traffic Volume
Weekday PM Peak Hour

**HALLETTS POINT**

**Figure 15-19**

**Table 15-21**
**Traffic Level of Service Summary Comparison—Overall Intersections: No Build vs. Build Conditions (2022)**

| | 2022 No Build | | | 2022 Build | | |
|---|---|---|---|---|---|---|
| | AM | Midday | PM | AM | Midday | PM |
| Intersections at Overall LOS A/B/C | 12 | 20 | 15 | 8 | 15 | 11 |
| Intersections at Overall LOS D | 6 | 4 | 4 | 3 | 7 | 2 |
| Intersections at Overall LOS E | 7 | 1 | 2 | 2 | 1 | 4 |
| Intersections at Overall LOS F | 0 | 0 | 4 | 12 | 2 | 8 |
| Number of intersections with significant impacts | - | - | - | 18 | 10 | 17 |

**Table 15-22**
**Traffic Level of Service Summary Comparison—Traffic Movements: No Build vs. Build Conditions (2022)**

| | 2022 No Build | | | 2022 Build | | |
|---|---|---|---|---|---|---|
| | AM | Midday | PM | AM | Midday | PM |
| Traffic Movements at Acceptable LOS | 60 | 82 | 71 | 49 | 73 | 57 |
| Traffic Movements at Unacceptable LOS D | 3 | 2 | 5 | 4 | 5 | 5 |
| Traffic Movements at LOS E | 12 | 5 | 5 | 4 | 5 | 7 |
| Traffic Movements at LOS F | 16 | 3 | 10 | 32 | 7 | 20 |
| Number of significantly impacted movements | - | - | - | 30 | 13 | 27 |
| Number of individual traffic movements* | 91 | 92 | 91 | 89 | 90 | 89 |
| * Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements | | | | | | |

This summary overview of the 2022 Build condition indicates that:

- During the weekday AM peak hour, the number of intersections analyzed that are projected to operate at overall LOS E or F under the Build condition would increase from seven under the No Build condition to 14 under the Build condition, and three intersections would operate at marginally acceptable/unacceptable LOS D compared with six under the No Build condition. The number of traffic movements projected to operate at unacceptable levels of service would increase from 31 under the No Build condition to 40 under the Build condition. Overall, 18 of the 25 intersections would have significant impacts.
- During the weekday midday peak hour, the number of intersections analyzed that are projected to operate at overall LOS E or F under the Build condition would increase from one under the No Build condition to three under the Build condition, and seven intersections would operate at marginally acceptable/unacceptable LOS D compared with four under the No Build condition. The number of traffic movements at unacceptable levels of service would increase from 10 to 17. Overall, ten intersections would be significantly impacted.
- During the weekday PM peak hour, the number of intersections analyzed that are projected to operate at overall LOS E or F under the Build condition would increase from six under the No Build condition to 12 under the Build condition, and the number of intersections that would operate at marginally acceptable/unacceptable LOS D would decrease from four to two. The number of traffic movements projected to operate at unacceptable levels of service would increase from 20 to 32. Overall, 17 intersections would experience significant impacts.

Of the six unsignalized intersections analyzed, three would continue to operate at overall LOS A, B or C during the weekday AM peak hour, all would continue to do so during the midday peak hour, and five would continue to do so during the PM peak hour. Three unsignalized intersections would be significantly impacted in the weekday AM and PM peak hours and none would be impacted in the midday peak hour.

Traffic movements expected to operate at unacceptable levels of service under the No Build condition would continue to do so under the Build condition. Additional movements expected to operate at unacceptable levels of service as a result of the proposed actions are listed below.

*27th Avenue and 8th Street*

- Eastbound 27th Street shared through/right-turn (AM, midday, and PM)
- Westbound 27th Avenue shared left-turn/through (midday and PM)
- Northbound 8th Street right-turn (midday and PM)

*Astoria Boulevard and 8th Street*

- Eastbound Astoria Boulevard shared left-turn/right-turn (AM)
- Northbound 8th Street shared left-turn/through (PM)

*Astoria Boulevard and 21st Street*

- Eastbound Astoria Boulevard shared through/right-turn (AM)
- Northbound 21st Street shared left-turn/through/right-turn (AM)

*Astoria Boulevard and 23rd Street*

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

*Hoyt Avenue North and 21st Street*

- Westbound Hoyt Avenue North left-turn (midday and PM)
- Northbound 21st Street through (midday)

*Hoyt Avenue North and 32nd Street*

- Westbound GCP Off-ramp through (midday)
- Northbound 32nd Street left-turn (AM)

*Broadway and Vernon Boulevard/11th Street*

- Southbound Vernon Boulevard shared left-turn/through/right-turn (PM)

*Broadway and 21st Street*

- Northbound 21st Street shared left-turn/through/right-turn (PM)

*27th Avenue and 2nd Street*

- Southbound 2nd Street shared left-turn/right-turn (AM and PM)

*27th Avenue and 4th Street*

- Eastbound 27th Avenue shared left-turn/through (AM)
- Westbound 27th Avenue shared through/right-turn (AM and PM)

*Astoria Boulevard and 18th Street*

- Southbound 18th Street shared left-turn/right-turn (PM)

*Astoria Boulevard and 28th Street*

- Northbound 28th Street shared left-turn/right-turn (midday and PM)

The remainder of this section provides an overview of significant traffic impacts that would result under the Build condition. Of the 25 study area intersections analyzed, 19 would be significantly impacted during at least one peak hour as a result of the proposed actions. This includes three of the six unsignalized intersections and 16 of the 19 signalized intersections. These intersections, along with the impacted traffic movements and the peak hours in which they are impacted, are listed below.

*27th Avenue and 8th Street*

- Eastbound 27th Street shared through/right-turn (AM, midday, and PM)
- Westbound 27th Avenue shared left-turn/through (AM, midday, and PM)
- Northbound 8th Street right-turn (midday and PM)

*Vernon Boulevard/Main Avenue and 8th Street/Welling Court*

- Eastbound Vernon Boulevard shared left-turn/through (AM, midday, and PM)
- Southbound 8th Street right-turn (AM)

*Astoria Boulevard and 8th Street*

- Eastbound Astoria Boulevard shared left-turn/right-turn (AM)
- Northbound 8th Street shared left-turn/through (PM)

*Astoria Boulevard and 21st Street*

- Eastbound Astoria Boulevard left-turn (AM)
- Eastbound Astoria Boulevard shared through/right-turn (AM)
- Westbound Astoria Boulevard left-turn (AM, midday, and PM)
- Northbound 21st Street shared left-turn/through/right-turn (AM and PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM and PM)

*Astoria Boulevard and 23rd Street*

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

*Astoria Boulevard and Crescent Street*

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

*Astoria Boulevard and 31st Street*

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

*Astoria Park South/Hoyt Avenue South and 21st Street*

- Northbound 21st Street shared left-turn/through/right-turn (PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM and PM)

*Hoyt Avenue South and 31st Street*

- Eastbound Hoyt Avenue South shared left-turn/through (AM)

*Hoyt Avenue South/Astoria Boulevard and 33rd Street*

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

*Hoyt Avenue North and 21st Street*

- Westbound Hoyt Avenue North left-turn (AM, midday, and PM)
- Northbound 21st Street through (AM and PM)

*Hoyt Avenue North and 29th Street*

- Southbound 29th Street right-turn (AM)

*Hoyt Avenue North and 32nd Street*

- Westbound GCP Off-ramp through (AM, midday, and PM)

*24th Avenue and 21st Street*

- Northbound 21st Street shared left-turn/through/right-turn (PM)

*Broadway and Vernon Boulevard/11th Street*

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

*Broadway and 21st Street*

- Eastbound Broadway shared left-turn/through/right-turn (AM, midday, and PM)
- Westbound Broadway shared left-turn/through/right-turn (AM, midday, and PM)
- Northbound 21st Street shared left-turn/through/right-turn (PM)
- Southbound 21st Street shared left-turn/through/right-turn (AM)

*27th Avenue and 2nd Street*

- Southbound 2nd Street shared left-turn/right-turn (AM and PM)

*27th Avenue and 4th Street*

- Eastbound 27th Avenue shared left-turn/through (AM)
- Westbound 27th Avenue shared through/right-turn (AM and PM)

*Astoria Boulevard and 18th Street*

- Southbound 18th Street shared left-turn/right-turn (AM and PM)

As mentioned, two additional intersections will be addressed in the FEIS. Any additional significant impacts identified by this analysis would be documented in the FEIS.

A variety of traffic capacity improvements were used to identify measures to mitigate these traffic impacts, wherever feasible. Mitigation is addressed in detail in Chapter 22, "Mitigation." For this project's FEIS, changes in the proposed Astoria Cove and Cornell NYC Tech project's respective environmental review documents will be incorporated. It is possible that some conclusions regarding levels of service and significant impacts may change and will be so noted in this project's FEIS.

## E. DETAILED TRANSIT ANALYSIS

Mass transit options serving the study area, provided by NYCT and the MTA Bus Company, include the N and Q subway lines at the 30th Avenue Station, the F subway line at the 21st Street-Queensbridge Station, and the Q18, Q102, and Q103 bus routes. These facilities are illustrated in **Figure 15-5**. A detailed analysis of transit operations during the critical weekday AM and PM peak periods is presented below. During other time periods, background transit ridership and station utilization, as well as project trip generation, are comparatively lower. Hence, potential transit impacts were evaluated only for the weekday AM and PM peak periods.

### TRANSIT STUDY AREAS

*SUBWAY SERVICE*

The N subway line (Broadway Local) operates between Coney Island-Stillwell Avenue, Brooklyn and Astoria-Ditmars Boulevard, Queens, at all times. The Q subway line (Broadway Express) operates between Coney Island-Stillwell Avenue, Brooklyn and Astoria-Ditmars Boulevard, Queens. Both of these lines operate above ground, along 31st Street, between Queens Plaza and Ditmars Boulevard in Astoria. The F subway line (Sixth Avenue Local) operates between Jamaica-179th Street, Queens and Coney Island-Stillwell Avenue, Brooklyn.

*BUS SERVICE*

The MTA Bus Q18, Q102, and Q103 routes have their terminals near the project site and connect the area's population to the N and Q trains at the 30th Avenue Station and the F train at the 21st Street-Queensbridge Station. These routes operate standard buses with a guideline capacity of 54 passengers per bus. **Table 15-23** provides a summary of these routes and their peak period schedules.

**Table 15-23**
**NYCT Local Bus Routes Serving The Study Area**

| Bus Route | Start Point | End Point | Routing in Study Area | Freq. of Bus Service (Headway in Minutes) | |
|---|---|---|---|---|---|
| | | | | AM | PM |
| Q18 (EB/WB) | Maspeth – 69th Street and Grand Avenue | Astoria – 27th Avenue and 2nd Street | 30th Avenue/27th Avenue | (14/12) | (10/10) |
| Q102 (EB/WB) | Roosevelt Island – Goldwater Memorial Hospital | Astoria – 27th Avenue and 2nd Street | 30th Avenue/27th Avenue | (18/23) | (30/30) |
| Q103 (NB/SB) | Hunters Point – Vernon Boulevard and Borden Avenue | Astoria – 27th Avenue and 2nd Street | 21st Street/8th Street/ 27th Avenue | (24/35) | (20/20) |

**Source:** MTA Bus Timetables (2012).

## SUBWAY STATION ANALYSIS

*EXISTING CONDITIONS*

As presented in Section B under "Level 1 Screening Assessment," the proposed project is expected to generate approximately 1,141 and 1,295 subway trips during the AM and PM peak hours, respectively. These trips were assigned to the three area subway lines and critical station elements, including station control areas, stairways, and escalators, were identified for analysis.

Field surveys were conducted at the 30th Avenue Station and the 21st Street-Queensbridge Station in November 2008 during the hours of 7:00 AM to 10:00 AM and 4:00 PM to 7:00 PM. A comparison of NYCT's 2008 and 2011 average annual weekday ridership statistics shows that 2008 and 2011 ridership levels at the 30th Avenue Station were almost identical; therefore, the 2008 counts at this station were unadjusted and used as representative volumes for the 2011 existing conditions analysis. At the 21st Street-Queensbridge Station, 2011 ridership was approximately 17.7 percent higher than 2008 levels. Therefore, the 2008 21st Street-Queensbridge Station counts were prorated by 17.7 percent to bring them up to 2011 levels. These volumes were then used for analysis using the methodologies described above. As shown in **Table 15-24** through **Table 15-26**, all critical subway station elements operate at LOS A or B during the weekday AM and PM peak periods.

**Table 15-24**
**2011 Existing Conditions: Subway Stairway Analysis**

| Stairway | Width (ft.) | Effective Width (ft.) | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | Down | Up | | | | |
| **Weekday AM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 195 | 765 | 0.90 | 0.90 | 0.63 | B |
| SE (S-2) | 5.0 | 4.0 | 105 | 672 | 0.90 | 0.90 | 0.44 | A |
| NW (S-3) | 4.5 | 3.5 | 208 | 527 | 0.90 | 0.90 | 0.47 | B |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 314 | 86 | 0.90 | 0.90 | 0.19 | A |
| **Weekday PM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 499 | 233 | 0.90 | 0.90 | 0.45 | A |
| SE (S-2) | 5.0 | 4.0 | 571 | 203 | 0.90 | 0.90 | 0.42 | A |
| NW (S-3) | 4.5 | 3.5 | 445 | 165 | 0.90 | 0.90 | 0.38 | A |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 69 | 176 | 0.90 | 0.90 | 0.12 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (*CEQR Technical Manual*).
**V/C = [Vin / (150 * We * Sf * Ff)]+ [Vx/ (150 * We * Sf * Ff)]**, where
Vin = Peak 15-minute entering passenger volume
Vx = Peak 15-minute exiting passenger volume
We = Effective width of stairs
Sf = Surging factor (if applicable)
Ff = Friction factor (if applicable)

**Table 15-25**
**2011 Existing Conditions: Subway Escalator Analysis**

| 21st Street-Queensbridge (F) Station Elements | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 1-Hour Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 663 | 480 | 0.43 | A |
| **PM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 151 | 480 | 0.10 | A |

**Notes:**
Capacities were calculated based on rates presented in the 2012 *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (2012 *CEQR Technical Manual*).
V/C = V/ GCap* Sf
Where
V = Peak 15-minute passenger volume
GCap = Guideline Capacity for the escalator
Sf = Surging factor (if applicable)

**Table 15-26**
**2011 Existing Conditions: Subway Control Area Analysis**

| Station Elements | Qty. | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|
| | | Into Control Area | Out from Control Area | | | | |
| **AM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 1,115 | 2,027 | 0.90 | 0.90 | 0.31 | A |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 1,282 | 488 | 0.90 | 0.90 | 0.30 | A |
| **PM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 1,690 | 1,085 | 0.90 | 0.90 | 0.31 | A |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 292 | 1,292 | 0.90 | 0.90 | 0.25 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual.*
**V/C =Vin / (Cin x Ff)+ Vx / (Cx x Sf x Ff)**, where
Vin = Peak 15 Min Entering Passenger Volume
Cin= Total 15-Minute Capacity of all turnstiles for entering Passengers
Vx = Peak 15- Minute Exiting Passenger
Cx = Total 15-minute Capacity of all turnstile for exiting Passengers
Sf = Surging Factor
Ff = Friction Factor

*THE FUTURE WITHOUT THE PROPOSED PROJECT (2022 NO BUILD CONDITION)*

An annual compounded background growth rate of 0.5 percent was applied to the existing station volumes from 2011 to 2016 and an annual compounded background growth rate of 0.25 percent was applied from 2016 to 2022. In addition, trips associated with the adjacent Astoria Cove project were incorporated into the No Build station volumes, using the same trip assignment patterns assumed for the proposed project. As shown in **Tables 15-27** through **15-29**,

all station stairways, escalators, and control area elements will continue to operate at acceptable levels during the weekday AM and PM peak periods.

**Table 15-27**
**2022 No Build Condition: Subway Stairway Analysis**

| Stairway | Width (ft.) | Effective Width (ft.) | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | Down | Up | | | | |
| **Weekday AM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 236 | 796 | 0.90 | 0.90 | 0.65 | B |
| SE (S-2) | 5.0 | 4.0 | 147 | 699 | 0.90 | 0.90 | 0.46 | B |
| NW (S-3) | 4.5 | 3.5 | 228 | 854 | 0.90 | 0.90 | 0.67 | B |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 327 | 192 | 0.90 | 0.90 | 0.24 | A |
| **Weekday PM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 636 | 243 | 0.90 | 0.90 | 0.52 | B |
| SE (S-2) | 5.0 | 4.0 | 731 | 211 | 0.90 | 0.90 | 0.49 | B |
| NW (S-3) | 4.5 | 3.5 | 502 | 344 | 0.90 | 0.90 | 0.52 | B |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 72 | 240 | 0.90 | 0.90 | 0.15 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (*CEQR Technical Manual*).
**V/C = [Vin / (150 * We * Sf * Ff) ]+ [Vx/ (150 * We * Sf * Ff)]**, where
Vin = Peak 15-minute entering passenger volume
Vx = Peak 15-minute exiting passenger volume
We = Effective width of stairs
Sf = Surging factor (if applicable)
Ff = Friction factor (if applicable)

**Table 15-28**
**2022 No Build Condition: Subway Escalator Analysis**

| 21st Street-Queensbridge (F) Station Elements | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 1-Hour Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 718 | 480 | 0.47 | B |
| **PM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 255 | 480 | 0.18 | A |

**Notes:**
Capacities were calculated based on rates presented in the 2012 *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (2012 *CEQR Technical Manual*).
V/C = V/ GCap* Sf
Where
V = Peak 15-minute passenger volume
GCap = Guideline Capacity for the escalator
Sf = Surging factor (if applicable)

**Table 15-29**
**2022 No Build Condition: Subway Control Area Analysis**

| Station Elements | Qty. | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|
| | | Into Control Area | Out from Control Area | | | | |
| **AM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 1,243 | 2,415 | 0.90 | 0.90 | 0.43 | A |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 1,362 | 610 | 0.90 | 0.90 | 0.34 | A |
| **PM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 2,052 | 1,301 | 0.90 | 0.90 | 0.38 | A |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 402 | 1,402 | 0.90 | 0.90 | 0.29 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual.*
**V/C =Vin / (Cin x Ff)+ Vx / (Cx x Sf x Ff)**, where
Vin = Peak 15 Min Entering Passenger Volume
Cin= Total 15-Minute Capacity of all turnstiles for entering Passengers
Vx = Peak 15- Minute Exiting Passenger
Cx = Total 15-minute Capacity of all turnstile for exiting Passengers
Sf = Surging Factor
Ff = Friction Factor

*PROBABLE IMPACTS OF THE PROPOSED PROJECT (2022 BUILD CONDITION)*

As discussed above, the projected incremental AM and PM peak hour subway trips were assigned to the three area subway lines and critical station elements. As summarized in **Table 15-6**, the proposed project is estimated to generate 1,141 (234 in and 907 out) subway trips during the weekday AM peak hour and 1,295 (832 in and 463 out) subway trips during the weekday PM peak hour. The combination of these trips with the 2022 No Build volumes would result in the 2022 Build condition. As shown in **Tables 15-30** through **15-32**, all station stairways, escalators, and control elements would continue to operate at acceptable levels during the weekday AM and PM peak periods. Therefore, the proposed project would not result in any significant adverse impacts to the analyzed subway station elements.

