# Chapter 14: Transportation

## A. INTRODUCTION

As described in detail in Chapter 1, "Project Description," Cornell is seeking a number of discretionary approvals (the proposed actions) to support and permit the development of the Cornell NYC Tech project on Roosevelt Island. The proposed development would include academic space, student and faculty housing, an Executive Education Center with hotel conference facilities, corporate co-location space, and university-oriented retail. The project would also result in 2.5 acres of new publicly accessible open space. For purposes of the EIS, the project is assumed to result in a reasonable worst-case development of approximately 2.1 million gross square feet (gsf) at Full Build.

As discussed in Chapter 1, "Project Description," the proposed Cornell NYC Tech project would be built out over an approximately 27-year period; therefore, the EIS uses 2018 and 2038 as analysis years, as those represent the first full years of operation for Phase 1 and Full Build of the project.

The transportation analyses consider both the 2018 and 2038 analysis years to identify potential impacts and determine feasible mitigation measures that would be appropriate in both analysis years.

This chapter examines the potential effects of the proposed Cornell NYC Tech project on nearby transportation systems on Roosevelt Island and in Queens, New York. 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 Action and With Action 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*.

As detailed in this chapter and summarized in Section I, "Conclusions," the proposed project would result in significant adverse impacts at several study area intersections, segments of the bus service for the Q102 route and the Red Bus on Roosevelt Island, and two sidewalk locations in both the 2018 and 2038 analysis years.

## B. CEQR SCREENING ASSESSMENT

The *CEQR Technical Manual* recommends a two-tier screening procedure for the preparation of a "preliminary analysis" to determine if quantified operational analyses of transportation conditions are warranted. As discussed in the following sections, the preliminary analysis begins with a trip generation analysis (Level 1) to estimate the volumes of person and vehicle trips attributable to the proposed project. According to the *CEQR Technical Manual*, if the proposed project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak

hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (Level 2) are performed to estimate the incremental trips for specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed project would generate 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a pedestrian element, then further quantified operational 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 analysis thresholds to determine if a Level 2 screening and/or quantified operational analyses may be warranted.

### *BACKGROUND*

It is anticipated that the development program would be completed in two stages, with the first year of full occupancy for Phase 1 in 2018 and for the Full Build in 2038. As described in Chapter 1, "Project Description," the reasonable worst-case development scenario for analysis in the EIS, which reflects the highest potential trip generation, would include 620,000 gsf of academic facilities, 500,000 gsf of corporate co-location space, 800,000 gsf for housing (1,094 total dwelling units), a 170,000 gsf Executive Education Center (225 hotel rooms with 25,000 gsf of conference space), and 25,000 gsf of university retail use. A summary of the above breakdown separated into Phase 1 and Full Build is shown in **Table 14-1**.

**Table 14-1**
**Reasonable Worst-Case Development Scenario Program (GSF)**

| Land Use | Phase 1 (2018) | Full Build Increment | Full Build (2038) |
|---|---|---|---|
| Academic Facilities | 200,000 | 420,000 | 620,000 |
| Corporate Co-location | 100,000 | 400,000 | 500,000 |
| Executive Education Center [(1)] | 170,000 | -- | 170,000 |
| Housing Facilities [(2) (3)] | 300,000 | 500,000 | 800,000 |
| University Retail | 10,000 | 15,000 | 25,000 |
| Total | 780,000 | 1,335,000 | 2,115,000 |

**Notes:**
(1) The proposed Executive Education Center is projected to include 225 hotel rooms with conference facilities of approximately 25,000 gross square feet.
(2) Phase 1 includes a projected housing allowance of 442 dwelling units (104 units of faculty/postdoctoral housing and 338 units of student housing).
(3) Full Build includes an additional projected housing allowance of 652 dwelling units (142 additional units of faculty/postdoctoral housing and 510 units of student housing).

For travel demand projection purposes, the proposed Cornell NYC Tech project can be categorized into the following trip-generating land uses;

- Academic, including faculty, graduate students, researchers, postdoctoral fellows, and administrative/support staff;

- Corporate co-location space;
- Executive Education Center;
- University retail; and
- University housing (external campus trips).

A portion of the campus population would live on campus (making internal campus trips); however, the proposed project-generated trips that would be subject to study would include those trips made between the campus and locations on and off Roosevelt Island. Chapter 1, "Project Description," provides information on the academic population expected to be housed on campus (see Table 1-3), and a summary of the anticipated residential status (on- and off-campus) for the academic population is provided in **Table 14-2**.

**Table 14-2**
**Projected Academic Population Residents**

| Population | Phase 1 | | | Phase 2 Full Build | | |
|---|---|---|---|---|---|---|
| | On-Campus | Off-Campus | Total | On-Campus | Off-Campus | Total |
| Administrative Staff | -- | 72 | 72 | -- | 131 | 131 |
| Leadership | 2 | 0 | 2 | 3 | 0 | 3 |
| Faculty and Visitors/Adjuncts | 77 | 34 | 111 | 180 | 139 | 319 |
| Postdoctoral Fellows | 30 | 7 | 37 | 76 | 49 | 125 |
| Ph.D. Candidates | 208 | 52 | 260 | 450 | 300 | 750 |
| Master's Students | 255 | 45 | 300 | 942 | 808 | 1,750 |
| Funded Researchers | -- | 45 | 45 | -- | 125 | 125 |
| Total | 572 | 255 | 827 | 1,651 | 1,552 | 3,203 |

The transportation planning assumptions and projected person and vehicle trips are described below.

*TRANSPORTATION PLANNING ASSUMPTIONS*

*Academic and Corporate Co-Location Use*

Trip generation estimates for the academic component for person and vehicle trips were based on Cornell's projections and information developed for the *Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development Project FEIS*, dated 2007 (*Manhattanville FEIS*). The following academic user groups were identified:

- Graduate Students, including students pursuing master's and Ph.D. degrees;
- Academic Researchers, including employees supporting the research programs;
- Corporate co-location workers, includes employees or tenants of the corporate co-location buildings;
- Faculty and Postdoctoral fellows;
- Administrators; and
- Visitors.

The modal split and auto and taxi occupancy factors were developed based on a review of the travel survey conducted as part of the *Manhattanville FEIS;* the survey results were interpreted and adjusted to reflect the Roosevelt Island campus environment.

Walk trips were identified separately for those trips being generated internally, or within the campus and those trips being generated externally, or outside the campus but within Roosevelt Island. For example, internally generated walk trips may include campus residents who travel intra-campus to an adjacent academic building, while off-campus walk trips include those made for lunch or errands from the campus to other parts of Roosevelt Island or those living off-campus on Roosevelt Island commuting to the campus. All of the academic populations who live on campus were assumed to walk the short distance between their dwelling and destination (lab, class, office, etc.) during the AM and PM peak periods.

During other hours of the day (i.e., the midday peak period), it was assumed that ¼ of the population living on-campus would leave the campus for discretionary trip-making (for example, to get lunch) while ¾ would remain on campus and use the on-campus amenities (i.e., cafe/restaurant) or return to their on-campus dwelling.

*Executive Education Center*

Travel demand factors from the *CEQR Technical Manual* were used to estimate daily person and delivery trip rates generated by the proposed Executive Education Center. The modal split, vehicle occupancy, and person temporal and directional distributions were identified by using the data available from the *Long Island City Gotham Garage EAS*.

For the conference center space, the daily person and delivery trip rates, vehicle occupancy, and temporal and directional distributions were generated based on the *NYU Core EIS*. Administrative modal split factors from the *Columbia Manhattanville FEIS* were adapted for the "Conference Facilities/Employees" (approximately 20 percent auto share).

*University Retail*

Travel demand factors for local retail from the *CEQR Technical Manual* were applied for the daily person and delivery vehicle trip generation rates and weekday peak hour percentages. Since the university retail space would mainly serve the on-campus population, it was estimated that 90 percent of the trips would be made intra-campus; the remaining 10 percent was allocated to off-campus modes of transportation based on the modal split factors used in the *New School DASNY FEAF*.

*University Housing-External Trips*

University Housing-External trips include the population who lives on campus but makes off-campus trips. These trips could include spouses or family members working off-campus and/or student trips made to primary or secondary schools, as well as other discretionary trips not related to the on-campus academic uses.

Trip estimates for non-academic related or "external housing" trips for the campus housing component were developed using temporal distribution, daily person trip rates, taxi occupancy, and delivery-trip generation factors from the *Manhattanville FEIS*. The modal split and auto occupancy factors for the external housing trips were developed based on a review of the American Community Census Survey, 2006-2010, U.S Department of Commerce: Bureau of the Census, and Journey-to-Work (JTW) data from Manhattan Census Tract #238 (Roosevelt Island).

*TRAVEL DEMAND ANALYSIS*

**Table 14-3** provides a detailed presentation of the travel demand factors. The travel demand analysis included a detailed assessment of a range of parameters including: daily person trip rate, absentee rate, peak hour temporal distribution, modal split, vehicle occupancy rate, and daily delivery trip characteristics. Individual projections were conducted for the different population groups and programmed uses discussed above.

*TRIP GENERATION ESTIMATES*

*2018 Analysis Year (Phase 1)*

Person-trip and vehicle-trip generation estimates for the proposed Phase 1 uses are presented in **Table 14-4**. As shown, there would be 689, 652, and 838 total person-trips, including 346, 173, and 404 subway-trips; 58, 50, and 72 bus-trips; 30, 20, and 34 tram-trips; and 95, 242, 118 walk-trips during the weekday AM, midday, and PM peak hours, respectively.

Phase 1 would generate approximately 143, 162, and 179 vehicle-trip, including 95, 78, and 119 auto-trips, and 40, 72, and 58 taxi-trips during the weekday AM, midday, and PM peak hours, respectively.

*2038 Analysis Year (Full Build)*

Person-trip and vehicle-trip generation estimates for the proposed uses at Full Build are presented in **Table 14-5**. As shown, there would be 2,196, 1,856, and 2,550 total person-trips including 1,175, 415, and 1,337 subway-trips, 159, 141, and 185 bus-trips, 103, 76, and 115 tram-trips, and 382, 940, 456 walk-trips during the weekday AM, midday, and PM peak hours, respectively.

At Full Build, the project would generate approximately 352, 304, and 404 vehicle-trip, including 266, 150, and 312 auto-trips, and 62, 124, and 84 taxi-trips during the weekday AM, midday, and PM peak hours, respectively.

Since the projected trips would exceed the CEQR analysis thresholds for vehicular traffic, transit, and pedestrians for all three peak hours (i.e., weekday AM, midday, and PM), a Level 2 screening assessment was undertaken to identify specific locations where detailed analyses may be warranted.

## Table 14-3
## Travel Demand Assumptions

| Land Use | Graduate Students (Master's/Ph.D.) | | | | | | Faculty (Postdoc/Faculty) | | | | | | Researchers | | | Administrators | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Person Trip** | (1) 3.5 Trips / Person | | | | | | (1) 3.5 Trips / Person | | | | | | (1) 3.5 Trips / Person | | | (1) 3.5 Trips / Person | | |
| **Absentee Rate** | 5% | | | | | | 20% | | | | | | 5% | | | 5% | | |
| **Link Credit** | n/a | | | | | | n/a | | | | | | n/a | | | n/a | | |
| **Final Trip Rate** | 3.3 | | | | | | 2.8 | | | | | | 3.3 | | | 3.3 | | |
| | AM | | MD | | PM | | AM | | MD | | PM | | AM | MD | PM | AM | MD | PM |
| **Temporal** | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | (1) | (1) | (1) | (1) | (1) |
| | 7% | | 9% | | 7% | | 11% | | 9% | | 11% | | 19% | 13% | 19% | 21% | 13% | 21% |
| **Direction** | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | (1) | (1) | (1) | (1) | (1) |
| **In** | 95% | | 50% | | 10% | | 95% | | 50% | | 10% | | 95% | 50% | 10% | 95% | 50% | 10% |
| **Out** | 5% | | 50% | | 90% | | 5% | | 50% | | 90% | | 5% | 50% | 90% | 5% | 50% | 90% |
| **Total** | 100% | | 100% | | 100% | | 100% | | 100% | | 100% | | 100% | 100% | 100% | 100% | 100% | 100% |
| | Living Off-Campus | Living On-Campus | Living Off-Campus | Living On-Campus | Living Off-Campus | Living On-Campus | Living Off-Campus | Living On-Campus | Living Off-Campus | Living On-Campus | Living Off-Campus | Living On-Campus | Living Off-Campus | | | Living Off-Campus | | |
| **Modal Split** | (2) | | (2) | | (2) | | (2) | | (2) | | (2) | | (2) | (2) | (2) | (2) | (2) | (2) |
| **Auto** | 6.0% | 0.0% | 5.0% | 0.0% | 6.0% | 0.0% | 35.0% | 0.0% | 5.0% | 0.0% | 35.0% | 0.0% | 15.9% | 5.0% | 15.9% | 20.4% | 5.0% | 20.4% |
| **Taxi** | 2.5% | 0.0% | 2.0% | 0.0% | 2.5% | 0.0% | 3.5% | 0.0% | 2.0% | 0.0% | 3.5% | 0.0% | 0.5% | 2.0% | 0.5% | 1.5% | 2.0% | 1.5% |
| **Subway** | 68.8% | 0.0% | 10.0% | 0.0% | 68.8% | 0.0% | 34.3% | 0.0% | 10.0% | 0.0% | 34.3% | 0.0% | 49.0% | 10.0% | 49.0% | 49.5% | 10.0% | 49.5% |
| **Bus** | 6.0% | 0.0% | 5.0% | 0.0% | 6.0% | 0.0% | 5.0% | 0.0% | 5.0% | 0.0% | 5.0% | 0.0% | 6.0% | 5.0% | 6.0% | 10.5% | 5.0% | 10.5% |
| **Walk - Internal** | 0.0% | 100.0% | 37.5% | 75.0% | 0.0% | 100.0% | 0.0% | 100.0% | 37.5% | 75.0% | 0.0% | 100.0% | 0.0% | 37.5% | 0.0% | 0.0% | 37.5% | 0.0% |
| **Walk - External** | 15.0% | 0.0% | 37.5% | 25.0% | 15.0% | 0.0% | 20.0% | 0.0% | 37.5% | 25.0% | 20.0% | 0.0% | 22.6% | 37.5% | 22.6% | 16.1% | 37.5% | 16.1% |
| **Tramway** | 1.7% | 0.0% | 3.0% | 0.0% | 1.7% | 0.0% | 2.2% | 0.0% | 3.0% | 0.0% | 2.2% | 0.0% | 6.0% | 3.0% | 6.0% | 2.0% | 3.0% | 2.0% |
| **Total** | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| **Vehicle Occupancy** | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | | (1) | (1) | (1) | (1) | (1) | (1) |
| **Auto** | 1.20 | | 1.20 | | 1.20 | | 1.20 | | 1.20 | | 1.20 | | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| **Taxi** | 1.30 | | 1.30 | | 1.30 | | 1.30 | | 1.30 | | 1.30 | | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| **Daily Delivery Trip Generation Rate** | | | | | | | | | | | | | | | | (1) 0.10 Delivery Trips / KSF | | |
| **Delivery Temporal** | | | | | | | | | | | | | | | | AM | MD | PM |
| | | | | | | | | | | | | | | | | (1) | (1) | (1) |
| | | | | | | | | | | | | | | | | 9.7% | 9.1% | 5.1% |
| **Delivery Direction** | | | | | | | | | | | | | | | | (3) | (3) | (3) |
| **In** | | | | | | | | | | | | | | | | 50% | 50% | 50% |
| **Out** | | | | | | | | | | | | | | | | 50% | 50% | 50% |
| **Total** | | | | | | | | | | | | | | | | 100% | 100% | 100% |

**Source**
(1) Proposed Columbia Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development FEIS.
(2) The Columbia Manhattanville On-line Travel Survey was also utilized and adjusted for area characteristics to have lower walk only share, higher subway share in comparison. Shuttle mode is added to subway, tramway mode is added (subway trip is distributed to tramway). In addition, the modal split factors used for the Columbia Manhattanville for administrative staff was applied to "Conference Facilities/Employees".
(3) 2012 *CEQR Technical Manual*
(4) 4.0 of 8.075 daily person trips (CEQR- residential) were conservatively assumed not to be journey trips to/from University facilities.
(5) 2006-2010 American Community Survey 5-Year Estimates- Journey To Work for New York County Census Tract #238.
(6) The New School DASNY FEAF (2010). Modal split factors were reapportioned for various modes of transportation, only for off-campus trips.
(7) NYU Core EIS (2011) For trips made by the "Conference Facilities/Patrons", the same modal split factors used for the NYU Core DEIS were applied, with the walk trip component allocated to solely on-campus travel.
(8) Long Island City Gotham Garage (EA) - Hotel Trips gen factors used in No Action Trip Gen was approved by NYCDOT.

## Table 14-3 (continued)
## Travel Demand Assumptions

| Land Use | Corporate Co-location Workers | | | Visitors | | | University Retail | | | Executive Education Center - Hotel | | | Executive Education Center Conf. Facilities/Employees | | | Executive Education Center Conf. Facilities/Patrons | | | University Housing - External | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Person Trip** | 18.0 Trips/1,000 gsf | | | (1) Academic 0.4 Trips /1,000 gsf | | | (3) 205.0 Trips /1,000 gsf | | | (3) 9.4 Trips /room | | | (7) 10.0 Trips /1,000 gsf | | | (7) 27.2 Trips /1,000 gsf | | | (1,3,4) 4.0 Trips / unit | | |
| **Absentee Rate** | n/a | | | n/a | | | n/a | | | n/a | | | n/a | | | n/a | | | n/a | | |
| **Link Credit** | n/a | | | n/a | | | 0% | | | n/a | | | n/a | | | n/a | | | n/a | | |
| **Final Trip Rate** | Same as the initial Trip Rate | | | Same as the initial Trip Rate | | | 205.0 | | | Same as the initial Trip Rate | | | Same as the initial Trip Rate | | | Same as the initial Trip Rate | | | Same as the initial Trip Rate | | |
| | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM | AM | MD | PM |
| **Temporal** | (3) | (3) | (3) | (1) | (1) | (1) | (3) | (3) | (3) | (3) | (3) | (3) | (7) | (7) | (7) | (7) | (7) | (7) | (1) | (1) | (1) |
| | 12% | 15% | 14% | 15% | 15% | 15% | 3% | 19% | 10% | 8% | 14% | 13% | 14.7% | 20.0% | 12.9% | 10.5% | 9.5% | 10.5% | 9.1% | 4.7% | 10.7% |
| **Direction** | (1) | (1) | (1) | (1) | (1) | (1) | (6) | (6) | (6) | (8) | (8) | (8) | (7) | (7) | (7) | (7) | (7) | (7) | (1) | (1) | (1) |
| **In** | 95% | 50% | 10% | 90% | 50% | 10% | 50% | 50% | 50% | 41% | 68% | 59% | 96% | 55% | 5% | 91% | 53% | 15% | 20% | 51% | 65% |
| **Out** | 5% | 50% | 90% | 10% | 50% | 90% | 50% | 50% | 50% | 59% | 32% | 41% | 4% | 44% | 95% | 9% | 47% | 85% | 80% | 49% | 35% |
| **Total** | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| | Living | | | | | | | | | | | | | | | | | | | | |
| | Off-Campus | | | | | | | | | | | | | | | | | | | | |
| **Modal Split** | (2) | (2) | (2) | (2) | (2) | (2) | (6) | (6) | (6) | (8) | (8) | (8) | (2) | (2) | (2) | (7) | (7) | (7) | (5) | (5) | (5) |
| **Auto** | 15.9% | 5.0% | 15.9% | 25.0% | 5.0% | 25.0% | 0.2% | 0.2% | 0.2% | 30.1% | 30.1% | 30.1% | 20.4% | 5.0% | 20.4% | 7.0% | 7.0% | 7.0% | 6.1% | 6.1% | 6.1% |
| **Taxi** | 0.5% | 2.0% | 0.5% | 2.0% | 2.0% | 2.0% | 0.3% | 0.3% | 0.3% | 12.3% | 12.3% | 12.3% | 1.5% | 2.0% | 1.5% | 6.0% | 6.0% | 6.0% | 0.0% | 0.0% | 0.0% |
| **Subway** | 49.0% | 10.0% | 49.0% | 50.0% | 10.0% | 50.0% | 0.6% | 0.6% | 0.6% | 16.8% | 16.8% | 16.8% | 49.5% | 10.0% | 49.5% | 20.0% | 25.0% | 25.0% | 71.4% | 71.4% | 71.4% |
| **Bus** | 6.0% | 5.0% | 6.0% | 11.0% | 5.0% | 11.0% | 0.6% | 0.6% | 0.6% | 5.5% | 5.5% | 5.5% | 10.5% | 5.0% | 10.5% | 10.0% | 10.0% | 10.0% | 9.4% | 9.4% | 9.4% |
| **Walk - Internal** | 0.0% | 37.5% | 0.0% | 0.0% | 37.5% | 0.0% | 90.0% | 90.0% | 90.0% | 33.3% | 33.3% | 33.3% | 0.0% | 37.5% | 0.0% | 52.0% | 52.0% | 52.0% | 0.0% | 0.0% | 0.0% |
| **Walk - External** | 22.6% | 37.5% | 22.6% | 10.0% | 37.5% | 10.0% | 8.3% | 8.3% | 8.3% | 0.0% | 0.0% | 0.0% | 16.1% | 37.5% | 16.1% | 0.0% | 0.0% | 0.0% | 8.6% | 8.6% | 8.6% |
| **Tramway** | 6.0% | 3.0% | 6.0% | 2.0% | 3.0% | 2.0% | 0.0% | 0.0% | 0.0% | 2.0% | 2.0% | 2.0% | 2.0% | 3.0% | 2.0% | 5.0% | 0.0% | 0.0% | 4.5% | 4.5% | 4.5% |
| **Total** | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| **Vehicle Occupancy** | (1) | (1) | (1) | (1) | (1) | (1) | (1) | (1) | (1) | (7) | (7) | (7) | (7) | (7) | (7) | (7) | (7) | (7) | (1)(5) | (1)(5) | (1)(5) |
| **Auto** | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 2.3 | 2.30 | 2.30 | 1.17 | 1.17 | 1.17 |
| **Taxi** | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.20 | 1.20 | 1.20 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.8 | 1.80 | 1.80 | 1.30 | 1.30 | 1.30 |
| **Daily Delivery Trip Generation Rate** | (3) 0.32 Delivery Trips / KSF | | | | | | (9) 0.35 Delivery Trips / KSF | | | (7) 0.06 Delivery Trips / room | | | (7) 0.35 Delivery Trips / KSF | | | | | | (1) 0.03 Delivery Trips / Unit | | |
| | AM | MD | PM | | | | AM | MD | PM | AM | MD | PM | AM | MD | PM | | | | AM | MD | PM |
| **Delivery Temporal** | (3) | (3) | (3) | | | | (9) | (9) | (9) | (7) | (7) | (7) | (7) | (7) | (7) | | | | (1) | (1) | (1) |
| | 10.0% | 11.0% | 2.0% | | | | 8.0% | 11.0% | 2.0% | 12.2% | 8.7% | 0.0% | 7.9% | 14.7% | 1.1% | | | | 9.7% | 9.1% | 5.1% |
| **Delivery Direction** | (3) | (3) | (3) | | | | (9) | (9) | (9) | (3) | (3) | (3) | (3) | (3) | (3) | | | | (3) | (3) | (3) |
| **In** | 50% | 50% | 50% | | | | 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% | | | | 50% | 50% | 50% |
| **Total** | 100% | 100% | 100% | | | | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | | | | 100% | 100% | 100% |

**Source**

(1) Proposed *Columbia Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development FEIS*.
(2) The Columbia Manhattanville On-line Travel Survey was also utilized and adjusted for area characteristics to have lower walk only share, higher subway share in comparison. Shuttle mode is added to subway, tramway mode is added (subway trip is distributed to tramway). In addition, the modal split factors used for the Columbia Manhattanville for administrative staff was applied to "Conference Facilities/Employees".
(3) 2012 *CEQR Technical Manual*
(4) 4.0 of 8.075 daily person trips (CEQR- residential) were conservatively assumed not to be journey trips to/from University facilities.
(5) 2006-2010 American Community Survey 5-Year Estimates- Journey To Work for New York County Census Tract #238.
(6) The New School DASNY FEAF (2010). Modal split factors were reapportioned for various modes of transportation, only for off-campus trips.
(7) *NYU Core DEIS* (2011) For trips made by the "Conference Facilities/Patrons", the same modal split factors used for the NYU Core DEIS were applied, with the walk trip component allocated to solely on-campus travel.
(8) Long Island City Gotham Garage (EA) - Hotel Trips gen factors used in No Action Trip Gen was approved by NYCDOT.

## Table 14-4
## Weekday Trip Generation Summary—Phase 1 (2018)

| USER GROUP | PEAK | DIR. | PERSON TRIPS | | | | | | | | | VEHICLE TRIPS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Auto | Taxi | Subway | Bus | Walk Internal | Walk External | Tram | Total w/ Walk Internal | Total w/o Walk Internal | Auto | Taxi | Delivery | Total |
| Graduate Student - Master's | AM | In | 1 | 0 | 7 | 1 | 56 | 2 | 0 | 67 | 11 | 1 | 0 | 0 | 1 |
| | | Out | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| | | Total | 1 | 0 | 7 | 1 | 59 | 2 | 0 | 70 | 11 | 1 | 0 | 0 | 1 |
| | MD | In | 0 | 0 | 1 | 0 | 32 | 13 | 0 | 46 | 13 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 0 | 32 | 13 | 0 | 46 | 13 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 0 | 64 | 26 | 0 | 92 | 26 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0 |
| | | Out | 1 | 0 | 7 | 1 | 53 | 1 | 0 | 63 | 10 | 0 | 0 | 0 | 0 |
| | | Total | 1 | 0 | 8 | 1 | 59 | 1 | 0 | 70 | 11 | 0 | 0 | 0 | 0 |
| Graduate Student - Ph.D. | AM | In | 1 | 0 | 8 | 1 | 46 | 2 | 0 | 58 | 12 | 1 | 0 | 0 | 1 |
| | | Out | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | | Total | 1 | 0 | 8 | 1 | 48 | 2 | 0 | 60 | 12 | 1 | 0 | 0 | 1 |
| | MD | In | 0 | 0 | 1 | 0 | 26 | 11 | 0 | 38 | 12 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 0 | 26 | 11 | 0 | 38 | 12 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 0 | 52 | 22 | 0 | 76 | 24 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 |
| | | Out | 1 | 0 | 7 | 1 | 44 | 2 | 0 | 55 | 11 | 1 | 0 | 0 | 1 |
| | | Total | 1 | 0 | 8 | 1 | 49 | 2 | 0 | 61 | 12 | 1 | 0 | 0 | 1 |
| Academic | AM | In | 4 | 0 | 13 | 2 | 0 | 6 | 2 | 27 | 27 | 4 | 0 | 0 | 4 |
| | | Out | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| | | Total | 4 | 0 | 14 | 2 | 0 | 6 | 2 | 28 | 28 | 4 | 0 | 0 | 4 |
| | MD | In | 0 | 0 | 1 | 0 | 4 | 4 | 0 | 9 | 5 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 0 | 4 | 4 | 0 | 9 | 5 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 0 | 8 | 8 | 0 | 18 | 10 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| | | Out | 4 | 0 | 13 | 2 | 0 | 6 | 2 | 27 | 27 | 3 | 0 | 0 | 3 |
| | | Total | 4 | 0 | 14 | 2 | 0 | 7 | 2 | 29 | 29 | 3 | 0 | 0 | 3 |
| Faculty | AM | In | 3 | 0 | 3 | 0 | 23 | 2 | 0 | 31 | 8 | 3 | 0 | 0 | 3 |
| | | Out | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | Total | 3 | 0 | 3 | 0 | 24 | 2 | 0 | 32 | 8 | 3 | 0 | 0 | 3 |
| | MD | In | 0 | 0 | 0 | 0 | 9 | 4 | 0 | 13 | 4 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 0 | 0 | 9 | 4 | 0 | 13 | 4 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 0 | 0 | 18 | 8 | 0 | 26 | 8 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | | Out | 3 | 0 | 3 | 0 | 22 | 2 | 0 | 30 | 8 | 3 | 0 | 0 | 3 |
| | | Total | 3 | 0 | 3 | 0 | 24 | 2 | 0 | 32 | 8 | 3 | 0 | 0 | 3 |
| Postdoctoral fellows | AM | In | 1 | 0 | 1 | 0 | 9 | 0 | 0 | 11 | 2 | 1 | 0 | 0 | 1 |
| | | Out | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Total | 1 | 0 | 1 | 0 | 9 | 0 | 0 | 11 | 2 | 1 | 0 | 0 | 1 |
| | MD | In | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 8 | 2 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | Out | 1 | 0 | 1 | 0 | 8 | 0 | 0 | 10 | 2 | 1 | 0 | 0 | 1 |
| | | Total | 1 | 0 | 1 | 0 | 9 | 0 | 0 | 11 | 2 | 1 | 0 | 0 | 1 |
| Admin. Support | AM | In | 10 | 1 | 24 | 5 | 0 | 8 | 1 | 49 | 49 | 8 | 1 | 1 | 10 |
| | | Out | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 2 |
| | | Total | 11 | 1 | 25 | 5 | 0 | 8 | 1 | 51 | 51 | 8 | 2 | 2 | 12 |
| | MD | In | 1 | 0 | 2 | 1 | 6 | 6 | 0 | 16 | 10 | 1 | 0 | 1 | 2 |
| | | Out | 1 | 0 | 2 | 1 | 6 | 6 | 0 | 16 | 10 | 1 | 0 | 1 | 2 |
| | | Total | 2 | 0 | 4 | 2 | 12 | 12 | 0 | 32 | 20 | 2 | 0 | 2 | 4 |
| | PM | In | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 5 | 5 | 1 | 1 | 1 | 3 |
| | | Out | 9 | 1 | 22 | 5 | 0 | 7 | 1 | 45 | 45 | 8 | 1 | 1 | 10 |
| | | Total | 10 | 1 | 24 | 6 | 0 | 8 | 1 | 50 | 50 | 9 | 2 | 2 | 13 |
| Visitors | AM | In | 3 | 0 | 5 | 1 | 0 | 1 | 0 | 10 | 10 | 2 | 0 | 0 | 2 |
| | | Out | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| | | Total | 3 | 0 | 6 | 1 | 0 | 1 | 0 | 11 | 11 | 2 | 0 | 0 | 2 |
| | MD | In | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 5 | 3 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 5 | 3 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 0 | 4 | 4 | 0 | 10 | 6 | 0 | 0 | 0 | 0 |
| | PM | In | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| | | Out | 3 | 0 | 5 | 1 | 0 | 1 | 0 | 10 | 10 | 2 | 0 | 0 | 2 |
| | | Total | 3 | 0 | 6 | 1 | 0 | 1 | 0 | 11 | 11 | 2 | 0 | 0 | 2 |

## Table 14-4 (cont'd)
## Weekday Trip Generation Summary—Phase 1 (2018)

| | | | PERSON TRIPS | | | | | | | | | VEHICLE TRIPS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| USER GROUP | PEAK | DIR. | Auto | Taxi | Subway | Bus | Walk Internal | Walk External | Tram | Total w/ Walk Internal | Total w/o Walk Internal | Auto | Taxi | Delivery | Total |
| University Retail | AM | In | 0 | 0 | 0 | 0 | 28 | 3 | 0 | 31 | 3 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 0 | 0 | 28 | 3 | 0 | 31 | 3 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 0 | 0 | 56 | 6 | 0 | 62 | 6 | 0 | 0 | 0 | 0 |
| | MD | In | 0 | 1 | 1 | 1 | 175 | 16 | 0 | 194 | 19 | 0 | 2 | 1 | 3 |
| | | Out | 0 | 1 | 1 | 1 | 175 | 16 | 0 | 194 | 19 | 0 | 2 | 1 | 3 |
| | | Total | 0 | 2 | 2 | 2 | 350 | 32 | 0 | 388 | 38 | 0 | 4 | 2 | 6 |
| | PM | In | 0 | 0 | 1 | 1 | 92 | 9 | 0 | 103 | 11 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 1 | 92 | 9 | 0 | 103 | 11 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 2 | 184 | 18 | 0 | 206 | 22 | 0 | 0 | 0 | 0 |
| Corporate Co-location | AM | In | 33 | 1 | 101 | 12 | 0 | 46 | 12 | 205 | 205 | 27 | 1 | 2 | 30 |
| | | Out | 2 | 0 | 5 | 1 | 0 | 2 | 1 | 11 | 11 | 1 | 1 | 2 | 4 |
| | | Total | 35 | 1 | 106 | 13 | 0 | 48 | 13 | 216 | 216 | 28 | 2 | 4 | 34 |
| | MD | In | 7 | 3 | 14 | 7 | 51 | 51 | 4 | 137 | 86 | 6 | 5 | 2 | 13 |
| | | Out | 7 | 3 | 14 | 7 | 51 | 51 | 4 | 137 | 86 | 6 | 5 | 2 | 13 |
| | | Total | 14 | 6 | 28 | 14 | 102 | 102 | 8 | 274 | 172 | 12 | 10 | 4 | 26 |
| | PM | In | 4 | 0 | 12 | 2 | 0 | 6 | 2 | 26 | 26 | 3 | 1 | 0 | 4 |
| | | Out | 36 | 1 | 11 | 14 | 0 | 51 | 14 | 227 | 227 | 30 | 1 | 0 | 31 |
| | | Total | 40 | 1 | 123 | 16 | 0 | 57 | 16 | 253 | 253 | 33 | 2 | 0 | 35 |
| Executive Education Center (Hotel) | AM | In | 21 | 9 | 12 | 4 | 23 | 0 | 1 | 70 | 47 | 13 | 15 | 1 | 29 |
| | | Out | 30 | 12 | 17 | 5 | 33 | 0 | 2 | 99 | 66 | 19 | 15 | 1 | 35 |
| | | Total | 51 | 21 | 29 | 9 | 56 | 0 | 3 | 169 | 113 | 32 | 30 | 2 | 64 |
| | MD | In | 61 | 25 | 34 | 11 | 67 | 0 | 4 | 202 | 135 | 38 | 26 | 1 | 65 |
| | | Out | 29 | 12 | 16 | 5 | 32 | 0 | 2 | 96 | 64 | 18 | 26 | 1 | 45 |
| | | Total | 90 | 37 | 50 | 16 | 99 | 0 | 6 | 298 | 199 | 56 | 52 | 2 | 110 |
| | PM | In | 49 | 20 | 27 | 9 | 54 | 0 | 3 | 162 | 108 | 31 | 24 | 0 | 55 |
| | | Out | 34 | 14 | 19 | 6 | 38 | 0 | 2 | 113 | 75 | 21 | 24 | 0 | 45 |
| | | Total | 83 | 34 | 46 | 15 | 92 | 0 | 5 | 275 | 183 | 52 | 48 | 0 | 100 |
| Executive Education Center (Conf. Facility) | AM | In | 12 | 5 | 30 | 10 | 34 | 6 | 4 | 101 | 67 | 6 | 3 | 0 | 9 |
| | | Out | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 6 | 3 | 0 | 3 | 0 | 3 |
| | | Total | 12 | 5 | 32 | 11 | 37 | 6 | 4 | 107 | 70 | 6 | 6 | 0 | 12 |
| | MD | In | 3 | 3 | 12 | 4 | 28 | 10 | 1 | 61 | 33 | 2 | 3 | 1 | 6 |
| | | Out | 3 | 2 | 10 | 4 | 24 | 8 | 1 | 52 | 28 | 2 | 3 | 1 | 6 |
| | | Total | 6 | 5 | 22 | 8 | 52 | 18 | 2 | 113 | 61 | 4 | 6 | 2 | 12 |
| | PM | In | 1 | 1 | 4 | 1 | 6 | 0 | 0 | 13 | 7 | 0 | 3 | 0 | 3 |
| | | Out | 10 | 4 | 30 | 9 | 32 | 5 | 1 | 91 | 59 | 6 | 3 | 0 | 9 |
| | | Total | 11 | 5 | 34 | 10 | 38 | 5 | 1 | 104 | 66 | 6 | 6 | 0 | 12 |
| University Housing - External | AM | In | 2 | 0 | 23 | 3 | 0 | 3 | 1 | 32 | 32 | 2 | 0 | 0 | 2 |
| | | Out | 8 | 0 | 92 | 12 | 0 | 11 | 6 | 129 | 129 | 7 | 0 | 0 | 7 |
| | | Total | 10 | 0 | 115 | 15 | 0 | 14 | 7 | 161 | 161 | 9 | 0 | 0 | 9 |
| | MD | In | 3 | 0 | 30 | 4 | 0 | 4 | 2 | 43 | 43 | 2 | 0 | 0 | 2 |
| | | Out | 2 | 0 | 29 | 4 | 0 | 4 | 2 | 41 | 41 | 2 | 0 | 0 | 2 |
| | | Total | 5 | 0 | 59 | 8 | 0 | 8 | 4 | 84 | 84 | 4 | 0 | 0 | 4 |
| | PM | In | 8 | 0 | 88 | 12 | 0 | 11 | 6 | 125 | 125 | 6 | 0 | 0 | 6 |
| | | Out | 4 | 0 | 47 | 6 | 0 | 6 | 3 | 66 | 66 | 3 | 0 | 0 | 3 |
| | | Total | 12 | 0 | 135 | 18 | 0 | 17 | 9 | 191 | 191 | 9 | 0 | 0 | 9 |
| TOTAL | AM | In | 91 | 16 | 227 | 39 | 219 | 79 | 21 | 692 | 473 | 68 | 20 | 4 | 92 |
| | | Out | 41 | 12 | 119 | 19 | 70 | 16 | 9 | 286 | 216 | 27 | 20 | 4 | 51 |
| | | Total | 132 | 28 | 346 | 58 | 289 | 95 | 30 | 978 | 689 | 95 | 40 | 8 | 143 |
| | MD | In | 75 | 32 | 97 | 28 | 403 | 122 | 11 | 768 | 365 | 49 | 36 | 6 | 91 |
| | | Out | 42 | 18 | 76 | 22 | 364 | 120 | 9 | 651 | 287 | 29 | 36 | 6 | 71 |
| | | Total | 117 | 50 | 173 | 50 | 767 | 242 | 20 | 1,419 | 652 | 78 | 72 | 12 | 162 |
| | PM | In | 63 | 21 | 138 | 26 | 166 | 28 | 11 | 453 | 287 | 41 | 29 | 1 | 71 |
| | | Out | 106 | 20 | 266 | 46 | 289 | 90 | 23 | 840 | 551 | 78 | 29 | 1 | 108 |
| | | Total | 169 | 41 | 404 | 72 | 455 | 118 | 34 | 1,293 | 838 | 119 | 58 | 2 | 179 |

## Table 14-5
## Weekday Trip Generation Summary—Full Build (2038)

| USER GROUP | PEAK | DIR. | PERSON TRIPS | | | | | | | | | VEHICLE TRIPS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Auto | Taxi | Subway | Bus | Walk Internal | Walk External | Tram | Total w/ Walk Internal | Total w/o Walk Internal | Auto | Taxi | Delivery | Total |
| Graduate Student - Master's | AM | In | 11 | 4 | 123 | 11 | 208 | 27 | 3 | 387 | 179 | 9 | 3 | 0 | 12 |
| | | Out | 1 | 0 | 6 | 1 | 11 | 1 | 0 | 20 | 9 | 0 | 3 | 0 | 3 |
| | | Total | 12 | 4 | 129 | 12 | 219 | 28 | 3 | 407 | 188 | 9 | 6 | 0 | 15 |
| | MD | In | 6 | 2 | 12 | 6 | 151 | 80 | 4 | 261 | 110 | 5 | 3 | 0 | 8 |
| | | Out | 6 | 2 | 12 | 6 | 151 | 80 | 4 | 261 | 110 | 5 | 3 | 0 | 8 |
| | | Total | 12 | 4 | 24 | 12 | 302 | 160 | 8 | 522 | 220 | 10 | 6 | 0 | 16 |
| | PM | In | 1 | 0 | 13 | 1 | 22 | 3 | 0 | 40 | 18 | 1 | 3 | 0 | 4 |
| | | Out | 10 | 4 | 116 | 10 | 197 | 25 | 3 | 365 | 168 | 8 | 3 | 0 | 11 |
| | | Total | 11 | 4 | 129 | 11 | 219 | 28 | 3 | 405 | 186 | 9 | 6 | 0 | 15 |
| Graduate Student - Ph.D. | AM | In | 4 | 2 | 46 | 4 | 100 | 10 | 1 | 167 | 67 | 3 | 2 | 0 | 5 |
| | | Out | 0 | 0 | 2 | 0 | 5 | 1 | 0 | 8 | 3 | 0 | 2 | 0 | 2 |
| | | Total | 4 | 2 | 48 | 4 | 105 | 11 | 1 | 175 | 70 | 3 | 4 | 0 | 7 |
| | MD | In | 2 | 1 | 4 | 2 | 67 | 34 | 1 | 111 | 44 | 2 | 2 | 0 | 4 |
| | | Out | 2 | 1 | 4 | 2 | 67 | 34 | 1 | 111 | 44 | 2 | 2 | 0 | 4 |
| | | Total | 4 | 2 | 8 | 4 | 134 | 68 | 2 | 222 | 88 | 4 | 4 | 0 | 8 |
| | PM | In | 0 | 0 | 5 | 0 | 10 | 1 | 0 | 16 | 6 | 0 | 2 | 0 | 2 |
| | | Out | 4 | 2 | 43 | 4 | 94 | 9 | 1 | 157 | 63 | 3 | 2 | 0 | 5 |
| | | Total | 4 | 2 | 48 | 4 | 104 | 10 | 1 | 173 | 69 | 3 | 4 | 0 | 7 |
| Academic | AM | In | 12 | 0 | 37 | 5 | 0 | 17 | 5 | 76 | 76 | 10 | 0 | 0 | 10 |
| | | Out | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 4 | 4 | 1 | 0 | 0 | 1 |
| | | Total | 13 | 0 | 39 | 5 | 0 | 18 | 5 | 80 | 80 | 11 | 0 | 0 | 11 |
| | MD | In | 1 | 1 | 3 | 1 | 10 | 10 | 1 | 27 | 17 | 1 | 2 | 0 | 3 |
| | | Out | 1 | 1 | 3 | 1 | 10 | 10 | 1 | 27 | 17 | 1 | 2 | 0 | 3 |
| | | Total | 2 | 2 | 6 | 2 | 20 | 20 | 2 | 54 | 34 | 2 | 4 | 0 | 6 |
| | PM | In | 1 | 0 | 4 | 0 | 0 | 2 | 0 | 7 | 7 | 1 | 0 | 0 | 1 |
| | | Out | 11 | 0 | 35 | 4 | 0 | 16 | 4 | 70 | 70 | 9 | 0 | 0 | 9 |
| | | Total | 12 | 0 | 39 | 4 | 0 | 18 | 4 | 77 | 77 | 10 | 0 | 0 | 10 |
| Faculty | AM | In | 14 | 1 | 14 | 2 | 54 | 8 | 1 | 94 | 40 | 12 | 1 | 0 | 13 |
| | | Out | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 5 | 2 | 1 | 1 | 0 | 2 |
| | | Total | 15 | 1 | 15 | 2 | 57 | 8 | 1 | 99 | 42 | 13 | 2 | 0 | 15 |
| | MD | In | 1 | 0 | 2 | 1 | 24 | 13 | 1 | 42 | 18 | 1 | 0 | 0 | 1 |
| | | Out | 1 | 0 | 2 | 1 | 24 | 13 | 1 | 42 | 18 | 1 | 0 | 0 | 1 |
| | | Total | 2 | 0 | 4 | 2 | 48 | 26 | 2 | 84 | 36 | 2 | 0 | 0 | 2 |
| | PM | In | 1 | 0 | 1 | 0 | 6 | 1 | 0 | 9 | 3 | 1 | 1 | 0 | 2 |
| | | Out | 13 | 1 | 13 | 2 | 51 | 8 | 1 | 89 | 38 | 11 | 1 | 0 | 12 |
| | | Total | 14 | 1 | 14 | 2 | 57 | 9 | 1 | 98 | 41 | 12 | 2 | 0 | 14 |
| Postdoctoral Fellows | AM | In | 5 | 1 | 5 | 1 | 22 | 3 | 0 | 37 | 15 | 4 | 1 | 0 | 5 |
| | | Out | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| | | Total | 5 | 1 | 5 | 1 | 23 | 3 | 0 | 39 | 15 | 4 | 2 | 0 | 6 |
| | MD | In | 0 | 0 | 1 | 0 | 9 | 4 | 0 | 14 | 5 | 0 | 0 | 0 | 0 |
| | | Out | 0 | 0 | 1 | 0 | 9 | 4 | 0 | 14 | 5 | 0 | 0 | 0 | 0 |
| | | Total | 0 | 0 | 2 | 0 | 18 | 8 | 0 | 28 | 10 | 0 | 0 | 0 | 0 |
| | PM | In | 1 | 0 | 1 | 0 | 2 | 3 | 0 | 4 | 2 | 0 | 0 | 0 | 0 |
| | | Out | 5 | 0 | 5 | 1 | 21 | 0 | 0 | 35 | 14 | 4 | 0 | 0 | 4 |
| | | Total | 6 | 0 | 6 | 1 | 23 | 3 | 0 | 39 | 16 | 4 | 0 | 0 | 4 |
| Admin. Support | AM | In | 18 | 1 | 43 | 9 | 0 | 14 | 0 | 84 | 87 | 15 | 1 | 3 | 19 |
| | | Out | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 4 | 4 | 1 | 1 | 3 | 5 |
| | | Total | 19 | 1 | 45 | 9 | 0 | 15 | 2 | 91 | 91 | 16 | 2 | 6 | 24 |
| | MD | In | 1 | 1 | 3 | 1 | 11 | 11 | 1 | 29 | 18 | 1 | 2 | 3 | 6 |
| | | Out | 1 | 1 | 3 | 1 | 11 | 11 | 1 | 29 | 18 | 1 | 2 | 3 | 6 |
| | | Total | 2 | 2 | 6 | 2 | 22 | 22 | 2 | 58 | 36 | 2 | 4 | 6 | 12 |
| | PM | In | 2 | 0 | 5 | 1 | 0 | 1 | 0 | 9 | 9 | 2 | 1 | 2 | 5 |
| | | Out | 17 | 1 | 41 | 9 | 0 | 13 | 2 | 83 | 83 | 14 | 1 | 2 | 17 |
| | | Total | 19 | 1 | 46 | 10 | 0 | 14 | 2 | 92 | 92 | 16 | 2 | 4 | 22 |
| Visitors | AM | In | 8 | 1 | 17 | 4 | 0 | 3 | 1 | 34 | 34 | 7 | 1 | 0 | 8 |
| | | Out | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 1 | 0 | 2 |
| | | Total | 9 | 1 | 19 | 4 | 0 | 3 | 1 | 37 | 37 | 8 | 2 | 0 | 10 |
| | MD | In | 1 | 0 | 2 | 1 | 7 | 7 | 1 | 19 | 12 | 1 | 0 | 0 | 1 |
| | | Out | 1 | 0 | 2 | 1 | 7 | 7 | 1 | 19 | 12 | 1 | 0 | 0 | 1 |
| | | Total | 2 | 0 | 4 | 2 | 14 | 14 | 2 | 38 | 24 | 2 | 0 | 0 | 2 |
| | PM | In | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 1 | 0 | 2 |
| | | Out | 8 | 1 | 17 | 4 | 0 | 3 | 1 | 34 | 34 | 7 | 1 | 0 | 8 |
| | | Total | 9 | 1 | 19 | 4 | 0 | 3 | 1 | 37 | 37 | 8 | 2 | 0 | 10 |

**Table 14-5 (cont'd)**
**Weekday Trip Generation Summary—Full Build (2038)**

| | | | USER GROUP | PEAK | DIR. | PERSON TRIPS | | | | | | | | | VEHICLE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Auto | Taxi | Subway | Bus | Walk Internal | Walk External | Tram | Total w/ Walk Internal | Total w/o Walk Internal | Auto | Taxi | De |
| University Retail | AM | In | 0 | 0 | 0 | 0 | 69 | 6 | 0 | 75 | 6 | 0 | 0 | 0 | 0 | | |
| | | Out | 0 | 0 | 0 | 0 | 69 | 6 | 0 | 75 | 6 | 0 | 0 | 0 | 0 | | |
| | | Total | 0 | 0 | 0 | 0 | 138 | 12 | 0 | 150 | 12 | 0 | 0 | 0 | 0 | | |
| | MD | In | 1 | 1 | 3 | 3 | 438 | 40 | 0 | 486 | 48 | 1 | 2 | 1 | 4 | | |
| | | Out | 1 | 1 | 3 | 3 | 438 | 40 | 0 | 486 | 48 | 1 | 2 | 1 | 4 | | |
| | | Total | 2 | 2 | 6 | 6 | 876 | 80 | 0 | 972 | 96 | 2 | 4 | 2 | 8 | | |
| | PM | In | 1 | 1 | 2 | 2 | 231 | 21 | 0 | 258 | 27 | 0 | 2 | 0 | 2 | | |
| | | Out | 1 | 1 | 2 | 2 | 231 | 21 | 0 | 258 | 27 | 0 | 2 | 0 | 2 | | |
| | | Total | 2 | 2 | 4 | 4 | 462 | 42 | 0 | 516 | 54 | 0 | 4 | 0 | 4 | | |
| Corporate Co-location | AM | In | 163 | 5 | 503 | 62 | 0 | 232 | 62 | 1,027 | 1,027 | 136 | 4 | 8 | 148 | | |
| | | Out | 9 | 0 | 26 | 3 | 0 | 12 | 3 | 53 | 53 | 7 | 4 | 8 | 19 | | |
| | | Total | 172 | 5 | 529 | 65 | 0 | 244 | 65 | 1,080 | 1,080 | 143 | 8 | 16 | 167 | | |
| | MD | In | 34 | 14 | 68 | 34 | 253 | 253 | 20 | 676 | 423 | 28 | 22 | 9 | 59 | | |
| | | Out | 34 | 14 | 68 | 34 | 253 | 253 | 20 | 676 | 423 | 28 | 22 | 9 | 59 | | |
| | | Total | 68 | 28 | 136 | 68 | 506 | 506 | 40 | 1,352 | 846 | 56 | 44 | 18 | 118 | | |
| | PM | In | 20 | 1 | 62 | 8 | 0 | 28 | 8 | 127 | 127 | 17 | 5 | 2 | 24 | | |
| | | Out | 180 | 6 | 556 | 68 | 0 | 256 | 68 | 1,134 | 1,134 | 150 | 5 | 2 | 157 | | |
| | | Total | 200 | 7 | 618 | 76 | 0 | 284 | 76 | 1,261 | 1,261 | 167 | 10 | 4 | 181 | | |
| Executive Education Center (Hotel) | AM | In | 21 | 9 | 12 | 4 | 23 | 0 | 1 | 70 | 47 | 13 | 15 | 1 | 29 | | |
| | | Out | 30 | 12 | 17 | 5 | 33 | 0 | 2 | 99 | 66 | 19 | 15 | 1 | 35 | | |
| | | Total | 51 | 21 | 29 | 9 | 56 | 0 | 3 | 169 | 113 | 32 | 30 | 2 | 64 | | |
| | MD | In | 61 | 25 | 34 | 11 | 67 | 0 | 4 | 202 | 135 | 38 | 26 | 1 | 65 | | |
| | | Out | 29 | 12 | 16 | 5 | 32 | 0 | 2 | 96 | 64 | 18 | 26 | 1 | 45 | | |
| | | Total | 90 | 37 | 50 | 16 | 99 | 0 | 6 | 298 | 199 | 56 | 52 | 2 | 110 | | |
| | PM | In | 49 | 20 | 27 | 9 | 54 | 0 | 3 | 162 | 108 | 31 | 24 | 0 | 55 | | |
| | | Out | 34 | 14 | 19 | 6 | 38 | 0 | 2 | 113 | 75 | 21 | 24 | 0 | 45 | | |
| | | Total | 83 | 34 | 46 | 15 | 92 | 0 | 5 | 275 | 183 | 52 | 48 | 0 | 100 | | |
| Executive Education Center (Conf. Facility) | AM | In | 12 | 5 | 30 | 10 | 34 | 6 | 4 | 101 | 67 | 6 | 3 | 0 | 9 | | |
| | | Out | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 6 | 3 | 0 | 3 | 0 | 3 | | |
| | | Total | 12 | 5 | 32 | 11 | 37 | 6 | 4 | 107 | 70 | 6 | 6 | 0 | 12 | | |
| | MD | In | 3 | 3 | 12 | 4 | 28 | 10 | 1 | 61 | 33 | 2 | 3 | 1 | 6 | | |
| | | Out | 3 | 2 | 10 | 4 | 24 | 8 | 1 | 52 | 28 | 2 | 3 | 1 | 6 | | |
| | | Total | 6 | 5 | 22 | 8 | 52 | 18 | 2 | 113 | 61 | 4 | 6 | 2 | 12 | | |
| | PM | In | 1 | 1 | 4 | 1 | 6 | 0 | 0 | 13 | 7 | 0 | 3 | 0 | 3 | | |
| | | Out | 10 | 4 | 30 | 9 | 32 | 5 | 1 | 91 | 59 | 6 | 3 | 0 | 9 | | |
| | | Total | 11 | 5 | 34 | 10 | 38 | 5 | 1 | 104 | 66 | 6 | 6 | 0 | 12 | | |
| University Housing - External | AM | In | 5 | 0 | 57 | 7 | 0 | 7 | 4 | 80 | 80 | 4 | 0 | 0 | 4 | | |
| | | Out | 19 | 0 | 228 | 30 | 0 | 27 | 14 | 318 | 318 | 17 | 0 | 0 | 17 | | |
| | | Total | 24 | 0 | 285 | 37 | 0 | 34 | 18 | 398 | 398 | 21 | 0 | 0 | 21 | | |
| | MD | In | 6 | 0 | 75 | 10 | 0 | 9 | 5 | 105 | 105 | 5 | 0 | 0 | 5 | | |
| | | Out | 6 | 0 | 72 | 9 | 0 | 9 | 5 | 101 | 101 | 5 | 0 | 0 | 5 | | |
| | | Total | 12 | 0 | 147 | 19 | 0 | 18 | 10 | 206 | 206 | 10 | 0 | 0 | 10 | | |
| | PM | In | 19 | 0 | 217 | 29 | 0 | 26 | 14 | 305 | 305 | 16 | 0 | 0 | 16 | | |
| | | Out | 10 | 0 | 117 | 15 | 0 | 14 | 7 | 163 | 163 | 9 | 0 | 0 | 9 | | |
| | | Total | 29 | 0 | 334 | 44 | 0 | 40 | 21 | 468 | 468 | 25 | 0 | 0 | 25 | | |
| TOTAL | AM | In | 273 | 29 | 887 | 119 | 510 | 333 | 84 | 2,235 | 1,725 | 219 | 31 | 12 | 262 | | |
| | | Out | 63 | 12 | 288 | 40 | 125 | 49 | 19 | 596 | 471 | 47 | 31 | 12 | 90 | | |
| | | Total | 336 | 41 | 1,175 | 159 | 635 | 382 | 103 | 2,831 | 2,196 | 266 | 62 | 24 | 352 | | |
| | MD | In | 117 | 48 | 219 | 74 | 1,065 | 471 | 39 | 2,033 | 968 | 85 | 62 | 15 | 162 | | |
| | | Out | 85 | 34 | 196 | 67 | 1,026 | 469 | 37 | 1,914 | 888 | 65 | 62 | 15 | 142 | | |
| | | Total | 202 | 82 | 415 | 141 | 2,091 | 940 | 76 | 3,947 | 1,856 | 150 | 124 | 30 | 304 | | |
| | PM | In | 97 | 23 | 343 | 51 | 331 | 83 | 25 | 953 | 622 | 70 | 42 | 4 | 116 | | |
| | | Out | 303 | 34 | 994 | 134 | 664 | 373 | 90 | 2,592 | 1,928 | 242 | 42 | 4 | 288 | | |
| | | Total | 400 | 57 | 1,337 | 185 | 995 | 456 | 115 | 3,545 | 2,550 | 312 | 84 | 8 | 404 | | |

## LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the distribution and assignment of projected trips to the transportation network and the determination of whether specific locations are expected to incur volumes in excess of the CEQR thresholds. For the Cornell NYC Tech project, trips projected for the 2038 analysis year, representing the maximum amount of project-generated trips, were

allocated to the area's roadways, transit facilities, and pedestrian elements to identify the various study areas for which detailed analyses of potential impacts would be prepared. As previously stated, further quantified analyses to assess the potential impacts of the proposed project on the transportation system would be warranted if the trip assignments resulted 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 for both the 2018 and 2038 analysis years. 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 C, "Transportation Analyses Methodology."

**Figures 14-1**, **14-2**, and **14-3** depict the projected 2018 vehicle-trip increments. The projected 2038 vehicle-trip increments are presented in **Figures 14-4**, **14-5**, and **14-6**. In coordination with the New York City Department of Transportation (NYCDOT), 14 intersections were identified for analysis, including four intersections on-Island, and 10 others at key locations along the primary traffic routes to the Roosevelt Island Bridge from off-Island (see **Figure 14-7**). These traffic analysis locations are:

1. Main Street at East and West Main Street Roundabout
2. Main Street and West Road
3. Main Street at Roosevelt Island Bridge
4. Motorgate garage at Roosevelt Island Bridge
5. 36th Avenue at Vernon Boulevard
6. 36th Avenue at 21st Street
7. 36th Avenue at 31st Street
8. 21st Street at Broadway
9. 21st Street at 30th Avenue
10. Vernon Boulevard at Broadway
11. Vernon Boulevard at 41st Avenue
12. Astoria Boulevard and 21st Street
13. Hoyt Avenue North and 21st Street
14. Hoyt Avenue South and 21st Street

*TRANSIT*

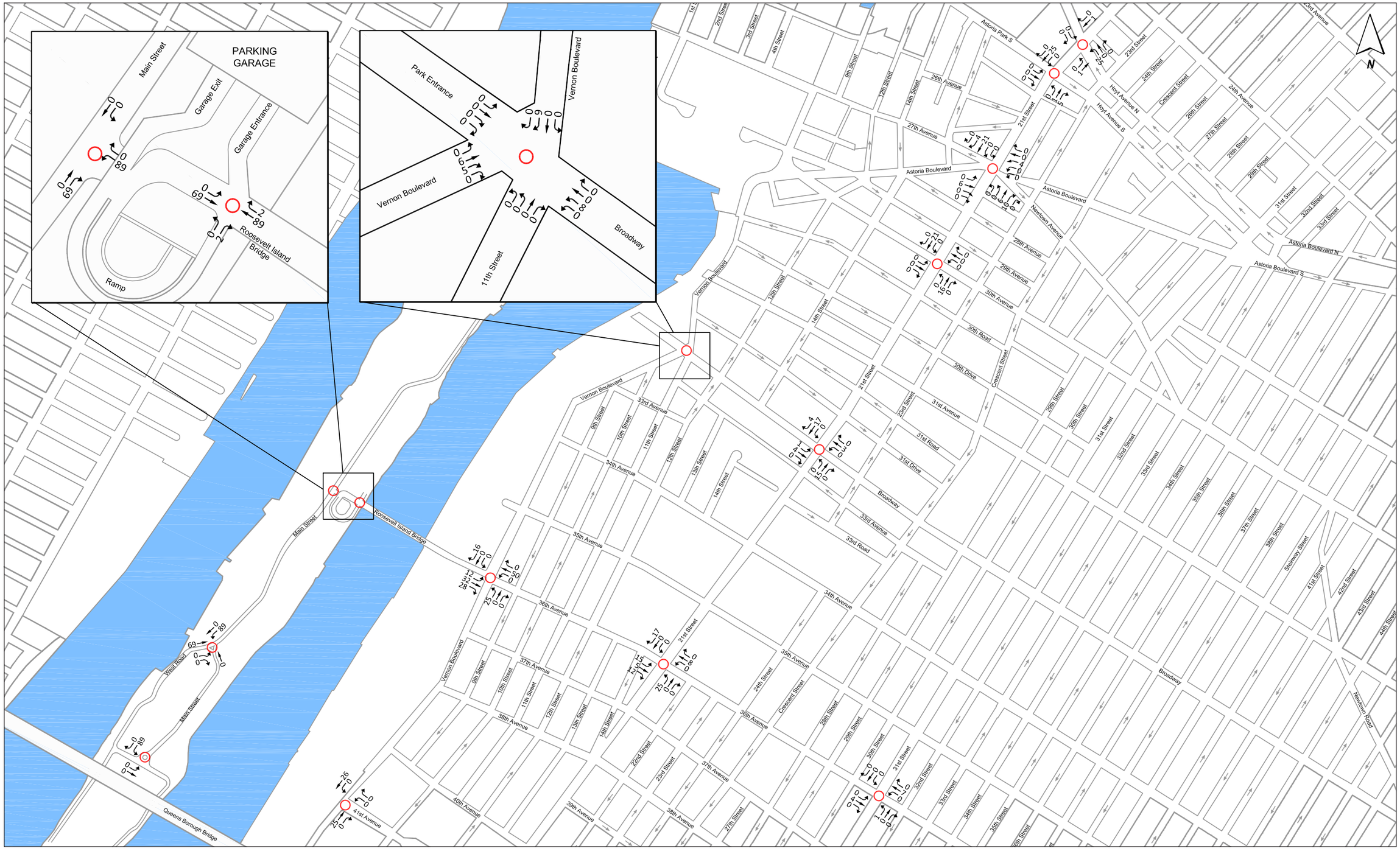
*Subway*

As presented in **Table 14-5**, in the 2038 analysis year, the Cornell NYC Tech project is projected to result in 1,175, 415, and 1,337 subway trips during the weekday AM, midday, and PM peak hours, respectively. These trips were assigned to the Roosevelt Island Station (F), which links Roosevelt Island with stations at 63rd Street and Lexington Avenue in Manhattan and 21st Street/Queensbridge in Queens. The Roosevelt Island Station (F) and station elements (including stairway, escalators and control areas) are expected to receive 200 or more peak hour incremental subway trips from the proposed project; therefore, these elements have been identified for analysis for the weekday AM and PM peak periods.

NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

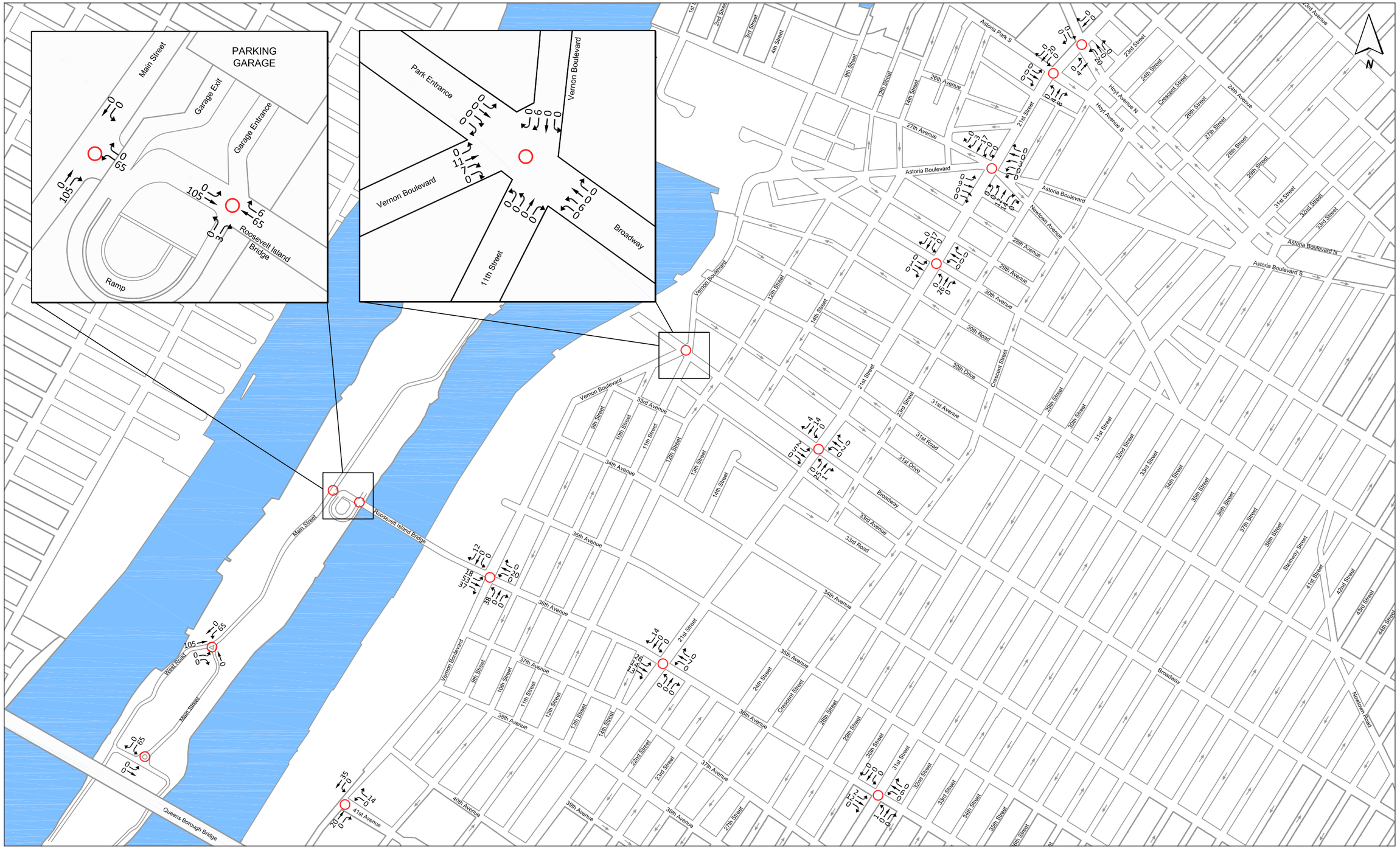
Weekday AM Peak Hour 2018 Build Traffic Increments

**Figure 14-1**




Weekday Midday Peak Hour 2018 Build Traffic Increments

**Figure 14-2**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*

Weekday PM Peak Hour 2018 Build Traffic Increments

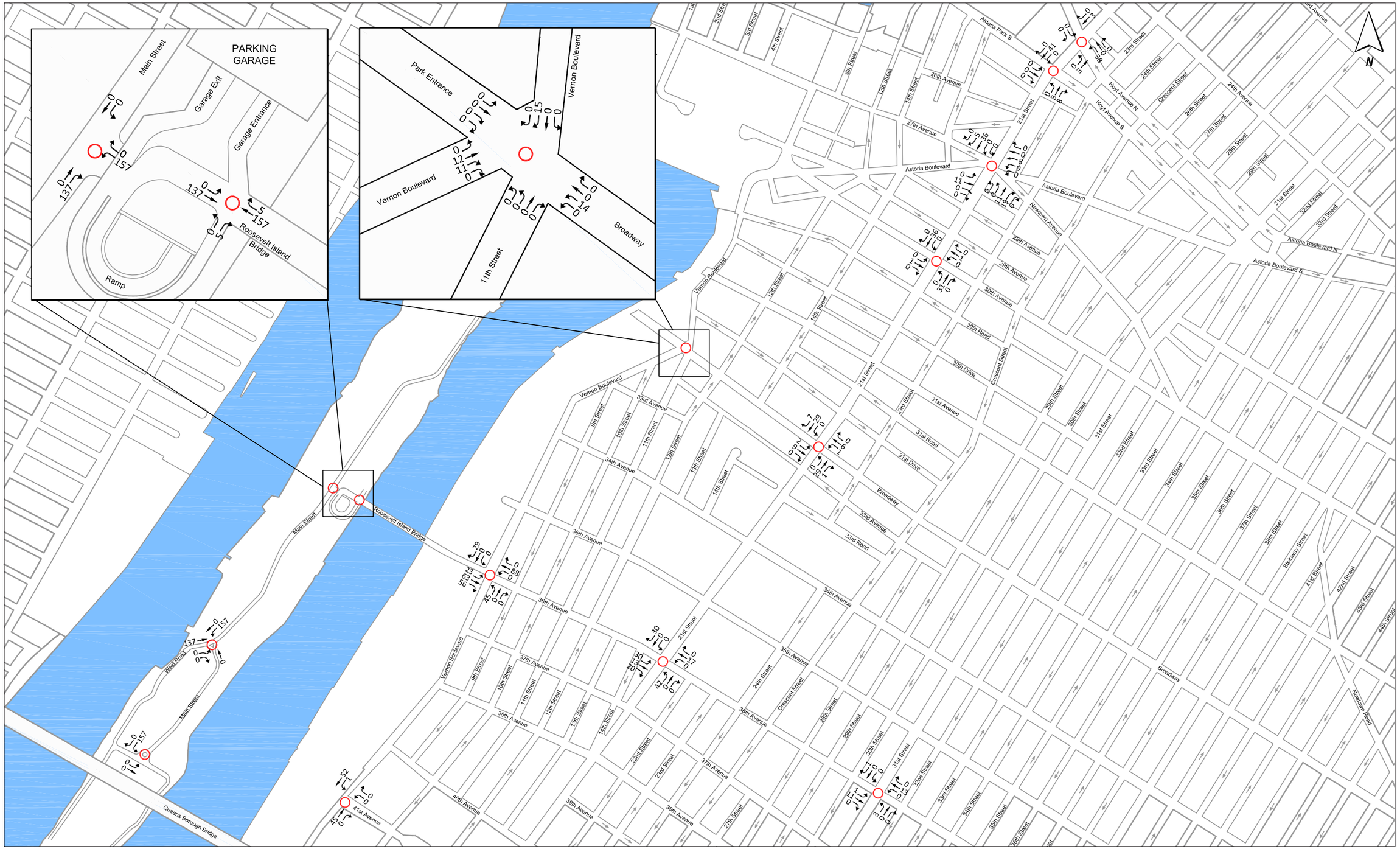
**Figure 14-3**

NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

Weekday AM Peak Hour 2038 Build Traffic Increments

**Figure 14-4**

10.9.12



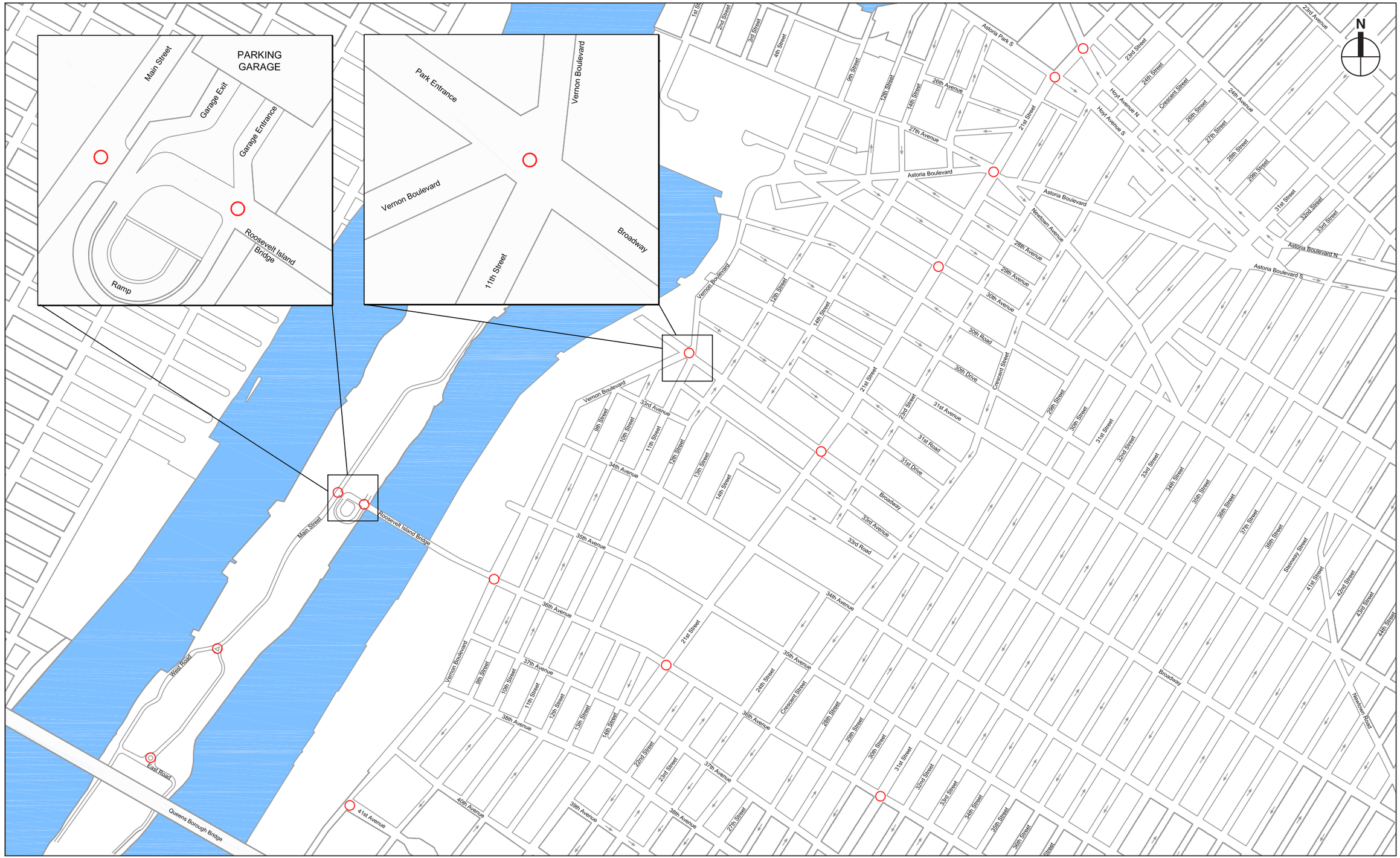

Weekday Midday Peak Hour 2038 Build Traffic Increments

**Figure 14-5**

NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*

Weekday PM Peak Hour 2038 Build Traffic Increments

**Figure 14-6**




Traffic Analysis Locations
**Figure 14-7**

To determine whether a subway line-haul analysis is warranted, the estimated incremental ridership for the F subway line by direction was compared with the peak period service frequency to determine the increase in subway riders per subway car as shown in **Table 14-6**. 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 subway line 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.

**Table 14-6**
**Subway Line Haul Screening Analysis**

| Subway Line | Projected Riders | No. of Cars/HR * | No. Riders/Car/HR | Screening Result |
|---|---|---|---|---|
| AM Peak Hour | | | | |
| **To Site** | **887** | | | |
| F Manhattan bound- to Roosevelt Island | 621 | 150 | 4.1 | Screened Out |
| F Queens bound- to Roosevelt Island | 266 | 140 | 1.9 | Screened Out |
| **From Site** | **288** | | | |
| F Manhattan bound- from Roosevelt Island | 86 | 150 | 0.6 | Screened Out |
| F Queens bound- from Roosevelt Island | 202 | 140 | 1.4 | Screened Out |
| PM Peak Hour | | | | |
| **To Site** | **343** | | | |
| F Manhattan bound- to Roosevelt Island | 240 | 120 | 2.0 | Screened Out |
| F Queens bound- to Roosevelt Island | 103 | 150 | 0.7 | Screened Out |
| **From Site** | **994** | | | |
| F Manhattan bound- from Roosevelt Island | 298 | 120 | 2.5 | Screened Out |
| F Queens bound- from Roosevelt Island | 696 | 150 | 4.6 | Screened Out |

**Note:** * Number of cars available for each line during the peak hour was obtained from MTA New York City Transit 2010 Weekday Cordon Count.