## Table 15-30
## 2022 Build Condition: Subway Stairway Analysis

| Stairway | Width (ft.) | Effective Width (ft.) | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | Down | Up | | | | |
| **Weekday AM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 508 | 796 | 0.90 | 0.90 | 0.81 | C |
| SE (S-2) | 5.0 | 4.0 | 464 | 699 | 0.90 | 0.90 | 0.62 | B |
| NW (S-3) | 4.5 | 3.5 | 319 | 1,030 | 0.90 | 0.90 | 0.84 | C |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 327 | 251 | 0.90 | 0.90 | 0.27 | A |
| **Weekday PM Peak Hour** | | | | | | | | |
| 30th Avenue Station (N,Q Lines) | | | | | | | | |
| SW (S-1) | 4.5 | 3.5 | 775 | 243 | 0.90 | 0.90 | 0.60 | B |
| SE (S-2) | 5.0 | 4.0 | 893 | 211 | 0.90 | 0.90 | 0.58 | B |
| NW (S-3) | 4.5 | 3.5 | 548 | 968 | 0.90 | 0.90 | 0.96 | C |
| 21st Street-Queensbridge Station (F Line) | | | | | | | | |
| NE – North Stair (S-2) | 6.0 | 5.0 | 72 | 448 | 0.90 | 0.90 | 0.26 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (*CEQR Technical Manual*).
**V/C = [Vin / (150 * We * Sf * Ff) ]+ [Vx/ (150 * We * Sf * Ff)]**, where
Vin = Peak 15-minute entering passenger volume
Vx = Peak 15-minute exiting passenger volume
We = Effective width of stairs
Sf = Surging factor (if applicable)
Ff = Friction factor (if applicable)

## Table 15-31
## 2022 Build Condition: Subway Escalator Analysis

| 21st Street-Queensbridge (F) Station Elements | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 1-Hour Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 945 | 480 | 0.61 | B |
| **PM Peak Period** | | | | | | | | | |
| Escalator - Down | 1 | 24 | 32 | 0.90 | 0 | 371 | 480 | 0.26 | A |

**Notes:**
Capacities were calculated based on rates presented in the 2012 *CEQR Technical Manual*.
Surging factors are only applied to the exiting pedestrian volume (2012 *CEQR Technical Manual*).
V/C = V/ GCap* Sf
Where
V = Peak 15-minute passenger volume
GCap = Guideline Capacity for the escalator
Sf = Surging factor (if applicable)

**Table 15-32**
**2022 Build Condition: Subway Control Area Analysis**

| Station Elements | Qty. | 1-Hour Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|
| | | Into Control Area | Out from Control Area | | | | |
| **AM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 1,923 | 2,591 | 0.90 | 0.90 | 0.53 | B |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 1,589 | 669 | 0.90 | 0.90 | 0.39 | A |
| **PM Peak Hour** | | | | | | | |
| **30th Avenue Station (N,Q Lines)** | | | | | | | |
| Two-Way Turnstiles | 6 | 2,399 | 1,925 | 0.90 | 0.90 | 0.43 | A |
| **21st Street-Queensbridge Station (F Line)** | | | | | | | |
| Two-Way Turnstiles | 4 | 518 | 1,610 | 0.90 | 0.90 | 0.44 | A |

**Notes:**
Capacities were calculated based on rates presented in the *CEQR Technical Manual.*
**V/C =Vin / (Cin x Ff)+ Vx / (Cx x Sf x Ff)**, where
Vin = Peak 15 Min Entering Passenger Volume
Cin= Total 15-Minute Capacity of all turnstiles for entering Passengers
Vx = Peak 15- Minute Exiting Passenger
Cx = Total 15-minute Capacity of all turnstile for exiting Passengers
Sf = Surging Factor
Ff = Friction Factor

## BUS LINE-HAUL ANALYSIS

### *EXISTING CONDITIONS*

To assess the potential impacts on the study area bus routes, maximum load point data for the Q18, Q102, and Q103 bus routes were obtained from the MTA Bus Company. These data were supplemented with passenger volumes gathered in November 2012. The field effort involved collecting arrival load and alighting/boarding counts at the bus stops adjacent to the 30th Avenue and 21st Street-Queensbridge Stations, where the highest numbers of bus riders generated by the proposed project would be expected to add loading to the three study area bus routes. The collected field data were compared with the MTA Bus ridership data for validation and were subsequently used for the bus line-haul analyses. As shown in **Table 15-33**, under existing conditions, the Q18, Q102, and Q103 bus routes currently operate within guideline capacity during the weekday AM and PM peak periods.

**Table 15-33**
**2012 Existing Conditions: Bus Line-Haul Analysis**

| Route | Direction | Load Point | Hourly Volumes | Buses/ Hour | AP |
|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 216 | 7 | 31 |
| | **West** | 30th Avenue West of 31st Street | 139 | 4 | 35 |
| **Q102** | **East** | 30th Avenue West of 31st Street | 125 | 4 | 32 |
| | **West** | 30th Avenue West of 31st Street | 126 | 4 | 32 |
| **Q103** | **North** | 41st Avenue and 21st Street | 35 | 3 | 12 |
| | **South** | 41st Avenue and 21st Street | 38 | 3 | 13 |
| **PM Peak Hour** | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 175 | 7 | 25 |
| | **West** | 30th Avenue West of 31st Street | 232 | 7 | 34 |
| **Q102** | **East** | 30th Avenue West of 31st Street | 28 | 3 | 10 |
| | **West** | 30th Avenue West of 31st Street | 80 | 4 | 20 |
| **Q103** | **North** | 41st Avenue and 21st Street | 41 | 3 | 14 |
| | **South** | 41st Avenue and 21st Street | 11 | 3 | 4 |

**Notes:** AP = average passengers per bus
**Sources:** AKRF Survey, November 2012; MTA Bus ridership data (2012)

*FUTURE WITHOUT THE PROPOSED PROJECT (2022 NO BUILD CONDITION)*

Estimates of peak hour bus volumes in the No Build condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates as previously described. In addition, trips associated with the adjacent Astoria Cove project were incorporated into the No Build bus line-haul volumes, using the same trip assignment patterns assumed for the proposed project. As shown in **Table 15-34**, under the No Build condition, during the AM peak period, the eastbound Q18 and eastbound Q102 are expected to exceed guideline capacity (54 passengers per bus) while the westbound Q18, the westbound Q102, and the northbound Q103 would exceed guideline capacity during the PM peak period.

**Table 15-34**
**2022 No Build Condition: Bus Line-Haul Analysis**

| Route | Direction | Load Point | Hourly Volumes | Buses/ Hour | AP | Bus Demand at Guideline Capacity |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 386 | 7 | **(55)** | **8** |
| | **West** | 30th Avenue West of 31st Street | 190 | 4 | 48 | 4 |
| **Q102** | **East** | 30th Avenue West of 31st Street | 269 | 4 | **(67)** | **5** |
| | **West** | 30th Avenue West of 31st Street | 171 | 4 | 43 | 4 |
| **Q103** | **North** | 41st Avenue and 21st Street | 72 | 3 | 24 | 2 |
| | **South** | 41st Avenue and 21st Street | 162 | 3 | 54 | 3 |
| **PM Peak Hour** | | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 283 | 7 | 40 | 6 |
| | **West** | 30th Avenue West of 31st Street | 405 | 7 | **(58)** | **8** |
| **Q102** | **East** | 30th Avenue West of 31st Street | 116 | 3 | 39 | 3 |
| | **West** | 30th Avenue West of 31st Street | 223 | 4 | **(56)** | **5** |
| **Q103** | **North** | 41st Avenue and 21st Street | 168 | 3 | **(56)** | **4** |
| | **South** | 41st Avenue and 21st Street | 89 | 3 | 30 | 2 |

**Notes:** AP = average passengers per bus
(#) = exceeds NYCT guideline capacity
**Sources:** AKRF Survey, November 2012; MTA Bus ridership data (2012)

*PROBABLE IMPACTS OF THE PROPOSED PROJECT (2022 BUILD CONDITION)*

As discussed in Chapter 1, "Project Description," the proposed project would include a bus layover facility along 2nd Street adjacent to Building 1 for the Q18, Q102, and Q103 bus routes, and potentially other routes in the future. Although this layover facility would not affect the bus line-haul analysis, it would be an important transit amenity for the area.

Peak period bus ridership for the Build condition was generated by adding the incremental trips associated with the proposed project to the No Build bus line-haul volumes. Based on the relative frequencies of the three area bus routes and anticipated distribution of subway trips to the 30th Avenue and 21st Street-Queensbridge Stations, it was assumed that 70 percent of projected bus riders would be evenly distributed between the Q18 and Q103 routes (i.e., 35 percent for each route), and 30 percent of the riders would use the Q102 route. As shown in **Table 15-35**, under the Build condition, all three bus routes in all directions would exceed guideline capacity (54 passengers per bus) during peak periods, except the Q103 northbound during the AM peak period. These projected increases in bus ridership beyond guideline capacities constitute significant adverse bus line-haul impacts.

**Table 15-35**
**2022 Build Condition: Bus Line-Haul Analysis**

| Route | Direction | Load Point | Hourly Volumes | Buses/ Hour | AP | Bus Demand at Guideline Capacity |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 743 | 7 | **(107)** | **14** |
| | **West** | 30th Avenue West of 31st Street | 284 | 4 | **(71)** | **6** |
| **Q102** | **East** | 30th Avenue West of 31st Street | 575 | 4 | **(144)** | **11** |
| | **West** | 30th Avenue West of 31st Street | 252 | 4 | **(63)** | **5** |
| **Q103** | **North** | 41st Avenue and 21st Street | 143 | 3 | 48 | 3 |
| | **South** | 41st Avenue and 21st Street | 429 | 3 | **(143)** | **8** |
| **PM Peak Hour** | | | | | | |
| **Q18** | **East** | 30th Avenue East of 31st Street | 473 | 7 | **(68)** | **9** |
| | **West** | 30th Avenue West of 31st Street | 739 | 7 | **(106)** | **14** |
| **Q102** | **East** | 30th Avenue West of 31st Street | 279 | 3 | **(93)** | **6** |
| | **West** | 30th Avenue West of 31st Street | 510 | 4 | **(128)** | **10** |
| **Q103** | **North** | 41st Avenue and 21st Street | 419 | 3 | **(140)** | **8** |
| | **South** | 41st Avenue and 21st Street | 233 | 3 | **(78)** | **5** |

**Notes:** AP=average passengers per bus
(#)=exceeds NYCT guideline capacity
denotes a significant adverse impact
**Sources:** AKRF Survey, November 2012; MTA Bus ridership data (2012)

Potential measures to mitigate the above significant adverse bus line-haul impacts include scheduling additional buses to increase capacity. NYCT routinely monitors changes in bus ridership and would make the necessary service adjustments where warranted. Service adjustments are subject to fiscal and operational constraints and, if implemented, are expected to occur over time. These measures are discussed in greater detail in Chapter 22, "Mitigation." In addition, preliminary discussions have taken place between the Applicant and the MTA Bus Company about the anticipated need to improve existing service on the Q18, Q102, and Q103, as well as the possible extension of the Q19 to the waterfront to serve the additional demand that is expected to occur over time with the development of this and other projects.

# F. DETAILED PEDESTRIAN ANALYSIS

## EXISTING CONDITIONS

Pedestrian data were collected in November 2008 during the hours of 7:00 AM to 10:00 AM, 12:00 PM to 2:00 PM, and 4:00 PM to 7:00 PM. As described in section E, "Detailed Transit Analysis," a comparison of NYCT's 2008 and 2011 average annual weekday ridership statistics shows that 2008 and 2011 ridership levels at the 30th Avenue Station were almost identical; therefore, the 2008 counts of pedestrian elements near this station were unadjusted and used as representative volumes for the 2011 existing conditions analysis. At the 21st Street-Queensbridge Station, 2011 ridership was approximately 17.7 percent higher than 2008 levels. Therefore, the 2008 counts of pedestrian elements near this station were prorated by 17.7 percent to bring them up to 2011 levels. For the remaining pedestrian locations, all of which located near the project sites, 2008 volumes were used for the analysis, as pedestrian activities were observed to remain approximately constant between 2008 and 2011.

Peak hours were determined by comparing rolling hourly averages; peak 15-minute pedestrian volumes were developed by dividing the hourly incremental volumes by four and accounting for peaking characteristics within the peak hours for each pedestrian element. The existing peak 1-hour weekday AM, midday, and PM pedestrian volumes are presented in **Figures 15-20** to **15-22**. **Tables 15-36** through **15-38** provide overall summaries of pedestrian levels of service under 2011 existing conditions. As shown in **Tables 15-56** through **15-58** in Section I, "Detailed Analysis Results Tables," all sidewalk, corner reservoir, and crosswalk analysis locations operate at acceptable LOS C or better (maximum of 6 PMF platoon flows for sidewalks; minimum of 24 SFP for corners and crosswalks) except the west sidewalk of 31st Street between 30th Avenue and 30th Drive during the PM peak hour (LOS D with 6.24 PMF).

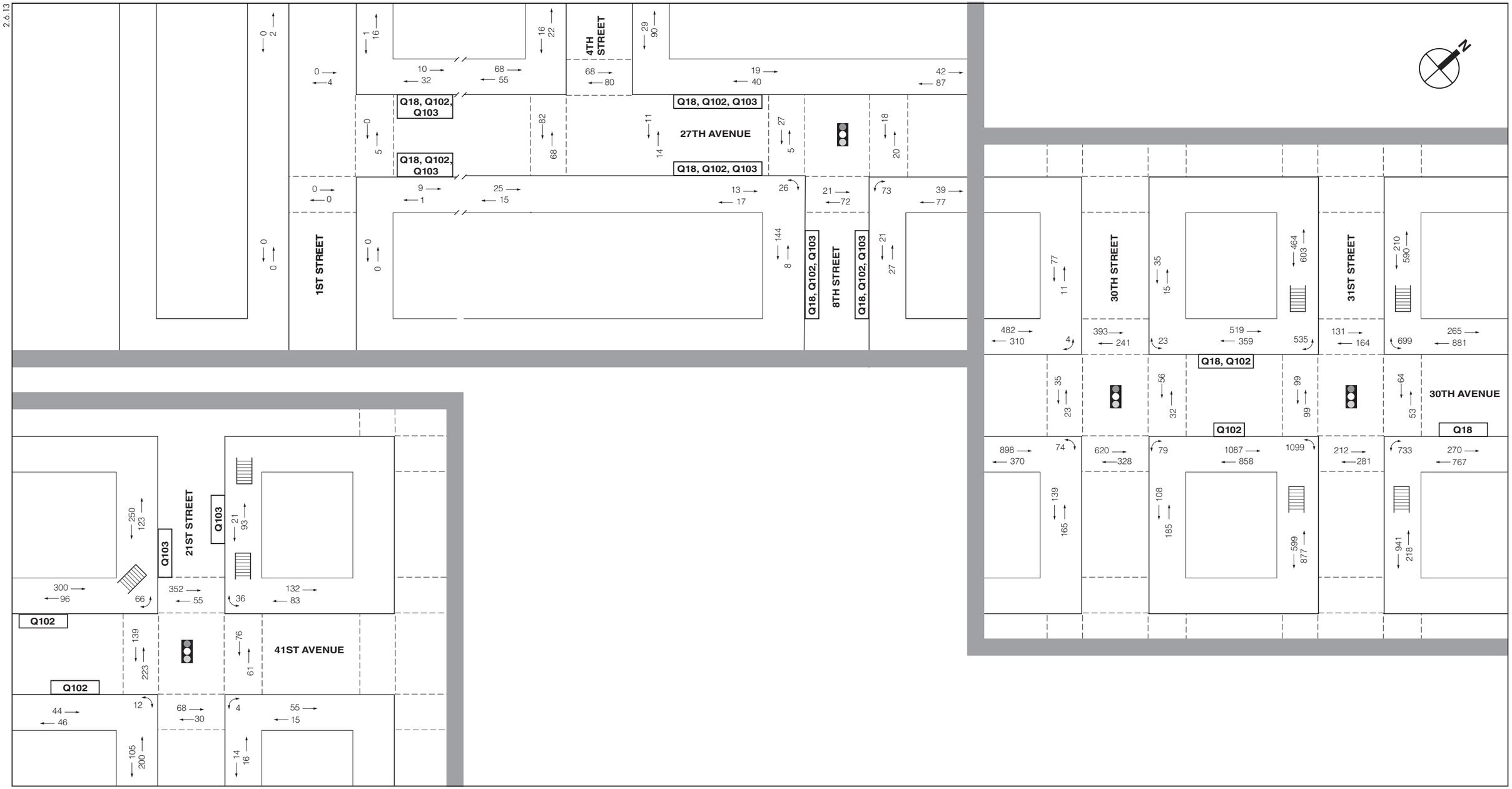
**Table 15-36**
**2011 Existing Conditions: Sidewalk LOS Analysis**

| Service Levels | Weekday | | |
|---|---|---|---|
| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
| Overall LOS A/B/C | 17 | 17 | 16 |
| Overall LOS D | 0 | 0 | 1 |
| Overall LOS E | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes 17 sidewalk analysis locations. | | | |

**Table 15-37**
**2011 Existing Conditions: Corner LOS Analysis**

| Service Levels | Weekday | | |
|---|---|---|---|
| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
| Overall LOS A/B/C | 5 | 5 | 5 |
| Overall LOS D | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes 5 corner analysis locations. | | | |