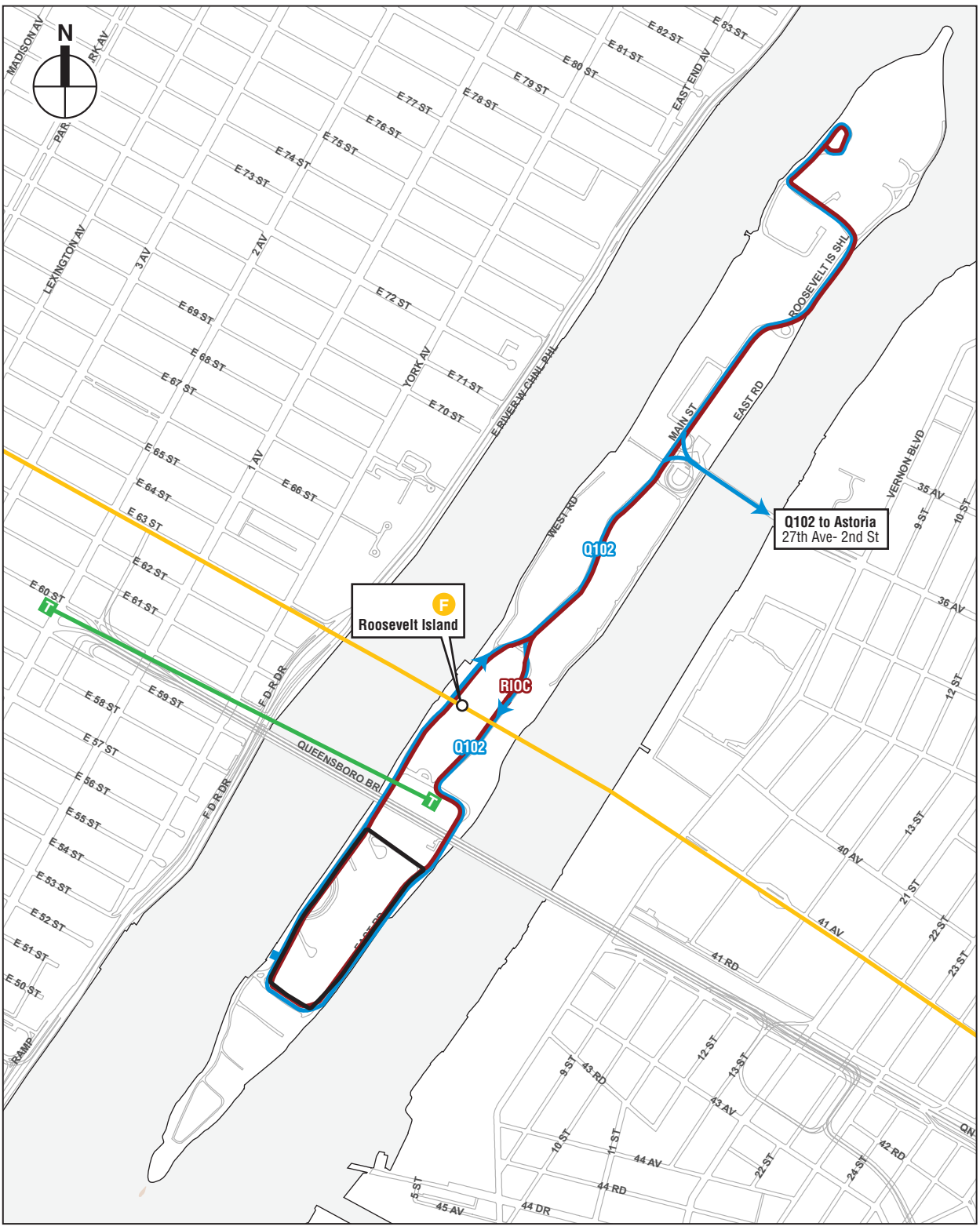
*Tramway*

As presented in **Table 14-5**, in the 2038 analysis year, the Cornell NYC Tech project is projected to result in 103, 76, and 115 tramway trips during the weekday AM, midday, and PM peak hours, respectively. Although an analysis guideline for the tramway is not provided in the *CEQR Technical Manual*, a noticeable number of tramway trips are expected to be generated by the proposed project; therefore, a detailed tramway line-haul analysis was conducted to address potential impacts on the tramway.

*Bus*

As presented in **Table 14-5**, in the 2038 analysis year, the Cornell NYC Tech project is projected to result in 159, 141, and 185 bus trips during the weekday AM, midday, and PM peak hours, respectively. The project-generated bus trips were distributed to Q102 and the Roosevelt Island Red Bus serving the island (see **Figure 14-8**). Based on the distribution of project-generated bus trips, the Q102 and the Red Bus routes would experience more than 50 peak hour bus trips in one direction—the *CEQR Technical Manual* recommended threshold for undertaking a quantified bus analysis. Therefore, a detailed bus line-haul analysis was conducted to address potential transit impacts on the bus system associated with the proposed project.

10.9.12




*Project Site Boundary*

*Roosevelt Island Red bus*

*Q102 Route*

*Subway Line*

*Tramway*

0 500 1000 FEET

**SCALE**

**Cornell** NYC **Tech**

Transit Map

**Figure 14-8**

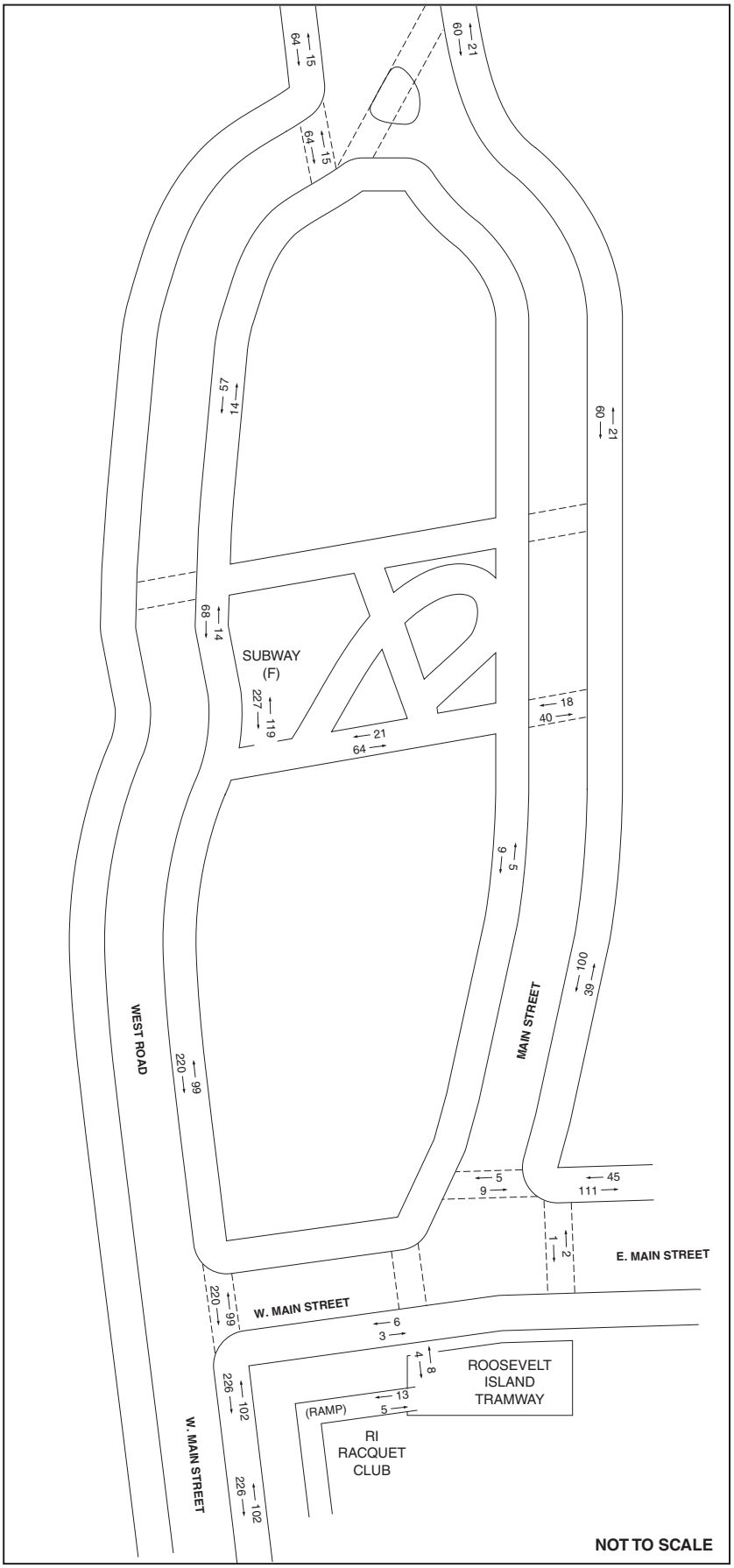
*PEDESTRIANS*

As shown in **Tables 14-4** and **14-5**, the projected peak hour pedestrian increments would be more than 200 during the weekday AM, midday, and PM peak hours for both the 2018 and 2038 analysis years. To account for the highest project-generated pedestrian volumes, Level 2 pedestrian trip assignments were developed for Full Build for all the uses presented in **Table 14-3**. For each use, pedestrian trips would follow similar assignment procedures, as described below:

- Auto Trips – The zoning changes proposed as part of the project would allow a maximum of 500 parking spaces on the project site; no minimum requirement is set forth; therefore, it was assumed that 100 percent of the auto trips would be assigned to the existing Motorgate garage for the most conservative pedestrian/transit assessment. It was assumed that 50 percent of the trips would transfer to the Red Bus to reach the campus and the other 50 percent would walk.
- Taxi Trips – Taxi riders were assumed to be dropped off and picked up near or at their destinations within the campus. These trips would not affect area pedestrian facilities outside the campus.
- Bus Trips – The Q102 bus circles the island and carries passengers to and from Queens, connecting with the Q101 and Q60 buses at Queensboro Plaza in Queens. The Red Bus provides service internal to the island, frequently looping between Southpoint Park and the Octagon development at the north end of the island, and stopping at locations along Main Street. Project generated bus riders would use Q102 or the Red Bus.
- Subway Trips – Local subway service includes the "F" train which links Roosevelt Island with stations at 63rd Street and Lexington Avenue in Manhattan and 21st Street/Queensbridge in Queens. Project-generated subway riders were assigned to the Roosevelt Island Station (F) and would either walk (assumed 90 percent) or transfer to the Q102 or the Red Bus (assumed 10 percent).
- Tramway – The tramway provides service between Roosevelt Island and 60th Street at Second Avenue in Manhattan. Fares are $2.25, equivalent to the subway or bus. Similar to the Red Bus, the tramway operates from 5:45 to 2:30 AM Sunday through Thursday and 5:45 to 3:30 AM on Friday and Saturday. Tram service runs approximately every 8 minutes during peak hours and 15 minutes during off-peak times. Project-generated tramway riders were assigned to the Roosevelt Island Tramway Station and would walk to and from campus.
- Walk-Only Trips – Pedestrian walk only trip assignments were developed by distributing person trips to surrounding pedestrian facilities, including sidewalks, corner reservoirs, and crosswalks, adjacent to and near the project site. The proposed site would be accessible from the subway and tram service via West Road or Main Street. Pedestrians who walk to and from the proposed campus were distributed based on the neighborhood land-use characteristics and available pedestrian facilities (i.e., midblock crossing, crosswalks, and sidewalks).

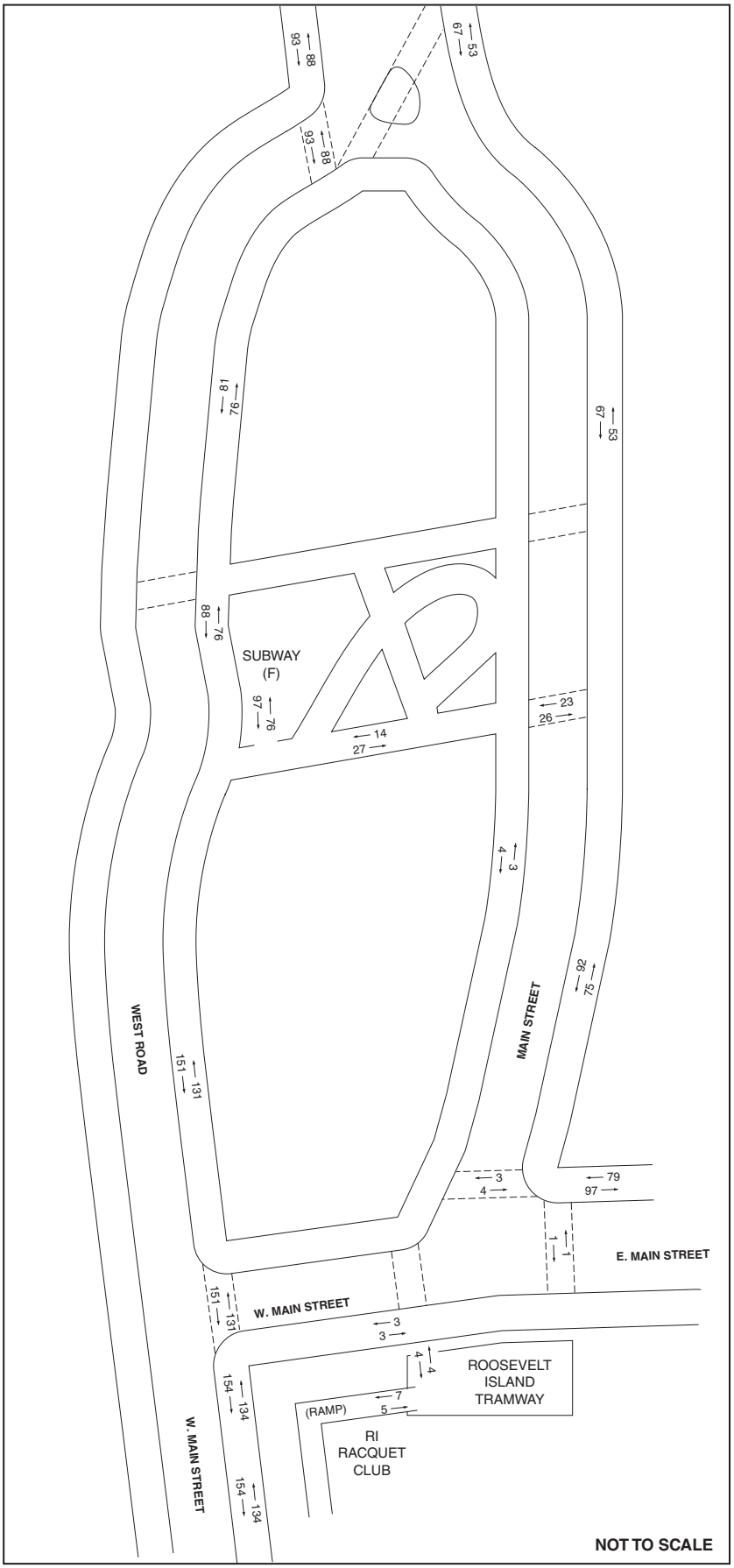
Peak hour incremental pedestrian volume maps were prepared following the pedestrian distribution patterns described above (see **Figures 14-9** through **14-11** and **Figures 14-12** through **14-14** for the 2018 and 2038 projected peak hour pedestrian increments, respectively). Based on this Level 2 assessment, 11 sidewalks at five area intersections were identified to receive more

10.9.12



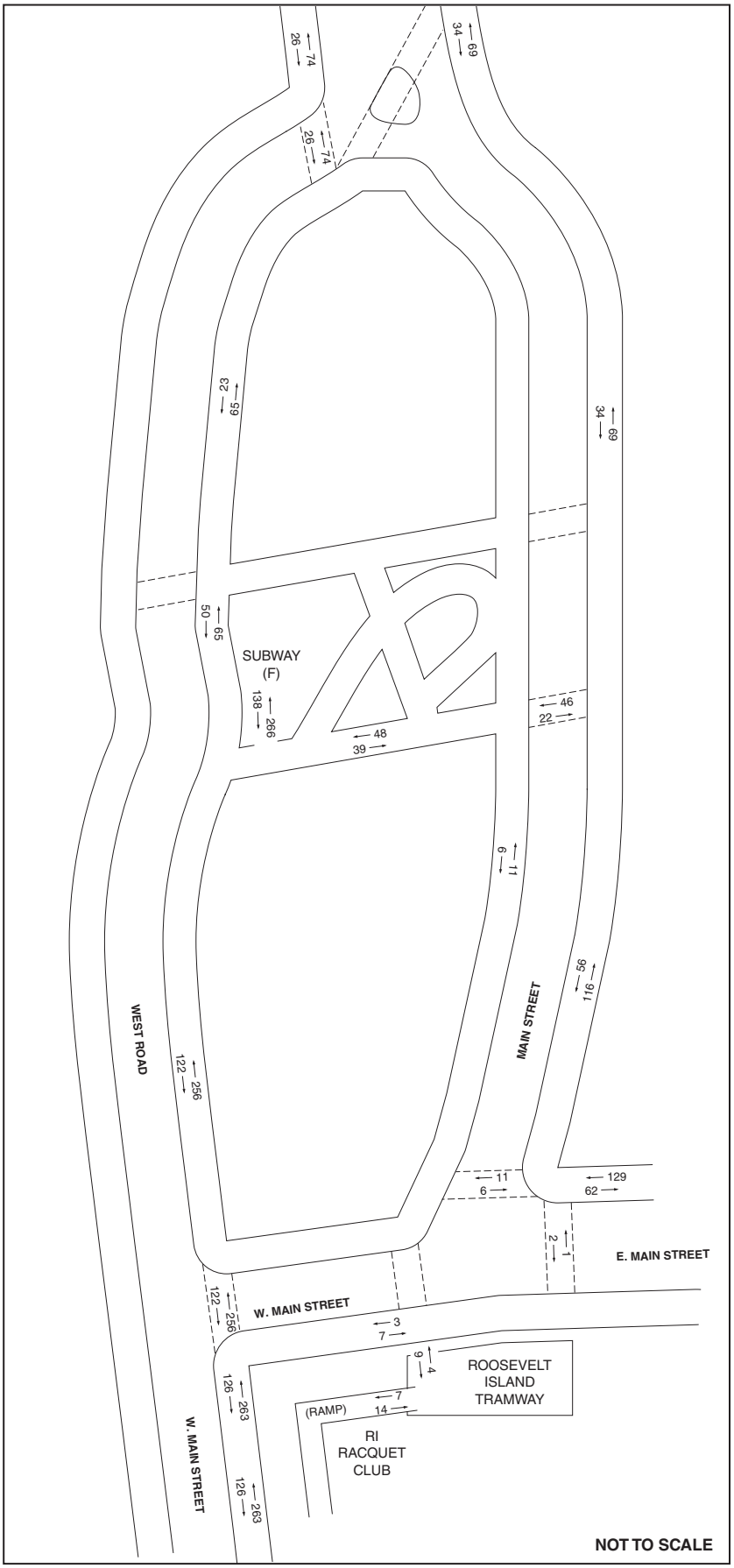

2018 Proposed Project Net Incremental Pedestrian Volumes
AM Peak Hour

10.9.12




2018 Proposed Project Net Incremental Pedestrian Volumes
Midday Peak Hour

10.9.12

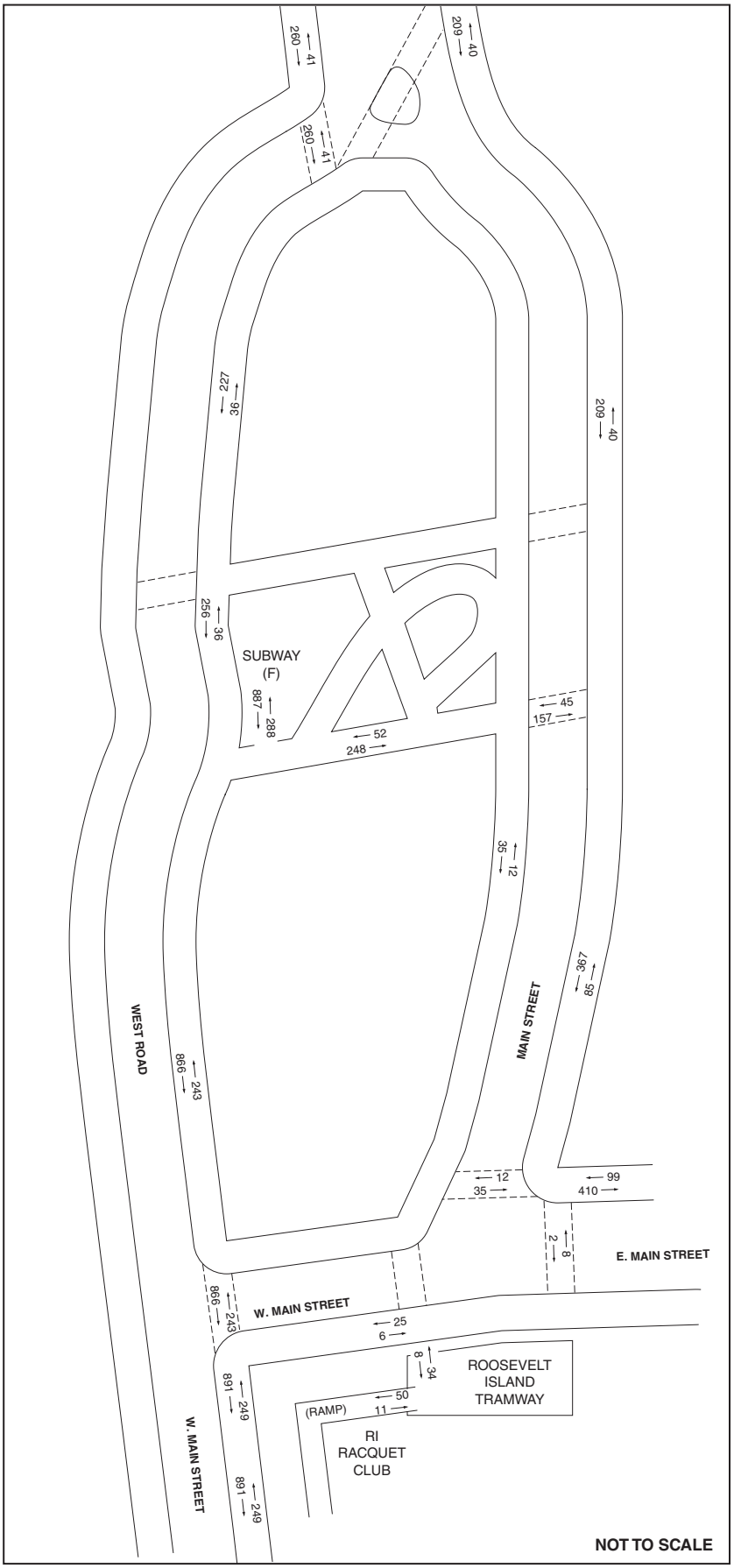



2018 Proposed Project Net Incremental Pedestrian Volumes
PM Peak Hour

**Cornell** NYC **Tech**

**Figure 14-11**

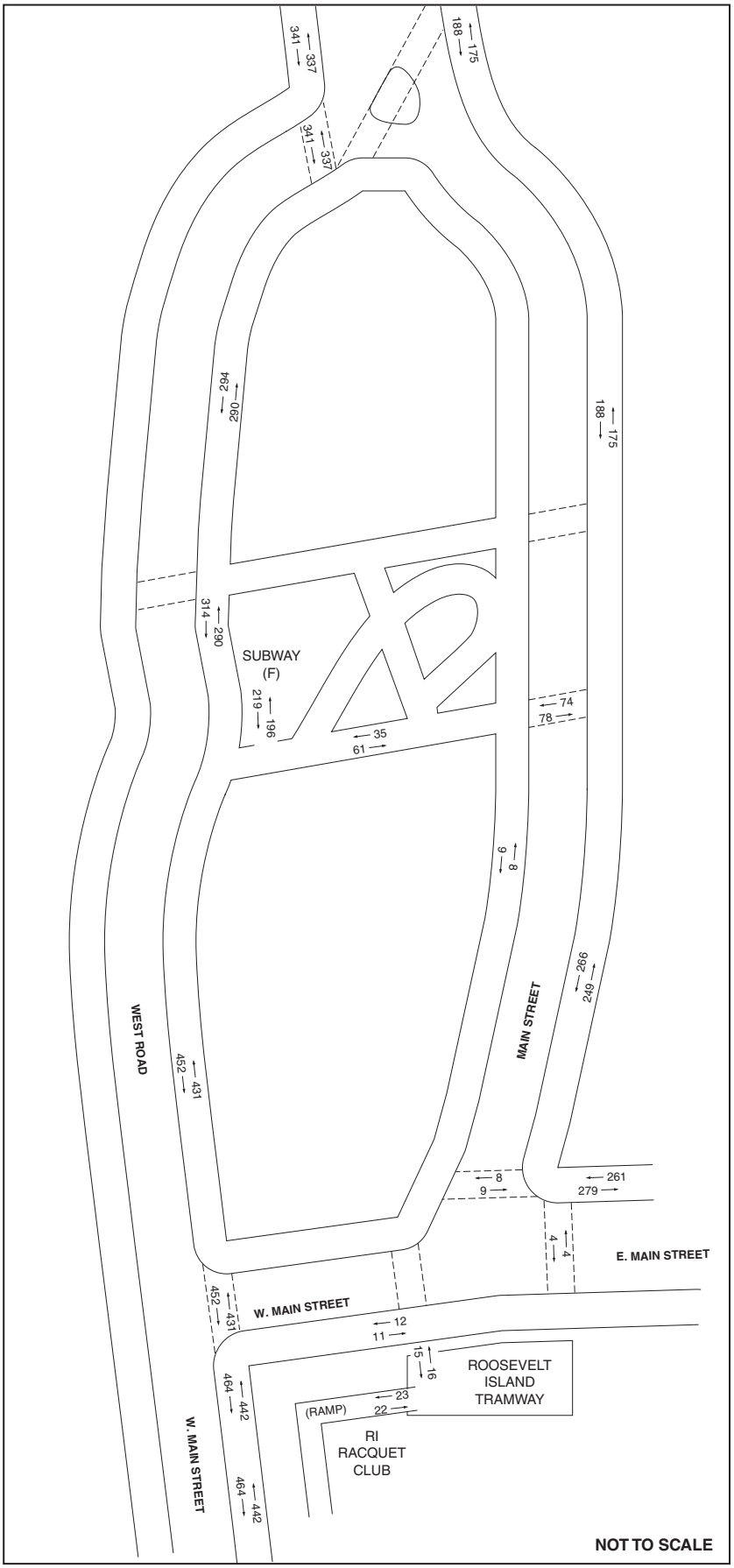
10.9.12




2038 Proposed Project Net Incremental Pedestrian Volumes
AM Peak Hour

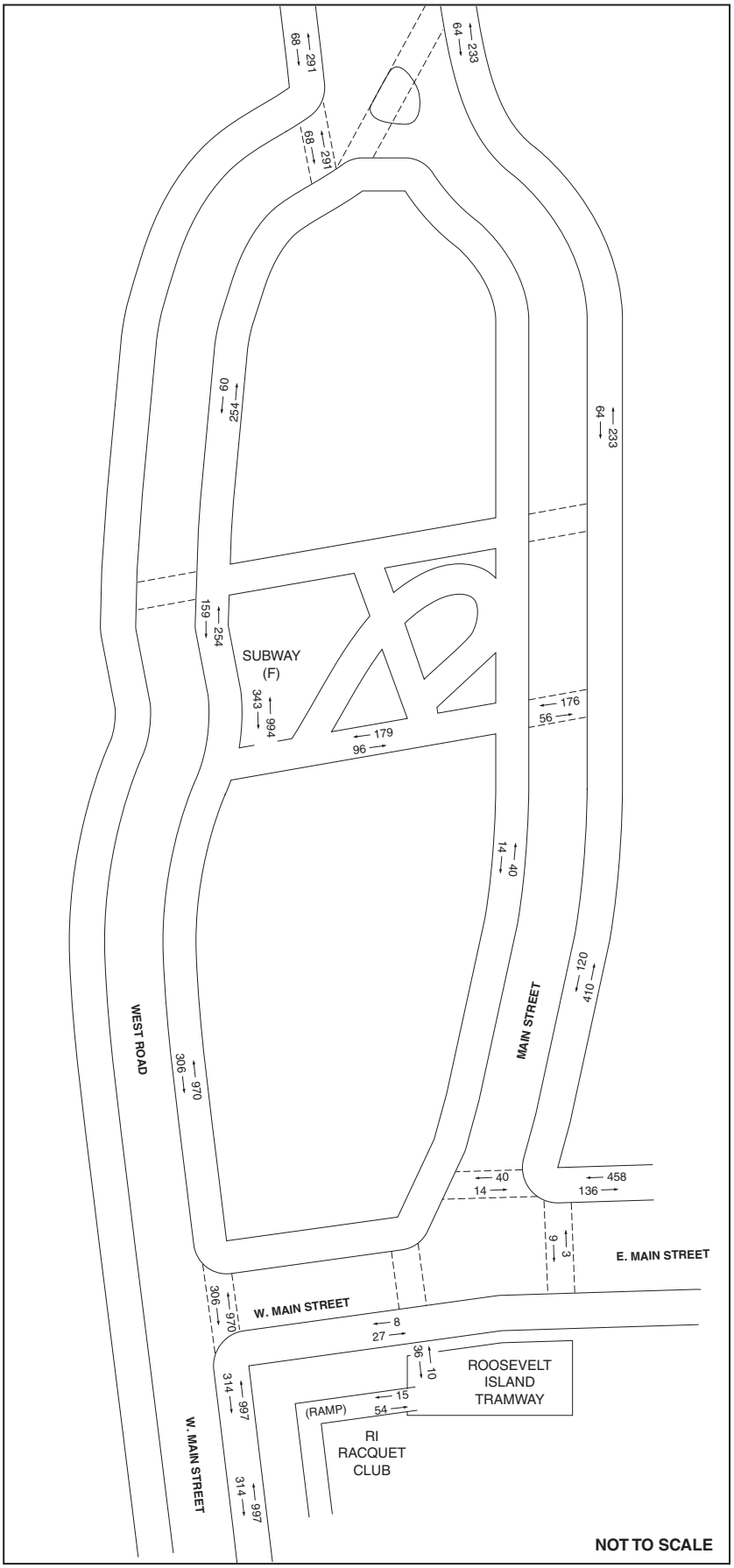
**Cornell** NYC **Tech**

**Figure 14-12**




2038 Proposed Project Net Incremental Pedestrian Volumes
Midday Peak Hour

10.9.12




2038 Proposed Project Net Incremental Pedestrian Volumes
PM Peak Hour

than 200 project-generated pedestrian trips per hour and were selected for detailed analysis. These analysis locations are depicted in **Figure 14-15** and summarized below in **Table 14-7**.

**Table 14-7**
**Sidewalk Capacity Analysis Locations**

| Intersection No. | Study Location | Sidewalk Location |
|---|---|---|
| 1 | West Road between West Main Street and Subway Station | East |
| | West Main Street (W) between West Main Street (N) and Bus Stop | East |
| | West Main Street between Bus Stop and Queensboro Bridge | East |
| 2 | Plaza Pathway between West Road and Main Street | South |
| | West Road between Subway Station and Bus Stop | East |
| | West Road between Bus Stop and Main Street | East |
| 3 | Main Street and West Road intersection | West |
| | | East |
| 4 | Main Street between West Road and Plaza Pathway | East |
| 5 | East Main Street and Main Street | East |
| | | North |

**Note:** The above analysis locations are also depicted in Figure 14-15.

## C. TRANSPORTATION ANALYSES METHODOLOGY

### TRAFFIC OPERATIONS

The operation of all of the signalized and unsignalized intersection analysis locations were assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Highway Capacity Software (HCS+ 5.5)*, which is the analysis methodology approved for use by NYCDOT. The *HCM* procedure evaluates the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

*SIGNALIZED INTERSECTIONS*

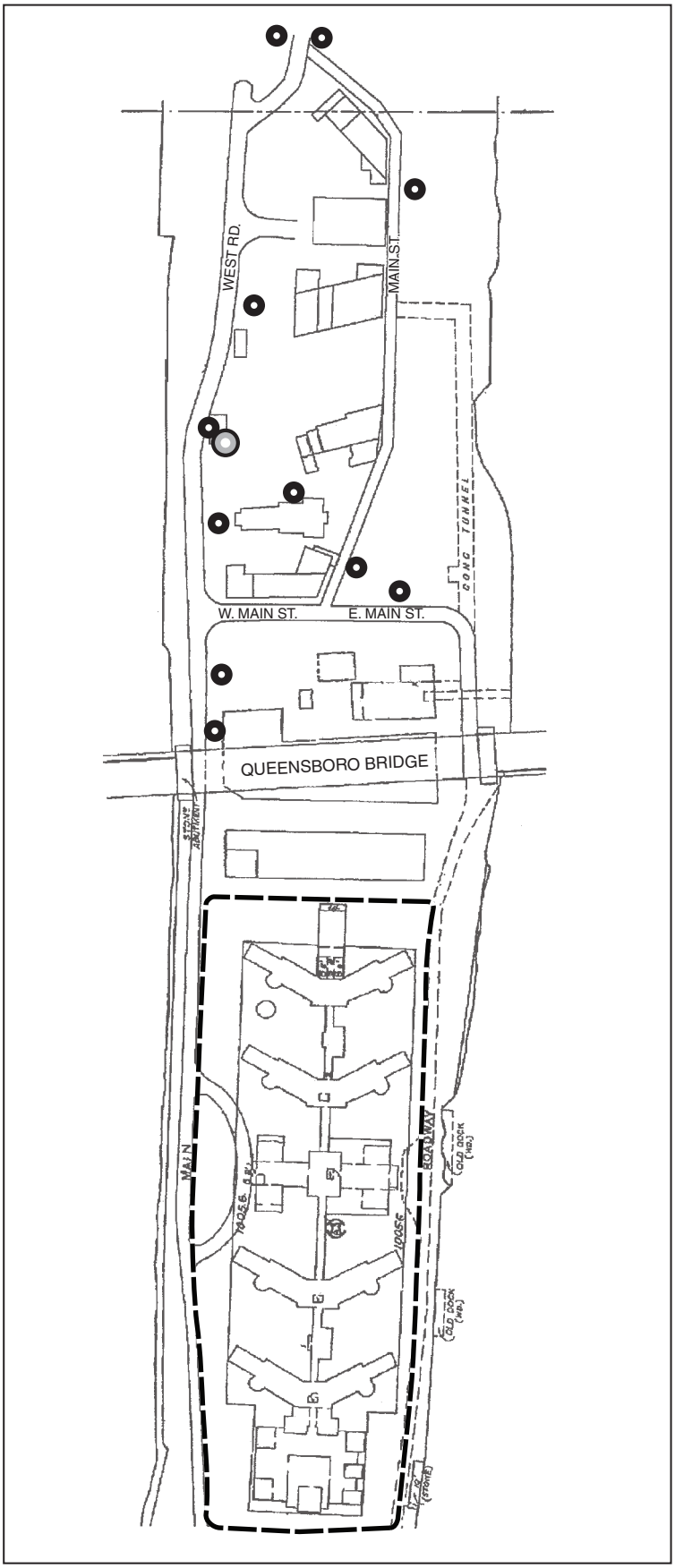
The average control delay per vehicle is the basis for determining levels of service for individual lane groups (grouping of movements in one or more travel lanes), the overall approaches to each intersection, and the overall intersection itself. Levels of service are defined in **Table 14-8**.

**Table 14-8**
**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.

10.9.12




Transit and Pedestrian Analysis Locations

**Figure 14-15**

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 14-9**.

**Table 14-9**
**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.

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.

*SIGNIFICANT IMPACT CRITERIA*

The assessment of potential significant traffic impacts of a proposed action 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 ELEMENTS*

The methodology for assessing station circulation (stairs, escalators, and passageways) 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 volume-to-capacity (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 applied to account for counter-flow friction), surging of exiting pedestrians (up to 25-percent capacity reduction applied to account for detraining surges near platforms), and the average area required for circulation. For passageways, similar considerations are made. For escalators and turnstiles, capacities are measured by the number and width of an element and the New York City Transit (NYCT optimum capacity per element, also account for the potential for surging of exiting pedestrians. In the analysis for each of these elements, volumes and capacities are presented for 15-minute intervals. The estimated v/c ratio is compared with NYCT criteria to determine a Level-of-Service (LOS) for the operation of an element, as summarized in **Table 14-10**.

**Table 14-10**
**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:** *CEQR Technical Manual* (June 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 and passageways, 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 future No Action 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 14-11** are reached or exceeded.

For escalators and control area elements, impacts are significant if the proposed action 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 Action condition, a 0.01 increase in v/c ratio is also significant.

**Table 14-11**
**Significant Impact Guidance for Stairs and Passageways**

| No Action 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 |

**Notes:** WIT = Width Increment Threshold
**Sources:** *CEQR Technical Manual* (June 2012).

*SUBWAY, TRAMWAY, AND BUS LINE HAUL CAPACITIES*

Per the *CEQR Technical Manual*, line-haul capacities are evaluated when a proposed action is anticipated to generate a perceptible number of passengers on a particular subway and bus route. For subways, if, on average, a subway car for a particular route is expected to incur five or more riders from a proposed action, a review of ridership levels at its maximum load point and/or other project-specific load points would be required to determine if the route's guideline (or practical) capacity would be exceeded. NYCT operates six different types of subway cars with different seating and guideline capacities. The peak period guideline capacity of a subway car, which ranges from 110 to 175 passengers, is compared with ridership levels to determine the acceptability of conditions.