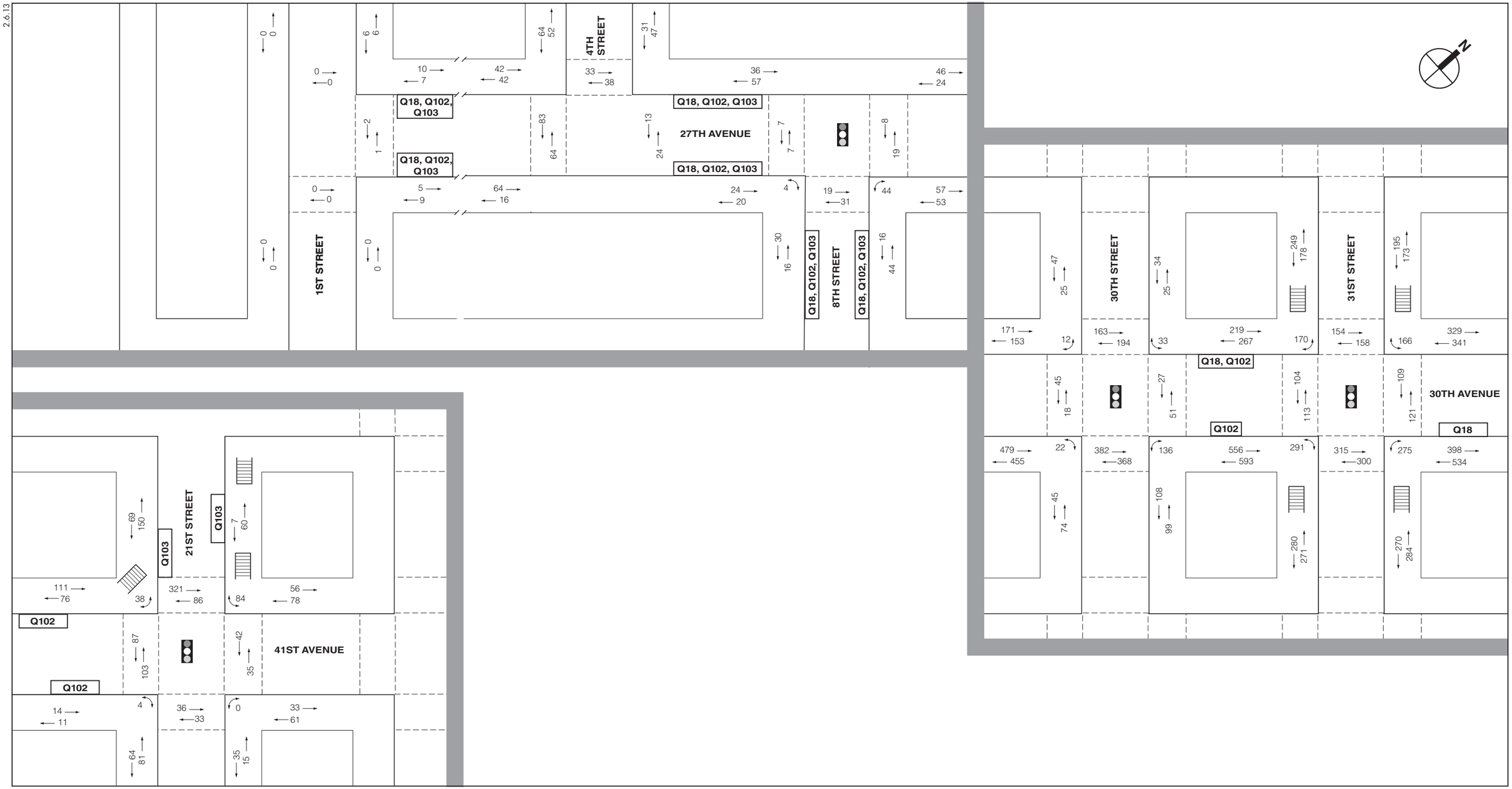
2.6.13




2011 Existing Pedestrian Trips
Weekday AM Peak Hour
**Figure 15-20**

**HALLETTS POINT**

2.6.13



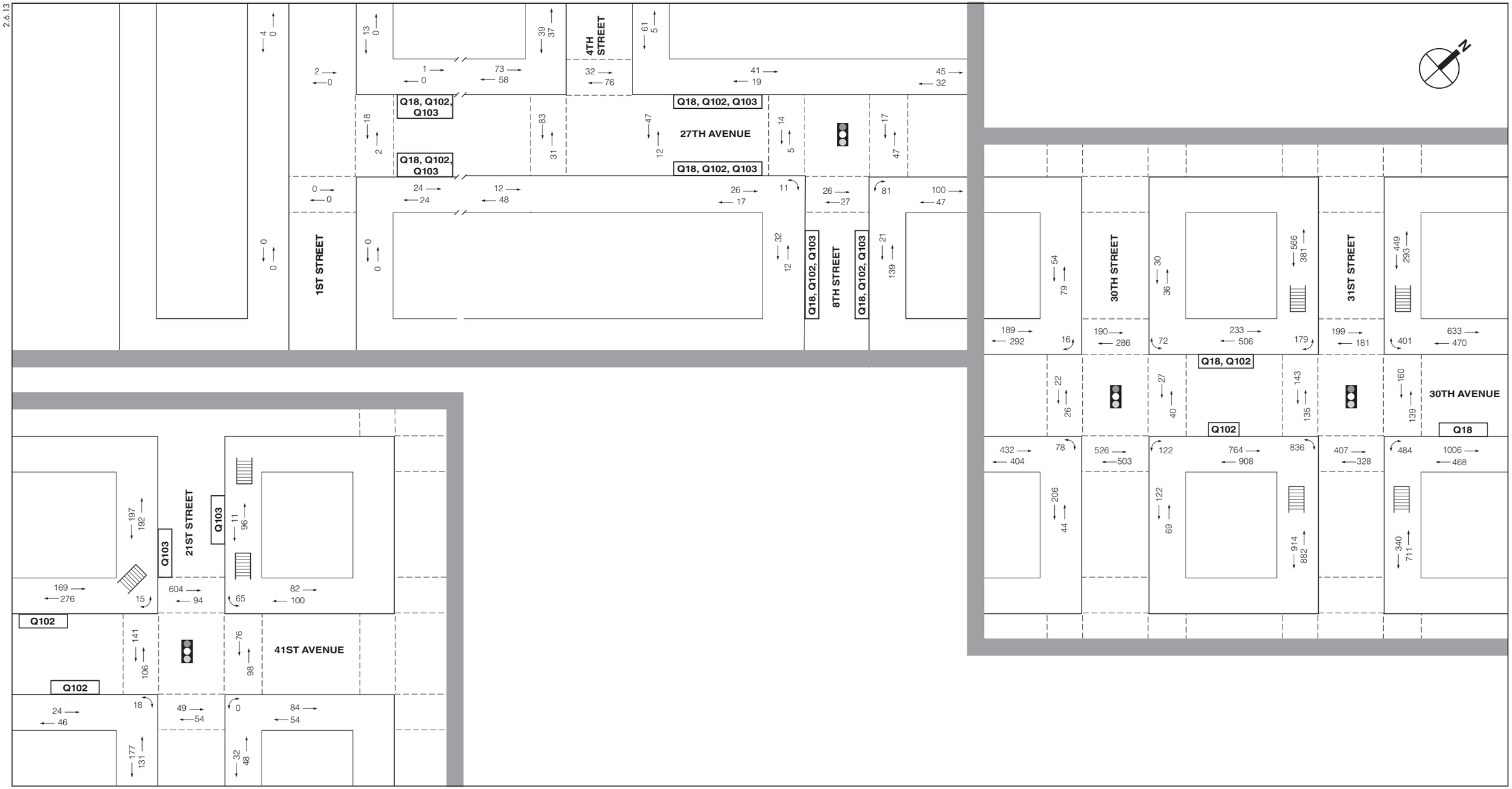

*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

2011 Existing Pedestrian Trips
Weekday Midday Peak Hour
**Figure 15-21**

2.6.13




*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

2011 Existing Pedestrian Trips
Weekday PM Peak Hour
**Figure 15-22**

**Table 15-38**
**2011 Existing Conditions: Crosswalk LOS Analysis**

| Service Levels | Weekday | | |
|---|---|---|---|
| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
| Overall LOS A/B/C | 2 | 2 | 2 |
| Overall LOS D | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes 2 crosswalk analysis locations. | | | |

## FUTURE WITHOUT THE PROPOSED PROJECT (2022 NO BUILD CONDITION)

No Build condition pedestrian volumes were estimated by increasing existing pedestrian levels to reflect expected growth in overall travel through and within the study area. As per *CEQR Technical Manual* guidelines, an annual background growth rate of 0.50 percent was assumed for the first five years (year 2011 to year 2016) and then 0.25 percent for the remaining years (year 2016 to year 2022). In addition, pedestrian trips associated with the adjacent Astoria Cove project were incorporated into the No Build station volumes, using the same trip assignment patterns assumed for the proposed project. The total No Build peak 1-hour pedestrian volumes for the weekday AM, midday, and PM peak periods are presented in **Figures 15-23** to **15-25**. **Tables 15-39** through **15-41** provide overall comparisons of pedestrian levels of service for the existing and No Build conditions. As summarized in **Tables 15-59** to **15-61** in Section I, "Detailed Analysis Results Tables," all sidewalk, corner reservoir, and crosswalk analysis locations will continue to operate at acceptable LOS C or better (maximum of 6 PMF platoon flows for sidewalks; minimum of 24 SFP for corners and crosswalks) except the west sidewalk of 31st Street between 30th Avenue and 30th Drive during the weekday PM peak hour (LOS D with 6.73 PMF).

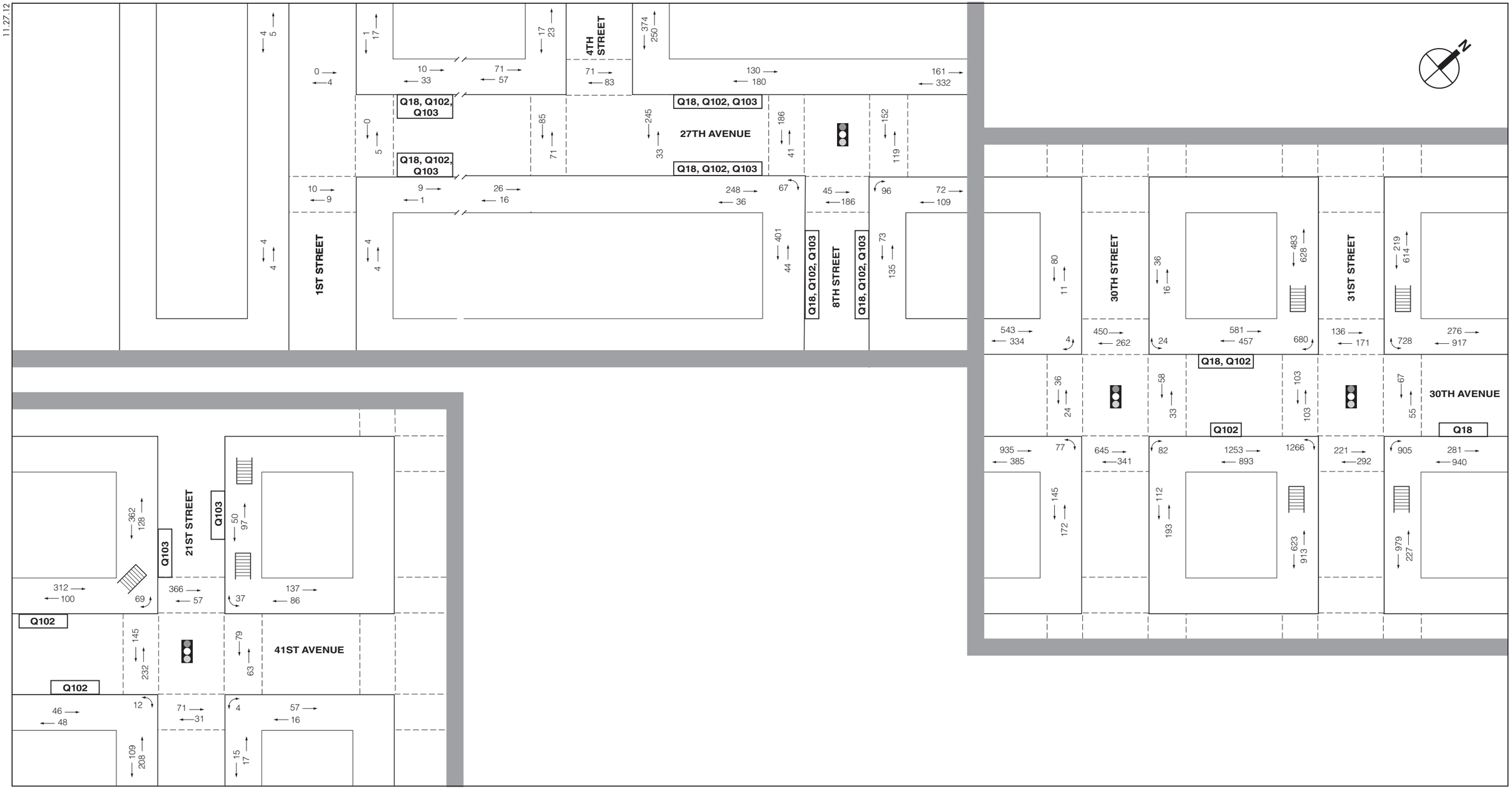
**Table 15-39**
**2011 Existing vs. 2022 No Build Conditions: Sidewalk LOS Analysis**

| | Existing | | | No Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 17 | 17 | 16 | 17 | 17 | 16 |
| Overall LOS D | 0 | 0 | 1 | 0 | 0 | 1 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 17 sidewalk analysis locations. | | | | | | |

**Table 15-40**
**2011 Existing vs. 2022 No Build Conditions: Corner LOS Analysis**

| | Existing | | | No Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 5 | 5 | 5 | 5 | 5 | 5 |
| Overall LOS D | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 5 corner analysis locations. | | | | | | |

11.27.12



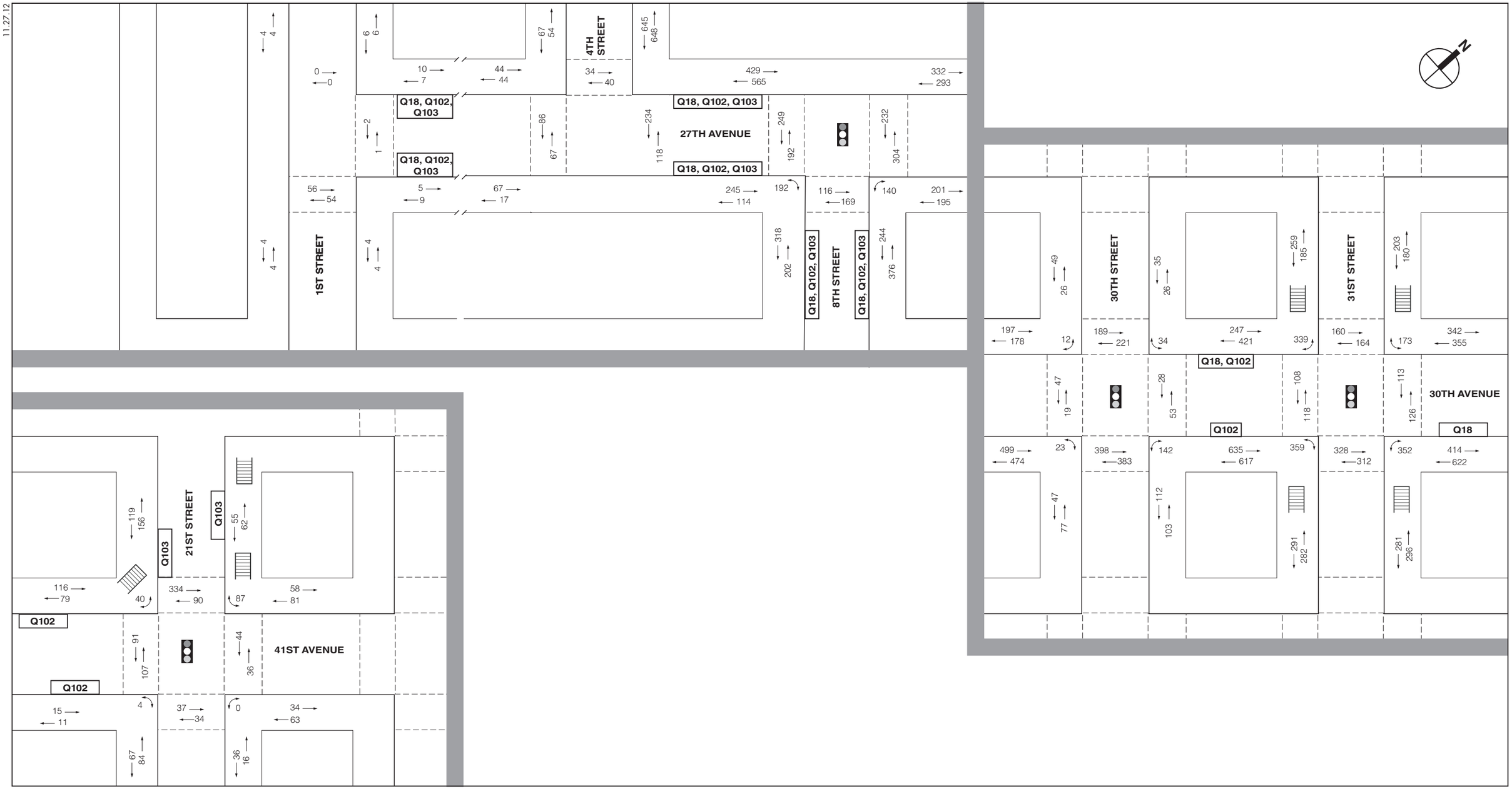

*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

2022 No Build Pedestrian Trips
Weekday AM Peak Hour
**Figure 15-23**

11.27.12

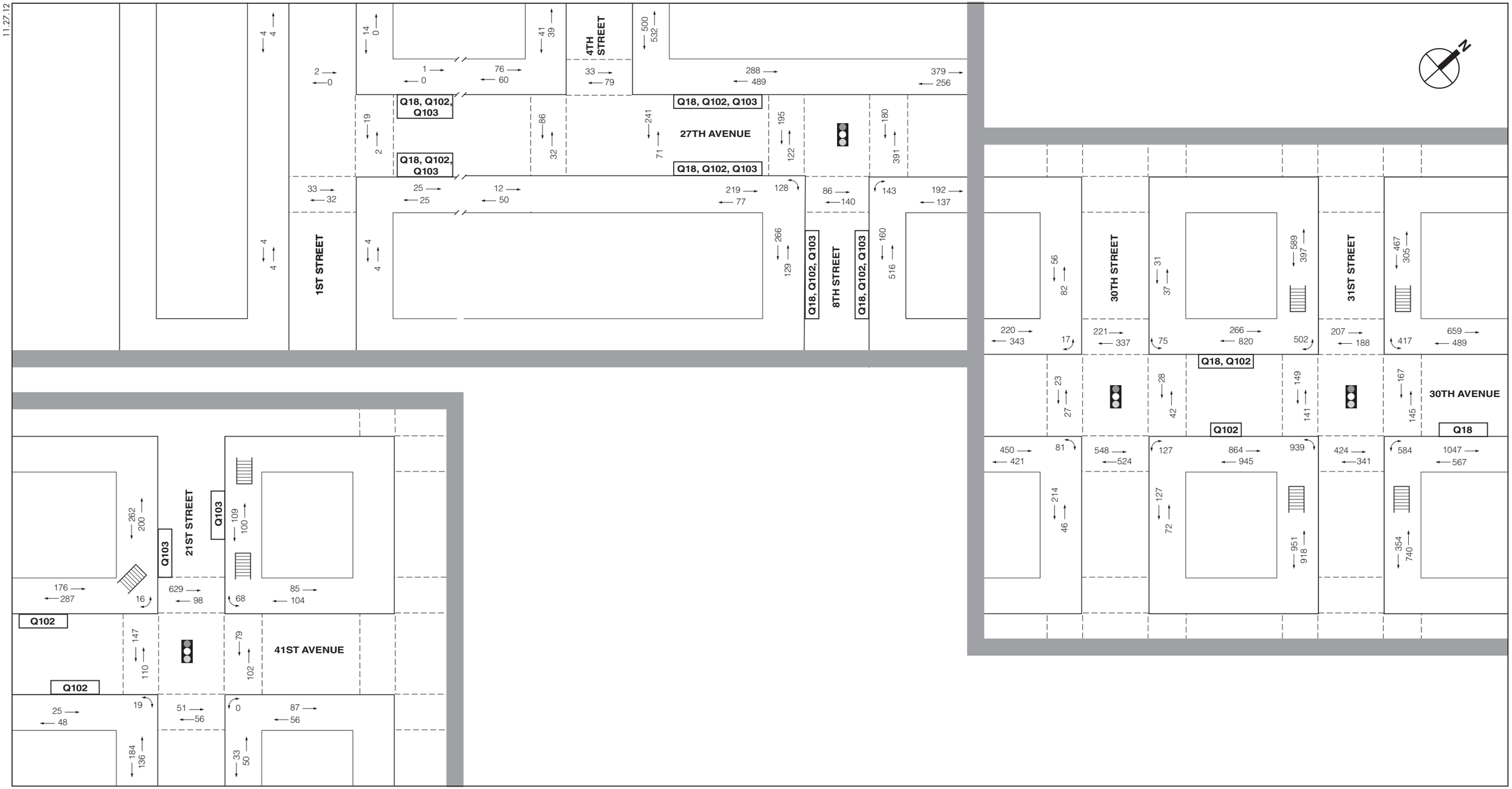



2022 No Build Pedestrian Trips
Weekday Midday Peak Hour

**HALLETTS POINT**

**Figure 15-24**

11.27.12




*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

**HALLETTS POINT**

2022 No Build Pedestrian Trips
Weekday PM Peak Hour
**Figure 15-25**

**Table 15-41**
**2011 Existing vs. 2022 No Build Conditions: Crosswalk LOS Analysis**

| | Existing | | | No Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 2 | 2 | 2 | 2 | 2 | 2 |
| Overall LOS D | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 2 crosswalk analysis locations. | | | | | | |

## PROBABLE IMPACTS OF THE PROPOSED PROJECT (2022 BUILD CONDITION)

*TRIP DISTRIBUTION AND ASSIGNMENT*

The project-generated pedestrian volumes were assigned to the pedestrian network considering current land uses in the area, parking locations, available transit services, and pedestrian pathways connecting to/from the project sites.

For each use, pedestrian trips would follow similar assignment procedures, as described below:

- Auto Trips – For the residential use, motorists would park on site and would have direct access to the site without traversing any pedestrian elements. For all other uses, it was assumed that the motorists would drive to the site and park near the site entrance and walk to and from the site.
- Taxi Trips – Taxi riders would get dropped off and picked up near their destination for each use.
- Bus Trips – Bus riders would use one of the three bus routes serving the area (Q18, Q102, and Q103) and would get on and off at the bus stops nearest to the destinations and walk to and from the project sites.
- Subway Trips – Subway riders were assigned to the 30th Avenue (N, Q) Station and the 21st Street-Queensbridge (F) Station. It was assumed that 10 percent of the subway riders would walk to/from the project sites while 90 percent would connect to/from these stations via the Q18, Q102, and Q103 bus routes at bus stops adjacent to the projects sites and the two subway stations. As described in section E, "Detailed Transit Analysis," approximately 75 percent of the total project-generated subway trips is expected to be served by the 30th Avenue Station while the remaining 25 percent would be served by the 21st Street-Kingsbridge Station.
- Walk-Only Trips – Walk-only pedestrian trips generated by the proposed residential, retail, and open space uses were distributed to the area's pedestrian facilities (i.e., sidewalks, corner reservoirs, and crosswalks) based on neighborhood land-use characteristics and population concentrations identified by the 2010 Census population data.