Bus line-haul capacities are evaluated when a proposed action is anticipated to generate 50 or more bus passengers to a single bus line in one direction. The assessment of bus line-haul conditions involves analyzing bus routes at their peak load points and, if necessary, also their bus stops closest to the project site to identify the potential for the analyzed routes to exceed their guideline (or practical) capacities. NYCT, the Metropolitan Transportation Authority (MTA) Bus Company, and Long Island Buses operate three types of buses: standard buses, articulated buses, and over-the-road coaches. During peak hours, standard buses operate with up to 54 passengers per bus, articulated buses operate with up to 85 passengers per bus, and over-the-road coaches operate with up to 55 passengers per bus. According to Roosevelt Island Operating Corporation (RIOC), the Roosevelt Island Tram can carry a maximum of 109 passengers plus an attendant per cabin.

*Significant Impact Criteria*

For subways, projected increases from the future No Action condition within guideline capacity to a future Action condition that exceeds guideline capacity may be a significant impact.

## PEDESTRIAN OPERATIONS

The adequacy of the study area's sidewalks capacities in relation to the demand imposed on them is evaluated based on the methodologies presented in the 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 15-minute period is relatively uniform, whereas, platoon flow occurs when pedestrian volumes vary significantly with the peak 15-minute period. Such variation typically occurs near bus stops, subway stations, and/or where adjacent crosswalks account for much of the walkway's pedestrian volume. The LOS standards for sidewalks are summarized in **Table 14-12**.

*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 Action and Action 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.

**Table 14-12**
**LOS Criteria for Sidewalks**

| LOS | Non-Platoon Flow | Platoon Flow |
|---|---|---|
| A | ≤ 5 PMF | ≤ 0.5 PMF |
| B | > 5 and ≤ 7 PMF | > 0.5 and ≤ 3 PMF |
| C | > 7 and ≤ 10 PMF | > 3 and ≤ 6 PMF |
| D | > 10 and ≤ 15 PMF | > 6 and ≤ 11 PMF |
| E | > 15 and ≤ 23 PMF | > 11 and ≤ 18 PMF |
| F | > 23 PMF | > 18 PMF |

**Notes:** PMF = pedestrians per minute per foot
**Source:** *CEQR Technical Manual* (June 2012).

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 Action 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 Action pedestrian flow exceeds LOS C in non-CBD areas or mid-LOS D in CBD areas. **Table 14-13** summarizes the sliding scale guidance provided by the *CEQR Technical Manual* for determining potential significant sidewalk impacts. Roosevelt Island is treated as a Non-CBD area in this analysis.

## 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 three-year period for which data are available. For the high accident locations, accident trends would be identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations or whether existing unsafe conditions could adversely impact the flow of the projected new trips. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety should be identified and coordinated with NYCDOT.

## PARKING 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 actions 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.

An inventory of the Motorgate garage was also conducted to determine off-street parking utilization. Even though this garage is outside of the typical ¼-mile radius study area, it was included in the analysis since it may, in the future, need to accommodate project-generated trips. According to the *CEQR Technical Manual,* the parking study area can be extended to include facilities within a maximum of a ½-mile radius of the site. For the proposed Cornell NYC Tech project, preliminary plans indicate that 250 spaces would be provided under the Phase 1 2018 With Action condition and 500 spaces would be provided under the 2038 Full Build-out With Action condition. However, on-site parking is not required under the proposed actions and a formal parking analysis is warranted and is presented in Section J, “Parking.”

**Table 14-13**
**Significant Impact Guidance for Sidewalks**

| Non-Platoon Flow | | | | Platoon Flow | | | |
|---|---|---|---|---|---|---|---|
| **Sliding Scale Formula:** ***Y ≥ 3.53 – X/8.0*** | | | | **Sliding Scale Formula:** ***Y ≥ 3.03 – X/8.0*** | | | |
| **Non-CBD Areas** | | **CBD Areas** | | **Non-CBD Areas** | | **CBD Areas** | |
| **No Action Ped. Flow (X, PMF)** | **Action Ped. Flow Incr. (Y, PMF)** | **No Action Ped. Flow (X, PMF)** | **Action Ped. Flow Incr. (Y, PMF)** | **No Action Ped. Flow (X, PMF)** | **Action Ped. Flow Incr. (Y, PMF)** | **No Action Ped. Flow (X, PMF)** | **Action Ped. Flow Incr. (Y, PMF)** |
| 7.5 to 7.8 | ≥ 2.6 | – | – | 3.5 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 | 10.4 to 11.0 | ≥ 2.2 | 6.3 to 7.0 | ≥ 2.2 | 6.4 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. to 11.0 | ≥ 1.7 | 10. 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 Action pedestrian flow rate in PMF.
**Sources:** *CEQR Technical Manual* (June 2012).

# D. TRAFFIC

## 2011 EXISTING CONDITIONS

*ROADWAY NETWORK*

As detailed above in Section E, "Level 2 Screening Assessment," 14 key intersections near the project site were identified that would most likely be affected by the project-generated traffic.

The traffic study area encompasses 10 signalized intersections and four unsignalized intersections. The specific analysis locations were selected in coordination with NYCDOT. The traffic study area primarily encompasses intersections along Main Street on Roosevelt Island, and 36th Avenue and 21St. Street in Long Island City and Astoria, Queens. 36th Avenue, which becomes the Roosevelt Island Bridge, provides the only vehicular access to the island. The main vehicular access routes to the site within the study area are discussed below.

*Main Street*

Main Street is the central spine road of Roosevelt Island that runs north-south along the length of most of the island. It spans between the Roosevelt Island Tram station to the south and the Coler

Campus of the Coler/Goldwater Specialty Hospital & Nursing Facility to the north. Main Street operates with one travel lane in each direction, and some sections have parking on one side of the street while others have no curbside parking. A local bus (Q102) and the RIOC bus also travel along this corridor.

*36th Avenue/Roosevelt Island Bridge*

36th Avenue is an east-west street in Long Island City that extends between Northern Boulevard to the east and Roosevelt Island/the East River to the west. Between Vernon Boulevard and the river, the road transitions to the Roosevelt Island Bridge approach. West of Vernon Boulevard, 36th Avenue continues over the Roosevelt Island Bridge; a one-way loop provides access to the foot of the bridge and serves the adjacent waterfront industrial uses. East of Vernon Boulevard, 36th Avenue is primarily mixed residential and commercial, and generally operates with one travel lane and curbside parking in each direction. The Roosevelt Island Bridge operates with one travel lane per direction and has no parking.

*Vernon Boulevard*

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 Hunters Point in the south to 27th 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.

*21st Street*

21st Street is a north-south arterial that spans between Astoria to the north and Hunters 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/Triboro 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. The traffic analysis locations are shown in the Figure 14-7.

*TRAFFIC VOLUMES*

Existing traffic volumes for the study area intersections were established based on field counts, including manual turning movement counts and Automatic Traffic Recorder (ATR) counts conducted between November 2008 and March 2012. To supplement the field data, inventories of roadway geometry, traffic controls, bus stops, and parking regulations/activities were also recorded to provide appropriate inputs for the operational analyses. In addition, official signal timings obtained from NYCDOT were used in the analysis for all the signalized intersections.

Traffic counts were collected at the intersections of Main Street at West Road, East/West Main Roundabout, and the Roosevelt Island Bridge; the intersections of 36th Avenue at Vernon Boulevard, 21st Street, and 31st Street; and the intersection of 21st Street at Broadway in November 2011 for weekday AM, midday, and PM peak periods using manual intersection counts and 24-hour ATR machine counts.

Traffic counts were conducted at the intersections of 21st Street at 30th Avenue, Motorgate garage at Roosevelt Island Bridge, and Vernon Boulevard at Broadway and at 41st Avenue in March 2012 for weekday AM, midday, and PM peak periods using manual intersection counts and 24-hour ATR machine counts.

Traffic counts were conducted for the intersections of 21st Street at Broadway, Astoria Boulevard at 21st Street, Hoyt Avenue North at 21st Street, and Hoyt Avenue South at 21st Street in June 2008 as part of another project (the Halletts Point Development Project) for weekday AM, midday, and PM peak periods using manual intersection counts and 24-hour ATR machine counts. A traffic count validation was performed for that project in September 2011 to determine whether traffic volumes changed since 2008 at its analysis locations. The traffic validation analysis concluded that, overall, 2011 peak hour traffic volumes were comparable to 2008 in its traffic study area, and the 2008 count data were approved by NYCDOT for continued use. These traffic counts were used along with observations of traffic conditions to determine levels of service for the weekday AM, midday, and PM peak hours, which are generally 7:30 to 8:30 AM, 12:00 to 1:00 PM, and 4:30 to 5:30 PM. The following is a summary of traffic volumes within the traffic study area during the weekday peak hours.

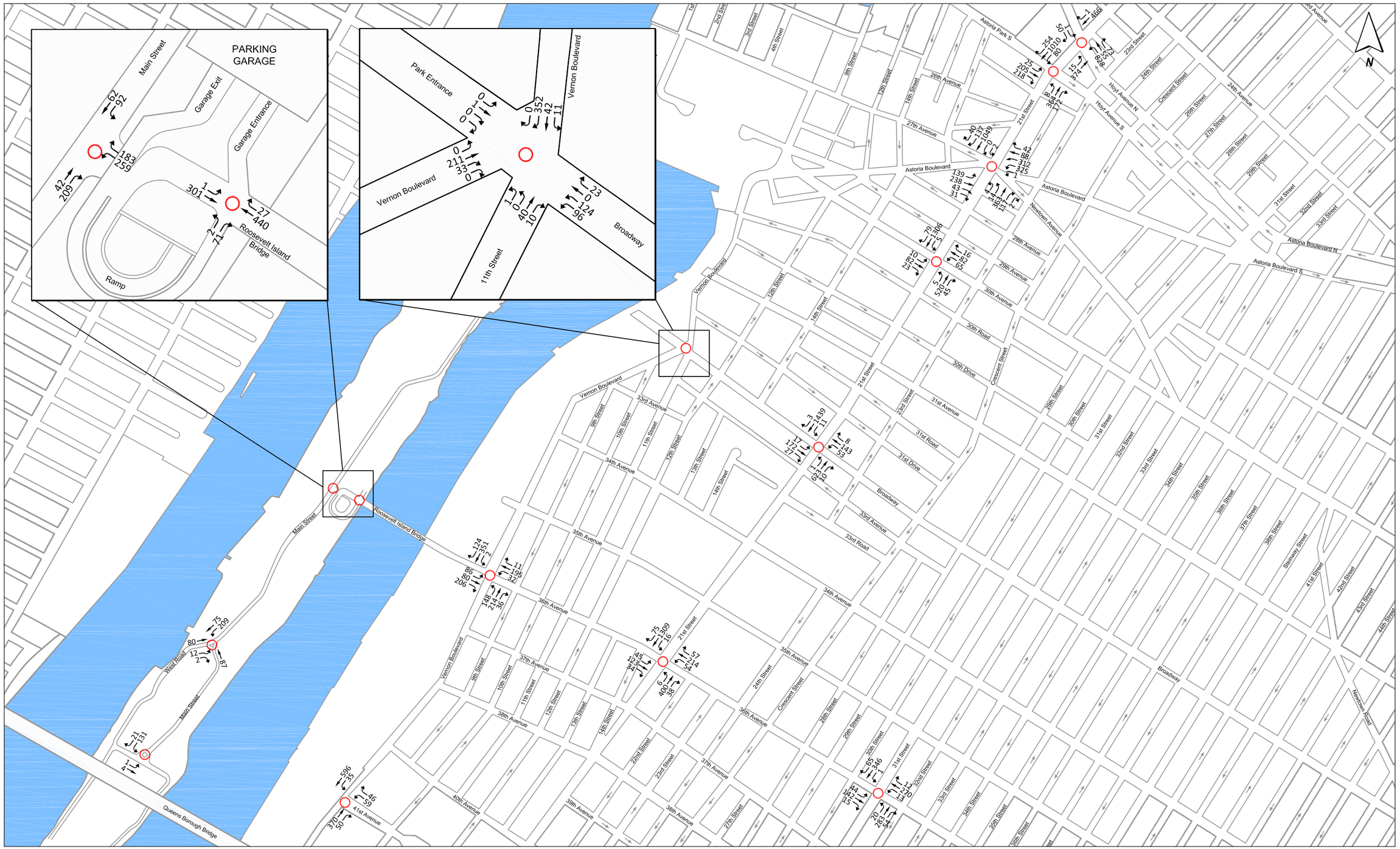
Along Main Street, traffic volumes range from 75 to 350 vehicles per hour (vph) in each direction during weekday AM, midday and PM peak hours. The Main Street and East/West Main Street loop road around the Goldwater Hospital campus (the proposed project site) at the southern end of Roosevelt Island carries up to 135 vph during weekday peak hours.

The Roosevelt Island Bridge carries approximately 375 to 475 vph per direction in the weekday AM peak hour and 200 to 275 vph per direction in the midday peak hour. During the PM peak hour, traffic volumes are approximately 575 vph in the eastbound (outbound) direction and 375 vph in the westbound (inbound) direction. Traffic volumes on 36th Avenue range from 125 to 300 vph per direction during all weekday peak hours except in the AM peak hour, when westbound volumes are between 300 and 475 vph. Along Vernon Boulevard between 41st Avenue and Broadway, the weekday AM peak hour traffic volumes range from 325 to 400 vph in the northbound direction and 475 to 650 vph in the southbound direction, and midday peak hour volumes range from 275 to 425 vph per direction. In the weekday PM peak hour, volumes range from 500 to 675 vph in the northbound direction and 425 to 550 vph in the southbound direction.

Traffic volumes on 21st Street range from 400 to 650 vph in the northbound direction and 1,225 to 1,450 vph in the southbound direction during the weekday AM peak hour. During the midday peak hour, traffic volumes along 21st Street range from 725 to 950 vph per direction, except between Astoria Boulevard and Hoyt Avenue North where northbound volumes are between 375 and 575 vph. During the PM peak hour, traffic volumes range from 675 to 975 vph per direction, except between 36th Avenue and Astoria Boulevard where northbound volumes are between 1,100 and 1,350 vph. The existing traffic volumes for the weekday AM, midday, and PM peak hours are presented in **Figure 14-16**, **Figure 14-17**, and **Figure 14-18**, respectively.

*LEVELS OF SERVICE*

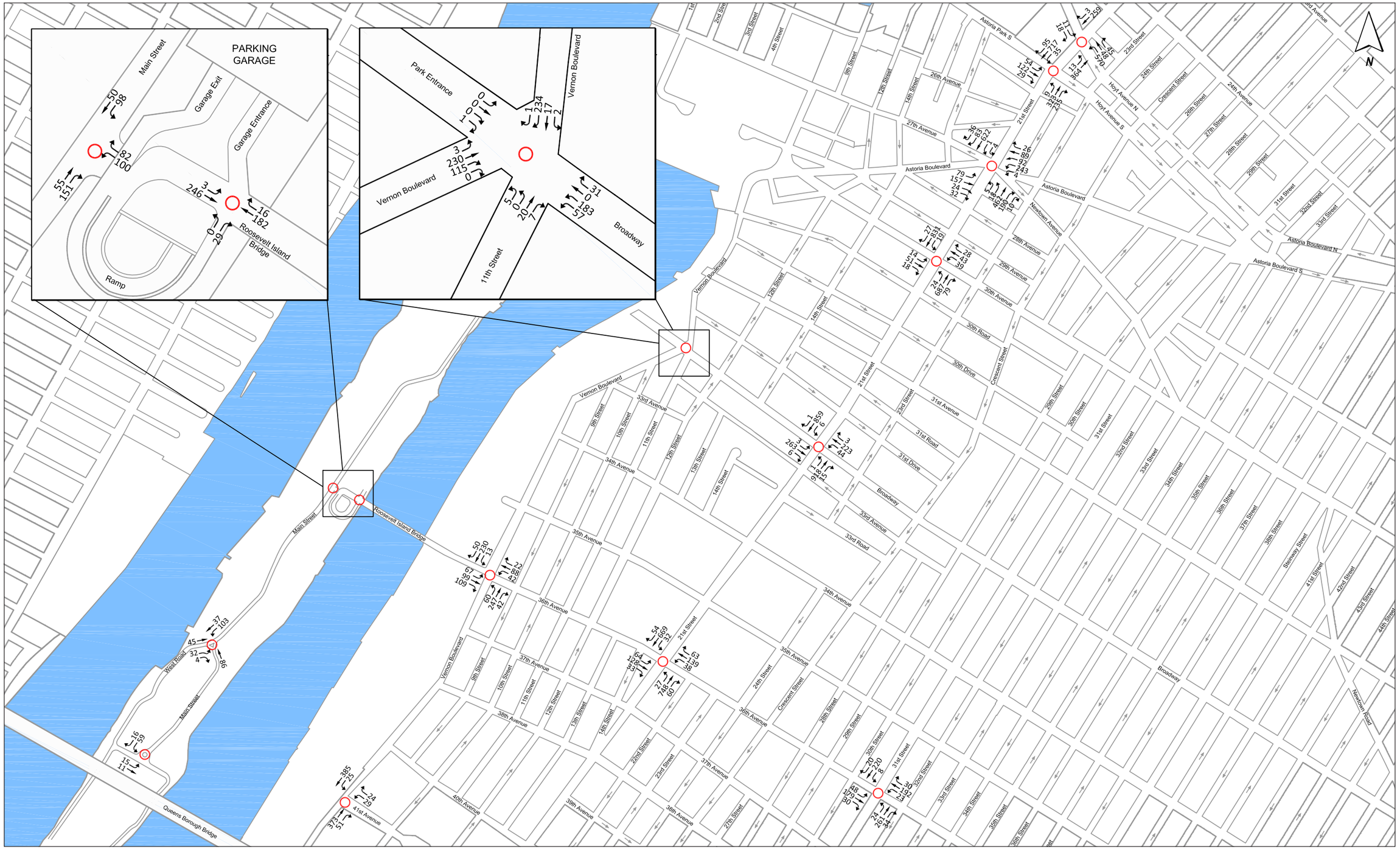
**Tables 14-14a** and **14-14b** provide an overview of the levels of service that characterize existing "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Detailed descriptions of the existing conditions traffic levels of service are provided in **Table 14-15** and **Table 14-16**. Overall, the capacity analysis indicates that most of the study area's intersection approaches/lane groups operate acceptably—




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

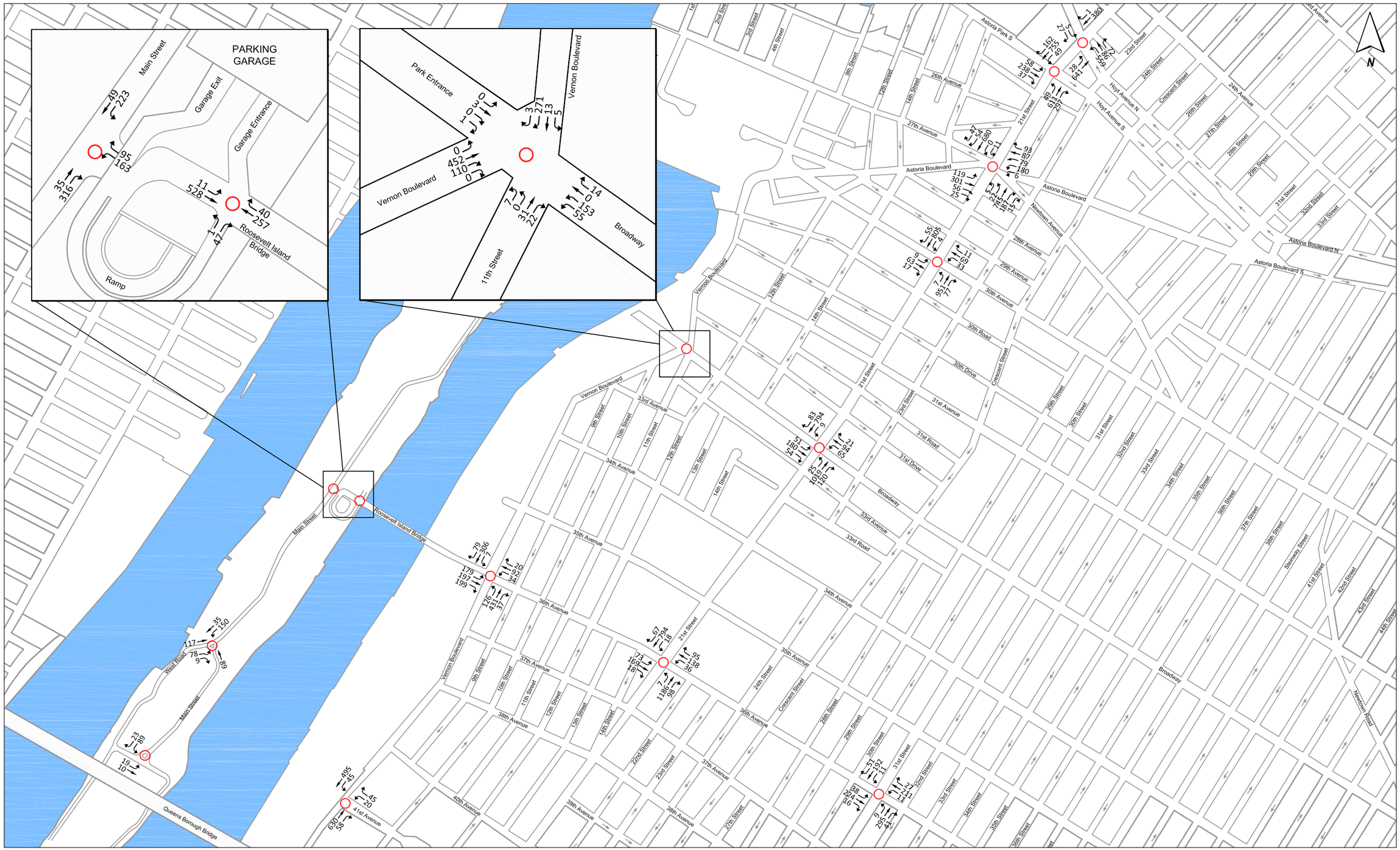
Weekday AM Peak Hour Existing Traffic Volumes

**Figure 14-16**




Weekday Midday Peak Hour Existing Traffic Volumes

**Figure 14-17**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*

Weekday PM Peak Hour Existing Traffic Volumes

**Figure 14-18**

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 14-14a**
**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 | 11 | 12 | 12 |
| Intersections at Overall LOS D | 3 | 2 | 2 |
| Intersections at Overall LOS E | 0 | 0 | 0 |
| Intersections Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes the 14 analyzed intersections (10 signalized and 4 unsignalized). | | | |

**Table 14-14b**
**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 | 46 | 52 | 50 |
| Traffic movements at unacceptable LOS D | 7 | 6 | 5 |
| Traffic movements at LOS E | 6 | 1 | 4 |
| Traffic movements at LOS F | 0 | 0 | 0 |
| Number of individual traffic movements* | 59 | 59 | 59 |

**Table 14-15**
**2011 Existing Conditions Traffic Level of Service Analysis**
**Signalized Intersections**

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **36th Avenue at Vernon Boulevard** | | | | | | | | | | | | |
| EB | L | 0.32 | 13.5 | B | L | 0.22 | 12.4 | B | L | 0.49 | 14.7 | B |
| | TR | 0.60 | 17.2 | B | TR | 0.43 | 14.6 | B | TR | 0.81 | 21.2 | C |
| WB | LTR | 0.48 | 15.2 | B | LTR | 0.36 | 13.8 | B | LTR | 0.36 | 13.9 | B |
| NB | LTR | 1.04 | 41.9 | D | LTR | 0.84 | 23.1 | C | LTR | 1.04 | 42.3 | D |
| SB | LTR | 0.99 | 37.6 | D | LTR | 0.64 | 17.8 | B | LTR | 0.80 | 22.6 | C |
| | **Overall Intersection** | | **29.5** | **C** | **Overall Intersection** | | **17.9** | **B** | **Overall Intersection** | | **26.6** | **C** |
| **36th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.79 | 47.5 | D | LTR | 0.80 | 48.1 | D | LTR | 0.93 | 52.8 | D |
| WB | LTR | 0.95 | 51.9 | D | LTR | 0.82 | 47.8 | D | LTR | 0.81 | 47.2 | D |
| NB | LTR | 0.33 | 12.1 | B | LTR | 0.64 | 16.6 | B | LTR | 0.87 | 22.4 | C |
| SB | LTR | 0.97 | 26.4 | C | LTR | 0.58 | 15.6 | B | LTR | 0.64 | 16.7 | B |
| | **Overall Intersection** | | **29.4** | **C** | **Overall Intersection** | | **23.9** | **C** | **Overall Intersection** | | **26.5** | **C** |
| **21st Street and 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 |
| 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** | | **29.4** | **C** | **Overall Intersection** | | **27.5** | **C** | **Overall Intersection** | | **32.8** | **C** |
| **36th Avenue and 31st Street** | | | | | | | | | | | | |
| EB | LTR | 0.70 | 33.1 | C | LTR | 0.80 | 35.2 | D | LTR | 0.91 | 38.7 | D |
| WB | LTR | 0.73 | 32.3 | C | LTR | 0.72 | 32.1 | C | LTR | 0.73 | 32.4 | C |
| NB | LTR | 0.60 | 16.9 | B | LTR | 0.55 | 16.0 | B | LTR | 0.65 | 17.8 | B |
| SB | LTR | 0.61 | 16.7 | B | LTR | 0.44 | 13.8 | B | LTR | 0.44 | 14.0 | B |
| | **Overall Intersection** | | **23.0** | **C** | **Overall Intersection** | | **23.5** | **C** | **Overall Intersection** | | **25.1** | **C** |

## Table 14-15 (cont'd)
## 2011 Existing Conditions Traffic Level of Service Analysis
## Signalized Intersections

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **Vernon Boulevard and 41st Avenue** | | | | | | | | | | | | |
| WB | LR | 0.27 | 16.1 | B | LR | 0.17 | 15.1 | B | LR | 0.23 | 15.7 | B |
| NB | TR | 0.60 | 12.2 | B | TR | 0.57 | 11.8 | B | TR | 0.88 | 17.5 | B |
| SB | LT | 0.95 | 20.9 | C | LT | 0.56 | 11.7 | B | LT | 0.78 | 15.4 | B |
| | **Overall Intersection** | | **17.3** | **B** | **Overall Intersection** | | **12.0** | **B** | **Overall Intersection** | | **16.5** | **B** |
| **30th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.47 | 37.6 | D | LTR | 0.32 | 34.2 | C | LTR | 0.32 | 34.0 | C |
| WB | LTR | 0.67 | 43.9 | D | LTR | 0.47 | 38.0 | D | LTR | 0.43 | 36.7 | D |
| NB | LTR | 0.48 | 14.0 | B | LTR | 0.69 | 17.8 | B | LTR | 0.81 | 20.4 | C |
| SB | LTR | 0.98 | 27.8 | C | LTR | 0.75 | 19.1 | B | LTR | 0.61 | 16.1 | B |
| | **Overall Intersection** | | **26.2** | **C** | **Overall Intersection** | | **20.6** | **C** | **Overall Intersection** | | **20.4** | **C** |
| **Broadway and Vernon Boulevard/11th Street** | | | | | | | | | | | | |
| 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 |
| 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 |
| NB | LTR | 0.36 | 40.8 | D | LTR | 0.21 | 32.8 | C | LTR | 0.32 | 38.0 | D |
| | **Overall Intersection** | | **39.3** | **D** | **Overall Intersection** | | **24.4** | **C** | **Overall Intersection** | | **23.9** | **C** |
| **Astoria Boulevard and 27th Avenue/ Newtown Avenue and 21st Street** | | | | | | | | | | | | |
| 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 | D | TR | 0.68 | 48.0 | D |
| 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** | | **52.1** | **D** | **Overall Intersection** | | **51.2** | **D** | **Overall Intersection** | | **43.0** | **D** |
| **Hoyt Avenue North and 21st Street** | | | | | | | | | | | | |
| 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 |
| 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** | | **48.2** | **D** | **Overall Intersection** | | **35.7** | **D** | **Overall Intersection** | | **48.0** | **D** |
| **Hoyt Avenue South and 21st Street** | | | | | | | | | | | | |
| 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 |
| 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** | | **32.1** | **C** | **Overall Intersection** | | **17.4** | **B** | **Overall Intersection** | | **25.6** | **C** |

Note: (1): Control delay is measured in seconds per vehicle

**Table 14-16**
**2011 Existing Conditions Traffic Level of Service Analysis**
**Unsignalized Intersections**

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **East-West Main Street at Main Street** | | | | | | | | | | | | |
| EB | LT | - | 7.4 | A | LT | - | 7.7 | A | LT | - | 7.6 | A |
| SB | LR | - | 8.4 | A | LR | - | 7.6 | A | LR | - | 8.0 | A |
| | **Overall Intersection** | | **8.3** | **A** | **Overall Intersection** | | **7.6** | **A** | **Overall Intersection** | | **7.9** | **A** |
| **West Road at Main Street** | | | | | | | | | | | | |
| EB1 | LR | - | 10.1 | B | LR | - | 8.8 | A | LR | - | 15.8 | C |
| EB2 | LR | - | 12.5 | B | LR | - | 10.9 | B | LR | - | 13.2 | B |
| NB | LT | - | 10.4 | B | LT | - | 9.3 | A | LT | - | 15.8 | C |
| SB | TR | - | 11.6 | B | TR | - | 9.0 | A | TR | - | 12.0 | B |
| | **Overall Intersection** | | **11.2** | **B** | **Overall Intersection** | | **9.4** | **A** | **Overall Intersection** | | **14.6** | **B** |
| **Roosevelt Island Bridge Ramp at Main Street** | | | | | | | | | | | | |
| WB | LR | - | 21.8 | C | LR | - | 10.7 | B | LR | - | 13.9 | B |
| NB | T | - | 10.6 | B | T | - | 9.3 | A | T | - | 10.0 | A |
| | R | - | 12.6 | B | R | - | 9.4 | A | R | - | 14.0 | B |
| SB | LT | - | 13.1 | B | LT | - | 10.6 | B | LT | - | 16.3 | C |
| | **Overall Intersection** | | **17.2** | **C** | **Overall Intersection** | | **10.1** | **B** | **Overall Intersection** | | **14.6** | **B** |
| **Roosevelt Island Bridge Ramp at Motorgate Garage Driveway** | | | | | | | | | | | | |
| EB | LT | - | 8.7 | A | LT | - | 7.7 | A | LT | - | 8.0 | A |
| NB | LR | - | 11.4 | B | LR | - | 10.0 | A | LR | - | 14.6 | B |
| | **Overall Intersection** | | **1.1** | **A** | **Overall Intersection** | | **0.7** | **A** | **Overall Intersection** | | **0.8** | **A** |

**Note:** (1): Control delay is measured in seconds per vehicle

This summary overview of existing conditions indicates that:

- In the weekday AM peak hour, none of the 14 intersections analyzed are operating at overall LOS E or F, and three 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 significant delays (the overall intersection LOS is a weighted average of all the individual traffic movements). Six individual traffic movements out of 59 such movements (e.g., left turns from one street to another, through traffic on one street passing through the intersection, etc.) analyzed are at LOS E or F, while seven are operating at unacceptable LOS D.
- In the weekday midday peak hour, none of the intersections is operating at overall LOS E or F, and two intersection are operating at marginally acceptable/unacceptable LOS D. One individual traffic movement operates at LOS E or F and six other traffic movements operate at unacceptable LOS D.
- In the weekday PM peak hour, no intersections operate at overall LOS E or F, and two intersections are operating at marginally acceptable/unacceptable LOS D. Four individual traffic movements operate at LOS E or F and five other traffic movements operate at unacceptable LOS D.

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

Traffic movements operating at unacceptable levels of service are listed below.

*36th Avenue and 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday and PM)

- Westbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday and PM)

*Broadway and 21st Street*

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

*Broadway and Vernon Boulevard / 11th Street*

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

*Astoria Boulevard / 27th Avenue / Newtown Avenue and 21st Street*

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

*Hoyt Avenue North and 21st Street*

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

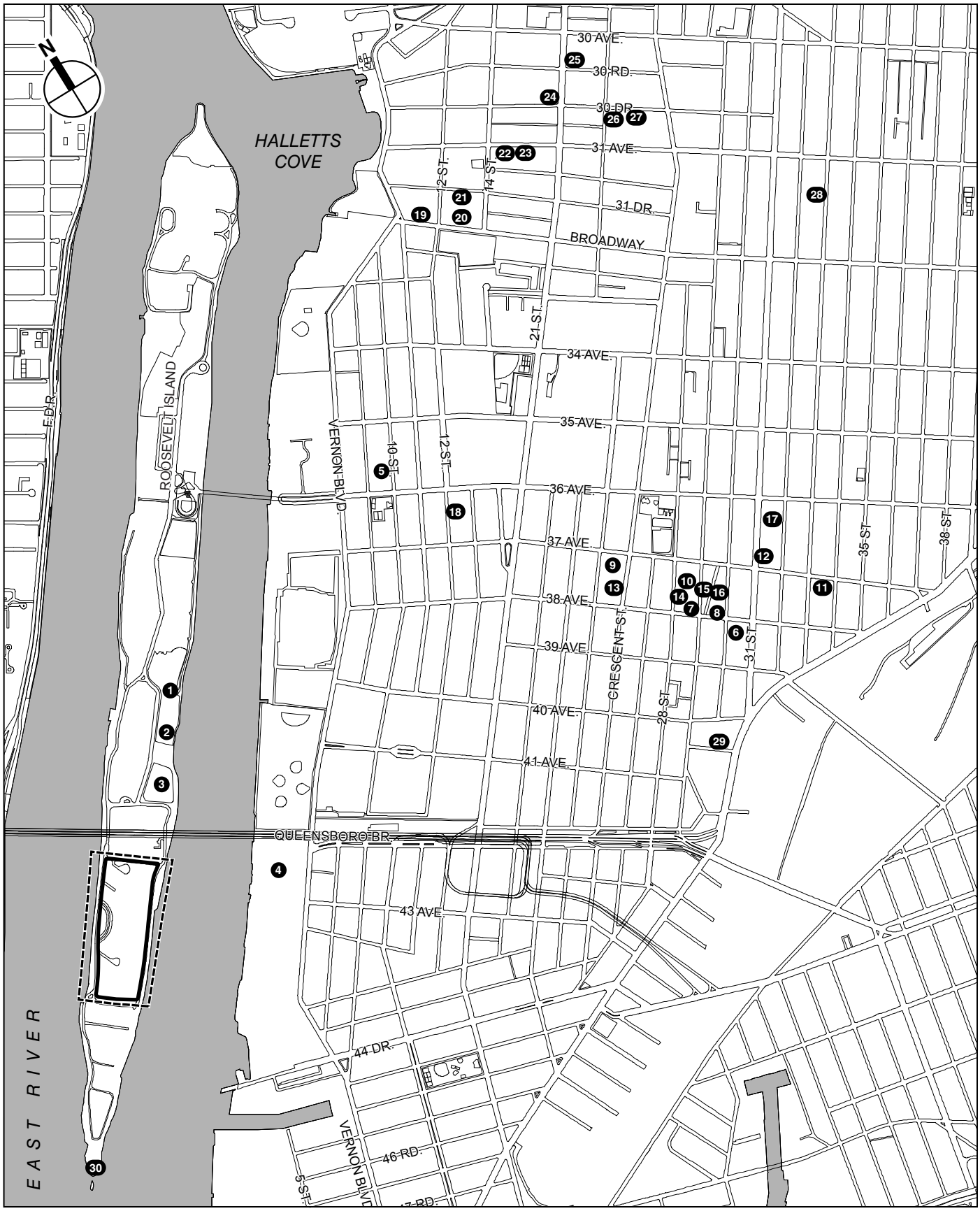
*Hoyt Avenue South and 21st Street*

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

## 2018 NO ACTION CONDITION

The 2018 No Action 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 2018. In addition, planned or proposed background projects were researched within the study area; 30 No Action projects are planned or proposed within or just outside the traffic study area. **Table 14-17** and **Figure 14-19** summarize the projects that were included in the future 2018 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.

After reviewing the development programs for each of the 30 No Action projects, it was determined that background growth will address the increase in traffic and pedestrian levels for three 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 27 projects were then determined, their traffic assigned, and their trips added to background growth to form the 2018 No Action traffic volumes.