*PEDESTRIAN VOLUME INCREMENTS*

Based on the incremental peak hour pedestrian trips presented on **Figures 15-6** to **15-8** in Section B, "Level 2 Screening Assessment," peak 15-minute incremental pedestrian volumes were developed by dividing the hourly incremental volumes by four and accounting for peaking

characteristics within the peak hours. These pedestrian volumes were added to the No Build volumes to arrive at the Build pedestrian volumes for analysis. The total Build peak 1-hour pedestrian volumes are presented in **Figures 15-26** to **15-28**.

*LEVELS OF SERVICE AND SIGNIFICANT IMPACTS*

The pedestrian analyses conducted for the Build condition accounted for the project-generated pedestrian volumes and anticipated physical changes, if any, to the pedestrian environment resulting from the proposed project. **Tables 15-42** through **15-44** provide overall comparisons of pedestrian levels of service for the No Build and Build conditions.

**Table 15-42**
**2022 No Build vs. 2022 Build Conditions: Sidewalk LOS Analysis**

| | No Build | | | Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 17 | 17 | 16 | 16 | 17 | 16 |
| Overall LOS D | 0 | 0 | 1 | 1 | 0 | 1 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 17 sidewalk analysis locations. | | | | | | |

**Table 15-43**
**2022 No Build vs. 2022 Build Conditions: Corner LOS Analysis**

| | No Build | | | Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 5 | 5 | 5 | 5 | 5 | 5 |
| Overall LOS D | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 5 corner analysis locations. | | | | | | |

**Table 15-44**
**2022 No Build vs. 2022 Build Conditions: Crosswalk LOS Analysis**

| | No Build | | | Build | | |
|---|---|---|---|---|---|---|
| | Weekday Peak Hours | | | Weekday Peak Hours | | |
| | AM | Midday | PM | AM | Midday | PM |
| Overall LOS A/B/C | 2 | 2 | 2 | 2 | 2 | 2 |
| Overall LOS D | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS E | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall LOS F | 0 | 0 | 0 | 0 | 0 | 0 |
| **Note:** Includes 2 crosswalk analysis locations. | | | | | | |

As summarized in **Tables 15-62** through **15-64** in Section I, "Detailed Analysis Results Tables," all sidewalk, corner reservoir, and crosswalk analysis locations would continue to operate at acceptable LOS C or better (maximum of 6 PMF platoon flows for sidewalks; minimum of 24 SFP for corners and crosswalks) except the west sidewalk of 31st Street between 30th Avenue and 30th Drive during the weekday AM and PM peak hours (LOS D with 6.70 PMF and LOS D with 7.21 PMF, respectively). As detailed for the sliding scale presented in **Table 15-14**, for No Build pedestrian flows of 5.5 to 6.2 PMF and 6.3 to 7.0 PMF, deteriorations of 2.3 PMF and 2.2 PMF or greater, respectively,

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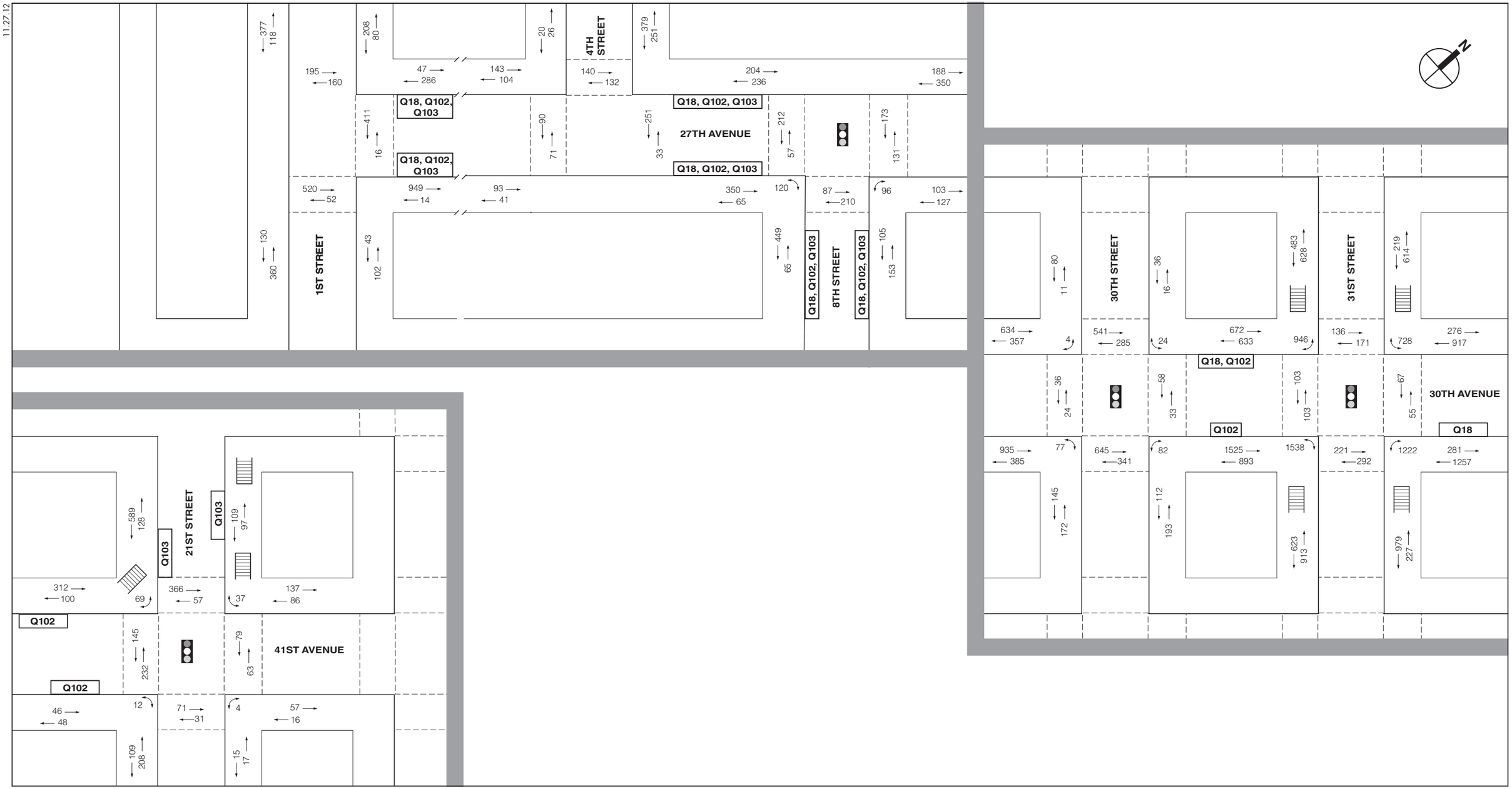



*Signalized Intersection*

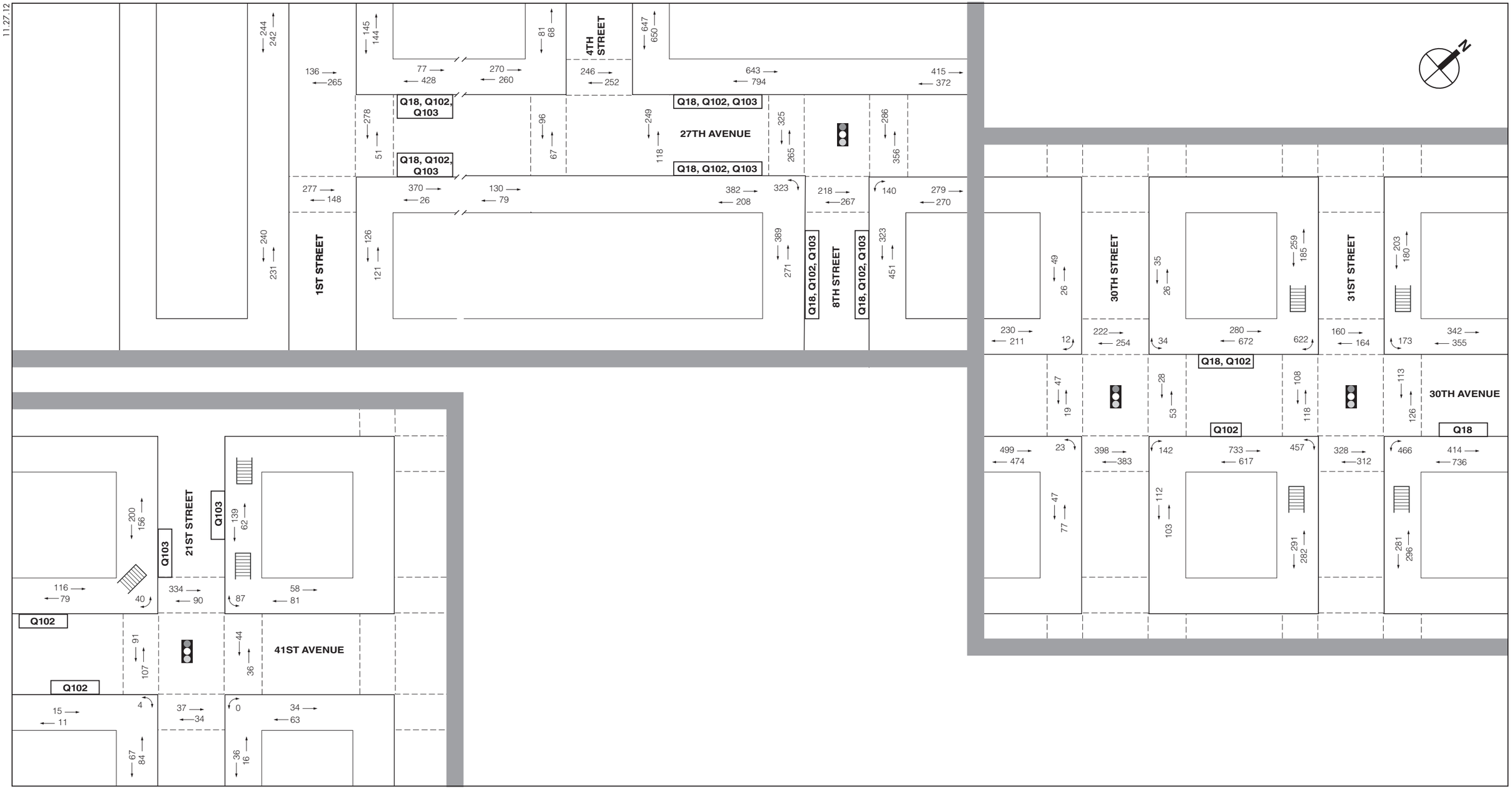
*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

**HALLETTS POINT**

2022 Build Pedestrian Trips
Weekday AM Peak Hour
**Figure 15-26**

11.27.12




*Signalized Intersection*

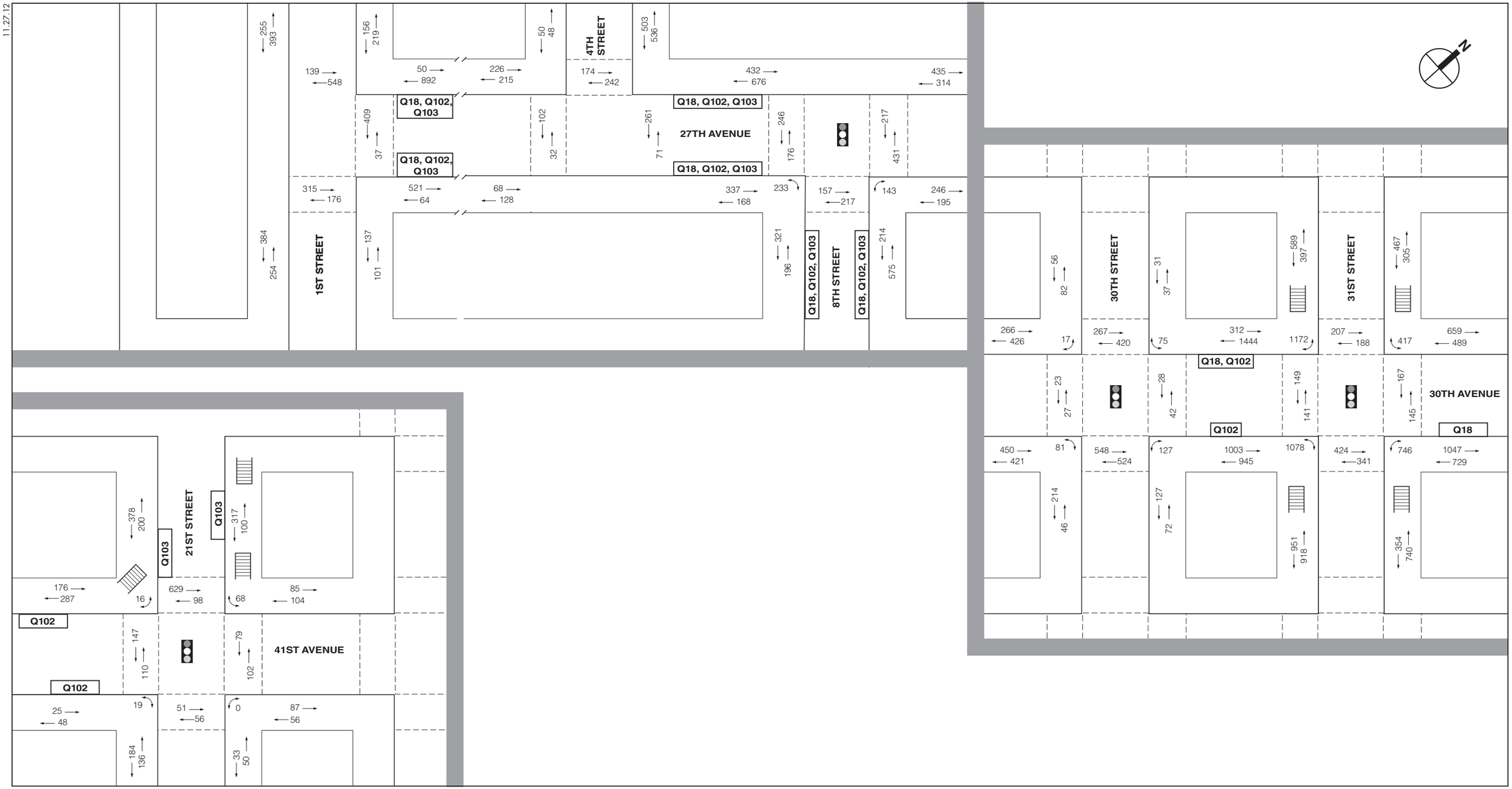
*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

**HALLETTS POINT**

2022 Build Pedestrian Trips
Weekday Midday Peak Hour
**Figure 15-27**

11.27.12




*Signalized Intersection*

*Subway Station Entrance*

Q103 *Bus Stop and Bus Route*

**HALLETTS POINT**

2022 Build Pedestrian Trips
Weekday PM Peak Hour
**Figure 15-28**

would constitute significant adverse pedestrian impacts. For the west sidewalk of 31st Street between 30th Avenue and 30th Drive, the projected deteriorations during the AM and PM peak hours are projected to be from 5.76 to 6.70 PMF (difference of 0.94 PMF) and from 6.73 to 7.21 PMF (difference of 0.48 PMF), respectively. Since these levels of deterioration are less than the impact thresholds described above and all other study area pedestrian facilities would continue to operate at acceptable levels, the proposed project would not result in any significant adverse pedestrian impacts.

## G. VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

Crash data for the study area intersections were obtained from the NYSDOT for the time period between January 1, 2009 and December 31, 2011. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of pedestrian- and bicycle-related accidents at each location. According to the *CEQR Technical Manual*, a high accident location is one where there were five or more pedestrian/bicyclist-related accidents or 48 or more reportable and non-reportable accidents in any consecutive 12 months within the most recent 3-year period for which data are available.

During the January 1, 2009 to December 31, 2011 3-year period, a total of 161 reportable and non-reportable accidents, one fatality, 79 injuries, and 7 pedestrian/bicyclist-related accidents occurred at the study area intersections. A rolling total of the 2009-2011 accident data indicates that the numbers of vehicular and pedestrian/bicyclist-related accidents at the study area intersections are well below the CEQR thresholds for high-accident locations. Although the proposed project is expected to result in significant adverse traffic impacts at some of these locations, given the low accident frequencies, the proposed project would not have the potential to result in any significant adverse vehicular and pedestrian safety impacts. **Table 15-45** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

## H. PARKING ANALYSIS

### EXISTING CONDITIONS

A detailed parking inventory of the area surrounding the project site was conducted on a typical weekday. The parking study area encompassed a ¼-mile radius (approximately a five-minute walk) from the project site, as recommended by CEQR guidelines. This area extends approximately between 8th Street to the east, the East River to the west, 26th Avenue to the north, and 30th Avenue/Main Avenue to the south. Parking data were collected during the morning (6:30 to 9:30 AM), midday (12 to 2 PM) and PM (4:30 to 6:30 PM) peak periods.

On-street parking regulations, capacity, and occupancy were inventoried for the study area on a block-by-block basis. Several streets within the study area have no posted parking regulations on either side of the street. Alternate side parking for street cleaning is regulated on many streets within the parking study area. There is no metered parking within the study area. The average number of legal on-street parking spaces within the parking study area ranges approximately between 425 and 500 spaces during weekday peak periods. During the weekday AM and midday peak periods, the average on-street parking occupancy is approximately 90 percent with about 50 on-street parking spaces available. In the PM peak period, the occupancy rate drops to 77 percent and there are approximately 100 on-street spaces available. This rate drops even further (to 71 percent) in the latter half of the PM peak period.

**Table 15-45**
**Vehicle and Pedestrian Accident Details**

| Intersection | | Study Period | | | | | Accidents by Year | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North-South Roadway | East-West Roadway | All Accidents by Year | | | Total Fatalities | Total Injuries | Pedestrian | | | Bicycle | | |
| | | 2009 | 2010 | 2011 | | | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 |
| 21st Street | Astoria Blvd | 4 | 4 | 5 | 0 | 7 | | | | | | |
| 23rd Street | Astoria Blvd | 1 | 1 | 2 | 0 | 2 | | | | | | |
| Crescent Street | Astoria Blvd | 3 | 1 | 1 | 0 | 3 | | | | | | |
| 28th Street | Astoria Blvd | 2 | 1 | 1 | 0 | 0 | | | | | | |
| 30th Street | Astoria Blvd | 1 | 1 | 1 | 0 | 1 | | | | | | |
| 31st Street | Astoria Blvd | 22 | 8 | 14 | 0 | 17 | | | | | | |
| 31st Street | Hoyt Ave (S) | 3 | 6 | 3 | 0 | 5 | | | 1 | | | |
| 31st Street | Hoyt Ave (N) | 2 | 0 | 6 | 0 | 6 | | | | | | |
| 29th Street | Hoyt Ave (S) | 2 | 1 | 2 | 0 | 2 | | | | | | |
| 29th Street | Hoyt Ave (N) | 1 | 2 | 1 | 0 | 1 | | | | | | |
| 21st Street | Hoyt Ave (S) | 0 | 5 | 0 | 0 | 3 | | | | | 1 | |
| 21st Street | Hoyt Ave (N) | 1 | 0 | 6 | 0 | 2 | | | | | | |
| 21st Street | 24th Avenue | 0 | 1 | 1 | 0 | 0 | | | | | | |
| 29th Street | 24th Avenue | 0 | 0 | 0 | 0 | 0 | | | | | | |
| 32nd Street | Astoria Blvd | 1 | 3 | 0 | 0 | 3 | | | | | | |
| 33rd Street | Astoria Blvd | 6 | 5 | 6 | 0 | 14 | | | | | | |
| 8th Street | Astoria Blvd | 0 | 0 | 1 | 0 | 1 | | | 1 | | | |
| 8th Street | Vernon Blvd | 0 | 0 | 0 | 0 | 0 | | | | | | |
| 8th Street | 27th Avenue | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Vernon Blvd | Broadway | 0 | 0 | 0 | 0 | 0 | | | | | | |
| 21st Street | Broadway | 4 | 10 | 5 | 1 | 12 | | 3 | | | 1 | |
| 1st Street | 27th Avenue | 1 | 1 | 0 | 0 | 0 | | | | | | |
| 2nd Street | 27th Avenue | 0 | 0 | 0 | 0 | 0 | | | | | | |
| 4th Street | 27th Avenue | 1 | 0 | 0 | 0 | 0 | | | | | | |
| 18th Street | Astoria Blvd | 1 | 0 | 0 | 0 | 0 | | | | | | |

**Source:** NYSDOT January 1, 2009 and December 31, 2011 accident data.

There are no public off-street parking facilities within the parking study area; however, an inventory of the permit-only off-street parking on the Astoria Houses Campus was performed since the proposed project would displace some of these facilities and replace them with new parking facilities. Therefore, an analysis was performed to determine whether the total parking provided on the campus in the future with the project would accommodate the parking demands of both the project and of the existing NYCHA permit-parking users.

As shown in **Table 15-46**, there are a total of seven surface parking lots on the Astoria Houses Campus—six residential permit parking lots, and one NYCHA employee lot. The total capacity of these lots is 178 spaces. Overall, these lots are approximately 70 to 80 percent occupied in the weekday AM peak period, and 65 to 75 percent occupied in the midday and PM peak periods.

## FUTURE WITHOUT THE PROPOSED PROJECT (2022 NO BUILD CONDITION)

Under the 2022 No Build condition, on-street parking demand is expected to increase by the same background growth rate assumed for traffic—0.5 percent per year for the first five years and 0.25 percent per year for each additional year until 2022. As a result of this growth, on-street parking occupancy is expected to reach 91 to 94 percent during the weekday AM and midday parking periods, and 80 percent in the PM period. The amount of on-street parking availability in the study area would decrease slightly to 30 to 40 spaces in the weekday AM and midday periods, and to about 85 spaces in the PM period, under the No Build condition.

**Table 15-46**
**Off-Street Parking Utilization (Astoria Houses Campus)**

| Lot No. | Parking Lot Location | Type | Capacity | Parking Occupancy By Period | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM Period | | | Midday Period | | PM Period | |
| | | | | 6:30 - 7:30 | 7:30 - 8:30 | 8:30 - 9:30 | 12 - 1 | 1 - 2 | 4:30 - 5:30 | 5:30 - 6:30 |
| 1 | Astoria Boulevard near 8th Street | Permit parking | 40 | 32 | 27 | 28 | 29 | 26 | 34 | 33 |
| 2 | Astoria Boulevard near 8th Street - section adjacent to apartment building | NYCHA employee | 21 | 4 | 14 | 14 | 11 | 11 | 1 | 2 |
| 3* | Astoria Boulevard and 1st Street | Permit parking | 34 | 34 | 27 | 29 | 28 | 26 | 28 | 29 |
| 4* | Astoria Boulevard just east of 1st Street -at cul-de-sac | Permit parking | 10 | 10 | 8 | 6 | 6 | 5 | 10 | 10 |
| 5* | 27th Avenue at 4th Street | Permit parking | 29 | 23 | 20 | 22 | 21 | 20 | 18 | 19 |
| 6* | 27th Avenue between 3rd and 2nd Streets | Permit parking | 33 | 32 | 20 | 25 | 23 | 19 | 16 | 26 |
| 7 | 8th Street at 30th Avenue | Permit parking | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| **Total** | | | **178** | **146** | **127** | **135** | **129** | **118** | **118** | **130** |
| **Percent Occupied** | | | - | **82%** | **71%** | **76%** | **72%** | **66%** | **66%** | **73%** |

**Note:** * Lot would be displaced by proposed project

No changes to parking demand or supply are expected to occur at the NYCHA parking facilities under the No Build condition.

## PROBABLE IMPACTS OF THE PROPOSED PROJECT (2022 BUILD CONDITION)

The proposed project would provide 1,375 off-street parking spaces which would be accessory to the residential and commercial uses. This would consist of 1,151 garage parking spaces within Buildings 1 through 5 (along 1st and 2nd Streets), and 224 project parking spaces on the Astoria Houses campus—53 surface lot spaces adjacent to Buildings 6 and 7 (along 27th Avenue) and 171 garage spaces in Building 8 (on Astoria Boulevard). It is estimated that the proposed project would also add approximately 28 on-street parking spaces with the extension of Astoria Boulevard through the Astoria Houses Campus. However, approximately 14 on-street spaces would be removed along the west side of 1st Street between 26th and 27th Avenues. These are generally evening/overnight parking spaces based on the regulations ('No Parking 8AM- 6PM Monday - Friday'). Overall, there would be a net increase of 14 overnight parking spaces in the area as a result of the proposed project.

The construction of Buildings 6, 7 and 8 would displace 144 residential permit parking spaces on lots within the Astoria Houses Campus. These spaces would be replaced by 178 new spaces within new parking facilities including Buildings' 6 and 7 lots and within reconfigured lots elsewhere in the Astoria Houses Campus. Therefore a net increase in NYCHA permit parking would occur as a result of the proposed project.

A 24-hour parking accumulation was developed for project-generated demand based on temporal distribution data available for each associated land use. An overnight parking rate of 0.6 vehicles per dwelling unit was developed based on vehicle ownership rates in *similar* nearby census tracts (e.g. excludes census tracts that are predominantly low income housing or single family homes with driveways/garages). As shown in **Table 15-47**, there would be an overall parking surplus in the garages for Buildings 1 through 5 during the majority of the day, but there would be a parking shortfall of up to 87 spaces during overnight hours (10 PM to 7 AM).

**Table 15-47**
**Build Parking Accumulation: Buildings 1–5**

| Time | Demand by Land Use | | | | | | | | | Total Demand | | | Total Surplus/ Shortfall |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Residential | | | Food Store | | | Local Retail | | | | | | |
| | In | Out | Accum. | In | Out | Accum. | In | Out | Accum. | In | Out | Accum. | |
| **12 - 1 AM** | 39 | 39 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **39** | **39** | **1,238** | -87 |
| **1 - 2 AM** | 16 | 16 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **16** | **16** | **1,238** | -87 |
| **2 - 3 AM** | 10 | 10 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **10** | **10** | **1,238** | -87 |
| **3 - 4 AM** | 8 | 8 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **8** | **8** | **1,238** | -87 |
| **4 - 5 AM** | 8 | 8 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **8** | **8** | **1,238** | -87 |
| **5 - 6 AM** | 8 | 8 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **8** | **8** | **1,238** | -87 |
| **6 - 7 AM** | 13 | 13 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **13** | **13** | **1,238** | -87 |
| **7 - 8 AM** | 16 | 146 | 1,108 | 2 | 1 | 1 | 0 | 0 | 0 | **18** | **147** | **1,109** | 42 |
| **8 - 9 AM** | 92 | 370 | 830 | 1 | 2 | 0 | 1 | 1 | 0 | **94** | **373** | **830** | 321 |
| **9 - 10 AM** | 70 | 213 | 687 | 2 | 2 | 0 | 0 | 0 | 0 | **72** | **215** | **687** | 464 |
| **10 - 11 AM** | 62 | 146 | 603 | 3 | 3 | 0 | 0 | 0 | 0 | **65** | **149** | **603** | 548 |
| **11 AM - 12 PM** | 78 | 117 | 564 | 4 | 3 | 1 | 0 | 0 | 0 | **82** | **120** | **565** | 586 |
| **12 - 1 PM** | 117 | 114 | 567 | 6 | 7 | 0 | 3 | 3 | 0 | **126** | **124** | **567** | 584 |
| **1 - 2 PM** | 115 | 116 | 566 | 6 | 6 | 0 | 2 | 2 | 0 | **123** | **124** | **566** | 585 |
| **2 - 3 PM** | 121 | 121 | 566 | 4 | 4 | 0 | 2 | 2 | 0 | **127** | **127** | **566** | 585 |
| **3 - 4 PM** | 126 | 126 | 566 | 4 | 4 | 0 | 1 | 1 | 0 | **131** | **131** | **566** | 585 |
| **4 - 5 PM** | 188 | 128 | 626 | 5 | 4 | 1 | 2 | 2 | 0 | **195** | **134** | **627** | 524 |
| **5 - 6 PM** | 332 | 179 | 779 | 6 | 6 | 1 | 2 | 2 | 0 | **340** | **187** | **780** | 371 |
| **6 - 7 PM** | 248 | 164 | 863 | 5 | 6 | 0 | 2 | 2 | 0 | **255** | **172** | **863** | 288 |
| **7 - 8 PM** | 258 | 110 | 1,011 | 4 | 4 | 0 | 2 | 2 | 0 | **264** | **116** | **1,011** | 140 |
| **8 - 9 PM** | 117 | 49 | 1,079 | 3 | 3 | 0 | 0 | 0 | 0 | **120** | **52** | **1,079** | 72 |
| **9 - 10 PM** | 94 | 40 | 1,133 | 1 | 1 | 0 | 0 | 0 | 0 | **95** | **41** | **1,133** | 18 |
| **10 - 11 PM** | 107 | 46 | 1,194 | 0 | 0 | 0 | 0 | 0 | 0 | **107** | **46** | **1,194** | -43 |
| **11 PM - 12 AM** | 78 | 34 | 1,238 | 0 | 0 | 0 | 0 | 0 | 0 | **78** | **34** | **1,238** | -87 |
| **Daily Total** | 2,321 | 2,321 | - | 56 | 56 | - | 17 | 17 | - | **2,394** | **2,394** | **-** | |
| **Overnight Demand** | - | - | 1,238 | - | - | 0 | - | - | 0 | **-** | **-** | **1,238** | |
| **Number of Parking Spaces Provided :** | | | | | | | | | | | | **1,151** | |

**Table 15-48** shows the projected parking accumulation for project Buildings 6, 7 and 8. Similarly, these buildings would have an overall overnight shortfall of 82 spaces. Much, of this shortfall could be absorbed by available on-street spaces within the ¼-mile parking study area. It is estimated (based on parking availability at the end of the PM peak period and at the beginning of the AM peak period in the No Build condition) that between 30 and 85 on-street spaces would be available during overnight hours. In addition to that, a net of approximately 14 new on-street spaces would be created with the extension of Astoria Boulevard, increasing available overnight on-street parking availability to 44 to 99 spaces. Also, parking data collected for a ½-mile radius (up to a ten-minute walk) from the project site indicates that any remaining overnight shortfall could be accommodated by the additional 50 to 125 on-street parking spaces available slightly beyond the ¼-mile parking study area. It is also noted that even more on-street parking would presumably become available in the future Build condition when existing uses on the project site vacate the premises. However, to be conservative, no credit was taken for on-street parking trips generated by these uses. Therefore, the proposed project would not result in a significant adverse parking impact.

## Table 15-48
## Build Parking Accumulation: Buildings 6-8

| Time | Demand by Land Use | | | | | | Total Demand | | | Project Surplus/Shortfall |
|---|---|---|---|---|---|---|---|---|---|---|
| | Residential | | | Local Retail | | | In | Out | Accum. | |
| | In | Out | Accum. | In | Out | Accum. | | | | |
| **12 - 1 AM** | 11 | 11 | 306 | 0 | 0 | 0 | **11** | **11** | **306** | --82 |
| **1 - 2 AM** | 4 | 4 | 306 | 0 | 0 | 0 | **4** | **4** | **306** | --82 |
| **2 - 3 AM** | 3 | 3 | 306 | 0 | 0 | 0 | **3** | **3** | **306** | -82 |
| **3 - 4 AM** | 1 | 1 | 306 | 0 | 0 | 0 | **1** | **1** | **306** | -82 |
| **4 - 5 AM** | 1 | 1 | 306 | 0 | 0 | 0 | **1** | **1** | **306** | -82 |
| **5 - 6 AM** | 1 | 1 | 306 | 0 | 0 | 0 | **1** | **1** | **306** | -82 |
| **6 - 7 AM** | 4 | 4 | 306 | 0 | 0 | 0 | **4** | **4** | **306** | -82 |
| **7 - 8 AM** | 4 | 36 | 274 | 0 | 0 | 0 | **4** | **36** | **274** | -50 |
| **8 - 9 AM** | 24 | 93 | 205 | 0 | 0 | 0 | **24** | **93** | **205** | 19 |
| **9 - 10 AM** | 18 | 51 | 172 | 0 | 0 | 0 | **18** | **51** | **172** | 52 |
| **10 - 11 AM** | 15 | 36 | 151 | 0 | 0 | 0 | **15** | **36** | **151** | 73 |
| **11 AM - 12 PM** | 19 | 29 | 141 | 1 | 1 | 0 | **20** | **30** | **141** | 83 |
| **12 - 1 PM** | 30 | 28 | 143 | 3 | 3 | 0 | **33** | **31** | **143** | 81 |
| **1 - 2 PM** | 28 | 28 | 143 | 3 | 3 | 0 | **31** | **31** | **143** | 81 |
| **2 - 3 PM** | 30 | 30 | 143 | 2 | 2 | 0 | **32** | **32** | **143** | 81 |
| **3 - 4 PM** | 30 | 30 | 143 | 0 | 0 | 0 | **30** | **30** | **143** | 81 |
| **4 - 5 PM** | 46 | 31 | 158 | 2 | 2 | 0 | **48** | **33** | **158** | 66 |
| **5 - 6 PM** | 82 | 44 | 196 | 1 | 1 | 0 | **83** | **45** | **196** | 28 |
| **6 - 7 PM** | 64 | 43 | 217 | 1 | 1 | 0 | **65** | **44** | **217** | 7 |
| **7 - 8 PM** | 62 | 28 | 251 | 0 | 0 | 0 | **62** | **28** | **251** | -27 |
| **8 - 9 PM** | 29 | 12 | 268 | 0 | 0 | 0 | **29** | **12** | **268** | -44 |
| **9 - 10 PM** | 23 | 11 | 280 | 0 | 0 | 0 | **23** | **11** | **280** | -56 |
| **10 - 11 PM** | 26 | 11 | 295 | 0 | 0 | 0 | **26** | **11** | **295** | -71 |
| **11 PM - 12 AM** | 19 | 8 | 306 | 0 | 0 | 0 | **19** | **8** | **306** | -82 |
| **Daily Total** | 574 | 574 | - | 13 | 13 | - | **587** | **587** | **-** | - |
| **Overnight Demand** | - | - | 306 | - | - | 0 | **-** | **-** | **306** | - |
| **# of Parking Spaces Provided : 224** | | | | | | | | | | |

# I. DETAILED ANALYSIS RESULTS TABLES

**Table 15-50**
**Existing Conditions Traffic Level of Service Analysis**
**Signalized Intersections**

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **27th Avenue & 8th Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | TR | 0.57 | 18.4 | B | TR | 0.54 | 17.1 | B | TR | 0.48 | 15.6 | B |
| | WB | LT | 0.81 | 30.2 | C | LT | 0.54 | 18.3 | B | LT | 0.41 | 14.9 | B |
| 8th Street | NB | L | 0.41 | 24.4 | C | L | 0.29 | 22.3 | C | L | 0.33 | 22.9 | C |
| | | R | 0.26 | 22.0 | C | R | 0.28 | 22.4 | C | R | 0.30 | 22.6 | C |
| **Overall Intersection** | | - | **0.65** | **24.4** | **C** | - | **0.44** | **19.1** | **B** | - | **0.42** | **17.9** | **B** |
| **Vernon Boulevard/Main Avenue & 8th Street/Welling Court** | | | | | | | | | | | | | |
| Vernon Boulevard | EB | LT | 0.96 | 46.7 | D | LT | 0.79 | 37.4 | D | LT | 1.00 | 54.0 | D |
| Main Street | WB | TR | 0.06 | 21.3 | C | TR | 0.03 | 21.0 | C | TR | 0.04 | 21.1 | C |
| Welling Court | NB | LTR | 0.26 | 31.5 | C | LTR | 0.14 | 28.9 | C | LTR | 0.08 | 28.2 | C |
| 8th Street | SB | R | 0.72 | 36.1 | D | R | 0.55 | 31.3 | C | R | 0.47 | 29.5 | C |
| **Overall Intersection** | | - | **0.42** | **40.0** | **D** | - | **0.32** | **34.0** | **C** | - | **0.38** | **44.4** | **D** |
| **Astoria Boulevard & 8th Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LR | 0.25 | 28.5 | C | LR | 0.12 | 26.4 | C | LR | 0.26 | 28.6 | C |
| | WB | L | 0.26 | 28.5 | C | L | 0.25 | 28.5 | C | L | 0.16 | 27.0 | C |
| | | TR | 0.20 | 27.7 | C | TR | 0.15 | 27.0 | C | TR | 0.15 | 26.9 | C |
| 8th Street | NB | LT | 0.34 | 15.1 | B | LT | 0.31 | 14.8 | B | LT | 0.40 | 15.5 | B |
| | SB | TR | 0.49 | 17.8 | B | TR | 0.31 | 15.1 | B | TR | 0.29 | 14.8 | B |
| **Overall Intersection** | | - | **0.40** | **20.6** | **C** | - | **0.29** | **18.9** | **B** | - | **0.34** | **19.3** | **B** |
| **Astoria Boulevard & 21st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | L | 0.81 | 58.9 | E | L | 0.25 | 34.6 | C | L | 0.44 | 41.8 | D |
| | | TR | 0.82 | 52.3 | D | TR | 0.38 | 36.0 | D | TR | 0.75 | 47.7 | D |
| | WB | L | 0.94 | 57.0 | E | L | 0.81 | 49.1 | D | L | 0.83 | 58.0 | E |
| | | TR | 0.72 | 42.6 | D | TR | 0.36 | 35.0 | C | TR | 0.68 | 48.0 | D |
| 21st Street | NB | LTR | 0.79 | 35.3 | D | LTR | 1.05 | 69.4 | E | LTR | 1.01 | 44.2 | D |
| | SB | LTR | 1.05 | 60.6 | E | LTR | 0.96 | 48.4 | D | LTR | 0.87 | 34.2 | C |
| **Overall Intersection** | | - | **0.97** | **52.1** | **D** | - | **0.76** | **51.2** | **D** | - | **0.90** | **43.0** | **D** |
| **Astoria Boulevard & 23rd Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LT | 0.64 | 20.0 | C | LT | 0.61 | 16.4 | B | LT | 0.69 | 21.0 | C |
| | WB | TR | 0.81 | 24.3 | C | TR | 0.66 | 15.2 | B | TR | 0.62 | 18.4 | B |
| 23rd Street | NB | LTR | 0.48 | 33.0 | C | LTR | 0.53 | 27.8 | C | LTR | 0.57 | 35.3 | D |
| **Overall Intersection** | | - | **0.68** | **24.2** | **C** | - | **0.61** | **18.5** | **B** | - | **0.64** | **23.3** | **C** |
| **Astoria Boulevard & Crescent Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | TR | 0.72 | 23.9 | C | TR | 0.63 | 17.2 | B | TR | 0.82 | 27.7 | C |
| | WB | LT | 0.85 | 26.9 | C | LT | 0.98 | 30.0 | C | LT | 0.99 | 37.2 | D |
| Crescent Street | SB | LTR | 1.05 | 66.6 | E | LTR | 1.03 | 52.2 | D | LTR | 1.00 | 49.8 | D |
| **Overall Intersection** | | - | **0.93** | **37.6** | **D** | - | **1.00** | **33.3** | **C** | - | **0.99** | **37.3** | **D** |
| **Astoria Boulevard & 31st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LTR | 0.90 | 44.2 | D | LTR | 0.85 | 31.6 | C | LTR | 0.95 | 45.8 | D |
| 31st Street | NB | T | 0.49 | 41.1 | D | T | 0.51 | 33.1 | C | T | 0.49 | 41.0 | D |
| | | R | 0.63 | 15.2 | B | R | 0.51 | 8.6 | A | R | 0.79 | 21.2 | C |
| | SB | T | 0.86 | 31.0 | C | T | 0.62 | 19.0 | B | T | 0.66 | 21.7 | C |
| | | R | 0.53 | 18.9 | B | R | 0.29 | 14.1 | B | R | 0.29 | 14.9 | B |
| **Overall Intersection** | | - | **0.87** | **29.3** | **C** | - | **0.72** | **21.1** | **C** | - | **0.78** | **29.1** | **C** |
| **Astoria Park South/ Hoyt Ave South & 21st Street** | | | | | | | | | | | | | |
| Astoria Park South/ Hoyt Ave South | EB | L | 0.12 | 29.9 | C | L | 0.21 | 31.5 | C | L | 0.17 | 30.7 | C |
| | | TR | 1.02 | 59.7 | E | TR | 0.40 | 35.2 | D | TR | 0.73 | 43.1 | D |
| 21st Street | NB | LTR | 0.51 | 14.6 | B | LTR | 0.41 | 13.0 | B | LTR | 0.86 | 22.3 | C |
| | SB | LTR | 0.98 | 32.1 | C | LTR | 0.58 | 15.4 | B | LTR | 0.83 | 23.3 | C |
| **Overall Intersection** | | - | **0.99** | **32.1** | **C** | - | **0.52** | **17.4** | **B** | - | **0.81** | **25.6** | **C** |
| **Hoyt Avenue South & RFK Bridge Off-Ramp/29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | TR | 0.52 | 24.9 | C | TR | 0.46 | 19.0 | B | TR | 0.53 | 25.0 | C |
| RFK Bridge Off-Ramp | SB | T | 0.67 | 30.8 | C | T | 0.39 | 19.2 | B | T | 0.46 | 25.2 | C |
| **Overall Intersection** | | - | **0.60** | **27.5** | **C** | - | **0.42** | **19.1** | **B** | - | **0.50** | **25.0** | **C** |