*Project Site*

*Rezoning Area (Special Southern Roosevelt Island District)*

❶ *No Action Project (See Table 14-17 for reference)*

0 1000 FEET

**SCALE**

Future Development Projects in the 2018 No Action Condition

**Figure 14-19**

## Table 14-17
## 2018 Analysis Year No Action Projects

| Map No. | Project/Location | Description | Transportation Assumptions | Build Year |
|---|---|---|---|---|
| 1 | Main St, Roosevelt Island, Block 1373 | Residential development with 540 units (Southtown) | 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 |
| 2 | Main St, Roosevelt Island, Block 1373 | | Same assumptions as site 1. | 2018 |
| 3 | Main St, Roosevelt Island, Block 1373 | | Same assumptions as site 1. | 2018 |
| 4 | 42-02 Vernon Blvd | Mixed-use development with 1,045 residential units;161,490 gsf retail; 1,001,642 gsf commercial office; a 126,401 gsf community facility; with 1,400 parking spaces | Assumptions from *Silver Cup West EIS* (2006) | 2016 |
| 5 | 35-34 10th St | Residential development with 8 units | Included in background growth | 2013 |
| 6 | Queens Block 383, Lot 9 | Residential development with 14 units | Assumptions from *Dutch Kills Rezoning and Related Actions FEIS* (2008) with updated modal splits and vehicle occupancies based on 2006-2010 Census American Community Survey (ACS) estimates | 2017 |
| 7 | Queens Block 370, Lot 29 | Residential development with 22 units | Same assumptions as Site 3 | 2017 |
| 8 | Queens Block 371, Lot 38 | Residential development with 22 units | Same assumptions as Site 3 | 2017 |
| 9 | Queens Block 367, Lots 15, 17, and 23 | Mixed-use development with 24 residential units and a 31,773 gsf community facility | Same assumptions as Site 3 | 2017 |
| 10 | Queens Block 370, Lot 12 | Residential development with 61 units | Same assumptions as Site 3 | 2017 |
| 11 | Queens Block 375, Lot 18 | Residential development with 25 units | Same assumptions as Site 3 | 2017 |
| 12 | Queens Block 600, Lots 8 and 111 | Residential development with 29 units | Same assumptions as Site 3 | 2017 |
| 13 | Queens Block 367, Lot 33 | Residential development with 27 units | Same assumptions as Site 3 | 2017 |
| 14 | Queens Block 370, Lot 3 | Residential development with 6 units | Same assumptions as Site 3 | 2017 |
| 15 | Queens Block 370, Lots 26 and 28 | Residential development with 12 units | Same assumptions as Site 3 | 2017 |
| 16 | Queens Block 371, Lots 33 and 34 | Residential development with 26 units | Same assumptions as Site 3 | 2017 |
| 17 | Queens Block 600, Lot 34 | Residential development with 19 units | Same assumptions as Site 3 | 2017 |
| 18 | Queens Block 351, Lot 14 (36-11 12 Street) | A 20,000 gsf community facility | Included in background growth | 2013 |
| 19 | Queens Block 502, Lot 41 (11-15 Broadway) | Residential development with 82 units | Same assumptions as Site 3 | 2012 |
| 20 | Queens Block 519, Lot 6 (12-07 Broadway) | Residential development with 190 units | Same assumptions as Site 3 | 2012 |
| 21 | Queens Block 519, Lot 31 (12-20 31 Drive) | Residential development with 6 units | Same assumptions as Site 3 | 2013 |
| 22 | Queens Block 533, Lot 31 (14-18 31 Ave) | Residential development with 6 units | Same assumptions as Site 3 | 2017 |
| 23 | Queens Block 533, Lot 37 (14-34 31 Drive) | Residential development with 14 units and 8 parking spaces | Same assumptions as Site 3 | 2013 |
| 24 | Queens Block 535, Lot 51 (30-50 21 Street) | Residential development with 65 units and 18 parking spaces | Same assumptions as Site 3 | 2012 |
| 25 | Queens Block 549, Lot 14 (30-11 21 Street) | Residential development with 33 units | Same assumptions as Site 3 | 2012 |
| 26 | Queens Block 570, Lot 30 (23-12 30 Drive) | Residential development with 20 units | Same assumptions as Site 3 | 2012 |
| 27 | Queens Block 570, Lot 33 (23-20 30 Drive) | Residential development with 22 units | Same assumptions as Site 3 | 2012 |
| 28 | Queens Block 614, Lot 54 (31-30 33 Street) | Mixed-use development with 66 residential units and a 3,371 gsf community facility | Included in background growth | 2012 |
| 29 | 29-27 40th Road (Fairfield Inn) | Development of a 60,680 gsf hotel | Assumptions from *Dutch Kills Rezoning and Related Actions FEIS* (2008) | 2012 |
| 30 | Four Freedoms Park | New RIOC open space that will include a memorial to President Roosevelt | Included in background growth | 2012 |

It is projected that the Southtown development on Roosevelt Island would be completed by 2018. This development is not expected to supply on-site parking. Therefore, it is assumed that auto trips destined to Southtown would park in the Motorgate garage, and traffic has been assigned there accordingly. A small number of autos and all taxi and delivery trips would be destined to and originate from Southtown.

Overall, the volume of vehicle trips that would be generated by these developments is estimated to be 355 inbound and 270 outbound in the AM peak hour, 345 inbound and 285 outbound in the midday peak hour, and 457 inbound and 463 outbound in the PM peak hour.

In addition, the Goldwater Hospital on Roosevelt Island—where the proposed project would be built—would be vacated. Therefore, since the Goldwater Hospital site would be vacated with or without the proposed actions, vehicle trips during the AM, midday and PM peak hours have been removed from the 2018 No Action traffic network. According to existing traffic counts, the Goldwater Hospital currently generates 101 inbound and 39 outbound trips in the AM peak hour, 28 inbound and 23 outbound trips in the midday peak hour, and 67 inbound trips and 149 outbound trips in the PM peak hour.

The net increase in traffic as a result of planned and proposed projects and the planned vacating of the Goldwater Hospital would be 254 inbound and 231 outbound trips in the AM peak hour, 317 inbound and 262 outbound trips in the midday peak hour, and 390 inbound and 314 outbound trips 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 2018 No Action traffic volumes, which are shown in **Figures 14-20 to 14-22**.

Projected traffic volume increases in the study area roadway network due to the cumulative effect of background projects, the annual growth in background traffic and the vacating of the Goldwater Hospital are quantified and discussed below.

Because the Goldwater Hospital site would be vacated and the Southtown development would not generate significant vehicular traffic compared to Goldwater Hospital, there would be a projected decrease in traffic on Main Street south of the Roosevelt Island Bridge and between Main Street and Vernon Boulevard on the Roosevelt Island Bridge. Traffic volumes along Main Street and the Bridge are expected to decrease by approximately 25 to 100 vph in the westbound/southbound direction during the weekday AM, midday and PM peak hours. In the northbound/eastbound direction along Main Street and the Bridge, traffic volumes are expected to decrease by approximately 25 to 150 vph in all time periods.

East of Vernon Boulevard, eastbound traffic volumes along 36th Avenue are expected to decrease by up to 100 vph during all peak hours. Traffic volumes in the westbound direction are expected to decrease by up to 70 vph in all peak hours, with the exception of the westbound 36th Avenue approach at 31st Street, which would increase by about up to 5 vph in the midday peak period.

Vernon Boulevard traffic volumes between 41st Avenue and Broadway are expected to increase by up to 75 vph in the northbound direction and 50 vph in the southbound direction during all peak hours.

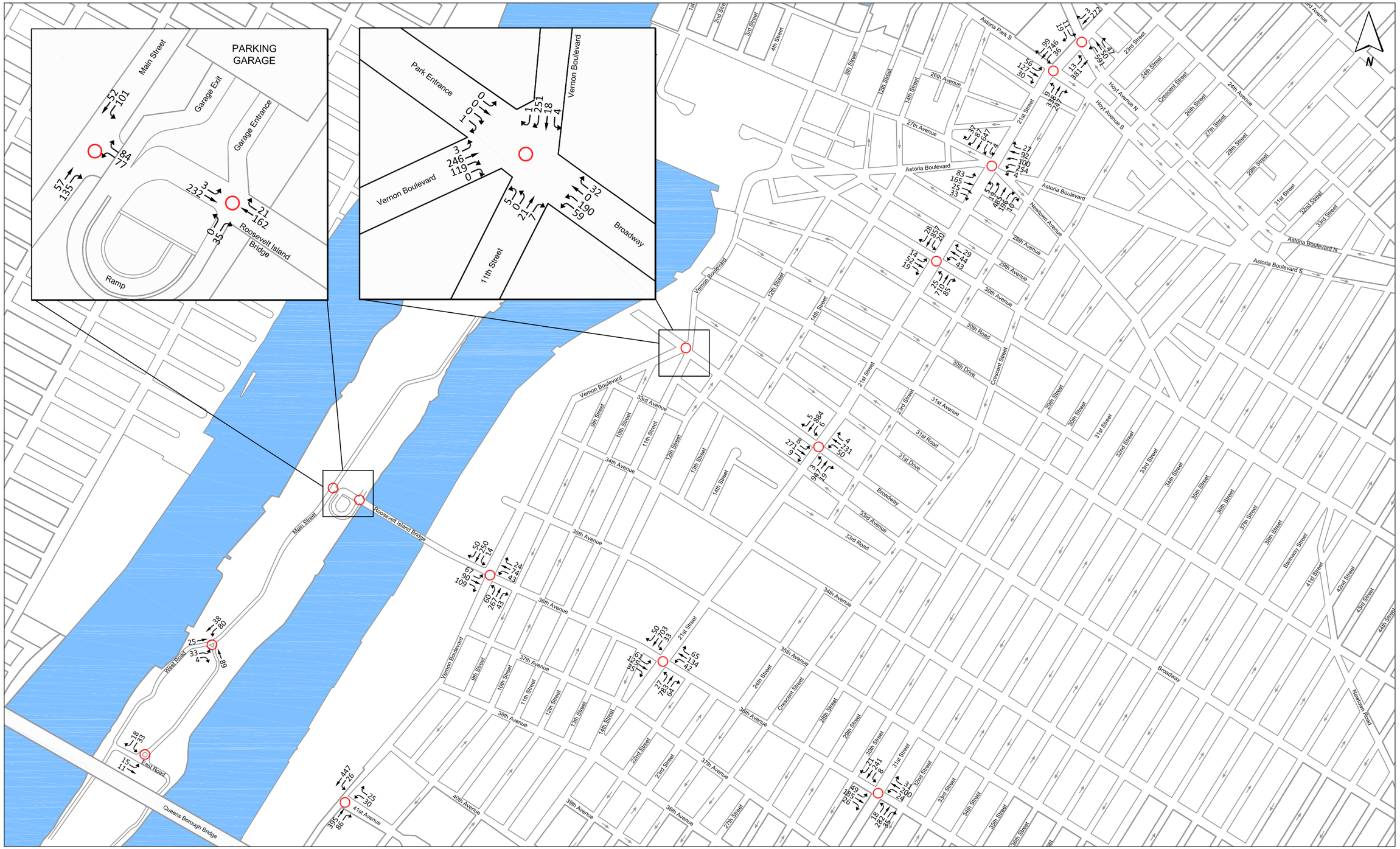
Traffic volumes along 21st Street between 36th Avenue and Hoyt Avenue North are generally expected to increase by 5 to 20 vph in the northbound direction and 5 to 10 vph in the southbound direction during the weekday AM, midday and PM peak hours.

NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

Weekday AM Peak Hour 2018 No Build Traffic Volumes

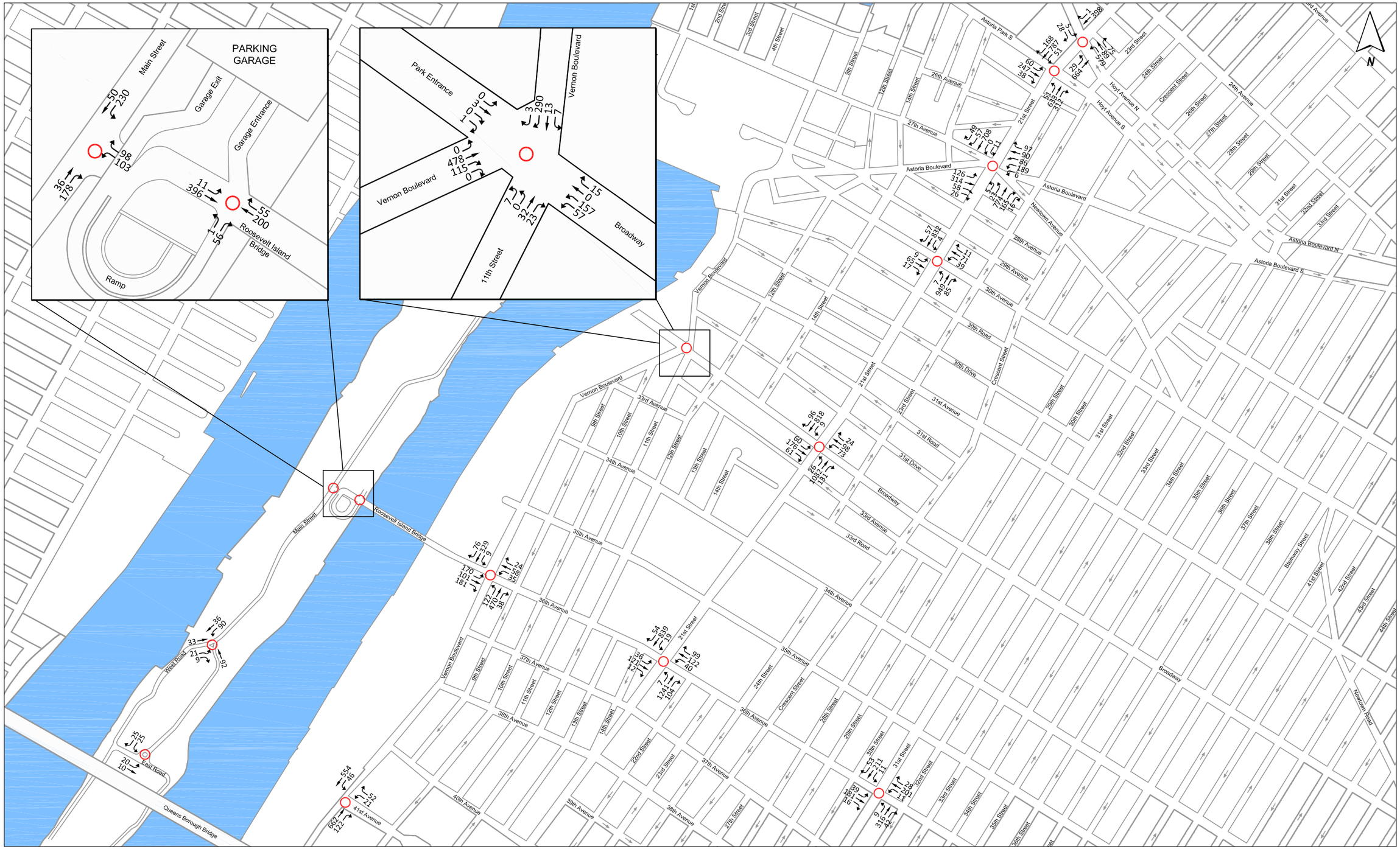
**Figure 14-20**

10.9.12




Weekday Midday Peak Hour 2018 No Build Traffic Volumes

**Figure 14-21**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*

Weekday PM Peak Hour 2018 No Build Traffic Volumes

**Figure 14-22**

*TRAFFIC CONDITIONS*

The traffic analyses for the 2018 No Action condition include changes at one intersection because of a future planned NYCDOT improvement—36th Avenue and 31st Street.

A bus bulb-out will be implemented by NYCDOT on the northbound and southbound approaches of 31st Street. The bulb-outs will be installed on the east side of the northbound approach and on the west side of the southbound approach within the narrow right lanes, which are too narrow for vehicular travel because of existing raised curbs around subway columns, and, according to observations, are used for loading and unloading. Because the bulb-outs would build upon existing raised curbs adjacent to the travel lanes, the northbound and southbound approaches would continue to operate as shared left-turn/through/right-turn lanes.

*LEVELS OF SERVICE*

Based on these traffic conditions, 2018 No Action traffic levels of service were determined for the 14 analysis locations. **Tables 14-18a and 14-18b** provide an overview of the levels of service that characterize 2018 No Action "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Detailed descriptions of the 2018 No Action traffic levels of service are provided in **Table 14-19** and **Table 14-20**.

The summary overview of the 2018 No Action condition indicates that:

- In the weekday AM peak hour, one out of the 14 study area intersections analyzed would operate at overall LOS E or F, and five intersections would operate at marginally acceptable/unacceptable LOS D. Nineteen individual traffic movements out of approximately 59 movements analyzed would operate at unacceptable levels of service as compared to 13 in the existing conditions.
- In the weekday midday peak hour, one out of the 14 intersections would operate at overall LOS E, and one intersection would operate at LOS D. Eight individual movements would operate at unacceptable levels of service, which is one more than existing conditions.
- In the weekday PM peak hour, no intersections would operate at LOS E and LOS F, and four intersections would operate at marginally acceptable levels of service. Ten individual traffic movements would operate at unacceptable levels of service as compared to nine in the existing conditions.

All four of the unsignalized intersections on Roosevelt Island 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 with the exception of the following:

*Roosevelt Island Bridge / 36th Avenue and Vernon Boulevard*

- Northbound Vernon Boulevard shared left-turn/through/right-turn (weekday AM and PM)
- Southbound Vernon Boulevard shared left-turn/through/right-turn (weekday AM)

## Table 14-18a
## 2018 No Action Traffic Level of Service Summary – Overall Intersections

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Intersections at Overall LOS A/B/C | 8 | 12 | 10 |
| Intersections at Overall LOS D | 5 | 1 | 4 |
| Intersections at Overall LOS E | 1 | 1 | 0 |
| Intersections Overall LOS F | 0 | 0 | 0 |
| **Note:** Includes the 14 analyzed intersections (10 signalized and 4 unsignalized). | | | |

## Table 14-18b
## 2018 No Action 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 | 40 | 51 | 49 |
| Traffic movements at unacceptable LOS D | 8 | 4 | 5 |
| Traffic movements at LOS E | 10 | 3 | 1 |
| Traffic movements at LOS F | 1 | 1 | 4 |
| Number of individual traffic movements* | 59 | 59 | 59 |

## Table 14-19
## 2018 No Action Traffic Level of Service Analysis
## Signalized Intersections

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **36th Avenue at Vernon Boulevard** | | | | | | | | | | | | |
| EB | L | 0.29 | 13.0 | B | L | 0.22 | 12.4 | B | L | 0.46 | 14.3 | B |
| | TR | 0.59 | 16.9 | B | TR | 0.41 | 14.3 | B | TR | 0.59 | 15.6 | B |
| WB | LTR | 0.37 | 13.7 | B | LTR | 0.33 | 13.5 | B | LTR | 0.28 | 12.8 | B |
| NB | LTR | 1.12 | 75.0 | E | LTR | 0.89 | 26.6 | C | LTR | 1.15 | 88.6 | F |
| SB | LTR | 1.06 | 57.4 | E | LTR | 0.68 | 19.0 | B | LTR | 0.85 | 25.3 | C |
| | **Overall Intersection** | | **45.5** | **D** | **Overall Intersection** | | **19.4** | **B** | **Overall Intersection** | | **42.8** | **D** |
| **36th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.73 | 44.1 | D | LTR | 0.78 | 46.5 | D | LTR | 0.51 | 35.1 | D |
| WB | LTR | 0.91 | 48.0 | D | LTR | 0.86 | 50.5 | D | LTR | 0.79 | 45.5 | D |
| NB | LTR | 0.34 | 12.2 | B | LTR | 0.67 | 17.3 | B | LTR | 0.92 | 24.8 | C |
| SB | LTR | 0.98 | 28.9 | C | LTR | 0.61 | 16.1 | B | LTR | 0.69 | 17.8 | B |
| | **Overall Intersection** | | **29.6** | **C** | **Overall Intersection** | | **24.2** | **C** | **Overall Intersection** | | **25.5** | **C** |
| **21st Street and Broadway** | | | | | | | | | | | | |
| EB | LTR | 0.98 | 78.6 | E | LTR | 0.95 | 64.9 | E | LTR | 1.13 | 107.6 | F |
| WB | LTR | 0.97 | 69.5 | E | LTR | 1.01 | 77.1 | E | LTR | 1.17 | 125.7 | F |
| NB | LTR | 0.48 | 15.9 | B | LTR | 0.78 | 22.2 | C | LTR | 0.91 | 26.7 | C |
| SB | LTR | 0.99 | 32.7 | C | LTR | 0.74 | 21.2 | C | LTR | 0.72 | 20.6 | C |
| | **Overall Intersection** | | **36.5** | **D** | **Overall Intersection** | | **32.7** | **C** | **Overall Intersection** | | **42.8** | **D** |
| **36th Avenue and 31st Street** | | | | | | | | | | | | |
| EB | LTR | 0.68 | 32.0 | C | LTR | 0.81 | 35.8 | D | LTR | 0.80 | 32.0 | C |
| WB | LTR | 0.68 | 30.3 | C | LTR | 0.74 | 33.2 | C | LTR | 0.71 | 31.6 | C |
| NB | LTR | 0.63 | 17.5 | B | LTR | 0.57 | 16.2 | B | LTR | 0.69 | 19.0 | B |
| SB | LTR | 0.65 | 17.6 | B | LTR | 0.48 | 14.4 | B | LTR | 0.48 | 14.5 | B |
| | **Overall Intersection** | | **22.5** | **C** | **Overall Intersection** | | **23.9** | **C** | **Overall Intersection** | | **23.2** | **C** |

## Table 14-19 (continued)
## 2018 No Action Traffic Level of Service Analysis
## Signalized Intersections

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **Vernon Boulevard and 41st Avenue** | | | | | | | | | | | | |
| WB | LR | 0.26 | 16.0 | B | LR | 0.18 | 15.2 | B | LR | 0.26 | 16.1 | B |
| NB | TR | 0.65 | 13.1 | B | TR | 0.66 | 13.6 | B | TR | 1.03 | 39.7 | D |
| SB | LT | 1.06 | 46.1 | D | LT | 0.64 | 13.2 | B | LT | 0.93 | 24.7 | C |
| | **Overall Intersection** | | **31.7** | **C** | **Overall Intersection** | | **13.6** | **B** | **Overall Intersection** | | **31.8** | **C** |
| **30th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.47 | 37.8 | D | LTR | 0.33 | 34.4 | C | LTR | 0.32 | 34.1 | C |
| WB | LTR | 0.72 | 46.2 | D | LTR | 0.50 | 38.9 | D | LTR | 0.48 | 38.0 | D |
| NB | LTR | 0.51 | 14.5 | B | LTR | 0.72 | 18.6 | B | LTR | 0.81 | 20.6 | C |
| SB | LTR | 1.00 | 30.9 | C | LTR | 0.78 | 20.0 | B | LTR | 0.63 | 16.5 | B |
| | **Overall Intersection** | | **28.3** | **C** | **Overall Intersection** | | **21.5** | **C** | **Overall Intersection** | | **20.8** | **C** |
| **Broadway and Vernon Boulevard/11th Street** | | | | | | | | | | | | |
| EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.2 | C | LTR | 0.03 | 33.2 | C |
| WB | LTR | 1.04 | 62.8 | E | LTR | 0.89 | 47.0 | D | LTR | 0.84 | 52.6 | D |
| NB | LT | 0.25 | 7.9 | A | LT | 0.26 | 8.3 | A | LT | 0.46 | 9.3 | A |
| | R | 0.04 | 6.4 | A | R | 0.17 | 7.6 | A | R | 0.13 | 6.3 | A |
| SB | LTR | 1.02 | 58.3 | E | LTR | 0.56 | 27.2 | C | LTR | 0.62 | 29.3 | C |
| NB | LTR | 0.38 | 41.2 | D | LTR | 0.22 | 32.9 | C | LTR | 0.33 | 38.3 | D |
| | **Overall Intersection** | | **47.6** | **D** | **Overall Intersection** | | **25.6** | **C** | **Overall Intersection** | | **24.6** | **C** |
| **Astoria Boulevard and 27th Avenue/ Newtown Avenue and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.84 | 61.6 | E | L | 0.26 | 34.9 | C | L | 0.47 | 42.4 | D |
| | TR | 0.86 | 54.6 | D | TR | 0.40 | 36.3 | D | TR | 0.78 | 48.9 | D |
| WB | L | 0.98 | 63.8 | E | L | 0.86 | 53.0 | D | L | 0.89 | 64.8 | E |
| | TR | 0.86 | 46.8 | D | TR | 0.43 | 36.2 | D | TR | 0.78 | 51.5 | D |
| NB | LTR | 0.86 | 39.2 | D | LTR | 1.13 | 102.1 | F | LTR | 1.04 | 54.2 | D |
| SB | LTR | 1.08 | 72.0 | E | LTR | 1.00 | 56.1 | E | LTR | 0.90 | 36.3 | D |
| | **Overall Intersection** | | **58.7** | **E** | **Overall Intersection** | | **63.9** | **E** | **Overall Intersection** | | **48.0** | **D** |
| **Hoyt Avenue North and 21st Street** | | | | | | | | | | | | |
| 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 | 0.90 | 44.1 | D | L | 0.69 | 38.5 | D | L | 0.61 | 36.8 | D |
| | TR | 0.25 | 14.8 | B | TR | 0.17 | 14.2 | B | TR | 0.29 | 15.7 | B |
| NB | L | 0.30 | 31.5 | C | L | 0.11 | 25.2 | C | L | 0.17 | 26.1 | C |
| | T | 1.04 | 85.7 | F | T | 0.77 | 43.0 | D | T | 1.09 | 90.0 | F |
| SB | TR | 1.00 | 53.9 | D | TR | 0.57 | 33.4 | C | TR | 0.76 | 39.0 | D |
| | **Overall Intersection** | | **53.1** | **D** | **Overall Intersection** | | **36.6** | **D** | **Overall Intersection** | | **52.9** | **D** |
| **Hoyt Avenue South and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.13 | 30.0 | C | L | 0.21 | 31.6 | C | L | 0.17 | 30.8 | C |
| | TR | 1.06 | 75.0 | E | TR | 0.41 | 35.5 | D | TR | 0.75 | 44.3 | D |
| NB | LTR | 0.55 | 15.1 | B | LTR | 0.43 | 13.3 | B | LTR | 0.92 | 26.3 | C |
| SB | LTR | 1.03 | 46.1 | D | LTR | 0.61 | 15.9 | B | LTR | 0.89 | 28.0 | C |
| | **Overall Intersection** | | **42.3** | **D** | **Overall Intersection** | | **17.8** | **B** | **Overall Intersection** | | **29.4** | **C** |

**Note:** (1): Control delay is measured in seconds per vehicle

**Table 14-20**
**2018 No Action Traffic Level of Service Analysis**
**Unsignalized Intersections**

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **East-West Main Street at Main Street** | | | | | | | | | | | | |
| EB | LT | - | 7.1 | A | LT | - | 7.6 | A | LT | - | 7.4 | A |
| SB | LR | - | 7.3 | A | LR | - | 7.3 | A | LR | - | 7.2 | A |
| | **Overall Intersection** | | **7.3** | **A** | **Overall Intersection** | | **7.4** | **A** | **Overall Intersection** | | **7.3** | **A** |
| **West Road at Main Street** | | | | | | | | | | | | |
| EB1 | LR | - | 9.1 | A | LR | - | 8.4 | A | LR | - | 8.7 | A |
| EB2 | LR | - | 11.3 | B | LR | - | 10.7 | B | LR | - | 10.6 | B |
| NB | LT | - | 9.9 | A | LT | - | 9.2 | A | LT | - | 9.9 | A |
| SB | TR | - | 9.3 | A | TR | - | 8.6 | A | TR | - | 8.7 | A |
| | **Overall Intersection** | | **9.8** | **A** | **Overall Intersection** | | **9.2** | **A** | **Overall Intersection** | | **9.6** | **A** |
| **Roosevelt Island Bridge Ramp at Main Street** | | | | | | | | | | | | |
| WB | LR | - | 14.6 | B | LR | - | 10.1 | B | LR | - | 11.0 | B |
| NB | T | - | 10.2 | B | T | - | 9.2 | A | T | - | 9.6 | A |
| | R | - | 10.8 | B | R | - | 9.0 | A | R | - | 9.6 | A |
| SB | LT | - | 12.2 | B | LT | - | 10.5 | B | LT | - | 14.2 | B |
| | **Overall Intersection** | | **12.8** | **B** | **Overall Intersection** | | **9.8** | **A** | **Overall Intersection** | | **11.9** | **B** |
| **Roosevelt Island Bridge Ramp at Motorgate Garage Driveway** | | | | | | | | | | | | |
| EB | LT | - | 8.4 | A | LT | - | 7.7 | A | LT | - | 7.9 | A |
| NB | LR | - | 11.2 | B | LR | - | 9.9 | A | LR | - | 12.5 | B |
| | **Overall Intersection** | | **1.4** | **A** | **Overall Intersection** | | **0.9** | **A** | **Overall Intersection** | | **1.0** | **A** |
| **Note:** (1): Control delay is measured in seconds per vehicle | | | | | | | | | | | | |

*36th Avenue and 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday midday)
- Westbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday, and PM)

*Broadway and 21st Street*

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

*41st Avenue and Vernon Boulevard*

- Southbound Vernon Boulevard shared left-turn/through (weekday AM)

*30th Avenue and 21st Street*

- Westbound 30th Avenue shared left-turn/through/right-turn (weekday AM)

*Broadway and Vernon Boulevard / 11th Street*

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

*Astoria Boulevard / 27th Avenue / Newtown Avenue and 21st Street*

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

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

*Hoyt Avenue North and 21st Street*

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

*Hoyt Avenue South and 21st Street*

- Eastbound Hoyt Avenue South shared through/right-turn (weekday AM)
- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

## 2018 WITH ACTION CONDITION

As discussed above in Section E, "Level 2 Screening Assessment," Phase 1 (2018) of the proposed project would result in 92 vehicle trips arriving at the project site and 51 vehicle trips leaving the project site in the weekday AM peak hour, for a total of 143 vehicle trips. In the weekday midday peak hour, it would generate 90 inbound vehicle trips plus 70 outbound vehicle trips for a total of 160 vehicle trips. In the weekday PM peak hour, it would generate 71 inbound vehicle trips plus 108 outbound vehicle trips for a total of 179 vehicle trips.

The distribution of these vehicle trips and the resulting 2018 traffic volume increases are shown in Figures 14-1 to 14-3**,** and impacts on levels of service are presented below.

*TRIP DISTRIBUTION AND ASSIGNMENT*

*Autos*

*Academic Use*

To determine the distribution of auto trips for the academic use, the latest Reverse Journey-to-Work (RJTW) US Census data were obtained for census tracts on Roosevelt Island and blocks immediately adjacent to Roosevelt Island in Long Island City to reflect worker population origins destined to this part of Queens. Based on these data, approximately 74 percent of auto trips would originate in Queens, 5 percent in Manhattan and points west including New Jersey, 7 percent in Brooklyn and points south including Staten Island, 3 percent in the Bronx and points north including Westchester, Upstate and New England, and 11 percent in Long Island.

The following academic and corporate land uses/populations were assigned using these distributions:

- Academic researchers, including employees supporting the research program;
- Corporate Co-location workers;
- Faculty;
- Postdoctoral fellows; and
- Administrators.

Trips from Manhattan and points west were generally assigned to the Ed Koch-Queensboro Bridge (Queensboro Bridge), and would approach the site using northbound Vernon Boulevard or northbound 21st Street to westbound 36th Avenue to the Roosevelt Island Bridge. Trips from Brooklyn using the Pulaski Bridge would also use northbound Vernon Boulevard or northbound

21st Street to approach the site. Trips from points north that would use the RFK Bridge or approach the area from sections of Astoria to the north of the bridge were assigned along southbound Vernon Boulevard or southbound 21st Street to westbound 36th Avenue. Trips from Flushing, Corona, Jackson Heights, other neighborhoods in northeast Queens, and Long Island would use the Grand Central Parkway, Northern Boulevard, Queens Boulevard or the Long Island Expressway. These trips were then assigned to westbound Hoyt Avenue North, Astoria Boulevard, 30th Avenue, or Broadway to southbound Vernon Boulevard, 21st Street and 31st Street to then approach Roosevelt Island via westbound 36th Avenue and the Roosevelt Island Bridge. Trips from southeast Queens, Brooklyn, and other points south were generally assigned to the Brooklyn-Queens Expressway, Long Island Expressway or local streets to approach the site along westbound 36th Avenue or along northbound Vernon Boulevard or northbound 21st Street to westbound 36th Avenue.

*Academic Student Use*

To determine the distribution of auto trips for academic student land uses, the same RJTW US Census data were researched for census tracts on Roosevelt Island and blocks immediately adjacent to Roosevelt Island in Long Island City. To reflect the origins of student populations as opposed to worker populations used in the academic land uses, it was estimated that approximately 50 percent of auto trips would originate in Queens, 10 percent in Manhattan and points west including New Jersey, 25 percent in Brooklyn and points south including Staten Island, 5 percent in the Bronx and points north including Westchester, Upstate and New England, and 10 percent in Long Island. The following academic student land uses were assigned using these distributions:

- Graduate Students-master's;
- Graduate Students-Ph.D. candidates;
- Visitors;
- University Retail; and
- University Housing-External.

Trips from these origins were generally assigned along the same routes as discussed in the previous section.

*Executive Education Center*

To determine the distribution of auto trips for the Executive Education Center, it was estimated that approximately 65 percent of auto trips would originate in Queens at LaGuardia or JFK Airports, central business districts in Flushing, Long Island City and Downtown Brooklyn, or points east such as Long Island. It was estimated that about 30 percent would originate in Manhattan and points west including New Jersey, and 5 percent would originate in the Bronx and points north including Westchester, Upstate and New England. Auto trips destined to the conference center space would primarily be made by employees. These would originate according to worker populations discussed in the academic use, where approximately 74 percent of auto trips would originate in Queens, 5 percent in Manhattan and points west including New Jersey, 7 percent in Brooklyn and points south including Staten Island, 3 percent in the Bronx and points north including Westchester, Upstate and New England, and 11 percent in Long Island. Trips from these origins were generally assigned along the same routes as discussed in the Academic Use section.

*TAXIS*

It was assumed that approximately 45 percent would originate in Queens – and points east including Long Island – from airports, central business districts, and nearby neighborhoods, and 55 percent in Manhattan from CBDs, hotels, train stations and residential neighborhoods, and New Jersey's Newark airport. Trips from these origins were generally assigned along the same routes as discussed in the Academic Use section.

*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 to the Queensboro and RFK Bridges, Queens Midtown Tunnel, and Long Island Expressway. Trucks were then assigned along regional and local truck routes as close to the project site as possible.

*TRAFFIC VOLUME INCREMENTS*

All project-generated auto trips were assigned to the site with the exception of those generated by the University Housing-External land use, which were assigned to the Motorgate garage. It is assumed that Cornell NYC would prioritize on-site parking by directing or mandating that University Housing-External auto trips park at the Motorgate garage. Therefore, the AM, midday and PM peak hour trips generated by the University Housing-External land use have been assigned in and out of the Motorgate garage, and the remaining land uses have been assigned to the site. The locations of driveways and entrances to parking facilities are currently under study and are not yet known, so peak hour trips assigned to the site are shown on figures on southbound Main Street and trips assigned away from the site are shown on figures on northbound West Road.

The proposed actions would add approximately 50 to 105 vehicles per hour (vph) in each direction along the Roosevelt Island Bridge. On northbound and southbound Main Street on Roosevelt Island, projected traffic increases range from about 45 to 105 vph during the peak hours.

Along 36th Avenue, eastbound and westbound traffic volumes would increase by approximately 20 to 50 vph per direction during all peak hours between Vernon Boulevard and 21st Street; east of 21st Street, traffic volumes would increase by 5 to 20 vph per direction.

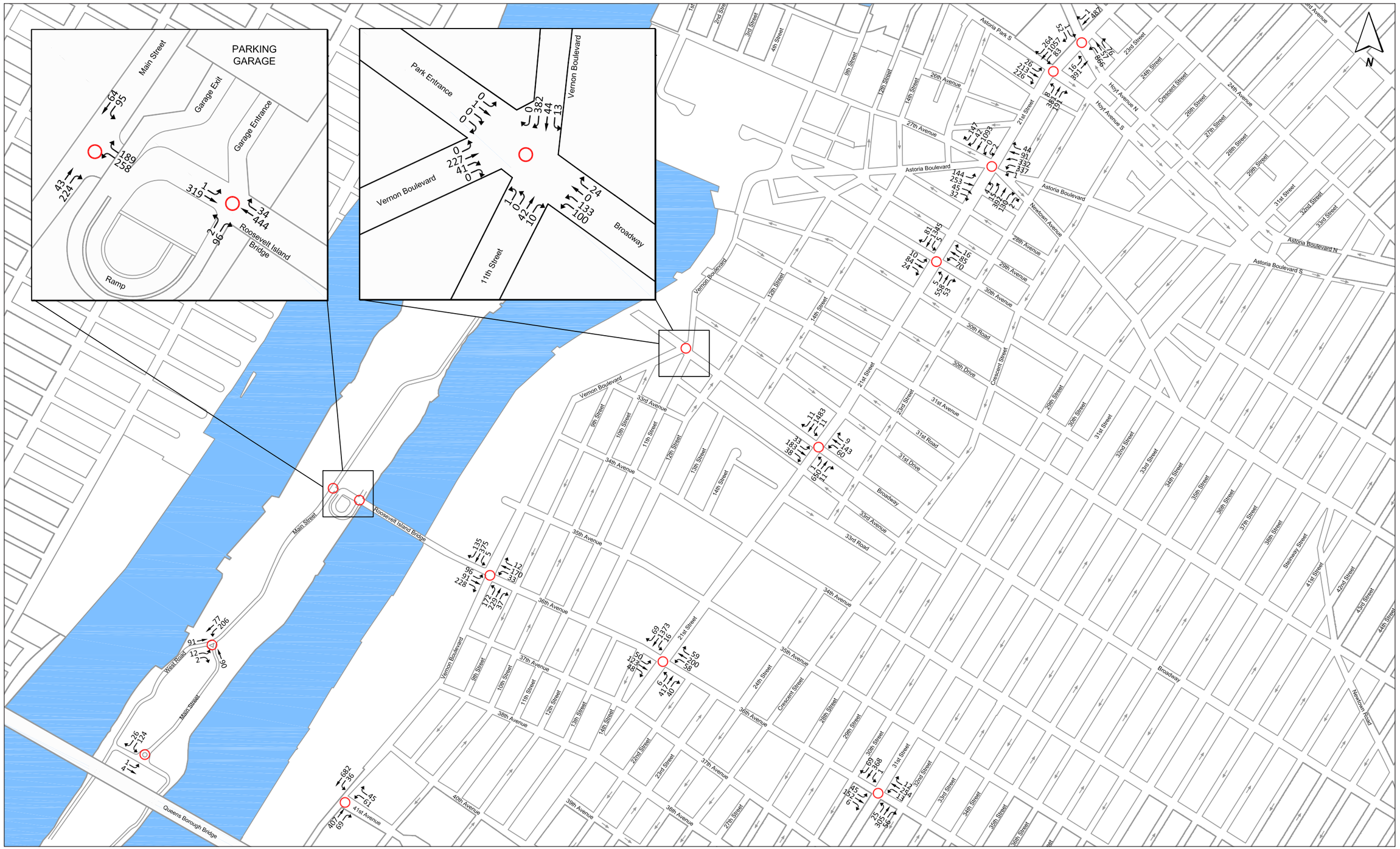
Along northbound and southbound Vernon Boulevard north of 36th Avenue, traffic volumes would increase by approximately 10 to 15 vph per direction up to Broadway, with more modest increases of approximately 5 to 10 vph per direction north of Broadway. South of 36th Avenue, Vernon Boulevard traffic volumes would increase by 25 to 40 vph per direction down to 41st Avenue, and about 20 to 35 vph per direction south of 41st Avenue.