**Table 15-50 (cont'd)**
**Existing Conditions Traffic Level of Service Analysis**
**Signalized Intersections**

| | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INTERSECTION & APPROACH** | | **Mvt.** | **V/C** | **Control Delay** | **LOS** | **Mvt.** | **V/C** | **Control Delay** | **LOS** | **Mvt.** | **V/C** | **Control Delay** | **LOS** |
| **Hoyt Avenue South & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 0.89 | 50.5 | D | LT | 0.60 | 25.7 | C | T | 0.76 | 36.5 | D |
| | | R | 0.54 | 46.7 | D | R | 0.41 | 25.9 | C | R | 0.31 | 29.9 | C |
| 31st Street | NB | TR | 0.20 | 35.3 | D | TR | 0.25 | 27.2 | C | TR | 0.27 | 36.1 | D |
| | SB | T | 0.47 | 10.7 | B | LT | 0.56 | 14.9 | B | T | 0.42 | 15.8 | B |
| **Overall Intersection** | | - | **0.59** | **32.9** | **C** | - | **0.61** | **21.8** | **C** | - | **0.55** | **29.9** | **C** |
| **Hoyt Avenue South/Astoria Boulevard & 33rd Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 0.54 | 25.6 | C | LT | 0.67 | 26.7 | C | LT | 0.73 | 35.0 | D |
| Astoria Boulevard | EB | LT | 0.90 | 50.0 | D | LT | 0.92 | 44.0 | D | LT | 1.05 | 75.5 | E |
| 33rd Street | NB | TR | 1.04 | 75.4 | E | TR | 0.77 | 37.1 | D | TR | 1.04 | 67.7 | E |
| | | R | 1.03 | 75.3 | E | R | 0.75 | 40.6 | D | R | 1.03 | 68.1 | E |
| **Overall Intersection** | | - | **0.75** | **45.9** | **D** | - | **0.77** | **35.0** | **D** | - | **0.92** | **57.3** | **E** |
| **Hoyt Avenue North & 21st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | EB | L | 0.02 | 40.4 | D | L | 0.11 | 42.0 | D | L | 0.09 | 41.7 | D |
| | | R | 0.36 | 47.1 | D | R | 0.13 | 42.3 | D | R | 0.17 | 43.0 | D |
| | WB | L | 0.88 | 43.1 | D | L | 0.66 | 37.9 | D | L | 0.59 | 36.4 | D |
| | | TR | 0.24 | 14.7 | B | TR | 0.16 | 14.1 | B | TR | 0.27 | 15.5 | B |
| 21st Street | NB | L | 0.27 | 30.4 | C | L | 0.10 | 25.1 | C | L | 0.16 | 25.8 | C |
| | | T | 0.99 | 73.5 | E | T | 0.73 | 40.9 | D | T | 1.05 | 76.6 | E |
| | SB | TR | 0.97 | 46.6 | D | TR | 0.55 | 32.7 | C | TR | 0.73 | 37.4 | D |
| **Overall Intersection** | | - | **0.82** | **48.2** | **D** | - | **0.58** | **35.7** | **D** | - | **0.70** | **48.0** | **D** |
| **Hoyt Avenue North & 29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 0.71 | 11.6 | B | L | 0.53 | 11.5 | B | L | 0.41 | 12.2 | B |
| | | LT | 0.71 | 11.2 | B | LT | 0.50 | 10.8 | B | LT | 0.56 | 14.0 | B |
| 29th Street | SB | R | 0.98 | 89.2 | F | R | 0.49 | 34.5 | C | R | 0.78 | 49.7 | D |
| **Overall Intersection** | | - | **0.77** | **18.4** | **B** | - | **0.52** | **13.2** | **B** | - | **0.63** | **19.2** | **C** |
| **Hoyt Avenue North & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 1.01 | 86.3 | F | L | 1.00 | 81.8 | F | L | 0.42 | 16.0 | B |
| | | T | 0.90 | 21.3 | C | T | 0.71 | 17.2 | B | T | 0.68 | 20.0 | C |
| | | R | 0.31 | 10.1 | B | R | 0.60 | 19.5 | B | R | 0.64 | 23.6 | C |
| 31st Street | NB | LT | 0.27 | 35.6 | D | DefL | 0.49 | 29.1 | C | LT | 0.27 | 28.0 | C |
| | | - | - | - | - | T | 0.22 | 21.1 | C | - | - | - | - |
| | SB | T | 0.26 | 36.0 | C | T | 0.43 | 24.0 | C | T | 0.15 | 26.5 | C |
| | | R | 0.68 | 53.1 | D | R | 0.24 | 21.9 | C | R | 0.46 | 33.5 | C |
| **Overall Intersection** | | - | **0.84** | **38.8** | **D** | - | **0.62** | **31.4** | **C** | - | **0.59** | **20.9** | **C** |
| **Hoyt Avenue North & 32nd Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | T | 0.51 | 8.6 | A | T | 0.35 | 7.8 | A | T | 0.31 | 9.1 | A |
| Grand Central Parkway Off-Ramp | WB | T | 1.05 | 81.0 | F | T | 0.91 | 21.5 | C | T | 0.89 | 23.1 | C |
| 32nd Street | NB | L | 0.56 | 43.7 | D | L | 0.33 | 28.5 | C | L | 0.50 | 38.2 | D |
| | SB | R | 0.03 | 38.0 | D | R | 0.02 | 25.9 | C | R | 0.02 | 33.3 | C |
| **Overall Intersection** | | - | **0.95** | **52.8** | **D** | - | **0.75** | **18.6** | **B** | - | **0.77** | **22.3** | **C** |
| **24th Avenue & 21st Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | LTR | 0.11 | 30.1 | C | LTR | 0.04 | 29.2 | C | LTR | 0.05 | 29.3 | C |
| | WB | LTR | 0.57 | 40.1 | D | LTR | 0.28 | 33.0 | C | LTR | 0.41 | 35.6 | D |
| 21st Street | NB | LTR | 0.70 | 18.4 | B | LTR | 0.68 | 19.3 | B | LTR | 1.01 | 40.8 | D |
| | SB | LTR | 0.65 | 18.3 | B | LTR | 0.36 | 13.1 | B | LTR | 0.46 | 14.5 | B |
| **Overall Intersection** | | - | **0.66** | **22.5** | **C** | - | **0.55** | **19.4** | **B** | - | **0.80** | **32.7** | **C** |
| **24th Avenue & 29th Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | TR | 0.59 | 13.8 | B | TR | 0.40 | 10.5 | B | TR | 0.73 | 17.5 | B |
| | WB | LT | 0.33 | 9.6 | A | LT | 0.22 | 8.5 | A | LT | 0.32 | 9.3 | A |
| 29th Street | SB | LTR | 0.45 | 19.1 | B | LTR | 0.34 | 17.6 | B | LTR | 0.41 | 18.4 | B |
| **Overall Intersection** | | - | **0.54** | **13.9** | **B** | - | **0.38** | **11.7** | **B** | - | **0.61** | **15.5** | **B** |
| **Broadway & Vernon Boulevard/11th Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.1 | C | LTR | 0.03 | 33.2 | C |
| | WB | LTR | 1.01 | 55.1 | E | LTR | 0.85 | 43.6 | D | LTR | 0.81 | 50.6 | D |
| Vernon Boulevard | NB | LT | 0.24 | 7.8 | A | LT | 0.24 | 8.2 | A | LT | 0.43 | 9.0 | A |
| | | R | 0.04 | 6.4 | A | R | 0.16 | 7.5 | A | R | 0.12 | 6.3 | A |
| | SB | LTR | 0.96 | 44.9 | D | LTR | 0.51 | 26.2 | C | LTR | 0.57 | 28.0 | C |
| 11th Street | NB | LTR | 0.36 | 40.8 | D | LTR | 0.21 | 32.8 | C | LTR | 0.32 | 38.0 | D |
| **Overall Intersection** | | - | **0.96** | **39.3** | **D** | - | **0.67** | **24.4** | **C** | - | **0.83** | **23.9** | **C** |

**Table 15-50 (cont'd)**
**Existing Conditions Traffic Level of Service Analysis**
**Signalized Intersections**

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **Broadway & 21st Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 0.75 | 49.4 | D | LTR | 0.83 | 51.2 | D | LTR | 1.04 | 70.5 | E |
| | WB | LTR | 0.88 | 54.7 | D | LTR | 0.88 | 54.8 | D | LTR | 1.04 | 74.9 | E |
| 21st Street | NB | LTR | 0.47 | 15.7 | B | LTR | 0.74 | 20.8 | C | LTR | 0.88 | 25.2 | C |
| | SB | LTR | 0.96 | 28.3 | C | LTR | 0.69 | 19.9 | B | LTR | 0.68 | 19.7 | B |
| **Overall Intersection** | | - | **0.94** | **29.4** | **C** | - | **0.79** | **27.5** | **C** | - | **0.94** | **32.8** | **C** |

**Notes:**
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

**Table 15-51**
**Existing Conditions Traffic Level of Service Analysis**
**Unsignalized Intersections**

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **27th Avenue & 1st Street** | | | | | | | | | | | | | |
| 27th Avenue | WB | LR | - | 9.2 | A | LR | - | 9.3 | A | LR | - | 8.7 | A |
| 1st Street | NB | TR | - | 7.8 | A | TR | - | 7.9 | A | TR | - | 7.3 | A |
| | SB | LT | - | 8.5 | A | LT | - | 8.3 | A | LT | - | 8.2 | A |
| **Overall Intersection** | | - | **-** | **8.7** | **A** | - | **-** | **8.8** | **A** | - | **-** | **8.2** | **A** |
| **27th Avenue & 2nd Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | LT | - | 7.7 | A | LT | - | 7.8 | A | LT | - | 7.8 | A |
| 2nd Street | SB | LR | - | 12.3 | B | LR | - | 11.2 | B | LR | - | 12.4 | B |
| **Overall Intersection** | | - | **-** | **1.3** | **A** | - | **-** | **1.8** | **A** | - | **-** | **2.0** | **A** |
| **27th Avenue & 4th Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | LT | - | 9.8 | A | LT | - | 9.4 | A | LT | - | 9.7 | A |
| | WB | TR | - | 11.7 | B | TR | - | 10.9 | B | TR | - | 11.3 | B |
| 4th Street | SB | LR | - | 9.8 | A | LR | - | 9.8 | A | LR | - | 9.5 | A |
| **Overall Intersection** | | - | **-** | **10.8** | **B** | - | **-** | **10.2** | **B** | - | **-** | **10.4** | **B** |
| **Astoria Boulevard & 18th Street** | | | | | | | | | | | | | |
| 18th Street | SB | LR | - | 20.6 | C | LR | - | 12.6 | B | LR | - | 14.2 | B |
| **Overall Intersection** | | - | **-** | **2.0** | **A** | - | **-** | **2.7** | **A** | - | **-** | **2.0** | **A** |
| **Astoria Boulevard & 28th Street** | | | | | | | | | | | | | |
| 28th Street | NB | LR | - | 20.7 | C | LR | - | 18.8 | C | LR | - | 17.3 | C |
| **Overall Intersection** | | - | **-** | **1.8** | **A** | - | **-** | **1.9** | **A** | - | **-** | **1.4** | **A** |
| **Astoria Boulevard & 30th Street** | | | | | | | | | | | | | |
| Astoria Boulevard | WB | LT | - | 11.3 | B | LT | - | 9.2 | A | LT | - | 10.3 | B |
| **Overall Intersection** | | - | **-** | **1.8** | **A** | - | **-** | **0.8** | **A** | - | **-** | **1.4** | **A** |

**Notes:**
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

## Table 15-52
## 2022 No Build Traffic Level of Service Analysis
## Signalized Intersections

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **27th Avenue & 8th Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | TR | 0.86 | 34.7 | C | TR | 0.76 | 26.5 | C | TR | 0.64 | 19.9 | B |
| | WB | LT | 0.98 | 59.5 | E | LT | 0.65 | 22.6 | C | LT | 0.49 | 16.9 | B |
| 8th Street | NB | L | 0.49 | 26.2 | C | L | 0.39 | 23.8 | C | L | 0.47 | 25.6 | C |
| | | R | 0.42 | 26.4 | C | R | 0.64 | 39.0 | D | R | 0.66 | 39.1 | D |
| **Overall Intersection** | | - | **0.79** | **40.8** | **D** | - | **0.71** | **26.4** | **C** | - | **0.65** | **23.2** | **C** |
| **Vernon Boulevard/Main Avenue & 8th Street/Welling Court** | | | | | | | | | | | | | |
| Vernon Boulevard | EB | LT | 1.13 | 100.5 | F | LT | 0.93 | 50.7 | D | LT | 1.20 | 127.2 | F |
| Main Street | WB | TR | 0.08 | 21.5 | C | TR | 0.04 | 21.1 | C | TR | 0.06 | 21.3 | C |
| Welling Court | NB | LTR | 0.27 | 31.7 | C | LTR | 0.15 | 29.1 | C | LTR | 0.12 | 28.7 | C |
| 8th Street | SB | R | 0.94 | 55.7 | E | R | 0.71 | 37.1 | D | R | 0.63 | 33.8 | C |
| **Overall Intersection** | | - | **0.50** | **72.2** | **E** | - | **0.38** | **42.9** | **D** | - | **0.47** | **88.4** | **F** |
| **Astoria Boulevard & 8th Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LR | 0.26 | 28.9 | C | LR | 0.13 | 26.5 | C | LR | 0.28 | 29.1 | C |
| | WB | L | 0.33 | 29.8 | C | L | 0.36 | 30.6 | C | L | 0.25 | 28.6 | C |
| | | TR | 0.23 | 28.1 | C | TR | 0.18 | 27.5 | C | TR | 0.17 | 27.2 | C |
| 8th Street | NB | LT | 0.40 | 15.9 | B | LT | 0.37 | 15.7 | B | LT | 0.50 | 17.0 | B |
| | SB | TR | 0.64 | 21.1 | C | TR | 0.38 | 16.0 | B | TR | 0.36 | 15.8 | B |
| **Overall Intersection** | | - | **0.52** | **22.4** | **C** | - | **0.37** | **20.1** | **C** | - | **0.41** | **20.3** | **C** |
| **Astoria Boulevard & 21st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | L | 0.87 | 56.2 | E | L | 0.31 | 25.5 | C | L | 0.48 | 31.4 | C |
| | | TR | 0.75 | 39.2 | D | TR | 0.43 | 33.3 | C | TR | 0.66 | 37.1 | D |
| | WB | L | 1.14 | 116.1 | F | L | 0.90 | 53.0 | D | L | 0.81 | 49.4 | D |
| | | TR | 0.60 | 34.7 | C | TR | 0.36 | 31.6 | C | TR | 0.50 | 33.6 | C |
| 21st Street | NB | LTR | 0.92 | 40.7 | D | LTR | 0.74 | 26.6 | C | LTR | 1.38 | 203.2 | F |
| | SB | LTR | 1.05 | 57.4 | E | LTR | 0.76 | 27.3 | C | LTR | 1.06 | 68.2 | E |
| **Overall Intersection** | | - | **1.06** | **54.0** | **D** | - | **0.85** | **31.1** | **C** | - | **1.15** | **98.4** | **F** |
| **Astoria Boulevard & 23rd Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LT | 0.91 | 33.1 | C | LT | 0.73 | 19.7 | B | LT | 0.84 | 26.7 | C |
| | WB | TR | 0.87 | 27.4 | C | TR | 0.73 | 16.5 | B | TR | 0.74 | 20.7 | C |
| 23rd Street | NB | LTR | 0.50 | 33.5 | C | LTR | 0.56 | 28.4 | C | LTR | 0.59 | 36.1 | D |
| **Overall Intersection** | | - | **0.75** | **30.5** | **C** | - | **0.66** | **20.3** | **C** | - | **0.74** | **26.5** | **C** |
| **Astoria Boulevard & Crescent Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | TR | 0.99 | 52.8 | D | TR | 0.75 | 21.1 | C | TR | 0.98 | 48.3 | D |
| | WB | LT | 1.04 | 57.7 | E | LT | 1.18 | 102.9 | F | LT | 1.29 | 158.9 | F |
| Crescent Street | SB | LTR | 1.09 | 83.5 | F | LTR | 1.07 | 68.1 | E | LTR | 1.04 | 62.4 | E |
| **Overall Intersection** | | - | **1.06** | **62.7** | **E** | - | **1.13** | **63.5** | **E** | - | **1.19** | **84.8** | **F** |
| **Astoria Boulevard & 31st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LTR | 1.26 | 160.5 | F | LTR | 1.02 | 56.4 | E | LTR | 1.15 | 112.2 | F |
| 31st Street | NB | T | 0.51 | 41.7 | D | T | 0.53 | 33.7 | C | T | 0.51 | 41.5 | D |
| | | R | 0.67 | 16.4 | B | R | 0.53 | 8.8 | A | R | 0.83 | 24.0 | C |
| | SB | T | 0.90 | 34.6 | C | T | 0.64 | 19.7 | B | T | 0.69 | 22.7 | C |
| | | R | 0.56 | 19.6 | B | R | 0.31 | 14.3 | B | R | 0.31 | 15.1 | B |
| **Overall Intersection** | | - | **1.04** | **61.1** | **E** | - | **0.81** | **29.4** | **C** | - | **0.87** | **50.1** | **D** |
| **Astoria Park South/ Hoyt Ave South & 21st Street** | | | | | | | | | | | | | |
| Astoria Park South/ Hoyt Ave South | EB | LTR | 0.68 | 37.3 | D | LTR | 0.36 | 33.3 | C | LTR | 0.51 | 35.2 | D |
| 21st Street | NB | LTR | 0.59 | 15.5 | B | LTR | 0.46 | 13.7 | B | LTR | 1.04 | 51.2 | D |
| | SB | LTR | 1.10 | 72.7 | E | LTR | 0.67 | 17.2 | B | LTR | 1.05 | 58.4 | E |
| **Overall Intersection** | | - | **0.96** | **50.5** | **D** | - | **0.57** | **18.5** | **B** | - | **0.87** | **52.0** | **D** |
| **Hoyt Avenue South & RFK Bridge Off-Ramp/29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | TR | 0.60 | 26.4 | C | TR | 0.50 | 19.5 | B | TR | 0.58 | 26.0 | C |
| RFK Bridge Off-Ramp | SB | T | 0.73 | 33.1 | C | T | 0.43 | 19.9 | B | T | 0.55 | 26.9 | C |
| **Overall Intersection** | | - | **0.66** | **29.3** | **C** | - | **0.47** | **19.7** | **B** | - | **0.56** | **26.3** | **C** |
| **Hoyt Avenue South & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 0.98 | 62.0 | E | LT | 0.65 | 26.4 | C | T | 0.82 | 38.4 | D |
| | | R | 0.58 | 48.3 | D | R | 0.44 | 26.6 | C | R | 0.33 | 30.3 | C |
| 31st Street | NB | TR | 0.21 | 35.4 | D | TR | 0.26 | 27.3 | C | TR | 0.28 | 36.3 | D |
| | SB | T | 0.49 | 11.0 | B | LT | 0.54 | 15.3 | B | T | 0.43 | 16.1 | B |
| **Overall Intersection** | | - | **0.63** | **39.1** | **D** | - | **0.63** | **22.5** | **C** | - | **0.59** | **31.2** | **C** |