Along northbound and southbound 21st Street, traffic volumes would increase by 10 to 25 vph per direction south of 36th Avenue, and 10 to 20 vph per direction north of 36th Avenue up to Hoyt Avenue North. The 2018 With Action traffic volumes are shown in **Figures 14-23** to **14-25** for the AM, midday, and PM peak hours.

*SITE ROADWAY IMPROVEMENTS AND VEHICLE RESTRICTIONS*

As part of the proposed project, the roadways surrounding the campus, i.e., the loop road, would be mapped and reconfigured. These changes, however, would not alter traffic flow and affect the analyses presented in this chapter. The design of the loop road is on-going and traffic operation

10.9.12

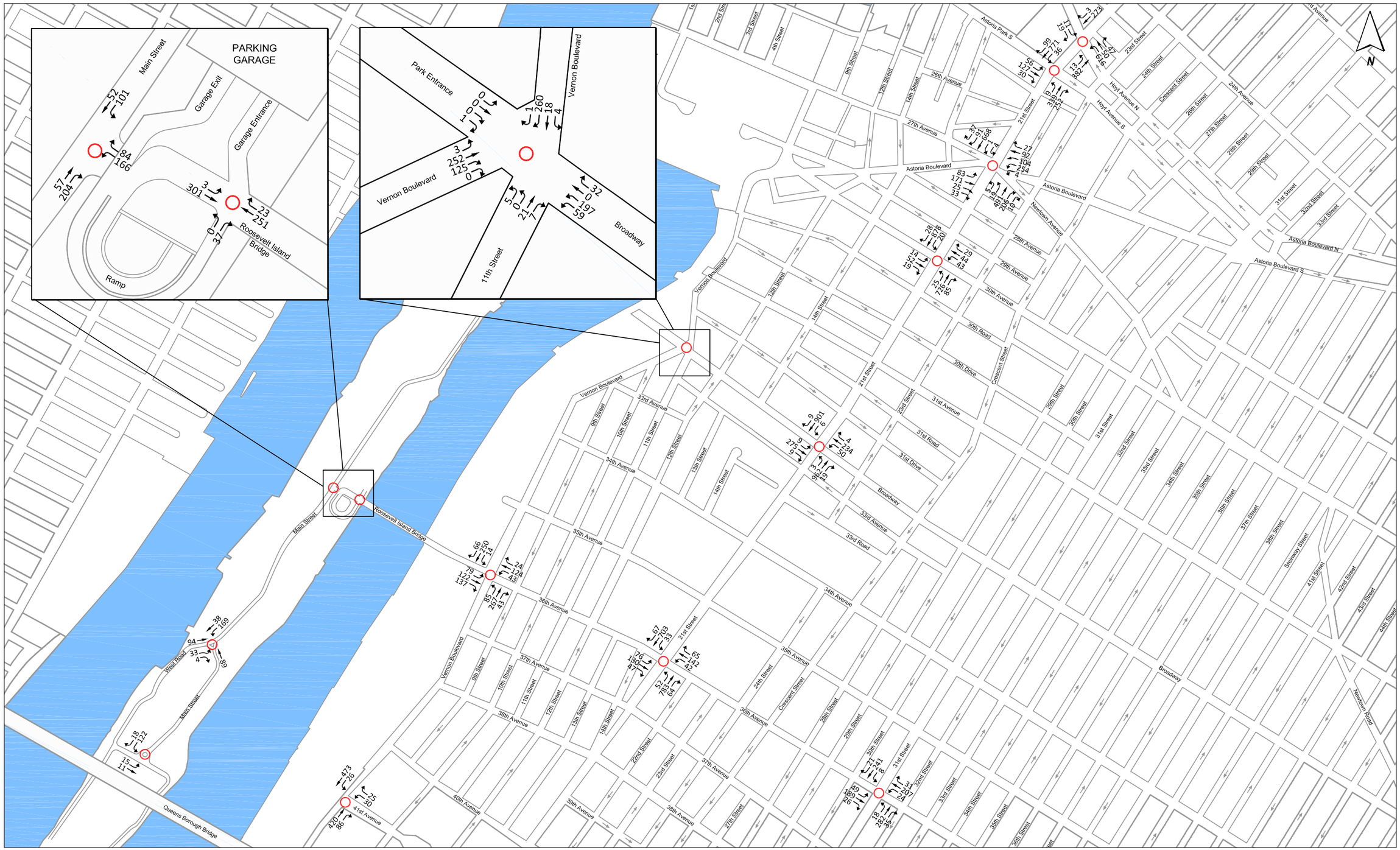



NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

Weekday AM Peak Hour 2018 Build Traffic Volumes

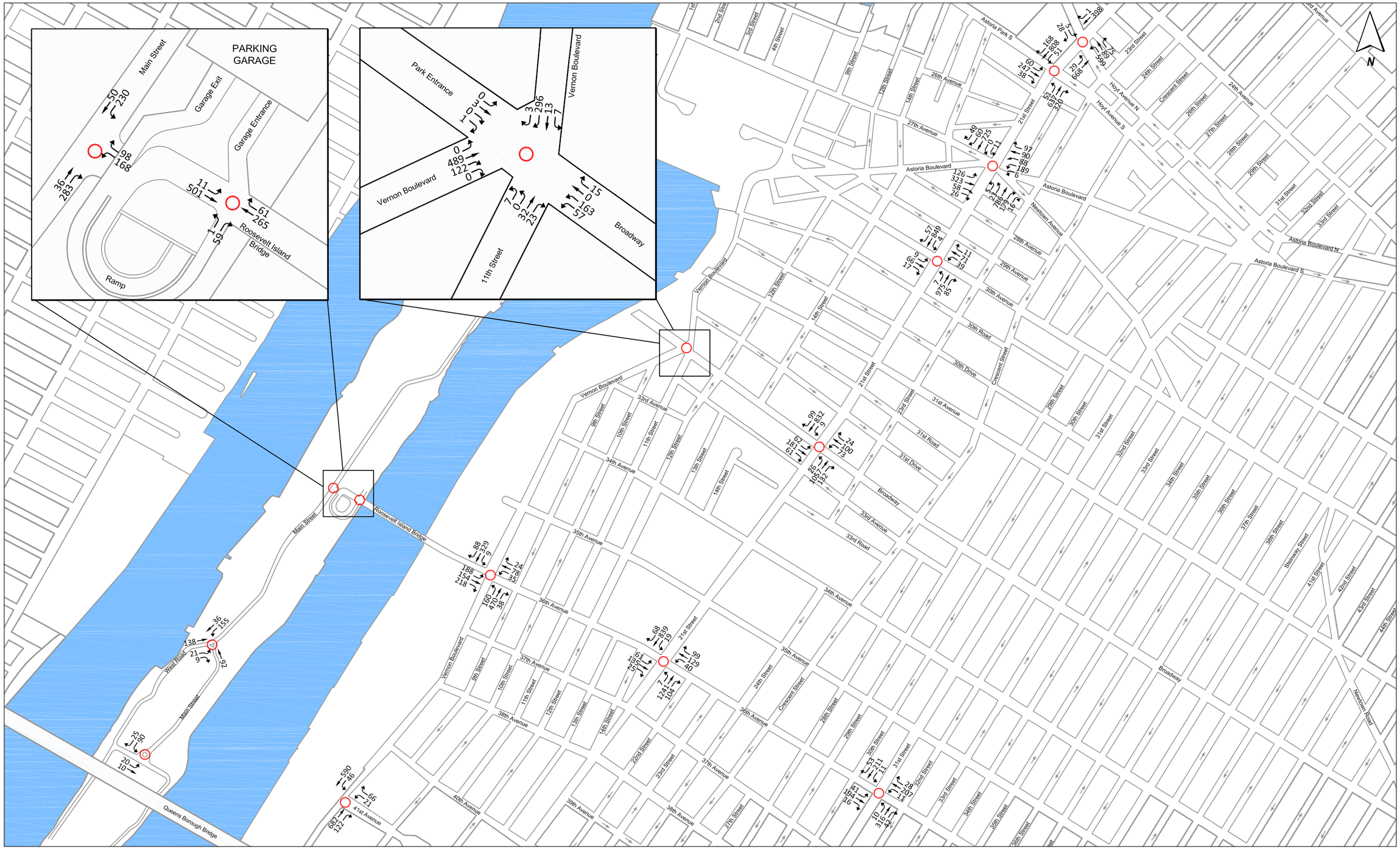
**Figure 14-23**

10.9.12




Weekday Midday Peak Hour 2018 Build Traffic Volumes

**Figure 14-24**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*



Weekday PM Peak Hour 2018 Build Traffic Volumes

**Figure 14-25**

and roadway design details may not be available within the timeframe of the environmental review process. The lead agency will work with the project sponsor to ensure the appropriate commitments are stated in approval documents (i.e., restrictive declaration and commitment letters) and that RIOC and NYCDOT will be involved in the review and approval of the necessary design, analyses, and implementation during the actual build-out of the project.

*LEVELS OF SERVICE AND SIGNIFICANT IMPACTS*

Based on 2018 With Action traffic volumes, traffic levels of service were determined for the 14 analysis locations. Also, significantly impacted locations and traffic movements were identified according to the criteria presented in the *CEQR Technical Manual* and discussed previously in Section F, "Transportation Analyses Methodology." The assessment of potential significant traffic impacts of the proposed actions is based on the significant impact criteria summarized below.

No Action LOS A, B, or C conditions that deteriorate to unacceptable With Action LOS D, E, or F conditions are considered a significant traffic impact.

For 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 delay meets or exceeds 45.0 seconds. For a No Action LOS E, the threshold is a four second increase in With Action 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.

**Tables 14-21a** and **14-21b** provide an overview of the levels of service that would characterize 2018 With Action "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 number of movements, respectively, that would have significant impacts. Detailed descriptions of the 2018 No Action condition traffic levels of service are provided in **Table 14-22** and **Table 14-23**, where significant adverse impacts are identified by the shaded rows in the analysis summary tables.

**Table 14-21a**
**2018 With Action Traffic Level of Service Summary – Overall Intersections**

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Intersections at Overall LOS A/B/C | 6 | 12 | 9 |
| Intersections at Overall LOS D | 6 | 1 | 4 |
| Intersections at Overall LOS E | 2 | 1 | 1 |
| Intersections Overall LOS F | 0 | 0 | 0 |
| Number of Intersections with Significant Impacts | 7 | 4 | 4 |
| **Note:** Includes the 14 analyzed intersections (10 signalized and 4 unsignalized). | | | |

## Table 14-21b
## 2018 With Action 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 | 38 | 50 | 48 |
| Traffic movements at unacceptable LOS D | 5 | 3 | 5 |
| Traffic movements at LOS E | 12 | 4 | 2 |
| Traffic movements at LOS F | 4 | 2 | 4 |
| Number of significantly impacted movements | 11 | 6 | 5 |
| Number of individual traffic movements* | 59 | 59 | 59 |

## Table 14-22
## 2018 With Action Traffic Level of Service Analysis
## Signalized Intersections

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **36th Avenue at Vernon Boulevard** | | | | | | | | | | | | |
| EB | L | 0.34 | 13.8 | B | L | 0.28 | 13.1 | B | L | 0.51 | 15.1 | B |
| | TR | 0.67 | 19.0 | B | TR | 0.53 | 16.3 | B | TR | 0.78 | 19.8 | B |
| WB | LTR | 0.44 | 14.7 | B | LTR | 0.44 | 15.1 | B | LTR | 0.34 | 13.6 | B |
| NB | LTR | 1.38 | 188.5 | F* | LTR | 1.06 | 62.9 | E* | LTR | 1.39 | 194.5 | F* |
| SB | LTR | 1.10 | 71.1 | E* | LTR | 0.72 | 20.3 | C | LTR | 0.87 | 27.4 | C |
| | **Overall Intersection** | | **77.4** | **E** | **Overall Intersection** | | **31.1** | **C** | **Overall Intersection** | | **77.4** | **E** |
| **36th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.90 | 58.2 | E* | LTR | 0.97 | 71.5 | E* | LTR | 0.78 | 42.0 | D |
| WB | LTR | 0.97 | 55.6 | E* | LTR | 0.89 | 53.7 | D | LTR | 0.83 | 48.4 | D |
| NB | LTR | 0.34 | 12.2 | B | LTR | 0.79 | 21.5 | C | LTR | 0.92 | 24.8 | C |
| SB | LTR | 1.00 | 33.4 | C | LTR | 0.62 | 16.5 | B | LTR | 0.70 | 18.2 | B |
| | **Overall Intersection** | | **35.0** | **D** | **Overall Intersection** | | **29.7** | **C** | **Overall Intersection** | | **26.7** | **C** |
| **21st Street and Broadway** | | | | | | | | | | | | |
| EB | LTR | 1.00 | 82.6 | F* | LTR | 0.98 | 71.5 | E* | LTR | 1.16 | 120.4 | F* |
| WB | LTR | 1.00 | 74.9 | E* | LTR | 1.02 | 80.7 | F* | LTR | 1.19 | 134.4 | F* |
| NB | LTR | 0.49 | 16.0 | B | LTR | 0.80 | 22.7 | C | LTR | 0.93 | 28.2 | C |
| SB | LTR | 1.01 | 38.6 | D | LTR | 0.78 | 22.5 | C | LTR | 0.73 | 20.9 | C |
| | **Overall Intersection** | | **40.7** | **D** | **Overall Intersection** | | **34.5** | **C** | **Overall Intersection** | | **45.8** | **D** |
| **36th Avenue and 31st Street** | | | | | | | | | | | | |
| EB | LTR | 0.70 | 32.7 | C | LTR | 0.82 | 36.8 | D | LTR | 0.85 | 34.9 | C |
| WB | LTR | 0.70 | 31.0 | C | LTR | 0.76 | 34.1 | C | LTR | 0.73 | 32.2 | C |
| NB | LTR | 0.66 | 18.5 | B | LTR | 0.57 | 16.2 | B | LTR | 0.70 | 19.2 | B |
| SB | LTR | 0.65 | 17.6 | B | LTR | 0.48 | 14.4 | B | LTR | 0.48 | 14.5 | B |
| | **Overall Intersection** | | **23.1** | **C** | **Overall Intersection** | | **24.4** | **C** | **Overall Intersection** | | **24.2** | **C** |
| **Vernon Boulevard and 41st Avenue** | | | | | | | | | | | | |
| WB | LR | 0.27 | 16.1 | B | LR | 0.18 | 15.2 | B | LR | 0.32 | 16.9 | B |
| NB | TR | 0.69 | 14.0 | B | TR | 0.70 | 14.4 | B | TR | 1.05 | 47.7 | D* |
| SB | LT | 1.09 | 57.7 | E* | LT | 0.68 | 14.0 | B | LT | 0.99 | 35.4 | D |
| | **Overall Intersection** | | **38.2** | **D** | **Overall Intersection** | | **14.3** | **B** | **Overall Intersection** | | **40.1** | **D** |
| **30th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.47 | 37.8 | D | LTR | 0.33 | 34.4 | C | LTR | 0.33 | 34.2 | C |
| WB | LTR | 0.72 | 46.4 | D | LTR | 0.50 | 38.9 | D | LTR | 0.48 | 38.0 | D |
| NB | LTR | 0.52 | 14.6 | B | LTR | 0.73 | 19.1 | B | LTR | 0.83 | 21.4 | C |
| SB | LTR | 1.01 | 34.4 | C | LTR | 0.80 | 20.7 | C | LTR | 0.65 | 16.8 | B |
| | **Overall Intersection** | | **30.3** | **C** | **Overall Intersection** | | **21.9** | **C** | **Overall Intersection** | | **21.2** | **C** |

## Table 14-22 (cont'd)
## 2018 With Action Traffic Level of Service Analysis
## Signalized Intersections

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **Broadway and Vernon Boulevard/11th Street** | | | | | | | | | | | | |
| EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.2 | C | LTR | 0.03 | 33.2 | C |
| WB | LTR | 1.06 | 71.8 | E* | LTR | 0.91 | 49.2 | D | LTR | 0.86 | 54.2 | D |
| NB | LT | 0.25 | 7.9 | A | LT | 0.27 | 8.4 | A | LT | 0.47 | 9.4 | A |
| | R | 0.05 | 6.4 | A | R | 0.18 | 7.6 | A | R | 0.14 | 6.4 | A |
| SB | LTR | 1.04 | 65.0 | E* | LTR | 0.57 | 27.7 | C | LTR | 0.63 | 29.6 | C |
| NB | LTR | 0.38 | 41.2 | D | LTR | 0.22 | 32.9 | C | LTR | 0.33 | 38.3 | D |
| | **Overall Intersection** | | **52.9** | **D** | **Overall Intersection** | | **26.3** | **C** | **Overall Intersection** | | **24.9** | **C** |
| **Astoria Boulevard and 27th Avenue/ Newtown Avenue and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.84 | 61.6 | E | L | 0.26 | 34.9 | C | L | 0.47 | 42.4 | D |
| | TR | 0.87 | 55.4 | E | TR | 0.41 | 36.5 | D | TR | 0.80 | 49.6 | D |
| WB | L | 0.98 | 63.8 | E | L | 0.86 | 53.0 | D | L | 0.89 | 64.8 | E |
| | TR | 0.86 | 47.0 | D | TR | 0.44 | 36.3 | D | TR | 0.78 | 51.7 | D |
| NB | LTR | 0.89 | 42.1 | D | LTR | 1.17 | 121.8 | F* | LTR | 1.08 | 69.6 | E* |
| SB | LTR | 1.10 | 81.6 | F* | LTR | 1.04 | 65.9 | E* | LTR | 0.93 | 38.1 | D |
| | **Overall Intersection** | | **63.0** | **E** | **Overall Intersection** | | **73.0** | **E** | **Overall Intersection** | | **53.6** | **D** |
| **Hoyt Avenue North and 21st Street** | | | | | | | | | | | | |
| 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 | 0.92 | 45.8 | D | L | 0.72 | 39.3 | D | L | 0.63 | 37.3 | D |
| | TR | 0.25 | 14.8 | B | TR | 0.17 | 14.2 | B | TR | 0.29 | 15.7 | B |
| NB | L | 0.30 | 31.7 | C | L | 0.11 | 25.2 | C | L | 0.17 | 26.1 | C |
| | T | 1.04 | 85.7 | F | T | 0.77 | 43.1 | D | T | 1.09 | 92.4 | F |
| SB | TR | 1.01 | 55.8 | E | TR | 0.58 | 33.5 | C | TR | 0.76 | 39.0 | D |
| | **Overall Intersection** | | **54.2** | **D** | **Overall Intersection** | | **37.1** | **D** | **Overall Intersection** | | **53.8** | **D** |
| **Hoyt Avenue South and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.13 | 30.0 | C | L | 0.21 | 31.6 | C | L | 0.17 | 30.8 | C |
| | TR | 1.06 | 75.0 | E | TR | 0.41 | 35.5 | D | TR | 0.75 | 44.3 | D |
| NB | LTR | 0.55 | 15.2 | B | LTR | 0.44 | 13.4 | B | LTR | 0.94 | 29.5 | C |
| SB | LTR | 1.05 | 52.3 | D* | LTR | 0.62 | 16.2 | B | LTR | 0.91 | 29.3 | C |
| | **Overall Intersection** | | **45.7** | **D** | **Overall Intersection** | | **17.9** | **B** | **Overall Intersection** | | **31.3** | **C** |

**Notes:**
**(1): Control delay is measured in seconds per vehicle**
"*" indicates significant adverse impact.

**Table 14-23**
**2018 With Action Traffic Level of Service Analysis**
**Unsignalized Intersections**

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **East-West Main Street at Main Street** | | | | | | | | | | | | |
| EB | LT | - | 7.4 | A | LT | - | 7.9 | A | LT | - | 7.6 | A |
| SB | LR | - | 8.3 | A | LR | - | 8.3 | A | LR | - | 8.0 | A |
| | **Overall Intersection** | | **8.3** | **A** | **Overall Intersection** | | **8.2** | **A** | **Overall Intersection** | | **7.9** | **A** |
| **West Road at Main Street** | | | | | | | | | | | | |
| EB1 | LR | - | 10.4 | B | LR | - | 10.1 | B | LR | - | 13.0 | B |
| EB2 | LR | - | 12.5 | B | LR | - | 11.9 | B | LR | - | 11.4 | B |
| NB | LT | - | 10.6 | B | LT | - | 10.1 | B | LT | - | 11.9 | B |
| SB | TR | - | 11.7 | B | TR | - | 10.8 | B | TR | - | 11.1 | B |
| | **Overall Intersection** | | **11.3** | **B** | **Overall Intersection** | | **10.6** | **B** | **Overall Intersection** | | **12.0** | **B** |
| **Roosevelt Island Bridge Ramp at Main Street** | | | | | | | | | | | | |
| WB | LR | - | 23.2 | C | LR | - | 13.7 | B | LR | - | 13.9 | B |
| NB | T | - | 10.7 | B | T | - | 9.8 | A | T | - | 10.1 | B |
| | R | - | 13.2 | B | R | - | 11.4 | B | R | - | 13.0 | B |
| SB | LT | - | 13.5 | B | LT | - | 11.7 | B | LT | - | 16.7 | C |
| | **Overall Intersection** | | **18.0** | **C** | **Overall Intersection** | | **12.2** | **B** | **Overall Intersection** | | **14.4** | **B** |
| **Roosevelt Island Bridge Ramp at Motorgate Garage Driveway** | | | | | | | | | | | | |
| EB | LT | - | 8.8 | A | LT | - | 7.9 | A | LT | - | 8.1 | A |
| NB | LR | - | 11.9 | B | LR | - | 10.6 | B | LR | - | 14.3 | B |
| | **Overall Intersection** | | **1.4** | **A** | **Overall Intersection** | | **0.7** | **A** | **Overall Intersection** | | **0.9** | **A** |

**Note:** (1): Control delay is measured in seconds per vehicle

This summary overview of the 2018 With Action 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 No Action condition would increase from one to two under the With Action condition. The number of intersections that are projected to operate at marginally acceptable/unacceptable LOS D would increase from five to six. The number of traffic movements projected to operate at unacceptable levels of service would increase from 19 under the No Action condition to 21 under the With Action condition. Overall, seven of the 14 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 No Action condition would remain at one under the With Action condition. The number of intersections that are projected to operate at marginally acceptable/unacceptable LOS D would remain at one. The number of traffic movements at unacceptable levels of service would increase from eight under the No Action condition to nine under the With Action condition. Overall, four 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 No Action condition would increase from zero to one under the With Action condition. The number of intersections that are projected to operate at marginally acceptable/unacceptable LOS D would remain at four. The number of traffic movements projected to operate at unacceptable levels of service would increase from 10 to 11. Overall, four intersections would experience significant impacts.

All four unsignalized intersections analyzed would continue to operate at overall LOS A, B or C during all peak hours and would not be significantly impacted. Traffic movements expected to operate at unacceptable levels of service under the No Action condition would continue to do so

under the With Action condition. Additional movements expected to operate at unacceptable levels of service as a result of the proposed actions are listed below.

*Roosevelt Island Bridge/36th Avenue & Vernon Boulevard*

- Northbound Vernon Boulevard shared left-turn/through/right-turn (weekday midday)

*36th Avenue & 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday AM)

*41st Avenue & Vernon Boulevard*

- Northbound Vernon Boulevard shared through/right-turn (weekday PM)

*Hoyt Avenue North & 21st Street*

- Westbound Hoyt Avenue North left-turn (weekday AM)

The remainder of this section provides an overview of significant traffic impacts that would result under the Phase 1 2018 With Action condition. Of the 14 study area intersections analyzed, the proposed actions would cause significant traffic impacts at seven intersections in the weekday AM peak hour, four in the weekday midday peak hour, and four in the weekday PM peak hour. Impacted traffic movements and the peak hours in which they are impacted are identified below.

*Roosevelt Island Bridge/36th Avenue & Vernon Boulevard*

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

*36th Avenue & 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday AM and midday)
- Westbound 36th Avenue shared left-turn/through/right-turn (weekday AM)

*Broadway & 21st Street*

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

*41st Avenue & Vernon Boulevard*

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

*Broadway & Vernon Boulevard/11th Street*

- Westbound Broadway shared left-turn/through/right-turn (weekday AM)
- Southbound Vernon Boulevard shared left-turn/through/right-turn (weekday AM)

*Astoria Boulevard/27th Avenue/Newtown Avenue & 21st Street*

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

*Hoyt Avenue South & 21st Street*

- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

Three of the intersections where significant impacts would occur would have those impacts during all three peak hours analyzed: Roosevelt Island Bridge/36th Avenue and Vernon Boulevard, Broadway and 21st Street, and Astoria Boulevard/27th Avenue/Newtown Avenue and 21st Street. Other intersections would be significantly impacted in one or two of the three peak hours analyzed, while all four study locations on Roosevelt Island and three more in Queens would not be significantly impacted during any of the peak hours analyzed.

## 2038 NO ACTION CONDITION

The 2038 No Action condition was developed by increasing existing traffic and pedestrian 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 2038. In addition, a total of 19 No Action development projects anticipated to be completed by 2038 were added to establish the future baseline traffic volume. **Table 14-24** and **Figure 14-26** summarize the projects that were accounted for in this future 2038 baseline, including some smaller projects that would generate a modest volume of traffic that were considered as part of the general study area background traffic growth rate.

After reviewing the development programs for each of the 19 planned and proposed projects, it was determined that the background growth would address the increase in traffic and pedestrian volumes for two 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 traffic growth rate. Person and vehicle trips generated by the remaining 17 projects were then determined, their traffic assigned, and their trips added to background growth to form the 2038 No Action traffic volumes.

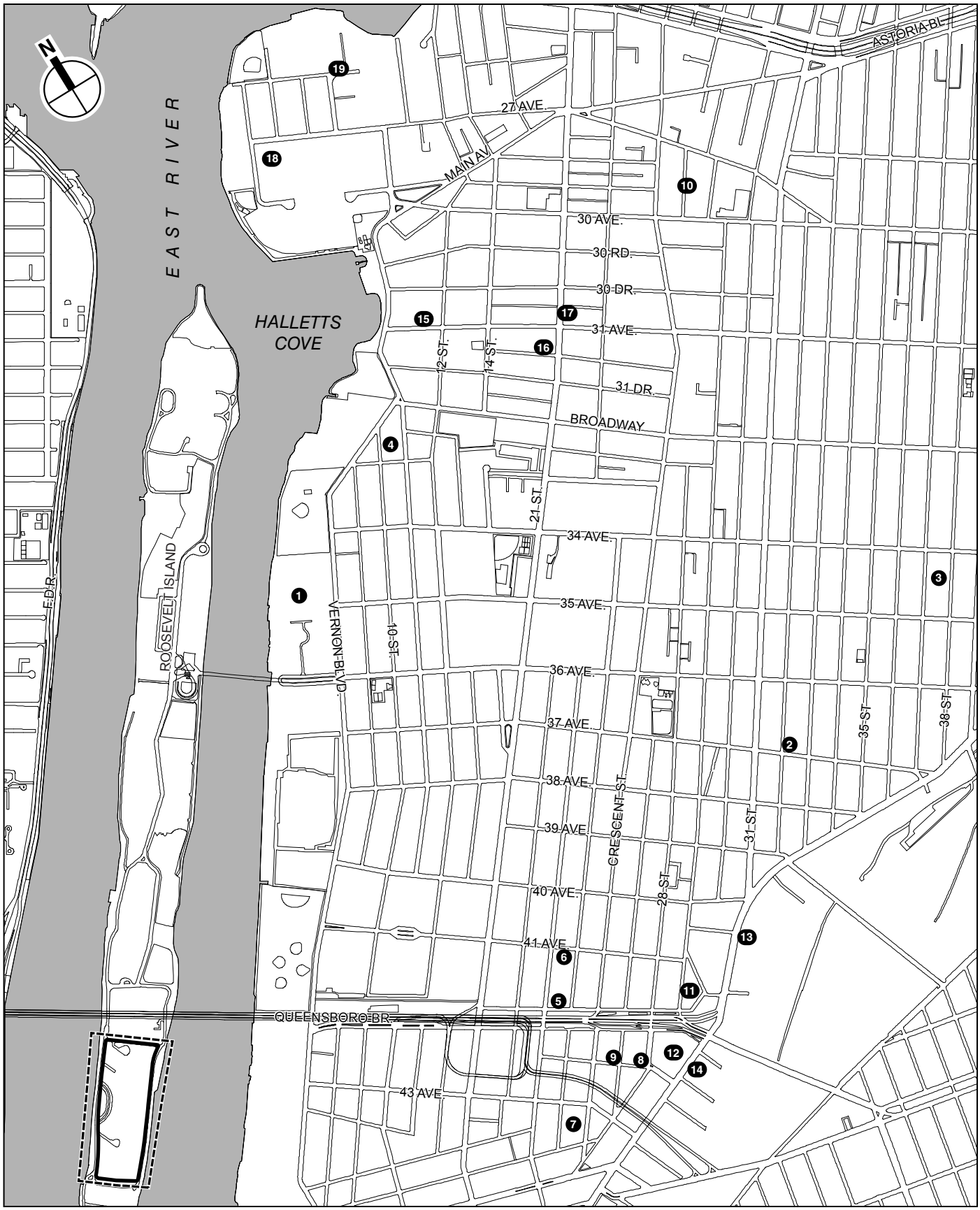
The cumulative volume of vehicle trips that would be generated by these and the developments projected to be built by 2018 is estimated to be 1,362 inbound and 1,606 outbound in the AM peak hour, 1,084 inbound and 1,033 outbound in the midday peak hour, and 1,718 inbound and 1,825 outbound in the PM peak hour.

In addition, the Goldwater Hospital on Roosevelt Island – where the proposed site would be built – would be vacated, as discussed in the 2018 No Action condition. Therefore, vehicle trips associated with the Goldwater Hospital during the AM, midday and PM peak hours have been removed from the 2038 No Action traffic network.

The net increase in traffic as a result of planned and proposed projects and the planned vacating of the Goldwater Hospital would be 1,261 inbound and 1,567 outbound in the AM peak hour, 1,056 inbound and 1,010 outbound in the midday peak hour, and 1,651 inbound and 1,676 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 2038 No Action traffic volumes, which are shown in **Figures 14-27 to 14-29**.

Projected traffic volume increases in the study area roadway network due to the cumulative effect of background projects, the annual growth in background traffic and the vacating of the Goldwater Hospital are quantified and discussed below.

10.9.12




*Project Site*

*Rezoning Area (Special Southern Roosevelt Island District)*

❶ *No Action Project (See Table 14-24 for reference)*

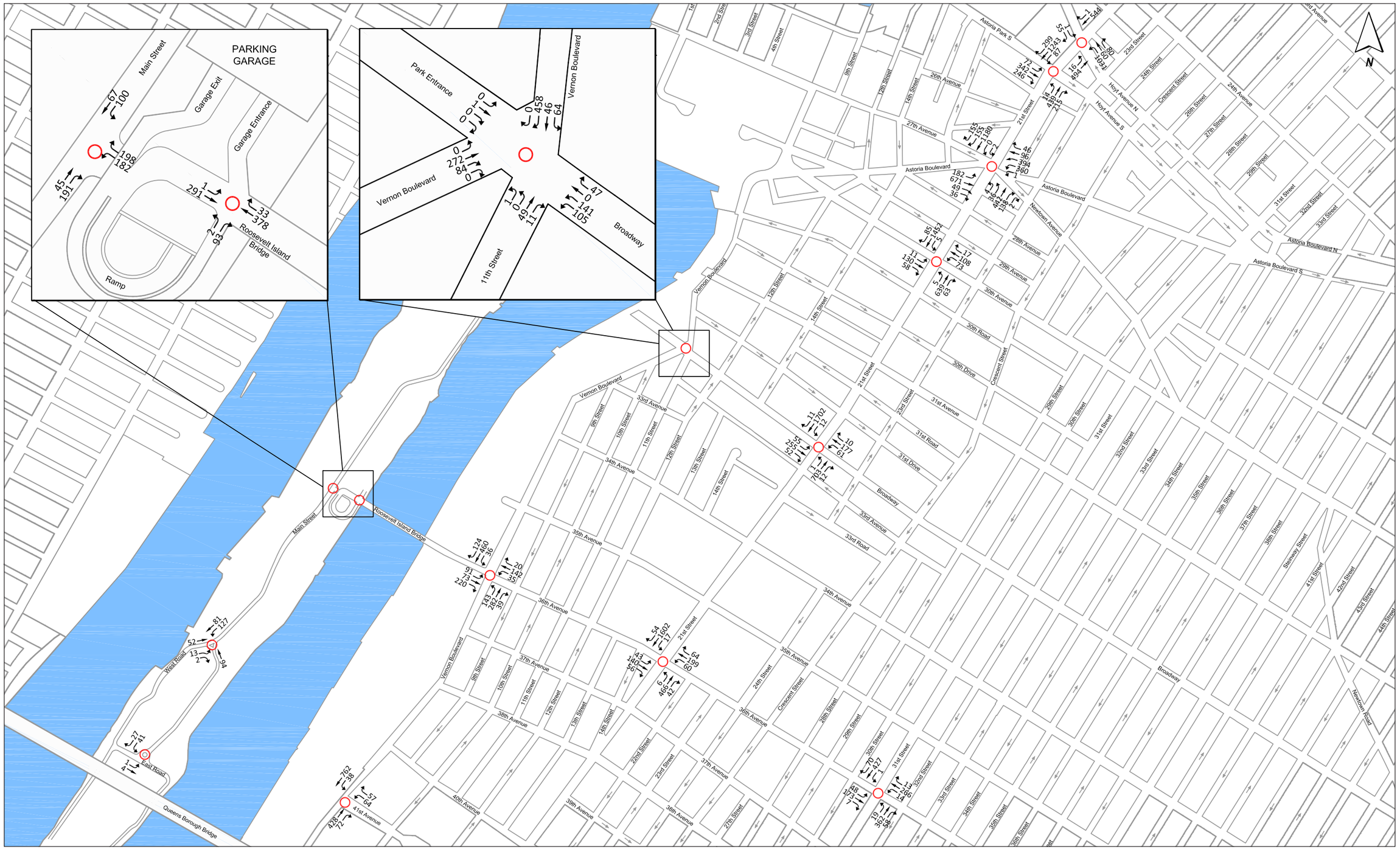
**NOTE:** Does not include No Action projects built before 2018 (see Figure 14-22)

0 1000 FEET

**SCALE**

# Future Development Projects in the 2038 No Action Condition

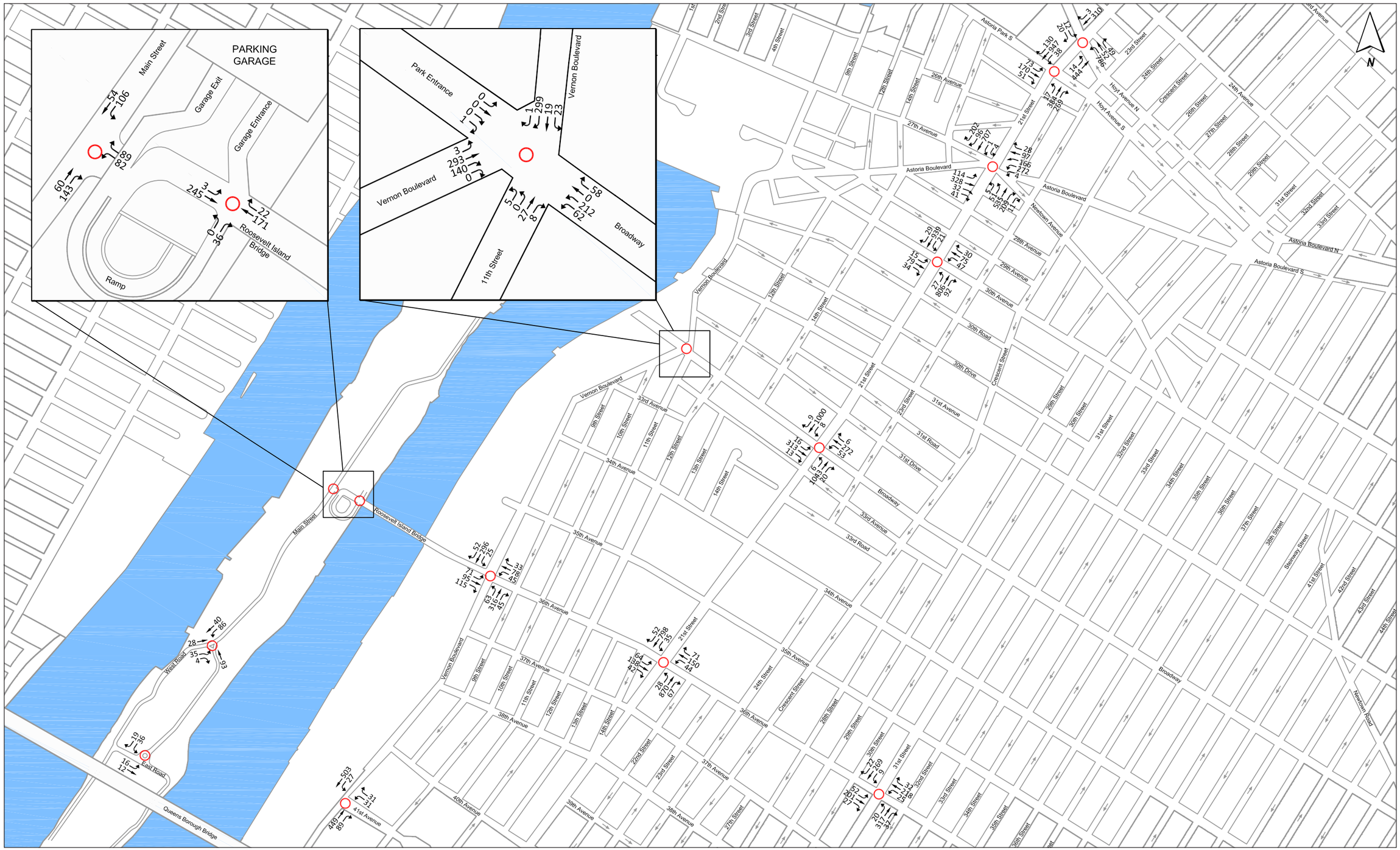
**Figure 14-26**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