## Table 15-52 (cont'd)
## 2022 No Build Traffic Level of Service Analysis
## Signalized Intersections

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **Hoyt Avenue South/Astoria Boulevard & 33rd Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 0.60 | 26.5 | C | LT | 0.71 | 27.5 | C | LT | 0.78 | 36.4 | D |
| Astoria Boulevard | EB | LT | 1.12 | 106.3 | F | LT | 1.05 | 71.2 | E | LT | 1.20 | 136.2 | F |
| 33rd Street | NB | TR | 1.09 | 91.5 | F | TR | 0.80 | 38.4 | D | TR | 1.08 | 84.9 | F |
| | | R | 1.08 | 91.3 | F | R | 0.78 | 42.2 | D | R | 1.07 | 83.3 | F |
| **Overall Intersection** | | - | **0.85** | **69.2** | **E** | - | **0.84** | **44.9** | **D** | - | **0.99** | **82.7** | **F** |
| **Hoyt Avenue North & 21st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | EB | L | 0.02 | 40.4 | D | L | 0.11 | 42.0 | D | L | 0.09 | 41.8 | D |
| | | R | 0.37 | 47.5 | D | R | 0.13 | 42.5 | D | R | 0.17 | 43.1 | D |
| | WB | L | 1.00 | 57.4 | E | L | 0.79 | 41.7 | D | L | 0.79 | 42.3 | D |
| | | TR | 0.25 | 14.8 | B | TR | 0.17 | 14.2 | B | TR | 0.29 | 15.7 | B |
| 21st Street | NB | L | 0.31 | 32.2 | C | L | 0.12 | 25.4 | C | L | 0.18 | 26.2 | C |
| | | T | 1.11 | 111.0 | F | T | 0.80 | 44.9 | D | T | 1.13 | 106.7 | F |
| | SB | TR | 1.03 | 61.3 | E | TR | 0.59 | 34.0 | C | TR | 0.79 | 40.4 | D |
| **Overall Intersection** | | - | **0.92** | **66.2** | **E** | - | **0.65** | **38.8** | **D** | - | **0.81** | **59.4** | **E** |
| **Hoyt Avenue North & 29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 0.77 | 12.8 | B | L | 0.56 | 11.9 | B | L | 0.44 | 12.6 | B |
| | | LT | 0.76 | 12.2 | B | LT | 0.56 | 11.4 | B | LT | 0.66 | 15.7 | B |
| 29th Street | SB | R | 1.07 | 113.1 | F | R | 0.52 | 35.1 | D | R | 0.83 | 52.5 | D |
| **Overall Intersection** | | - | **0.83** | **21.6** | **C** | - | **0.55** | **13.7** | **B** | - | **0.71** | **20.4** | **C** |
| **Hoyt Avenue North & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 1.05 | 109.0 | F | L | 1.05 | 96.7 | F | L | 0.44 | 16.2 | B |
| | | T | 0.97 | 29.2 | C | T | 0.77 | 18.7 | B | T | 0.78 | 22.6 | C |
| | | R | 0.34 | 10.4 | B | R | 0.65 | 21.3 | C | R | 0.71 | 26.6 | C |
| 31st Street | NB | LT | 0.29 | 35.8 | D | DefL | 0.53 | 30.9 | C | LT | 0.29 | 28.3 | C |
| | | - | - | - | - | T | 0.23 | 21.2 | C | - | - | - | - |
| | SB | T | 0.28 | 36.3 | D | T | 0.45 | 24.4 | C | T | 0.15 | 26.6 | C |
| | | R | 0.74 | 57.8 | E | R | 0.26 | 22.2 | C | R | 0.49 | 33.8 | C |
| **Overall Intersection** | | - | **0.91** | **48.9** | **D** | - | **0.68** | **35.0** | **C** | - | **0.66** | **22.8** | **C** |
| **Hoyt Avenue North & 32nd Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | T | 0.53 | 8.8 | A | T | 0.37 | 7.9 | A | T | 0.32 | 9.2 | A |
| Grand Central Parkway Off-Ramp | WB | T | 1.14 | 162.5 | F | T | 1.00 | 35.4 | D | T | 1.02 | 46.8 | D |
| 32nd Street | NB | L | 0.62 | 44.7 | D | L | 0.37 | 28.8 | C | L | 0.55 | 38.8 | D |
| | SB | R | 0.03 | 38.0 | D | R | 0.02 | 25.9 | C | R | 0.02 | 33.3 | C |
| **Overall Intersection** | | - | **1.03** | **46.8** | **D** | - | **0.82** | **27.6** | **C** | - | **0.88** | **36.8** | **D** |
| **24th Avenue & 21st Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | LTR | 0.11 | 30.2 | C | LTR | 0.04 | 29.2 | C | LTR | 0.05 | 29.3 | C |
| | WB | LTR | 0.60 | 41.0 | D | LTR | 0.29 | 33.3 | C | LTR | 0.42 | 36.0 | D |
| 21st Street | NB | LTR | 0.78 | 21.0 | C | LTR | 0.74 | 21.4 | C | LTR | 1.08 | 66.9 | E |
| | SB | LTR | 0.69 | 19.9 | B | LTR | 0.40 | 13.6 | B | LTR | 0.50 | 15.2 | B |
| **Overall Intersection** | | - | **0.72** | **24.3** | **C** | - | **0.59** | **20.6** | **C** | - | **0.86** | **48.3** | **D** |
| **24th Avenue & 29th Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | TR | 0.65 | 15.3 | B | TR | 0.44 | 11.0 | B | TR | 0.78 | 19.8 | B |
| | WB | LT | 0.35 | 9.8 | A | LT | 0.24 | 8.7 | A | LT | 0.34 | 9.5 | A |
| 29th Street | SB | LTR | 0.48 | 19.5 | B | LTR | 0.37 | 18.0 | B | LTR | 0.44 | 18.8 | B |
| **Overall Intersection** | | - | **0.58** | **14.7** | **B** | - | **0.41** | **12.1** | **B** | - | **0.65** | **16.9** | **B** |
| **Broadway & Vernon Boulevard/11th Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.1 | C | LTR | 0.03 | 33.2 | C |
| | WB | LTR | 1.14 | 105.1 | F | LTR | 0.98 | 60.7 | E | LTR | 1.00 | 77.0 | E |
| Vernon Boulevard | NB | LT | 0.26 | 8.0 | A | LT | 0.27 | 8.4 | A | LT | 0.49 | 9.6 | A |
| | | R | 0.11 | 6.8 | A | R | 0.20 | 7.8 | A | R | 0.18 | 6.7 | A |
| | SB | LTR | 1.14 | 102.7 | F | LTR | 0.60 | 28.6 | C | LTR | 0.70 | 32.4 | C |
| 11th Street | NB | LTR | 0.38 | 41.2 | D | LTR | 0.22 | 32.9 | C | LTR | 0.33 | 38.3 | D |
| **Overall Intersection** | | - | **1.12** | **77.1** | **E** | - | **0.77** | **29.9** | **C** | - | **0.91** | **30.5** | **C** |
| **Broadway & 21st Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 1.40 | 234.0 | F | LTR | 1.19 | 141.5 | F | LTR | 1.37 | 211.5 | F |
| | WB | LTR | 1.02 | 80.2 | F | LTR | 0.98 | 70.1 | E | LTR | 1.23 | 150.2 | F |
| 21st Street | NB | LTR | 0.51 | 17.0 | B | LTR | 0.91 | 30.1 | C | LTR | 0.99 | 38.1 | D |
| | SB | LTR | 1.09 | 71.2 | E | LTR | 0.86 | 27.4 | C | LTR | 0.79 | 23.6 | C |
| **Overall Intersection** | | - | **1.19** | **78.9** | **E** | - | **1.01** | **47.1** | **D** | - | **1.12** | **65.6** | **E** |

**Notes:** (1) Control delay is measured in seconds per vehicle; (2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

## Table 15-53
## 2022 No Build Traffic Level of Service Analysis
## Unsignalized Intersections

| | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INTERSECTION & APPROACH** | | **Mvt.** | **V/C** | **Control Delay** | **LOS** | **Mvt.** | **V/C** | **Control Delay** | **LOS** | **Mvt.** | **V/C** | **Control Delay** | **LOS** |
| **27th Avenue & 1st Street** | | | | | | | | | | | | | |
| 27th Avenue | WB | LR | - | 9.3 | A | LR | - | 9.4 | A | LR | - | 8.8 | A |
| 1st Street | NB | TR | - | 7.8 | A | TR | - | 7.9 | A | TR | - | 7.4 | A |
| | SB | LT | - | 8.6 | A | LT | - | 8.3 | A | LT | - | 8.3 | A |
| **Overall Intersection** | | - | **-** | **8.8** | **A** | - | **-** | **8.9** | **A** | - | **-** | **8.3** | **A** |
| **27th Avenue & 2nd Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | LT | - | 7.7 | A | LT | - | 7.8 | A | LT | - | 7.8 | A |
| 2nd Street | SB | LR | - | 12.6 | B | LR | - | 11.4 | B | LR | - | 12.7 | B |
| **Overall Intersection** | | - | **-** | **1.2** | **A** | - | **-** | **1.9** | **A** | - | **-** | **2.1** | **A** |
| **27th Avenue & 4th Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | LT | - | 10.8 | B | LT | - | 10.0 | A | LT | - | 10.5 | B |
| | WB | TR | - | 14.0 | B | TR | - | 12.5 | B | TR | - | 13.6 | B |
| 4th Street | SB | LR | - | 11.6 | B | LR | - | 11.0 | B | LR | - | 10.7 | B |
| **Overall Intersection** | | - | **-** | **12.5** | **B** | - | **-** | **11.4** | **B** | - | **-** | **12.0** | **B** |
| **Astoria Boulevard & 18th Street** | | | | | | | | | | | | | |
| 18th Street | SB | LR | - | 62.4 | F | LR | - | 15.1 | C | LR | - | 19.6 | C |
| **Overall Intersection** | | - | **-** | **10.0** | **A** | - | **-** | **3.8** | **A** | - | **-** | **4.2** | **A** |
| **Astoria Boulevard & 28th Street** | | | | | | | | | | | | | |
| 28th Street | NB | LR | - | 37.5 | E | LR | - | 24.3 | C | LR | - | 23.5 | C |
| **Overall Intersection** | | - | **-** | **2.8** | **A** | - | **-** | **2.2** | **A** | - | **-** | **1.7** | **A** |
| **Astoria Boulevard & 30th Street** | | | | | | | | | | | | | |
| Astoria Boulevard | WB | LT | - | 15.4 | C | LT | - | 9.8 | A | LT | - | 11.8 | B |
| **Overall Intersection** | | - | **-** | **2.2** | **A** | - | **-** | **0.8** | **A** | - | **-** | **1.5** | **A** |

**Notes:** (1) Control delay is measured in seconds per vehicle; (2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

## Table 15-54
## 2022 Build Traffic Level of Service Analysis
## Signalized Intersections

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **27th Avenue & 8th Street** | | | | | | | | | | | | | |
| 27th Avenue | EB | TR | 1.62 | 309.9 | F | TR | 1.19 | 124.1 | F | TR | 1.05 | 70.2 | E |
| | WB | LT | 2.03 | 495.4 | F | LT | 1.10 | 95.1 | F | LT | 1.20 | 130.4 | F |
| 8th Street | NB | L | 0.55 | 27.7 | C | L | 0.44 | 24.8 | C | L | 0.60 | 29.0 | C |
| | | R | 0.48 | 28.8 | C | R | 0.72 | 46.6 | D | R | 0.73 | 45.4 | D |
| **Overall Intersection** | | - | **1.43** | **306.9** | **F** | - | **1.00** | **91.6** | **F** | - | **1.01** | **80.6** | **F** |
| **Vernon Boulevard/Main Avenue & 8th Street/Welling Court** | | | | | | | | | | | | | |
| Vernon Boulevard | EB | LT | 1.23 | 141.8 | F | LT | 1.01 | 68.1 | E | LT | 1.41 | 218.3 | F |
| Main Street | WB | TR | 0.08 | 21.5 | C | TR | 0.04 | 21.1 | C | TR | 0.06 | 21.3 | C |
| Welling Court | NB | LTR | 0.27 | 31.7 | C | LTR | 0.15 | 29.1 | C | LTR | 0.12 | 28.7 | C |
| 8th Street | SB | R | 1.21 | 141.1 | F | R | 0.83 | 44.3 | D | R | 0.76 | 39.7 | D |
| **Overall Intersection** | | - | **0.53** | **129.7** | **F** | - | **0.41** | **54.4** | **D** | - | **0.54** | **144.2** | **F** |
| **Astoria Boulevard & 8th Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LR | 0.87 | 57.2 | E | LR | 0.31 | 29.6 | C | LR | 0.72 | 42.9 | D |
| | WB | L | 0.33 | 29.8 | C | L | 0.36 | 30.6 | C | L | 0.25 | 28.6 | C |
| | | TR | 0.37 | 30.8 | C | TR | 0.34 | 30.3 | C | TR | 0.44 | 32.3 | C |
| 8th Street | NB | LT | 0.51 | 17.7 | B | LT | 0.50 | 17.9 | B | LT | 0.99 | 45.4 | D |
| | SB | TR | 0.81 | 27.6 | C | TR | 0.45 | 17.2 | B | TR | 0.45 | 17.3 | B |
| **Overall Intersection** | | - | **0.83** | **32.9** | **C** | - | **0.44** | **22.4** | **C** | - | **0.88** | **34.9** | **C** |
| **Astoria Boulevard & 21st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | L | 1.00 | 81.7 | F | L | 0.36 | 27.6 | C | L | 0.58 | 38.0 | D |
| | | TR | 1.14 | 112.5 | F | TR | 0.56 | 36.0 | D | TR | 0.83 | 43.0 | D |
| | WB | L | 1.52 | 289.2 | F | L | 0.99 | 74.6 | E | L | 0.93 | 68.1 | E |
| | | TR | 0.64 | 35.3 | D | TR | 0.41 | 32.3 | C | TR | 0.62 | 35.8 | D |
| 21st Street | NB | LTR | 1.09 | 86.6 | F | LTR | 0.88 | 30.3 | C | LTR | 1.92 | 445.5 | F |
| | SB | LTR | 1.12 | 87.3 | F | LTR | 0.86 | 30.2 | C | LTR | 1.33 | 184.3 | F |
| **Overall Intersection** | | - | **1.21** | **102.6** | **F** | - | **0.94** | **35.7** | **D** | - | **1.45** | **202.8** | **F** |
| **Astoria Boulevard & 23rd Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LT | 1.31 | 172.3 | F | LT | 0.85 | 25.4 | C | LT | 1.00 | 46.9 | D |
| | WB | TR | 0.91 | 29.8 | C | TR | 0.79 | 17.6 | B | TR | 0.87 | 24.4 | C |
| 23rd Street | NB | LTR | 0.50 | 33.5 | C | LTR | 0.56 | 28.4 | C | LTR | 0.59 | 36.1 | D |
| **Overall Intersection** | | - | **1.00** | **98.9** | **F** | - | **0.74** | **23.0** | **C** | - | **0.84** | **36.8** | **D** |
| **Astoria Boulevard & Crescent Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | TR | 1.38 | 203.3 | F | TR | 0.87 | 27.8 | C | TR | 1.16 | 106.3 | F |
| | WB | LT | 1.27 | 153.3 | F | LT | 1.33 | 171.6 | F | LT | 1.63 | 309.2 | F |
| Crescent Street | SB | LTR | 1.09 | 83.5 | F | LTR | 1.07 | 68.1 | E | LTR | 1.04 | 62.4 | E |
| **Overall Intersection** | | - | **1.27** | **159.1** | **F** | - | **1.23** | **87.6** | **F** | - | **1.40** | **156.5** | **F** |
| **Astoria Boulevard & 31st Street** | | | | | | | | | | | | | |
| Astoria Boulevard | EB | LTR | 1.78 | 392.8 | F | LTR | 1.18 | 117.7 | F | LTR | 1.37 | 207.1 | F |
| 31st Street | NB | T | 0.51 | 41.7 | D | T | 0.53 | 33.7 | C | T | 0.51 | 41.5 | D |
| | | R | 0.67 | 16.4 | B | R | 0.53 | 8.8 | A | R | 0.83 | 24.0 | C |
| | SB | T | 0.90 | 34.6 | C | T | 0.64 | 19.7 | B | T | 0.69 | 22.7 | C |
| | | R | 0.56 | 19.6 | B | R | 0.31 | 14.3 | B | R | 0.31 | 15.1 | B |
| **Overall Intersection** | | - | **1.24** | **145.7** | **F** | - | **0.88** | **51.1** | **D** | - | **0.96** | **84.4** | **F** |
| **Astoria Park South/ Hoyt Ave South & 21st Street** | | | | | | | | | | | | | |
| Astoria Park South/ Hoyt Ave South | EB | LTR | 0.83 | 40.0 | D | LTR | 0.41 | 34.2 | C | LTR | 0.58 | 36.6 | D |
| | NB | LTR | 0.62 | 16.2 | B | LTR | 0.47 | 13.8 | B | LTR | 1.16 | 101.0 | F |
| 21st Street | SB | LTR | 1.16 | 100.0 | F | LTR | 0.73 | 18.8 | B | LTR | 1.24 | 136.3 | F |
| **Overall Intersection** | | - | **1.06** | **65.4** | **E** | - | **0.62** | **19.8** | **B** | - | **1.02** | **108.0** | **F** |
| **Hoyt Avenue South & RFK Bridge Off-Ramp/29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | TR | 0.65 | 27.6 | C | TR | 0.52 | 19.8 | B | TR | 0.61 | 26.6 | C |
| RFK Bridge Off-Ramp | SB | T | 0.77 | 34.8 | D | T | 0.47 | 20.4 | C | T | 0.62 | 28.9 | C |
| **Overall Intersection** | | - | **0.71** | **30.6** | **C** | - | **0.49** | **20.0** | **C** | - | **0.61** | **27.5** | **C** |
| **Hoyt Avenue South & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 1.04 | 77.9 | E | LT | 0.66 | 26.7 | C | T | 0.84 | 39.4 | D |
| | | R | 0.58 | 48.3 | D | R | 0.44 | 26.6 | C | R | 0.33 | 30.3 | C |
| 31st Street | NB | TR | 0.21 | 35.4 | D | TR | 0.26 | 27.3 | C | TR | 0.28 | 36.3 | D |
| | SB | T | 0.49 | 11.0 | B | LT | 0.59 | 15.3 | B | T | 0.43 | 16.1 | B |
| **Overall Intersection** | | - | **0.64** | **47.8** | **D** | - | **0.63** | **22.6** | **C** | - | **0.59** | **31.9** | **C** |