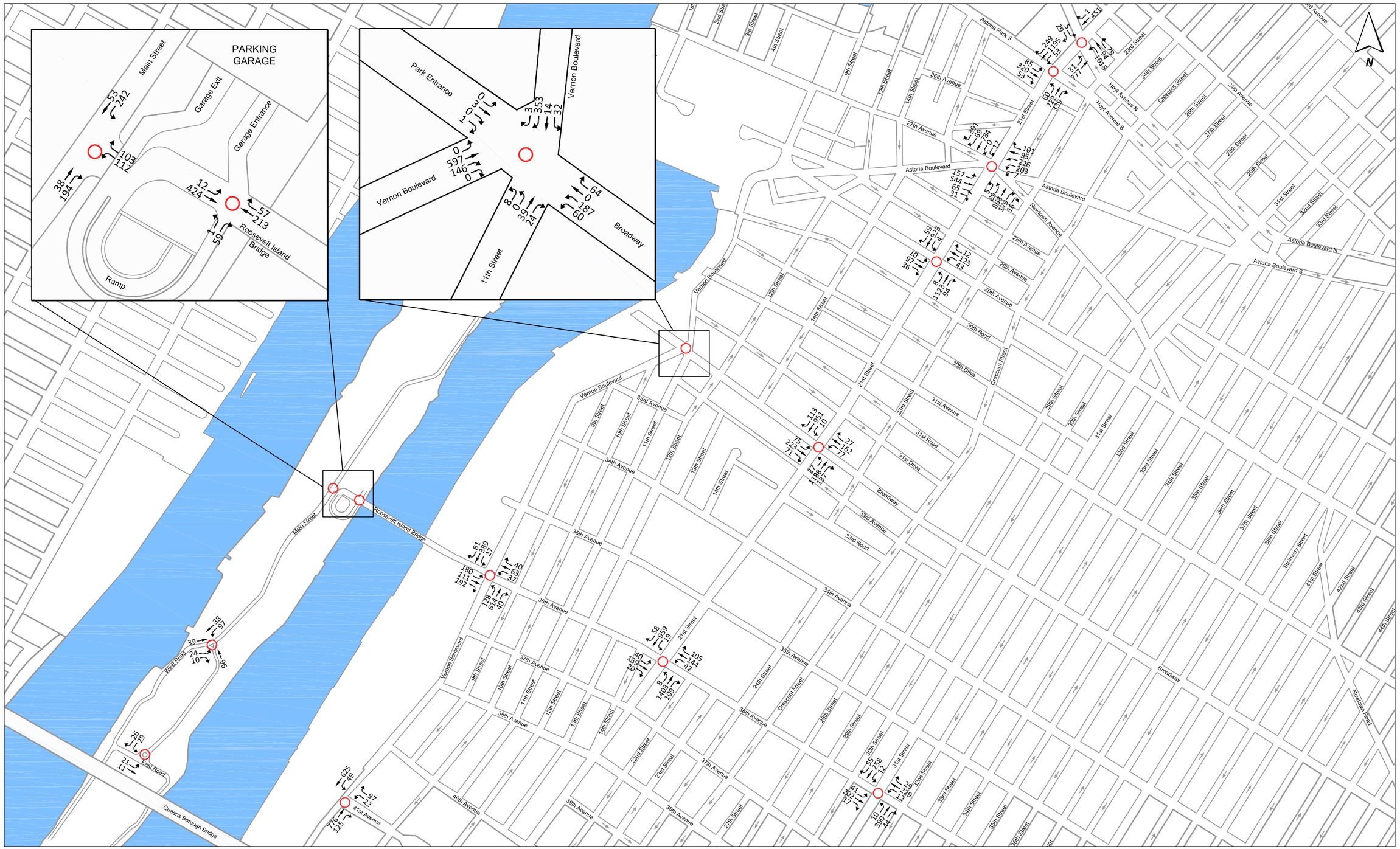
Weekday AM Peak Hour 2038 No Build Traffic Volumes

**Figure 14-27**




Weekday Midday Peak Hour 2038 No Build Traffic Volumes

**Figure 14-28**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*

Weekday PM Peak Hour 2038 No Build Traffic Volumes

**Figure 14-29**

## Table 14-24
## Phase 2 (2038) No Action Projects

| Map No. | Project/Location | Description | Transportation Assumptions | Build Year |
|---|---|---|---|---|
| 1 | 34-20-50 Vernon Blvd. | Mixed-use development with 350 residential units; 20,000 gsf community facility; and 250 parking spaces | Residential: Assumptions from *Dutch Kills Rezoning and Related Actions FEIS* (2008) with updated modal splits and vehicle occupancies based on 2006-2010 Census American Community Survey (ACS) Estimates.; Community Facility: Trip rates, modal splits, vehicle occupancies, and temporal distributions for community facility from *Webster Avenue Rezoning FEIS* (2011) | 2037* |
| 2 | Queens Block 601, Lot 22 (36-31 32 Street) | Mixed-use development with 1,719 gsf commercial use and 2,447 gsf manufacturing | Included in background growth | 2037* |
| 3 | Queens Block 645 (38 Street bet. 34 & 35 Ave) | Mixed-use development with 106 residential units; 2,651gsf local retail; and 81 parking spaces | Included in background growth (43 of the residential units are from conversion and enlargement of existing commercial building) | 2037* |
| 4 | Queens Block 315, Lot 1 (32-01 Vernon Blvd) | Residential development with 313 units | Assumptions from *Dutch Kills Rezoning and Related Actions FEIS* (2008) with updated modal splits and vehicle occupancies based on 2006-2010 ACS Estimates. | 2037* |
| 5 | 41-50 24th Street | Residential development with 416 units | Same assumptions as site 7 | 2037* |
| 6 | 23-10 41st Avenue | Residential development with 117 units and 25 parking spaces | Same assumptions as site 7 | 2037* |
| 7 | 24-02 43rd Avenue | Mixed-use development with 709 residential units; 16,399 gsf local retail; and 204 parking spaces | Residential: Same assumptions as site 7; 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) | 2037* |
| 8 | 27-11 42nd Road | Residential development with 184 units | Same assumptions as site 7 | 2037* |
| 9 | 27-03 42 Road | Residential development with 143 units and 38 parking spaces | Same assumptions as site 7 | 2037* |
| 10 | 27-37 27th Street | Mixed-use development with 28 residential units; 3,098 gsf local retail; and 7 parking spaces | Included in background growth | 2037* |
| 11 | 29-28 41st Avenue | Residential development with 91 units | Same assumptions as site 7 | 2037* |
| 12 | Gotham Center Build-out | 975,000 gsf commercial development | Assumptions from the Gotham Center EAS (2009) | 2037* |
| 13 | 30-30 Northern Blvd. | 201,550 gsf commercial development with 115 parking spaces | Same assumptions as site 15 | 2037* |
| 14 | QP Market Site | 1,500,000 gsf commercial development | Same assumptions as site 15 | 2037* |
| 15 | Queens Block 504, Lots 1 and 3 | Mixed-use development with 450 residential units; 16,367 gsf local retail; and a 40,000 gsf community facility | Residential: Same assumptions as site 7; Retail: Same assumptions as Site 10; Community Facility: Medical Office assumptions from Dutch Kills Rezoning and Related Actions FEIS (2008); Daycare assumptions from 363-365 Bond Street FEIS (2009). Assumed 30k sf medical office and 10k sf daycare space. | 2019 |
| 16 | Queens Block 533, Lots 1 and 45 | Mixed-use development with 40 residential units and 9,017gsf local retail | Residential: Same assumptions as site 7; Retail: Same assumptions as site 10. | 2019 |

**Table 14-24 (cont'd)**
**Phase 2 (2038) No Action Projects**

| Map No. | Project/Location | Description | Transportation Assumptions | Build Year |
|---|---|---|---|---|
| 17 | Queens Block 551, Lots 17 and 19 | Mixed-use development with 66 residential units and 15,037 gsf local retail | Same assumptions as site 19. | 2019 |
| 18 | Hallett's Point (Block 490, Lots 1, 11 and portion of 101; Block 916, Lots 1 and 10; Block 915, Lot 6) | Mixed-use development with 2,326 residential units; 77,678 gsf retail; a 10,000 gsf community facility; and 1,687 parking spaces | Residential: Same assumptions as site 7; Retail: same assumptions as site 18; Supermarket: Trip rates and temporal distribution from the 2012 *CEQR Technical Manual*; Modal splits, vehicle occupancies, and directional trip distribution from *The Food Retail Expansion to Support Health (FRESH) Food Store Program*, NYCDCP, 2009; Parkland: assumptions from the 2012 *CEQR Technical Manual and Hunters Point South EIS* (2008); Community Facility: assumptions from the *Webster Avenue Rezoning FEIS* (2011) | 2026 |
| 19 | Astoria Cove | Mixed-use development with 1,800 residential units; 132,000 gsf retail; and 1,600 parking spaces | Same assumptions as Site 21 | 2037* |

**Note**: This list does not include No Action projects built before 2018 (see Table 14-17).
* indicates exact Build year is unknown but will be prior to 2038.

East of Vernon Boulevard, eastbound traffic volumes along 36th Avenue are expected to increase by approximately 25 to 80 vph during all peak hours. Traffic volumes in the westbound direction are expected to increase by approximately 25 to 90 vph in all peak hours.

Vernon Boulevard traffic volumes between 41st Avenue and Broadway are expected to increase by approximately 110 to 250 vph in the northbound direction and 100 to 230 vph in the southbound direction during all peak hours.

Traffic volumes along 21st Street between 36th Avenue and Hoyt Avenue North are generally expected to increase by 70 to 255 vph in the northbound direction and 55 to 560 vph in the southbound direction during the weekday AM, midday and PM peak hours as a result of two major development projects being proposed to the north.

*TRAFFIC CONDITIONS*

Traffic analyses for the 2038 No Action condition include the same changes at six intersections discussed for 2018 No Action condition.

*LEVELS OF SERVICE*

Based on these traffic conditions, 2038 No Action traffic levels of service were determined for the 14 analysis locations. **Tables 14-25a** and **14-25b** provide an overview of the levels of service that characterize 2038 No Action "overall" intersection conditions and individual traffic movements, respectively, during the weekday AM, midday and PM peak hours. Detailed descriptions of the 2038 No Action condition traffic levels of service are provided in **Table 14-26** and **Table 14-27**.

The summary overview of the 2038 No Action condition indicates that:

- In the weekday AM peak hour, eight out of the 14 study area intersections analyzed would operate at overall LOS E or F, and one intersection would operate at marginally acceptable/unacceptable LOS D. Twenty-six individual traffic movements out of approximately 59 movements analyzed would operate at unacceptable levels of service as compared to 13 in the existing conditions.
- In the weekday midday peak hour, two out of the 14 intersections would operate at overall LOS E and LOS F, and two intersection would operate at unacceptable LOS D. Eleven individual movements would operate at unacceptable levels of service as compared to seven in the existing conditions.
- In the weekday PM peak hour, seven intersections would operate at LOS E and LOS F, and one intersection would operate at unacceptable LOS D. Twenty-four individual traffic movements would operate at unacceptable levels of service as compared to nine in the existing conditions.
- All four of the unsignalized intersections on Roosevelt Island would continue to operate at overall LOS B or better during all peak hours.

Based on the analysis results, most of the approaches/lane-groups would operate at acceptable levels of service with the exception of the following traffic movements operating at unacceptable levels of service:

*Roosevelt Island Bridge / 36th Avenue and Vernon Boulevard*

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

**Table 14-25a**
**2038 No Action Traffic Level of Service Summary – Overall Intersections**

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Intersections at Overall LOS A/B/C | 5 | 10 | 6 |
| Intersections at Overall LOS D | 1 | 2 | 1 |
| Intersections at Overall LOS E | 2 | 1 | 1 |
| Intersections Overall LOS F | 6 | 1 | 6 |
| **Note:** Includes the 14 analyzed intersections (10 signalized and 4 unsignalized). | | | |

**Table 14-25b**
**2038 No Action 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 | 33 | 48 | 36 |
| Traffic movements at unacceptable LOS D | 1 | 2 | 4 |
| Traffic movements at LOS E | 6 | 4 | 3 |
| Traffic movements at LOS F | 19 | 5 | 17 |
| Number of individual traffic movements* | 59 | 59 | 60 |
| **Note:** * Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements. | | | |

## Table 14-26
## 2038 No Action Traffic Level of Service Analysis
## Signalized Intersections

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **36th Avenue at Vernon Boulevard** | | | | | | | | | | | | |
| EB | L | 0.31 | 13.3 | B | L | 0.24 | 12.5 | B | L | 0.49 | 14.8 | B |
| | TR | 0.62 | 17.7 | B | TR | 0.44 | 14.6 | B | TR | 0.64 | 16.4 | B |
| WB | LTR | 0.43 | 14.5 | B | LTR | 0.37 | 14.0 | B | LTR | 0.34 | 13.5 | B |
| NB | LTR | 1.43 | 214.4 | F | LTR | 1.04 | 54.5 | D | LTR | 1.49 | 236.2 | F |
| SB | LTR | 1.71 | 336.7 | F | LTR | 0.85 | 27.4 | C | LTR | 1.06 | 63.3 | E |
| | **Overall Intersection** | | **199.1** | **F** | **Overall Intersection** | | **31.4** | **C** | **Overall Intersection** | | **108.6** | **F** |
| **36th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.91 | 59.0 | E | LTR | 0.89 | 56.6 | E | LTR | 0.62 | 37.4 | D |
| WB | LTR | 1.02 | 68.4 | E | LTR | 0.96 | 63.8 | E | LTR | 0.89 | 54.2 | D |
| NB | LTR | 0.40 | 13.0 | B | LTR | 0.75 | 19.4 | B | LTR | 1.03 | 44.7 | D |
| SB | LTR | 1.14 | 88.8 | F | LTR | 0.69 | 18.1 | B | LTR | 0.82 | 22.8 | C |
| | **Overall Intersection** | | **69.5** | **E** | **Overall Intersection** | | **28.5** | **C** | **Overall Intersection** | | **38.0** | **D** |
| **21st Street and Broadway** | | | | | | | | | | | | |
| EB | LTR | 1.62 | 331.7 | F | LTR | 1.30 | 191.5 | F | LTR | 1.55 | 293.1 | F |
| WB | LTR | 1.26 | 171.3 | F | LTR | 1.24 | 161.7 | F | LTR | 1.59 | 313.1 | F |
| NB | LTR | 0.55 | 17.1 | B | LTR | 0.90 | 28.3 | C | LTR | 1.05 | 54.1 | D |
| SB | LTR | 1.16 | 97.9 | F | LTR | 0.87 | 27.4 | C | LTR | 0.84 | 25.2 | C |
| | **Overall Intersection** | | **115.7** | **F** | **Overall Intersection** | | **63.3** | **E** | **Overall Intersection** | | **99.5** | **F** |
| **36th Avenue and 31st Street** | | | | | | | | | | | | |
| EB | LTR | 0.79 | 38.1 | D | LTR | 0.88 | 42.3 | D | LTR | 0.90 | 38.7 | D |
| WB | LTR | 0.74 | 32.6 | C | LTR | 0.80 | 36.2 | D | LTR | 0.80 | 35.9 | D |
| NB | LTR | 0.73 | 20.8 | C | LTR | 0.63 | 17.9 | B | LTR | 0.83 | 25.2 | C |
| SB | LTR | 0.73 | 20.2 | C | LTR | 0.53 | 15.3 | B | LTR | 0.56 | 16.1 | B |
| | **Overall Intersection** | | **25.7** | **C** | **Overall Intersection** | | **26.5** | **C** | **Overall Intersection** | | **27.7** | **C** |
| **Vernon Boulevard and 41st Avenue** | | | | | | | | | | | | |
| WB | LR | 0.31 | 16.7 | B | LR | 0.21 | 15.5 | B | LR | 0.44 | 18.9 | B |
| NB | TR | 0.72 | 15.0 | B | TR | 0.74 | 15.7 | B | TR | 1.17 | 97.4 | F |
| SB | LT | 1.21 | 110.2 | F | LT | 0.73 | 15.3 | B | LT | 1.14 | 86.1 | F |
| | **Overall Intersection** | | **68.4** | **E** | **Overall Intersection** | | **15.5** | **B** | **Overall Intersection** | | **85.2** | **F** |
| **30th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.82 | 56.4 | E | LTR | 0.50 | 38.7 | D | LTR | 0.52 | 39.2 | D |
| WB | LTR | 0.94 | 72.2 | E | LTR | 0.65 | 45.0 | D | LTR | 0.67 | 45.3 | D |
| NB | LTR | 0.59 | 16.1 | B | LTR | 0.84 | 23.4 | C | LTR | 0.96 | 31.2 | C |
| SB | LTR | 1.09 | 64.9 | E | LTR | 0.86 | 23.8 | C | LTR | 0.70 | 18.1 | B |
| | **Overall Intersection** | | **51.6** | **D** | **Overall Intersection** | | **26.3** | **C** | **Overall Intersection** | | **28.0** | **C** |
| **Broadway and Vernon Boulevard/11th Street** | | | | | | | | | | | | |
| EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.2 | C | LTR | 0.03 | 33.2 | C |
| WB | LTR | 1.24 | 146.1 | F | LTR | 1.09 | 93.0 | F | LTR | 1.18 | 140.0 | F |
| NB | LT | 0.30 | 8.4 | A | LT | 0.31 | 8.8 | A | LT | 0.57 | 11.0 | B |
| | R | 0.10 | 6.8 | A | R | 0.20 | 7.8 | A | R | 0.16 | 6.6 | A |
| SB | LTR | 1.56 | 284.7 | F | LTR | 0.75 | 34.5 | C | LTR | 1.15 | 117.2 | F |
| NB | LTR | 0.43 | 42.6 | D | LTR | 0.26 | 33.6 | C | LTR | 0.37 | 39.1 | D |
| | **Overall Intersection** | | **177.5** | **F** | **Overall Intersection** | | **41.0** | **D** | **Overall Intersection** | | **67.5** | **E** |
| **Astoria Boulevard and 27th Avenue/ Newtown Avenue and 21st Street** | | | | | | | | | | | | |
| EB | L | 1.06 | 106.3 | F | L | 0.36 | 36.8 | D | L | 0.59 | 45.2 | D |
| | TR | 1.93 | 471.4 | F | TR | 0.71 | 44.2 | D | TR | 1.24 | 162.8 | F |
| WB | L | 1.05 | 81.9 | F | L | 0.92 | 59.6 | E | L | 0.96 | 75.9 | E |
| | TR | 0.98 | 57.7 | E | TR | 0.56 | 38.2 | D | TR | 1.15 | 127.3 | F |
| NB | LTR | 1.38 | 212.7 | F | LTR | 1.89 | 443.0 | F | LTR | 2.08 | 526.1 | F |
| | | - | - | - | | - | - | - | DefL | 1.89 | 434.7 | F |
| SB | LTR | 1.31 | 173.3 | F | LTR | 1.39 | 220.2 | F | LTR | 1.48 | 250.0 | F |
| | **Overall Intersection** | | **217.4** | **F** | **Overall Intersection** | | **205.0** | **F** | **Overall Intersection** | | **254.7** | **F** |

**Table 14-26 (cont'd)**
**2038 No Action Traffic Level of Service Analysis**
**Signalized Intersections**

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **Hoyt Avenue North and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.02 | 40.4 | D | L | 0.12 | 42.3 | D | L | 0.10 | 41.9 | D |
| | R | 0.39 | 48.2 | D | R | 0.14 | 42.7 | D | R | 0.18 | 43.3 | D |
| WB | L | 1.10 | 91.1 | F | L | 0.91 | 49.9 | D | L | 1.07 | 86.0 | F |
| | TR | 0.26 | 15.0 | B | TR | 0.17 | 14.3 | B | TR | 0.30 | 15.9 | B |
| NB | L | 0.36 | 35.0 | C | L | 0.13 | 25.6 | C | L | 0.21 | 26.9 | C |
| | T | 1.31 | 188.8 | F | T | 0.90 | 55.3 | E | T | 1.27 | 166.0 | F |
| SB | TR | 1.13 | 585.7 | F | TR | 0.65 | 35.8 | D | TR | 0.87 | 580.5 | F |
| | **Overall Intersection** | | **218.6** | **F** | **Overall Intersection** | | **45.7** | **D** | **Overall Intersection** | | **191.2** | **F** |
| **Hoyt Avenue South and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.36 | 32.5 | C | L | 0.28 | 32.7 | C | L | 0.24 | 31.7 | C |
| | TR | 1.39 | 219.6 | F | TR | 0.60 | 40.7 | D | TR | 0.99 | 72.1 | E |
| NB | LTR | 0.80 | 45.0 | D | LTR | 0.52 | 14.6 | B | LTR | 1.32 | 286.8 | F |
| SB | LTR | 1.27 | 147.4 | F | LTR | 0.77 | 20.2 | C | LTR | 1.35 | 185.2 | F |
| | **Overall Intersection** | | **129.3** | **F** | **Overall Intersection** | | **21.4** | **C** | **Overall Intersection** | | **202.3** | **F** |

**Notes:**
**(1): Control delay is measured in seconds per vehicle**

**Table 14-27**
**2038 No Action Traffic Level of Service Analysis**
**Unsignalized Intersections**

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **East-West Main Street at Main Street** | | | | | | | | | | | | |
| EB | LT | - | 7.2 | A | LT | - | 7.6 | A | LT | - | 7.4 | A |
| SB | LR | - | 7.4 | A | LR | - | 7.4 | A | LR | - | 7.3 | A |
| | **Overall Intersection** | | **7.3** | **A** | **Overall Intersection** | | **7.5** | **A** | **Overall Intersection** | | **7.3** | **A** |
| **West Road at Main Street** | | | | | | | | | | | | |
| EB1 | LR | - | 9.3 | A | LR | - | 8.5 | A | LR | - | 9.0 | A |
| EB2 | LR | - | 11.5 | B | LR | - | 10.9 | B | LR | - | 10.9 | B |
| NB | LT | - | 10.1 | B | LT | - | 9.4 | A | LT | - | 10.4 | B |
| SB | TR | - | 9.6 | A | TR | - | 8.7 | A | TR | - | 9.0 | A |
| | **Overall Intersection** | | **10.1** | **B** | **Overall Intersection** | | **9.4** | **A** | **Overall Intersection** | | **9.9** | **A** |
| **Roosevelt Island Bridge Ramp at Main Street** | | | | | | | | | | | | |
| WB | LR | - | 16.2 | C | LR | - | 10.4 | B | LR | - | 11.5 | B |
| NB | T | - | 10.4 | B | T | - | 9.3 | A | T | - | 9.7 | A |
| | R | - | 11.4 | B | R | - | 9.2 | A | R | - | 10.0 | A |
| SB | LT | - | 12.8 | B | LT | - | 10.8 | B | LT | - | 15.4 | C |
| | **Overall Intersection** | | **13.9** | **B** | **Overall Intersection** | | **10.0** | **B** | **Overall Intersection** | | **12.7** | **B** |
| **Roosevelt Island Bridge Ramp at Motorgate Garage Driveway** | | | | | | | | | | | | |
| EB | LT | - | 8.5 | A | LT | - | 7.7 | A | LT | - | 7.9 | A |
| NB | LR | - | 11.5 | B | LR | - | 10.1 | B | LR | - | 13.0 | B |
| | **Overall Intersection** | | **1.5** | **A** | **Overall Intersection** | | **0.9** | **A** | **Overall Intersection** | | **1.0** | **A** |

**Notes:**
**(1): Control delay is measured in seconds per vehicle**

*36th Avenue and 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday AM and midday)
- Westbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday and PM)
- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

*Broadway and 21st Street*

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

*41st Avenue and Vernon Boulevard*

- Northbound Vernon Boulevard shared through/right-turn (weekday PM)
- Southbound Vernon Boulevard shared left-turn/through (weekday AM and PM)

*30th Avenue and 21st Street*

- Eastbound 30th Avenue shared left-turn/through/right-turn (weekday AM)
- Westbound 30th Avenue shared left-turn/through/right-turn (weekday AM and PM)
- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

*Broadway and Vernon Boulevard / 11th Street*

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

*Astoria Boulevard / 27th Avenue / Newtown Avenue and 21st Street*

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

*Hoyt Avenue North and 21st Street*

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

*Hoyt Avenue South and 21st Street*

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

**2038 WITH ACTION CONDITION**

As discussed above in Section E, "Level 2 Screening Assessment," the Phase 2 2038 Full Build-out With Action condition would generate 262 vehicle trips arriving at the project site and 90

vehicle trips leaving the project site in the weekday AM peak hour, for a total of 352 vehicle trips. In the weekday midday peak hour, it would generate 161 inbound vehicle trips plus 141 outbound vehicle trips for a total of 302 vehicle trips. In the weekday PM peak hour, it would generate 116 inbound vehicle trips plus 288 outbound vehicle trips for a total of 404 vehicle trips. The distribution of these vehicle trips and the resulting 2038 traffic volume increases are shown in Figures 14-4 to 14-6, and impacts on levels of service are presented below.

*TRIP DISTRIBUTION AND ASSIGNMENT*

The Phase 2 2038 Full Build-out With Action condition would have the same land uses as Phase 1. Therefore, the same distribution and assignment of trips was used. For a summary of these distributions and assignments, see the "2018 With Action Condition." section of this chapter.

*TRAFFIC VOLUME INCREMENTS*

All project-generated auto trips were assigned to the site with the exception of those generated by the University Housing-External land use, which were assigned to the Motorgate garage. The parking demand estimates discussed later in Section K, "Parking", assume that the 500 on-site spaces allowed under the proposed actions would be built under the Phase 2 2038 Full Build-out With Action condition. Because these spaces would not fully accommodate on-site demand, it is assumed that on-site parking would be managed by directing or mandating that University Housing-External auto trips park at the Motorgate garage. Therefore, the AM, midday and PM peak hour trips generated by the University Housing-External land use have been assigned in and out of the Motorgate garage, and the remaining land uses have been assigned to the site. The locations of driveways and entrances to parking facilities are currently under study and are not yet known, so peak hour trips assigned to the site are shown on figures on southbound Main Street and trips assigned away from the site are shown on figures on northbound West Road.

The proposed actions would add approximately 90 to 290 vehicles per hour (vph) in each direction along the Roosevelt Island Bridge. On northbound and southbound Main Street on Roosevelt Island, projected traffic increases would range from about 75 to 280 vph during the peak hours.

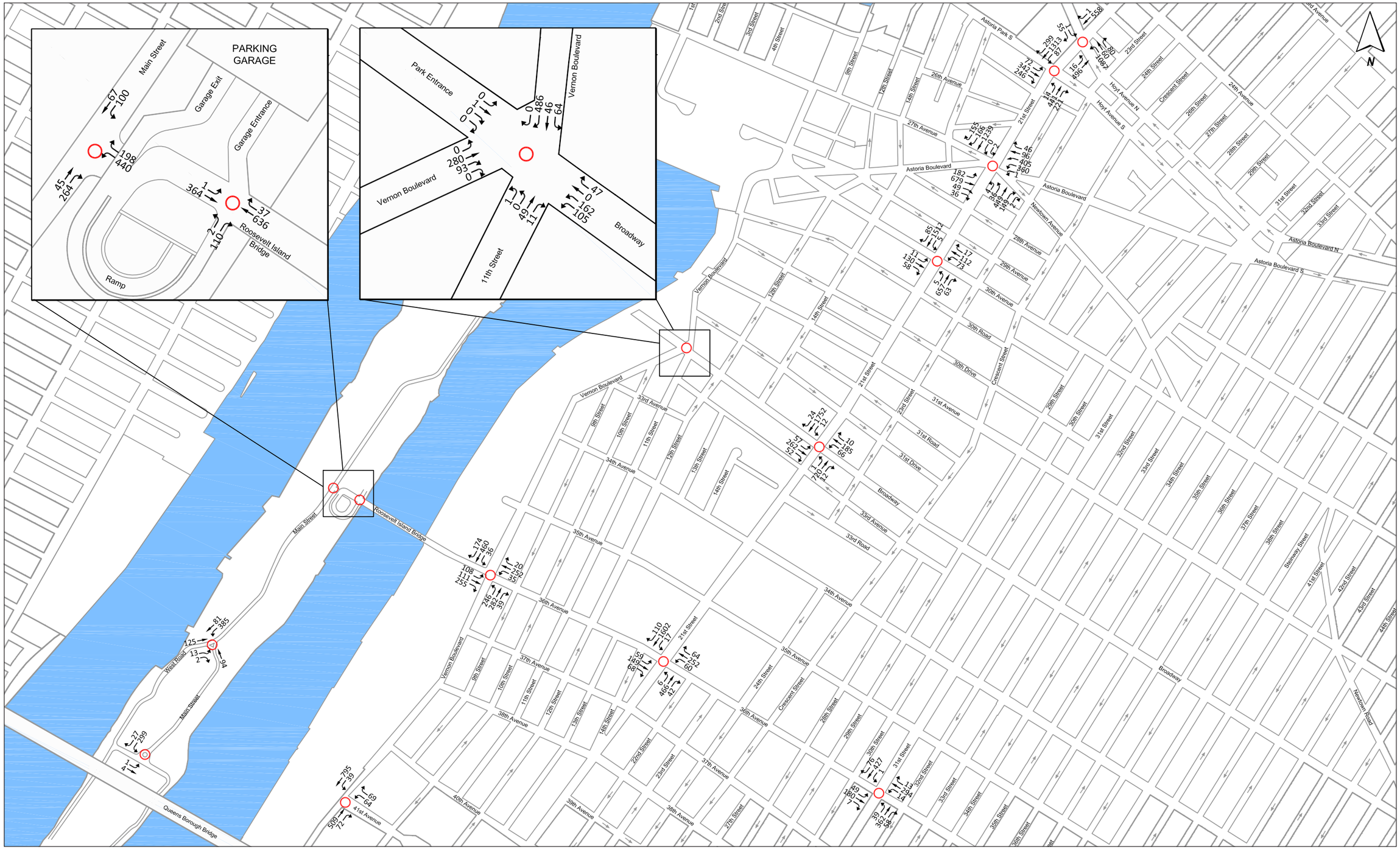
Along 36th Avenue, eastbound and westbound traffic volumes would increase by approximately 40 to 145 vph per direction during all peak hours between Vernon Boulevard and 21st Street; east of 21st Street, traffic volumes would increase by 10 to 55 vph per direction.

Along northbound and southbound Vernon Boulevard north of 36th Avenue, traffic volumes would increase by approximately 15 to 50 vph per direction up to Broadway, and would increase by approximately 10 to 30 vph per direction north of Broadway. South of 36th Avenue, Vernon Boulevard traffic volumes would increase by 35 to 100 vph per direction down to 41st Avenue, and about 30 to 90 vph per direction south of 41st Avenue.

Along northbound and southbound 21st Street, traffic volumes would increase by 10 to 40 vph per direction south of 36th Avenue, and by 15 to 70 vph per direction north of 36th Avenue up to Hoyt Boulevard North. The 2038 With Action traffic volumes are shown in **Figures 14-30** to **14-32** for the AM, midday, and PM peak hours.

*LEVELS OF SERVICE AND SIGNIFICANT IMPACTS*

Based on 2038 With Action traffic volumes, traffic levels of service were determined for the 14 analysis locations. Also, impacted locations and traffic movements were identified according to

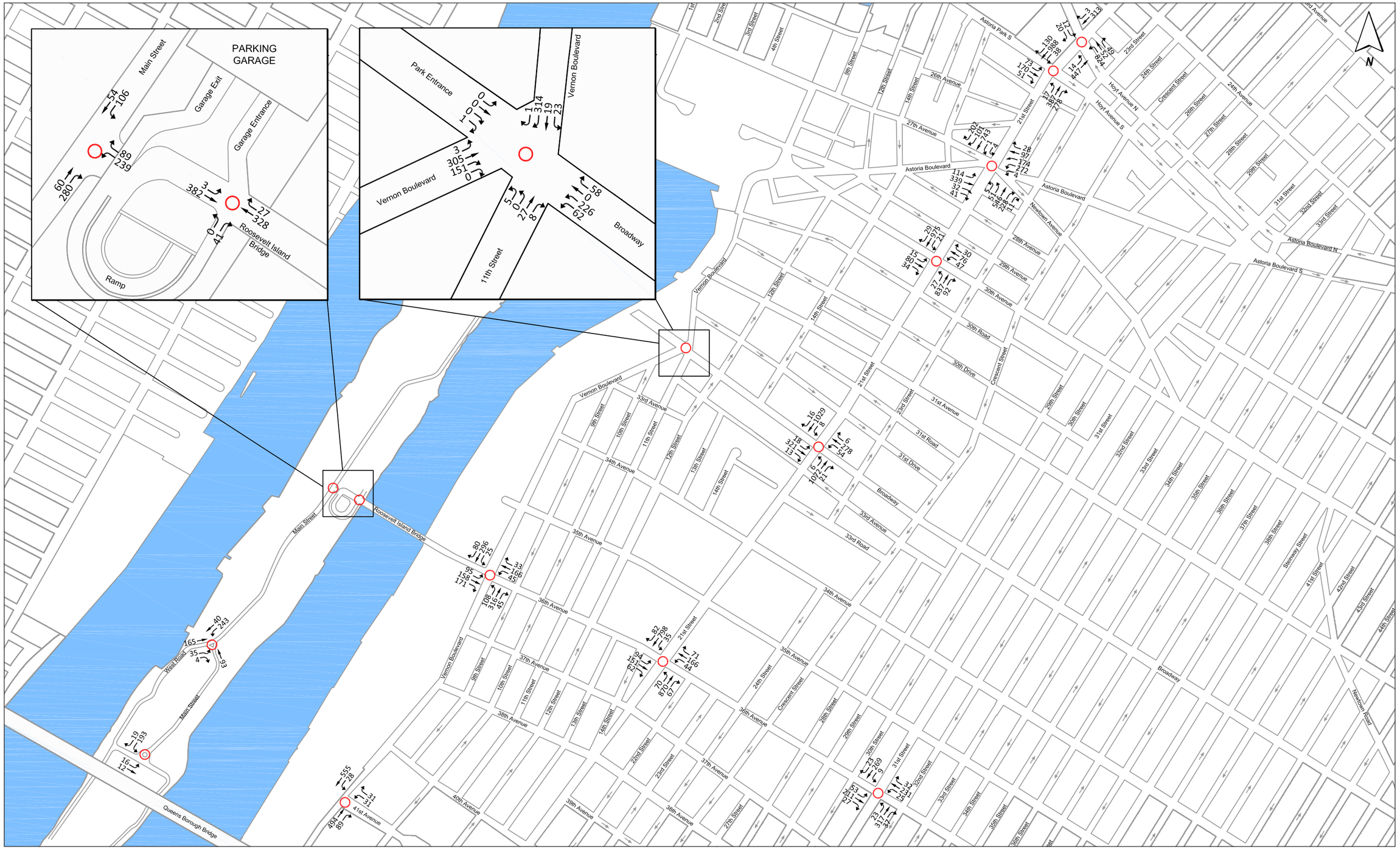



NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street and 36th Avenue at 21st Street, and in the southbound direction at the intersection of 36th Avenue and 31st Street during the weekday AM Peak hour.*

Weekday AM Peak Hour 2038 Build Traffic Volumes

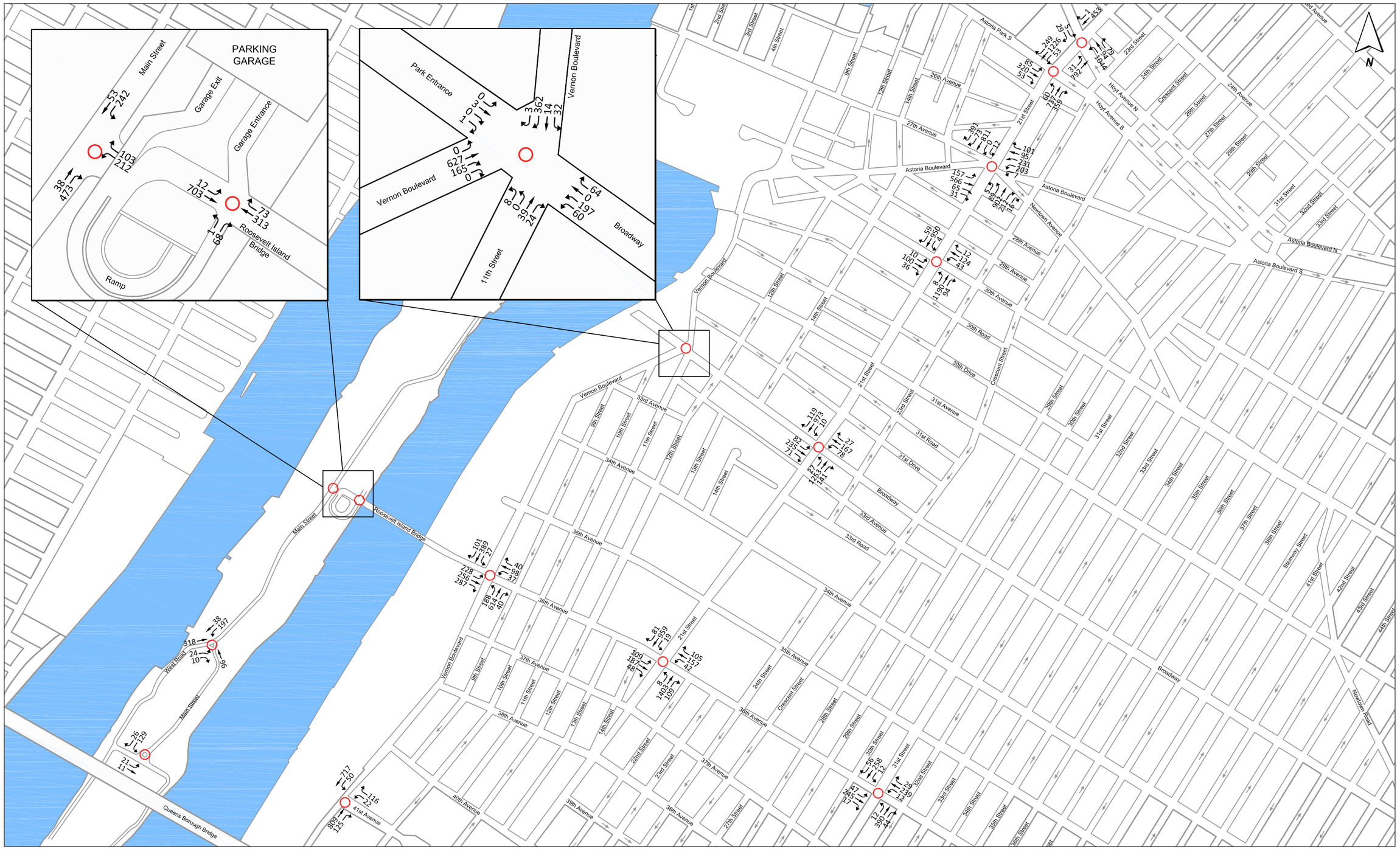
**Figure 14-30**

10.9.12




Weekday Midday Peak Hour 2038 Build Traffic Volumes

**Figure 14-31**




NOTE: *Left turns are prohibited in the northbound and southbound direction at the intersections of Broadway at 21st Street, 36th Avenue at 21st Street, and 36th Avenue at 31st Street during the weekday PM peak hour.*



Weekday PM Peak Hour 2038 Build Traffic Volumes

**Figure 14-32**

the criteria presented in the *CEQR Technical Manual* and discussed previously in Section F, "Transportation Analyses Methodology."