**Table 15-54 (cont'd)**
**2022 Build Traffic Level of Service Analysis**
**Signalized Intersections**

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **Hoyt Avenue South/Astoria Boulevard & 33rd Street** | | | | | | | | | | | | | |
| Hoyt Avenue South | EB | LT | 0.63 | 27.2 | C | LT | 0.73 | 27.8 | C | LT | 0.81 | 37.1 | D |
| Astoria Boulevard | EB | LT | 1.39 | 221.7 | F | LT | 1.15 | 108.7 | F | LT | 1.32 | 191.1 | F |
| 33rd Street | NB | TR | 1.09 | 91.5 | F | TR | 0.80 | 38.4 | D | TR | 1.08 | 84.9 | F |
| | | R | 1.08 | 91.3 | F | R | 0.78 | 42.2 | D | R | 1.07 | 83.3 | F |
| **Overall Intersection** | | - | **0.95** | **115.8** | **F** | - | **0.87** | **58.9** | **E** | - | **1.04** | **103.3** | **F** |
| **Hoyt Avenue North & 21st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | EB | L | 0.02 | 40.4 | D | L | 0.11 | 42.0 | D | L | 0.09 | 41.8 | D |
| | | R | 0.37 | 47.5 | D | R | 0.13 | 42.5 | D | R | 0.17 | 43.1 | D |
| | WB | L | 1.09 | 86.1 | F | L | 0.89 | 47.6 | D | L | 1.04 | 75.6 | E |
| | | TR | 0.25 | 14.8 | B | TR | 0.17 | 14.2 | B | TR | 0.29 | 15.7 | B |
| 21st Street | NB | L | 0.31 | 32.3 | C | L | 0.12 | 25.4 | C | L | 0.18 | 26.3 | C |
| | | T | 1.23 | 158.2 | F | T | 0.84 | 48.3 | D | T | 1.17 | 124.3 | F |
| | SB | TR | 1.04 | 63.1 | E | TR | 0.61 | 34.4 | C | TR | 0.81 | 41.6 | D |
| **Overall Intersection** | | - | **1.00** | **90.6** | **F** | - | **0.71** | **42.7** | **D** | - | **0.92** | **77.3** | **E** |
| **Hoyt Avenue North & 29th Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 0.79 | 13.3 | B | L | 0.57 | 12.0 | B | L | 0.45 | 12.7 | B |
| | | LT | 0.80 | 13.1 | B | LT | 0.59 | 11.8 | B | LT | 0.77 | 18.2 | C |
| 29th Street | SB | R | 1.17 | 147.4 | F | R | 0.54 | 35.7 | D | R | 0.86 | 54.8 | D |
| **Overall Intersection** | | - | **0.86** | **25.9** | **C** | - | **0.58** | **14.1** | **B** | - | **0.79** | **21.9** | **C** |
| **Hoyt Avenue North & 31st Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | L | 1.05 | 109.0 | F | L | 1.05 | 96.7 | F | L | 0.44 | 16.2 | B |
| | | T | 1.01 | 38.8 | D | T | 0.81 | 19.9 | B | T | 0.88 | 26.4 | C |
| | | R | 0.34 | 10.4 | B | R | 0.65 | 21.3 | C | R | 0.71 | 26.6 | C |
| 31st Street | NB | LT | 0.29 | 35.8 | D | DefL | 0.53 | 30.9 | C | LT | 0.29 | 28.3 | C |
| | | - | - | - | - | T | 0.23 | 21.2 | C | - | - | - | - |
| | SB | T | 0.28 | 36.3 | D | T | 0.45 | 24.4 | C | T | 0.15 | 26.6 | C |
| | | R | 0.74 | 57.8 | E | R | 0.26 | 22.2 | C | R | 0.49 | 33.8 | C |
| **Overall Intersection** | | - | **0.94** | **54.5** | **D** | - | **0.70** | **35.2** | **D** | - | **0.72** | **25.1** | **C** |
| **Hoyt Avenue North & 32nd Street** | | | | | | | | | | | | | |
| Hoyt Avenue North | WB | T | 0.53 | 8.8 | A | T | 0.37 | 7.9 | A | T | 0.32 | 9.2 | A |
| Grand Central Parkway Off-Ramp | WB | T | 1.18 | 180.0 | F | T | 1.05 | 49.7 | D | T | 1.16 | 97.1 | F |
| 32nd Street | NB | L | 0.67 | 45.5 | D | L | 0.38 | 29.0 | C | L | 0.56 | 39.0 | D |
| | SB | R | 0.03 | 38.0 | D | R | 0.02 | 25.9 | C | R | 0.02 | 33.3 | C |
| **Overall Intersection** | | - | **1.07** | **109.4** | **F** | - | **0.86** | **36.9** | **D** | - | **0.99** | **69.1** | **E** |
| **24th Avenue & 21st Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | LTR | 0.11 | 30.2 | C | LTR | 0.04 | 29.2 | C | LTR | 0.05 | 29.3 | C |
| | WB | LTR | 0.60 | 41.0 | D | LTR | 0.29 | 33.3 | C | LTR | 0.42 | 36.0 | D |
| 21st Street | NB | LTR | 0.86 | 25.2 | C | LTR | 0.77 | 22.8 | C | LTR | 1.12 | 81.9 | F |
| | SB | LTR | 0.71 | 20.3 | C | LTR | 0.41 | 13.8 | B | LTR | 0.52 | 15.5 | B |
| **Overall Intersection** | | - | **0.78** | **26.1** | **C** | - | **0.61** | **21.5** | **C** | - | **0.88** | **57.3** | **E** |
| **24th Avenue & 29th Street** | | | | | | | | | | | | | |
| 24th Avenue | EB | TR | 0.72 | 17.6 | B | TR | 0.46 | 11.3 | B | TR | 0.81 | 21.5 | C |
| | WB | LT | 0.35 | 9.8 | A | LT | 0.24 | 8.7 | A | LT | 0.34 | 9.6 | A |
| 29th Street | SB | LTR | 0.48 | 19.5 | B | LTR | 0.37 | 18.0 | B | LTR | 0.44 | 18.8 | B |
| **Overall Intersection** | | - | **0.62** | **15.9** | **B** | - | **0.42** | **12.2** | **B** | - | **0.67** | **17.9** | **B** |
| **Broadway & Vernon Boulevard/11th Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.1 | C | LTR | 0.03 | 33.2 | C |
| | WB | LTR | 1.18 | 121.6 | F | LTR | 1.02 | 71.0 | E | LTR | 1.10 | 108.2 | F |
| Vernon Boulevard | NB | LT | 0.28 | 8.2 | A | LT | 0.29 | 8.6 | A | LT | 0.53 | 10.3 | B |
| | | R | 0.11 | 6.8 | A | R | 0.20 | 7.8 | A | R | 0.18 | 6.7 | A |
| | SB | LTR | 1.40 | 214.1 | F | LTR | 0.68 | 31.1 | C | LTR | 0.96 | 58.2 | E |
| 11th Street | NB | LTR | 0.38 | 41.2 | D | LTR | 0.22 | 32.9 | C | LTR | 0.33 | 38.3 | D |
| **Overall Intersection** | | - | **1.27** | **135.8** | **F** | - | **0.83** | **33.5** | **C** | - | **1.06** | **44.2** | **D** |
| **Broadway & 21st Street** | | | | | | | | | | | | | |
| Broadway | EB | LTR | 1.48 | 269.5 | F | LTR | 1.22 | 155.3 | F | LTR | 1.45 | 247.0 | F |
| | WB | LTR | 1.08 | 98.3 | F | LTR | 1.02 | 78.7 | E | LTR | 1.33 | 195.5 | F |
| 21st Street | NB | LTR | 0.53 | 17.3 | B | LTR | 0.93 | 31.5 | C | LTR | 1.02 | 45.9 | D |
| | SB | LTR | 1.13 | 88.4 | F | LTR | 0.88 | 28.6 | C | LTR | 0.81 | 24.6 | C |
| **Overall Intersection** | | - | **1.24** | **95.5** | **F** | - | **1.03** | **50.9** | **D** | - | **1.16** | **78.8** | **E** |

**Notes:** (1) Control delay is measured in seconds per vehicle; (2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

Denotes a significant impact.

## Table 15-55
## 2022 Build Traffic Level of Service Analysis
## Unsignalized Intersections

| INTERSECTION & APPROACH | | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS | Mvt. | V/C | Control Delay | LOS |
| **27TH AVENUE & 1ST STREET** | | | | | | | | | | | | | |
| 27th Avenue | WB | LR | - | 10.9 | B | LR | - | 11.9 | B | LR | - | 14.1 | A |
| 1st Street | NB | TR | - | 8.7 | A | TR | - | 8.9 | A | TR | - | 8.7 | B |
| **Overall Intersection** | | - | **-** | **10.1** | **B** | - | **-** | **11.1** | **B** | - | **-** | **13.0** | **B** |
| **27TH AVENUE & 2ND STREET** | | | | | | | | | | | | | |
| 2nd Street | SB | LR | - | 61.2 | F | LR | - | 17.1 | C | LR | - | 62.1 | F |
| **Overall Intersection** | | - | **-** | **26.2** | **D** | - | **-** | **5.3** | **A** | - | **-** | **19.3** | **C** |
| **27TH AVENUE & 4TH STREET** | | | | | | | | | | | | | |
| 27th Avenue | EB | LT | - | 57.9 | F | LT | - | 15.1 | C | LT | - | 22.6 | C |
| | WB | TR | - | 31.6 | D | TR | - | 23.7 | C | TR | - | 120.4 | F |
| 4th Street | SB | LR | - | 14.7 | B | LR | - | 13.0 | B | LR | - | 13.4 | B |
| **Overall Intersection** | | - | **-** | **42.0** | **E** | - | **-** | **18.7** | **C** | - | **-** | **74.1** | **F** |
| **ASTORIA BOULEVARD & 18TH STREET** | | | | | | | | | | | | | |
| 18th Street | SB | LR | - | 518.1 | F | LR | - | 20.8 | C | LR | - | 48.9 | E |
| **Overall Intersection** | | - | **-** | **114.8** | **F** | - | **-** | **5.4** | **A** | - | **-** | **9.8** | **A** |
| **ASTORIA BOULEVARD & 28TH STREET** | | | | | | | | | | | | | |
| 28th Street | NB | LR | - | 115.7 | F | LR | - | 31.5 | D | LR | - | 35.3 | E |
| **Overall Intersection** | | - | **-** | **7.3** | **A** | - | **-** | **2.6** | **A** | - | **-** | **2.3** | **A** |
| **ASTORIA BOULEVARD & 30TH STREET** | | | | | | | | | | | | | |
| Astoria Boulevard | WB | LT | - | 28.1 | D | LT | - | 10.4 | B | LT | - | 13.6 | B |
| **Overall Intersection** | | - | **-** | **3.3** | **A** | - | **-** | **0.8** | **A** | - | **-** | **1.5** | **A** |

**Notes:**
(1) Control delay is measured in seconds per vehicle.
(2) Overall intersection V/C ratio is the critical lane groups' V/C ratio.

Denotes a significant impact.

## Table 15-56
## 2011 Existing Conditions Sidewalk Analysis

| Intersection No. | Location | Sidewalk | Effective Width (ft) | 1 Hour Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 1067 | 2.02 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1159 | 3.02 | C |
| | | West | 6 | 1476 | 5.13 | C |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1037 | 2.16 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 878 | 1.47 | B |
| | | South | 13 | 1945 | 3.12 | C |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 19 | 0.20 | A |
| | | South | 9 | 13 | 0.07 | A |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 68 | 0.26 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 42 | 0.11 | A |
| | | South | 10 | 10 | 0.02 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 17 | 0.04 | A |
| | | West | 7 | 9 | 0.03 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 114 | 0.44 | A |
| | | West | 6 | 373 | 1.23 | B |
| **Midday Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 427 | 0.81 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 554 | 1.25 | B |
| | | West | 6 | 551 | 1.91 | B |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 932 | 1.67 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 486 | 0.86 | B |
| | | South | 13 | 1149 | 1.84 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 36 | 0.27 | A |
| | | South | 9 | 24 | 0.10 | A |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 42 | 0.19 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 17 | 0.04 | A |
| | | South | 10 | 14 | 0.03 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 12 | 0.03 | A |
| | | West | 7 | 8 | 0.02 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 67 | 0.27 | A |
| | | West | 6 | 219 | 0.70 | B |
| **PM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 947 | 1.64 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1051 | 2.74 | B |
| | | West | 6 | 1796 | 6.24 | D |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1474 | 2.65 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 739 | 1.45 | B |
| | | South | 13 | 1672 | 2.53 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 41 | 0.18 | A |
| | | South | 9 | 26 | 0.09 | A |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 73 | 0.30 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 1 | 0.00 | A |
| | | South | 10 | 48 | 0.10 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 13 | 0.03 | A |
| | | West | 7 | 8 | 0.02 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 107 | 0.43 | A |
| | | West | 6 | 389 | 1.35 | B |

## Table 15-57
## 2011 Existing Conditions Corner Analyis

| Intersection No. | Location | Corner | AM Peak Period | | Midday Peak Period | | PM Peak Period | |
|---|---|---|---|---|---|---|---|---|
| | | | SFP | LOS | SFP | LOS | SFP | LOS |
| 1 | 30th Avenue and 31st Street | Northwest | 238.4 | A | 370.9 | A | 325.0 | A |
| | | Southwest | 139.2 | A | 234.5 | A | 142.4 | A |
| | | Southeast | 185.3 | A | 225.1 | A | 176.2 | A |
| 3 | 27th Avenue and 8th Street | Southwest | 949.1 | A | 2141.0 | A | 1649.8 | A |
| | | Southeast | 687.7 | A | 1238.0 | A | 712.1 | A |

**Notes:** SFP = square feet per pedestrian

## Table 15-58
## 2011 Existing Conditions Crosswalk Analysis

| Intersection No. | Location | Crosswalk | Street Width (feet) | Crosswalk Width (feet) | Conditions with conflicting vehicles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | AM Peak Period | | | Midday Peak Period | | | PM Peak Period | | |
| | | | | | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS |
| 3 | 27th Avenue and 8th Street | South | 50 | 13 | 93 | 468.7 | A | 50 | 881.1 | A | 53 | 805.8 | A |
| | | West | 50 | 12 | 32 | 587.6 | A | 14 | 1456.2 | A | 19 | 979.7 | A |

**Notes:** SFP = square feet per pedestrian

## Table 15-59
## 2022 No Build Condition Sidewalk Analysis

| Intersection No. | Location | Sidewalk | Effective Width (ft) | 1 Hour Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 1235 | 2.34 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1348 | 3.51 | C |
| | | West | 6 | 1658 | 5.76 | C |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1221 | 2.54 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 1038 | 1.73 | B |
| | | South | 13 | 2146 | 3.44 | C |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 130 | 1.08 | B |
| | | South | 9 | 248 | 0.66 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 71 | 0.27 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 43 | 0.11 | A |
| | | South | 10 | 10 | 0.02 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 18 | 0.04 | A |
| | | West | 7 | 9 | 0.03 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 147 | 0.57 | B |
| | | West | 6 | 490 | 1.62 | B |
| **Midday Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 606 | 1.15 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 643 | 1.45 | B |
| | | West | 6 | 629 | 2.18 | B |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1036 | 1.86 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 668 | 1.18 | B |
| | | South | 13 | 1252 | 2.01 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 429 | 2.85 | B |
| | | South | 9 | 245 | 0.83 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 44 | 0.20 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 17 | 0.04 | A |
| | | South | 10 | 14 | 0.03 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 12 | 0.03 | A |
| | | West | 7 | 8 | 0.02 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 117 | 0.47 | A |
| | | West | 6 | 275 | 0.88 | B |
| **PM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 1302 | 2.26 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1174 | 3.06 | C |
| | | West | 6 | 1938 | 6.73 | D |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1614 | 2.90 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 1086 | 2.14 | B |
| | | South | 13 | 1809 | 2.74 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 288 | 2.30 | B |
| | | South | 9 | 219 | 0.61 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 76 | 0.31 | A |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 1 | 0.00 | A |
| | | South | 10 | 50 | 0.10 | A |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 14 | 0.03 | A |
| | | West | 7 | 8 | 0.02 | A |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 8 | 0.02 | A |
| | | West | 8 | 8 | 0.02 | A |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 209 | 0.83 | B |
| | | West | 6 | 462 | 1.60 | B |

## Table 15-60
## 2022 No Build Condition Corner Analyis

| Intersection No. | Location | Corner | AM Peak Period | | Midday Peak Period | | PM Peak Period | |
|---|---|---|---|---|---|---|---|---|
| | | | SFP | LOS | SFP | LOS | SFP | LOS |
| 1 | 30th Avenue and 31st Street | Northwest | 204.7 | A | 290.1 | A | 227.3 | A |
| | | Southwest | 125.2 | A | 215.1 | A | 131.6 | A |
| | | Southeast | 161.2 | A | 204.2 | A | 160.3 | A |
| 3 | 27th Avenue and 8th Street | Southwest | 266.4 | A | 156.5 | A | 196.9 | A |
| | | Southeast | 224.8 | A | 135.6 | A | 140.5 | A |

**Notes:** SFP = square feet per pedestrian

## Table 15-61
## 2022 No Build Condition Crosswalk Analysis

| Intersection No. | Location | Crosswalk | Street Width (feet) | Crosswalk Width (feet) | Conditions with conflicting vehicles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | AM Peak Period | | | Midday Peak Period | | | PM Peak Period | | |
| | | | | | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS |
| 3 | 27th Avenue and 8th Street | South | 50 | 13 | 231 | 176.4 | A | 285 | 147.0 | A | 226 | 180.2 | A |
| | | West | 50 | 12 | 227 | 77.9 | A | 441 | 42.0 | B | 317 | 53.0 | B |

**Notes:** SFP = square feet per pedestrian

## Table 15-62
## 2022 Build Condition Sidewalk Analysis

| Intersection No. | Location | Sidewalk | Effective Width (ft) | 1 Hour Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 1502 | 2.84 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1665 | 4.34 | C |
| | | West | 6 | 1930 | 6.70 | D |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1538 | 3.20 | C |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 1305 | 2.18 | B |
| | | South | 13 | 2418 | 3.88 | C |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 204 | 1.53 | B |
| | | South | 9 | 350 | 0.96 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 143 | 0.52 | B |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 333 | 0.87 | B |
| | | South | 10 | 963 | 2.01 | B |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 288 | 0.67 | B |
| | | West | 7 | 495 | 1.47 | B |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 145 | 0.34 | A |
| | | West | 8 | 490 | 1.28 | B |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 206 | 0.80 | B |
| | | West | 6 | 717 | 2.37 | B |
| **Midday Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 890 | 1.69 | B |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 757 | 1.71 | B |
| | | West | 6 | 727 | 2.52 | B |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1150 | 2.06 | B |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 952 | 1.68 | B |
| | | South | 13 | 1350 | 2.16 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 643 | 4.12 | C |
| | | South | 9 | 382 | 1.37 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 270 | 1.23 | B |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 505 | 1.32 | B |
| | | South | 10 | 396 | 0.83 | B |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 289 | 0.67 | B |
| | | West | 7 | 486 | 1.45 | B |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 247 | 0.57 | B |
| | | West | 8 | 471 | 1.23 | B |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 201 | 0.80 | B |
| | | West | 6 | 356 | 1.14 | B |
| **PM Peak Period** | | | | | | |
| 1 | 31st Street between 30th Avenue and Newtown Avenue | West | 11 | 1972 | 3.42 | C |
| | 31st Street between 30th Avenue and 30th Drive | East | 8 | 1336 | 3.48 | C |
| | | West | 6 | 2077 | 7.21 | D |
| | 30th Avenue between 31st Street and 32nd Street | South | 10 | 1776 | 3.19 | C |
| 2 | 30th Avenue between 31st Street and 30th Street | North | 10 | 1756 | 3.45 | C |
| | | South | 13 | 1948 | 2.95 | B |
| 3 | 27th Avenue between 4th Street and 8th Street | North | 6 | 432 | 3.28 | C |
| | | South | 9 | 337 | 1.04 | B |
| 4 | 27th Avenue between 4th Street and 3rd Street | North | 9 | 226 | 1.02 | B |
| 5 | 27th Avenue between 1st Street and 2nd Street | North | 8 | 942 | 2.45 | B |
| | | South | 10 | 585 | 1.22 | B |
| | 1st Street between 27th Avenue and 26th Avenue | East | 9 | 375 | 0.87 | B |
| | | West | 7 | 648 | 1.93 | B |
| | 1st Street between 27th Avenue and Astoria Boulevard | East | 9 | 238 | 0.55 | B |
| | | West | 8 | 638 | 1.66 | B |
| 6 | 21st Street between 41st Avenue and 40th Avenue | East | 5 | 417 | 1.66 | B |
| | | West | 6 | 578 | 2.01 | B |

## Table 15-63
## 2022 Build Condition Corner Analyis

| Intersection No. | Location | Corner | AM Peak Period | | Midday Peak Period | | PM Peak Period | |
|---|---|---|---|---|---|---|---|---|
| | | | SFP | LOS | SFP | LOS | SFP | LOS |
| 1 | 30th Avenue and 31st Street | Northwest | 166.7 | A | 219.1 | A | 144.3 | A |
| | | Southwest | 110.0 | A | 200.0 | A | 122.6 | A |
| | | Southeast | 133.5 | A | 186.7 | A | 145.4 | A |
| 3 | 27th Avenue and 8th Street | Southwest | 202.0 | A | 99.8 | A | 125.5 | A |
| | | Southeast | 192.26 | A | 99.76 | A | 110.45 | A |

**Notes:** SFP = square feet per pedestrian

## Table 15-64
## 2022 Build Condition Crosswalk Analysis

| Intersection No. | Location | Crosswalk | Street Width (feet) | Crosswalk Width (feet) | Conditions with conflicting vehicles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | AM Peak Period | | | Midday Peak Period | | | PM Peak Period | | |
| | | | | | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS | 2-way Volume | SFP | LOS |
| 3 | 27th Avenue and 8th Street | South | 50 | 13 | 297 | 128.8 | A | 485 | 82.5 | A | 374 | 103.7 | A |
| | | West | 50 | 12 | 269 | 64.2 | A | 590 | 30.1 | C | 422 | 37.0 | C |

**Notes:** SFP = square feet per pedestrian

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