**Tables 14-28a** and **14-28b** provide an overview of the levels of service that characterize 2018 With Action "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 number of movements, respectively, that would have significant impacts. Detailed descriptions of the 2018 No Action condition traffic levels of service are provided in **Table 14-29** and **Table 14-30**, where significant adverse impacts are identified by the shaded rows in the analysis summary tables.

This summary overview of the 2038 With Action 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 With Action condition would increase from eight under the No Action condition to 10 under the With Action condition, and no intersections would operate at marginally acceptable/unacceptable LOS D compared to one under the No Action condition. The number of traffic movements projected to operate at unacceptable levels of service would increase from 26 under the No Action condition to 28 under the With Action condition. Overall, 10 of the 14 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 With Action condition would increase from two under the No Action condition to four under the With Action condition, and two intersections would continue to operate at marginally acceptable/unacceptable LOS D. The number of traffic movements at unacceptable levels of service would increase from 11 to 14. Overall, seven 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 With Action condition would increase from seven under the No Action condition to nine under the With Action condition, and the number of intersections that would operate at marginally acceptable/unacceptable LOS D would increase from one to two. The number of traffic movements projected to operate at unacceptable levels of service would increase from 24 to 29. Overall, 11 intersections would experience significant impacts.

Of the four unsignalized intersections analyzed, three would continue to operate at overall LOS A, B or C during the AM peak hour, four would do so during the midday peak hour, and two would do so during the PM peak hour. One unsignalized intersection would be significantly impacted in the AM peak hour and two would be in the PM peak hour.

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

*West Road & Main Street*

- Eastbound West Road shared left-turn/right-turn (weekday PM)

## Table 14-28a
## 2038 With Action Traffic Level of Service Summary – Overall Intersections

| | AM Peak Hour | Midday Peak Hour | PM Peak Hour |
|---|---|---|---|
| Intersections at Overall LOS A/B/C | 4 | 8 | 3 |
| Intersections at Overall LOS D | 0 | 2 | 2 |
| Intersections at Overall LOS E | 1 | 2 | 3 |
| Intersections Overall LOS F | 9 | 2 | 6 |
| Number of Intersections with Significant Impacts | 10 | 7 | 11 |
| **Note:** Includes the 14 analyzed intersections (10 signalized and 4 unsignalized). | | | |

## Table 14-28b
## 2038 With Action 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 | 31 | 45 | 31 |
| Traffic movements at unacceptable LOS D | 2 | 3 | 2 |
| Traffic movements at LOS E | 3 | 4 | 5 |
| Traffic movements at LOS F | 23 | 7 | 22 |
| Number of significantly impacted movements | 21 | 11 | 24 |
| Number of individual traffic movements* | 59 | 59 | 60 |
| **Note:** * Number of movements may vary between peak hours due to turn prohibitions, parking regulations, and the presence of de facto left turn movements. | | | |

## Table 14-29
## 2038 With Action Traffic Level of Service Analysis
## Signalized Intersections

| | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **36th Avenue at Vernon Boulevard** | | | | | | | | | | | | |
| EB | L | 0.46 | 16.3 | B | L | 0.37 | 14.7 | B | L | 0.64 | 17.5 | B |
| | TR | 0.77 | 22.5 | C | TR | 0.68 | 20.0 | B | TR | 1.12 | 83.2 | F* |
| WB | LTR | 0.64 | 18.8 | B | LTR | 0.59 | 18.2 | B | LTR | 0.56 | 18.8 | B |
| NB | LTR | 2.19 | 556.3 | F* | LTR | 1.43 | 219.6 | F* | LTR | 1.95 | 443.3 | F* |
| SB | LTR | 1.81 | 385.7 | F* | LTR | 0.93 | 36.0 | D | LTR | 1.10 | 80.2 | F* |
| | **Overall Intersection** | | **287.0** | **F** | **Overall Intersection** | | **82.1** | **F** | **Overall Intersection** | | **185.0** | **F** |
| **36th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 1.25 | 169.1 | F* | LTR | 1.31 | 193.8 | F* | LTR | 1.45 | 250.7 | F* |
| WB | LTR | 1.17 | 123.1 | F* | LTR | 1.02 | 78.2 | E* | LTR | 0.99 | 70.8 | E* |
| NB | LTR | 0.41 | 13.2 | B | LTR | 1.02 | 52.1 | D* | LTR | 1.03 | 44.9 | D |
| SB | LTR | 1.20 | 115.1 | F* | LTR | 0.73 | 19.3 | B | LTR | 0.85 | 24.0 | C |
| | **Overall Intersection** | | **104.5** | **F** | **Overall Intersection** | | **61.7** | **E** | **Overall Intersection** | | **66.0** | **E** |
| **21st Street and Broadway** | | | | | | | | | | | | |
| EB | LTR | 1.67 | 356.0 | F* | LTR | 1.39 | 227.0 | F* | LTR | 1.65 | 339.4 | F* |
| WB | LTR | 1.36 | 215.4 | F* | LTR | 1.28 | 179.6 | F* | LTR | 1.64 | 333.3 | F* |
| NB | LTR | 0.59 | 18.1 | B | LTR | 0.93 | 30.9 | C | LTR | 1.11 | 78.3 | E* |
| SB | LTR | 1.23 | 130.4 | F* | LTR | 0.94 | 34.3 | C | LTR | 0.86 | 26.6 | C |
| | **Overall Intersection** | | **140.7** | **F** | **Overall Intersection** | | **73.0** | **E** | **Overall Intersection** | | **118.7** | **F** |
| **36th Avenue and 31st Street** | | | | | | | | | | | | |
| EB | LTR | 0.84 | 42.0 | D | LTR | 0.93 | 48.3 | D* | LTR | 1.08 | 80.1 | F* |
| WB | LTR | 0.80 | 35.8 | D | LTR | 0.83 | 38.5 | D | LTR | 0.83 | 37.4 | D |
| NB | LTR | 0.82 | 25.8 | C | LTR | 0.64 | 18.2 | B | LTR | 0.84 | 25.8 | C |
| SB | LTR | 0.74 | 20.6 | C | LTR | 0.53 | 15.4 | B | LTR | 0.56 | 16.2 | B |
| | **Overall Intersection** | | **28.7** | **C** | **Overall Intersection** | | **28.6** | **C** | **Overall Intersection** | | **37.7** | **D** |

## Table 14-29 (cont'd)
## 2038 With Action Traffic Level of Service Analysis
## Signalized Intersections

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **Vernon Boulevard and 41st Avenue** | | | | | | | | | | | | |
| WB | LR | 0.34 | 17.1 | B | LR | 0.21 | 15.5 | B | LR | 0.52 | 20.4 | C |
| NB | TR | 0.83 | 19.4 | B | TR | 0.80 | 17.8 | B | TR | 1.21 | 114.8 | F* |
| SB | LT | 1.31 | 157.1 | F* | LT | 0.80 | 18.1 | B | LT | 1.32 | 164.2 | F* |
| | **Overall Intersection** | | **93.0** | **F** | **Overall Intersection** | | **17.8** | **B** | **Overall Intersection** | | **125.4** | **F** |
| **30th Avenue and 21st Street** | | | | | | | | | | | | |
| EB | LTR | 0.82 | 56.4 | E | LTR | 0.50 | 38.7 | D | LTR | 0.53 | 39.5 | D |
| WB | LTR | 0.95 | 75.2 | E | LTR | 0.66 | 45.2 | D | LTR | 0.67 | 45.6 | D |
| NB | LTR | 0.61 | 16.5 | B | LTR | 0.88 | 25.7 | C | LTR | 1.01 | 42.4 | D |
| SB | LTR | 1.13 | 82.5 | F* | LTR | 0.89 | 25.9 | C | LTR | 0.72 | 18.6 | B |
| | **Overall Intersection** | | **62.0** | **E** | **Overall Intersection** | | **28.1** | **C** | **Overall Intersection** | | **33.9** | **C** |
| **Broadway and Vernon Boulevard/11th Street** | | | | | | | | | | | | |
| EB | LTR | 0.01 | 28.2 | C | LTR | 0.02 | 26.2 | C | LTR | 0.03 | 33.2 | C |
| WB | LTR | 1.30 | 175.4 | F* | LTR | 1.13 | 106.3 | F* | LTR | 1.21 | 150.8 | F* |
| NB | LT | 0.31 | 8.5 | A | LT | 0.32 | 8.9 | A | LT | 0.60 | 11.5 | B |
| | R | 0.11 | 6.8 | A | R | 0.21 | 7.9 | A | R | 0.19 | 6.7 | A |
| SB | LTR | 1.63 | 318.0 | F* | LTR | 0.78 | 36.2 | D | LTR | 1.20 | 138.4 | F* |
| NB | LTR | 0.43 | 42.6 | D | LTR | 0.26 | 33.6 | C | LTR | 0.37 | 39.1 | D |
| | **Overall Intersection** | | **200.9** | **F** | **Overall Intersection** | | **45.1** | **D** | **Overall Intersection** | | **74.5** | **E** |
| **Astoria Boulevard and 27th Avenue/ Newtown Avenue and 21st Street** | | | | | | | | | | | | |
| EB | L | 1.06 | 106.3 | F | L | 0.36 | 36.8 | D | L | 0.59 | 45.2 | D |
| | TR | 1.95 | 480.3 | F* | TR | 0.73 | 45.0 | D | TR | 1.28 | 180.2 | F* |
| WB | L | 1.05 | 81.9 | F | L | 0.92 | 59.6 | E | L | 0.96 | 75.9 | E |
| | TR | 0.99 | 60.7 | E | TR | 0.57 | 38.5 | D | TR | 1.16 | 132.3 | F* |
| NB | LTR | 1.43 | 234.1 | F* | LTR | 2.02 | 501.8 | F* | DefL | 2.08 | 526.1 | F |
| | | - | - | - | | - | - | - | TR | 2.02 | 492.4 | F* |
| SB | LTR | 1.37 | 200.5 | F* | LTR | 1.44 | 242.7 | F* | LTR | 1.52 | 267.8 | F* |
| | **Overall Intersection** | | **232.1** | **F** | **Overall Intersection** | | **229.1** | **F** | **Overall Intersection** | | **280.9** | **F** |
| **Hoyt Avenue North and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.02 | 40.4 | D | L | 0.12 | 42.3 | D | L | 0.10 | 41.9 | D |
| | R | 0.39 | 48.2 | D | R | 0.14 | 42.7 | D | R | 0.18 | 43.3 | D |
| WB | L | 1.16 | 116.3 | F* | L | 0.96 | 55.7 | E* | L | 1.10 | 97.2 | F* |
| | TR | 0.26 | 15.0 | B | TR | 0.17 | 14.3 | B | TR | 0.30 | 15.9 | B |
| NB | L | 0.37 | 36.2 | D | L | 0.13 | 25.6 | C | L | 0.21 | 26.9 | C |
| | T | 1.31 | 191.5 | F | T | 0.90 | 56.2 | E | T | 1.30 | 176.4 | F* |
| SB | TR | 1.16 | 718.7 | F* | TR | 0.66 | 36.1 | D | TR | 0.87 | 665.1 | F* |
| | **Overall Intersection** | | **259.5** | **F** | **Overall Intersection** | | **48.9** | **D** | **Overall Intersection** | | **212.9** | **F** |
| **Hoyt Avenue South and 21st Street** | | | | | | | | | | | | |
| EB | L | 0.36 | 32.5 | C | L | 0.28 | 32.7 | C | L | 0.24 | 31.7 | C |
| | TR | 1.39 | 219.6 | F | TR | 0.60 | 40.7 | D | TR | 0.99 | 72.1 | E |
| NB | LTR | 0.83 | 54.1 | D* | LTR | 0.53 | 14.8 | B | LTR | 1.38 | 325.9 | F* |
| SB | LTR | 1.32 | 170.0 | F* | LTR | 0.80 | 21.1 | C | LTR | 1.40 | 204.9 | F* |
| | **Overall Intersection** | | **143.6** | **F** | **Overall Intersection** | | **21.9** | **C** | **Overall Intersection** | | **226.8** | **F** |

**Notes:**
**(1): Control delay is measured in seconds per vehicle**
"*" indicates significant adverse impact.

**Table 14-30**
**2038 With Action Traffic Level of Service Analysis**
**Unsignalized Intersections**

| Location | AM PEAK HOUR | | | | MIDDAY PEAK HOUR | | | | PM PEAK HOUR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS | Lane Group | v/c Ratio | Delay (sec) | LOS |
| **East-West Main Street at Main Street** | | | | | | | | | | | | |
| EB | LT | - | 8.0 | A | LT | - | 8.1 | A | LT | - | 7.8 | A |
| SB | LR | - | 11.3 | B | LR | - | 9.1 | A | LR | - | 8.5 | A |
| | **Overall Intersection** | | **11.2** | **B** | **Overall Intersection** | | **9.0** | **A** | **Overall Intersection** | | **8.4** | **A** |
| **West Road at Main Street** | | | | | | | | | | | | |
| EB1 | LR | - | 12.7 | B | LR | - | 12.6 | B | LR | - | 84.8 | F* |
| EB2 | LR | - | 16.4 | C | LR | - | 13.4 | B | LR | - | 12.2 | B |
| NB | LT | - | 12.1 | B | LT | - | 11.4 | B | LT | - | 17.3 | C |
| SB | TR | - | 25.2 | D | TR | - | 14.5 | B | TR | - | 16.8 | C |
| | **Overall Intersection** | | **19.4** | **C** | **Overall Intersection** | | **13.1** | **B** | **Overall Intersection** | | **48.6** | **E** |
| **Roosevelt Island Bridge Ramp at Main Street** | | | | | | | | | | | | |
| WB | LR | - | 110.6 | F* | LR | - | 21.5 | C | LR | - | 20.2 | C |
| NB | T | - | 11.6 | B | T | - | 10.5 | B | T | - | 10.7 | B |
| | R | - | 17.9 | C | R | - | 16.9 | C | R | - | 37.6 | E* |
| SB | LT | - | 15.9 | C | LT | - | 13.4 | B | LT | - | 23.5 | C |
| | **Overall Intersection** | | **67.9** | **F** | **Overall Intersection** | | **17.6** | **C** | **Overall Intersection** | | **28.0** | **D** |
| **Roosevelt Island Bridge Ramp at Motorgate Garage Driveway** | | | | | | | | | | | | |
| EB | LT | - | 9.6 | A | LT | - | 8.2 | A | LT | - | 8.3 | A |
| NB | LR | - | 13.0 | B | LR | - | 11.4 | B | LR | - | 20.0 | C |
| | **Overall Intersection** | | **1.4** | **A** | **Overall Intersection** | | **0.7** | **A** | **Overall Intersection** | | **1.1** | **A** |

**Notes:**
**(1): Control delay is measured in seconds per vehicle**
"*" indicates significant adverse impact.

*Roosevelt Island Bridge Ramp & Main Street*

- Westbound Roosevelt Island Bridge Ramp shared left-turn/right-turn (weekday AM)
- Northbound Main Street right-turn (weekday PM)

*Roosevelt Island Bridge/36th Avenue & Vernon Boulevard*

- Eastbound Roosevelt Island Bridge shared through/right-turn (weekday PM)

*36th Avenue & 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday PM)
- Northbound 21st Street shared left-turn/through/right-turn (weekday midday)

*36th Avenue & 31st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday midday and PM)

*30th Avenue & 21st Street*

- Westbound 30th Avenue shared left-turn/through/right-turn (weekday midday)

*Hoyt Avenue South & 21st Street*

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

The remainder of this section provides an overview of significant traffic impacts that would result under the Phase 2 2038 Full Build-out With Action condition. Of the 14 study area intersections analyzed, the proposed actions would cause significant traffic impacts at 10 intersections in the weekday AM peak hour, seven in the weekday midday peak hour, and 11 in the weekday PM

peak hour. Impacted traffic movements and the peak hours in which they are impacted are identified below.

*West Road & Main Street*

- Eastbound West Road shared left-turn/right-turn (weekday PM)

*Roosevelt Island Bridge Ramp & Main Street*

- Westbound Roosevelt Island Bridge Ramp shared left-turn/right-turn (weekday AM)
- Northbound Main Street right-turn (weekday PM)

*Roosevelt Island Bridge/36th Avenue & Vernon Boulevard*

- Eastbound Roosevelt Island Bridge shared through/right-turn (weekday PM)
- Northbound Vernon Boulevard shared left-turn/through/right-turn (weekday AM, midday and PM)
- Southbound Vernon Boulevard shared left-turn/through/right-turn (weekday AM and PM)

*36th Avenue & 21st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday and PM)
- Westbound 36th Avenue shared left-turn/through/right-turn (weekday AM, midday and PM)
- Northbound 21st Street shared left-turn/through/right-turn (weekday midday)
- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

*Broadway & 21st Street*

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

*36th Avenue & 31st Street*

- Eastbound 36th Avenue shared left-turn/through/right-turn (weekday midday and PM)

*41st Avenue & Vernon Boulevard*

- Northbound Vernon Boulevard shared through/right-turn (weekday PM)
- Southbound Vernon Boulevard shared left-turn/through (weekday AM and PM)

*30th Avenue & 21st Street*

- Southbound 21st Street shared left-turn/through/right-turn (weekday AM)

*Broadway & Vernon Boulevard/11th Street*

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

*Astoria Boulevard/27th Avenue/Newtown Avenue & 21st Street*

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

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

*Hoyt Avenue North & 21st Street*

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

*Hoyt Avenue South & 21st Street*

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

Six of the intersections where significant impacts would occur would experience those impacts during all three peak hours analyzed: Roosevelt Island Bridge/36th Avenue and Vernon Boulevard; 36th Avenue and 21st Street; Broadway and 21st Street; Broadway and Vernon Boulevard and 11th Street; Astoria Boulevard/27th Avenue/Newtown Avenue and 21st Street; and Hoyt Avenue North and 21st Street. Other intersections would be significantly impacted in one or two of the three peak hours analyzed, while two study locations on Roosevelt Island would not be significantly impacted during any of the peak hours analyzed.

## E. TRANSIT

Mass transit options serving Roosevelt Island include the "F" line, the Q102 bus, the Roosevelt Island "Red" Bus, and the Tramway. A detailed analysis of transit operations for the critical elements during the weekday AM and PM peak periods is presented below. During other time periods, background transit ridership, station utilization, and project trip generation, are comparatively lower. Hence, potential transit impacts were evaluated only for the weekday AM and PM peak periods.

To reflect a Reasonable Worst Case Development Scenario, conservative conditions were developed independent of the traffic assignments. All off-campus pedestrian trips would be generated from the Roosevelt Island subway station, bus stops, or the Motorgate garage. A credit was not taken for the potential on-campus parking accommodations. At the Motorgate garage, 50 percent of the person trips were assigned as bus trips to the campus and the remaining 50 percent were assigned as pedestrian trips to the campus. At the subway station, ten percent of the trips were projected to utilize the bus to transfer to campus.

### TRANSIT STUDY AREAS

*SUBWAY SERVICE*

Local subway service includes the "F" train which links Roosevelt Island with stations at 63rd Street and Lexington Avenue in Manhattan and 21st Street/Queensbridge in Queens. The "F" train service at the Roosevelt Island station is characterized by high demand, especially in the southbound direction during the weekday morning peak hours.

*TRAM SERVICE*

The Tram provides service between Roosevelt Island and 60th Street at Second Avenue in Manhattan. Tram service runs approximately every 8 minutes during peak hours and 15 minutes

during off peak times. According to the RIOC, it has a capacity to carry 109 passengers plus an attendant per cabin.

*BUS SERVICE*

The Q102 bus circles the island and carries passengers to and from Queens, connecting with the Q101 and Q60 at Queensboro Plaza in Queens. The Roosevelt Island Red Bus provides service internal to the Island, frequently looping between the Southpoint Park and the Octagon development at the north end of the Island, stopping at locations along Main Street.

Based on the travel demand estimates and the availability and service frequencies of the bus routes in the study area, it was determined that the Q102 and Red Bus routes would experience more than 50 peak hour bus trips in one direction—the *CEQR Technical Manual* recommended threshold for undertaking a quantified bus analysis. Therefore, detailed bus line-haul analyses were conducted to address potential transit impacts on the bus system associated with the proposed project. **Table 14-31** provides a summary of the NYCT Q102 route and RIOC Red Bus route. These routes use standard buses with a guideline capacity of 54 and 55 passengers per bus for the Q102 and Red Bus route, respectively.

**Table 14-31**
**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 | Afternoon | PM |
| Q102 (EB/WB) | 27th Avenue/ 2nd Street, Astoria, Queens | Main Street, Roosevelt Island | Main Street loop from Octagon to Southpoint Park | 20/20 | 30/30 | 30/30 |
| RIOC (SB/NB) | 888 Main Street-Octagon | Southpoint Park | Main Street loop from Octagon to Southpoint Park | 8/8 | 15/15 | 8/8 |
| **Source:** MTA NYCT Bus Timetables (2011)/ Roosevelt Island Red Bus Service Schedule(2012) | | | | | | |

**2011 EXISTING CONDITIONS—SUBWAY STATION OPERATIONS**

As presented in Section D, "Level 1 Screening Assessment," the Full Build of the proposed project is expected to result in approximately 1,085 and 1,250 project-generated subway trips during the AM and PM peak hours, respectively. These trips were distributed to the Roosevelt Island subway station ("F" line). As detailed in Section B, "CEQR Level 2 Screening Assessment," station elements were identified for analysis, as follows.

- Station control area;
- Station escalators; and
- Station stairways.

Field surveys conducted on Thursday, November 17, 2011 and Tuesday, March 27, 2012 during the hours of 7:00 AM to 9:30 AM and 4:00 PM to 6:30 PM. The field data were then calibrated based on the metro card entry data obtained from the NYCT. The calibrated data were used as the baseline volumes for the analysis of the above subway station elements. As shown in **Table 14-32** through **Table 14-34**, all critical subway station elements operate at LOS A during the weekday AM and PM peak periods.

## Table 14-32
## 2011 Existing Conditions Subway Control Area Analysis

| Peak Condition | Control Element | Quantity | 15-Minute Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | | | | |
| AM Peak | Two-Way Turnstile | 4 | 297 | 121 | 0.90 | 0.90 | 0.25 | A |
| PM Peak | Two-Way Turnstile | 4 | 126 | 153 | 0.90 | 0.90 | 0.16 | 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 = [Vin/ Cin* Ff ] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute 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 (if applicable)
Ff = Friction factor (if applicable)

## Table 14-33
## 2011 Existing Conditions Subway Escalator Analysis

| Station Element | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 15-Min. Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 28 | 0 | 1,890 | 0.02 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 59 | 0 | 1,890 | 0.04 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 91 | 0 | 1,695 | 0.07 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 238 | 945 | 0.25 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 91 | 0 | 1,695 | 0.06 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/Down | 1 | 40 | 63 | 1.00 | 0 | 238 | 945 | 0.25 | A |
| **PM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 19 | 0 | 1,890 | 0.01 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 90 | 0 | 1,890 | 0.06 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 106 | 0 | 1,695 | 0.08 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 106 | 945 | 0.11 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 106 | 0 | 1,695 | 0.07 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 106 | 945 | 0.11 | 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 14-34**
**2011 Existing Conditions Subway Stairway Analysis**

| Stairway Location | Width | Effective Width | Surge Factor | Friction Factor (AM/PM) | AM Peak Period | | | | PM Peak Period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS |
| | | | | | Down (Enter) | Up (Exit) | | | Down (Enter) | Up (Exit) | | |
| Platform Level/ To Manhattan | 5.8 | 4.8 | 0.75 | 1.00/1.00 | 228 | 4 | 0.428 | B | 78 | 1 | 0.146 | A |
| Platform Level/ To Queens | 5.8 | 4.8 | 0.75 | 0.90/0.90 | 21 | 4 | 0.049 | A | 29 | 6 | 0.069 | A |
| Mezzanine Level | 7.4 | 6.4 | 0.80 | 0.90/0.90 | 9 | 4 | 0.018 | A | 7 | 4 | 0.015 | A |
| Upper Level | 7.4 | 6.4 | 0.90 | 0.90/0.90 | 9 | 4 | 0.016 | A | 7 | 4 | 0.014 | 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 = [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)

## 2011 EXISTING CONDITIONS—BUS LINE-HAUL OPERATIONS

To assess the potential impact on the study area bus routes and to establish the baseline load points for the Q102 and Red Bus routes, field surveys were conducted on Wednesday, May 2, 2012 and Thursday, June 28, 2012 during the hours of 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. As shown in **Table 14-35,** the Q102 and Red Bus routes operate within the guideline capacity during the weekday AM and PM peak periods.

## 2011 EXISTING CONDITIONS—TRAM LINE-HAUL OPERATIONS

To assess the potential impacts and to establish the baseline volumes for the tramway, a field survey was conducted on Tuesday, March 27, 2012 during the hours of 7:00 AM to 9:30 AM and 4:00 PM to 6:30 PM. As shown in **Table 14-36,** the tramway operates within the guideline capacity during the weekday AM and PM peak periods.

## 2018 NO ACTION CONDITION—SUBWAY STATION OPERATIONS

Estimates of peak hour transit volumes in the 2018 No Action condition were developed by applying the recommended *CEQR Technical Manual* annual background growth rates. An annual compounded background growth rate of 0.50 percent was applied to the transit volumes from 2011 to 2016, and 0.25 percent was applied to the transit volumes from 2016 to 2018. In addition, trips associated with No Action projects were incorporated into the future No Action transit volumes.

The No Action peak period volume projections were allocated to the transit analysis elements described above. As shown in **Tables 14-37** through **14-39**, all station control area elements, stairways, and escalators would continue to operate at acceptable levels.

## Table 14-35
## 2011 Existing Bus Line-Haul Analysis

| Route- Direction | Maximum Load Point | Hourly Volume | Buses/ Hour | Passengers per Bus | Capacity/ Bus | Capacity Shortfall |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 10th Street at 41st Avenue | 88 | 4 | 22 | 54 | No |
| | Roosevelt Island: Tram Station West | 72 | 4 | 18 | 54 | No |
| | Roosevelt Island: Subway Station | 56 | 4 | 14 | 54 | No |
| **Q102- Westbound** | Queens: 8th Street at Astoria Blvd | 90 | 3 | 30 | 54 | No |
| | Roosevelt Island: 543 Main Street | 63 | 3 | 21 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 33 | 3 | 11 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 120 | 9 | 14 | 55 | No |
| | Tram Station West (With Action) | 15 | 9 | 2 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 343 | 9 | 39 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 123 | 9 | 14 | 55 | No |
| **PM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 27th Street at 30th Avenue | 60 | 2 | 30 | 54 | No |
| | Roosevelt Island: Tram Station West | 8 | 2 | 4 | 54 | No |
| | Roosevelt Island: Subway Station | 30 | 2 | 15 | 54 | No |
| **Q102- Westbound** | Queens: 12th Street at 41st Avenue | 54 | 2 | 27 | 54 | No |
| | Roosevelt Island: 543 Main Street | 24 | 2 | 12 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 20 | 2 | 10 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 255 | 9 | 29 | 55 | No |
| | Tram Station West (With Action) | 99 | 9 | 11 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 160 | 9 | 18 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 48 | 9 | 6 | 55 | No |

**Notes:** Q102 route Maximum Load Point data was based on maximum load on bus over 2 hour survey period. One stop from both Roosevelt Island and Queens were selected for Analysis

Red Bus existing counts were increased based on comparison of May to June subway counts (increased by 14% in the AM Peak Hour)

Nine Red Buses were observed in the AM and PM peak period both in the Northbound and Southbound direction. As the schedule specifies 8 buses/hr this assumption was used for the No Action and With Action analyses.

**Source:** Q102 Bus Survey (May 2012) and Red Bus Survey (June 2012)

## Table 14-36
## 2011 Existing Tram Line-Haul Analysis

| Route- Direction | Hourly Volumes | Trams/ Hour | Passengers per Tram | Capacity/ Tram | Capacity shortfall |
|---|---|---|---|---|---|
| AM Peak Hour | | | | | |
| Eastbound | 72 | 8 | 9 | 109 | No |
| Westbound | 754 | 8 | 95 | 109 | No |
| PM Peak Hour | | | | | |
| Eastbound | 461 | 8 | 58 | 109 | No |
| Westbound | 218 | 8 | 28 | 109 | No |

## Table 14-37
## 2018 No Action Condition Subway Control Area Analysis

| Peak Condition | Control Element | Quantity | 15-Minute Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | | | | |
| AM Peak | Two-Way Turnstile | 4 | 375 | 142 | 0.90 | 0.90 | 0.32 | A |
| PM Peak | Two-Way Turnstile | 4 | 163 | 220 | 0.90 | 0.90 | 0.21 | 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 = [Vin/ Cin* Ff ] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute 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 (if applicable)
Ff = Friction factor (if applicable)

## Table 14-38
## 2018 No Action Condition Subway Escalator Analysis

| Station Element | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 15-Min. Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 30 | 0 | 1890 | 0.02 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 76 | 0 | 1890 | 0.05 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 110 | 0 | 1695 | 0.08 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 311 | 945 | 0.33 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 110 | 0 | 1695 | 0.07 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/Down | 1 | 40 | 63 | 1.00 | 0 | 311 | 945 | 0.33 | A |
| **PM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 74 | 0 | 1890 | 0.05 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 98 | 0 | 1890 | 0.07 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 168 | 0 | 1695 | 0.12 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 139 | 945 | 0.15 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 169 | 0 | 1695 | 0.11 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 140 | 945 | 0.15 | 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 14-39**
**2018 No Action Condition Subway Stairway Analysis**

| Stairway Location | Width | Effective Width | Surge Factor | Friction Factor (AM/PM) | AM Peak Period | | | | PM Peak Period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS |
| | | | | | Down (Enter) | Up (Exit) | | | Down (Enter) | Up (Exit) | | |
| Platform Level/ To Manhattan | 5.8 | 4.8 | 0.75 | 1.00/0.90 | 299 | 4 | 0.559 | B | 83 | 5 | 0.178 | A |
| Platform Level/ To Queens | 5.8 | 4.8 | 0.75 | 0.90/0.90 | 28 | 5 | 0.065 | A | 61 | 6 | 0.135 | A |
| Mezzanine Level | 7.4 | 6.4 | 0.80 | 0.90/0.90 | 12 | 5 | 0.023 | A | 9 | 6 | 0.020 | A |
| Upper Level | 7.4 | 6.4 | 0.90 | 0.90/0.90 | 12 | 5 | 0.021 | A | 9 | 6 | 0.019 | 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 = [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)

## 2018 NO ACTION CONDITION—BUS LINE-HAUL LEVELS

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

As shown in **Table 14-40,** the Q102 and Red Bus routes would continue to operate within the guideline capacity during the weekday AM and PM peak periods.

## 2018 NO ACTION CONDITION—TRAM LINE-HAUL OPERATIONS

Estimates of peak hour tramway volumes in the No Action condition were developed by applying *CEQR Technical Manual* recommended annual background growth rates as mentioned above. As shown in **Table 14-41,** the tramway would continue to operate within the guideline capacity during the weekday AM and PM peak periods.

## 2018 WITH ACTION CONDITION —SUBWAY STATION OPERATIONS

The 344 (225 in and 119 out) AM peak hour and 403 (138 in and 265 out) PM peak hour project-generated subway trips (see **Table 14-4**) were allocated to the transit analysis elements previously described. These trips were added to the projected 2018 With Action volumes to generate the 2018 With Action volumes for analysis.

As shown in **Tables 14-42** through **14-44**, all station stairways, escalators, and control area elements would continue to operate at acceptable levels. Therefore, the proposed project would not result in any significant adverse subway impacts in the interim Phase 1 (2018) With Action condition.

## Table 14-40
## 2018 No Action Bus Line-Haul Analysis

| Route- Direction | Maximum Load Point | Hourly Volume | Buses/ Hour | Passengers per Bus | Capacity/ Bus | Capacity Shortfall |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 10th Street at 41st Avenue | 137 | 4 | 34 | 54 | No |
| | Roosevelt Island: Tram Station West | 107 | 4 | 27 | 54 | No |
| | Roosevelt Island: Subway Station | 91 | 4 | 23 | 54 | No |
| **Q102- Westbound** | Queens: 8th Street at Astoria Blvd | 107 | 3 | 36 | 54 | No |
| | Roosevelt Island: 543 Main Street | 73 | 3 | 24 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 42 | 3 | 14 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 135 | 8 | 17 | 55 | No |
| | Tram Station West (With Action) | 15 | 8 | 2 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 356 | 8 | 45 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 130 | 8 | 16 | 55 | No |
| **PM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 27th Street at 30th Avenue | 86 | 2 | 43 | 54 | No |
| | Roosevelt Island: Tram Station West | 24 | 2 | 12 | 54 | No |
| | Roosevelt Island: Subway Station | 47 | 2 | 24 | 54 | No |
| **Q102- Westbound** | Queens: 12th Street at 41st Avenue | 80 | 2 | 40 | 54 | No |
| | Roosevelt Island: 543 Main Street | 54 | 2 | 27 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 50 | 2 | 25 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 268 | 8 | 34 | 55 | No |
| | Tram Station West (With Action) | 102 | 8 | 13 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 175 | 8 | 22 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 59 | 8 | 7 | 55 | No |

**Notes:** Q102 route Maximum Load Point data was based on maximum load on bus over 2 hour survey period. One stop from both Roosevelt Island and Queens were selected for Analysis

Red Bus existing counts were increased based on comparison of May to June subway counts (increased by 14% in the AM Peak Hour)

Nine Red Buses were observed in the AM and PM peak period both in the Northbound and Southbound direction. As the schedule specifies 8 buses/hr this assumption was used for the No Action and With Action analyses.

## Table 14-41
## 2018 No Action Condition Tram Line-Haul Analysis

| Route- Direction | Hourly Volumes | Trams/Hour | Passengers per Tram | Capacity/ Tram | Capacity shortfall |
|---|---|---|---|---|---|
| AM Peak Hour | | | | | |
| Eastbound | 78 | 8 | 10 | 109 | No |
| Westbound | 793 | 8 | 99 | 109 | No |
| PM Peak Hour | | | | | |
| Eastbound | 489 | 8 | 61 | 109 | No |
| Westbound | 233 | 8 | 29 | 109 | No |

## Table 14-42
## 2018 With Action Condition Subway Control Area Analysis

| Peak Condition | Control Element | Quantity | 15-Minute Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | | | | |
| AM Peak | Two-Way Turnstile | 4 | 408 | 205 | 0.90 | 0.90 | 0.37 | A |
| PM Peak | Two-Way Turnstile | 4 | 237 | 258 | 0.90 | 0.90 | 0.28 | 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 = [Vin/ Cin* Ff ] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute 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 (if applicable)
Ff = Friction factor (if applicable)

## Table 14-43
## 2018 With Action Condition Subway Escalator Analysis

| Station Element | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 15-Min. Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 73 | 0 | 1890 | 0.05 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 94 | 0 | 1890 | 0.07 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 170 | 0 | 1695 | 0.13 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 343 | 945 | 0.36 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 170 | 0 | 1695 | 0.11 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/Down | 1 | 40 | 63 | 1.00 | 0 | 343 | 945 | 0.36 | A |
| **PM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 85 | 0 | 1890 | 0.06 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 123 | 0 | 1890 | 0.09 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 204 | 0 | 1695 | 0.15 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 207 | 945 | 0.22 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 206 | 0 | 1695 | 0.14 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 209 | 945 | 0.22 | 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 14-44**
**2018 With Action Condition Subway Stairway Analysis**

| Stairway Location | Width | Effective Width | Surge Factor | Friction Factor (AM/PM) | AM Peak Period | | | | PM Peak Period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15-Min. Pedestrian Vol. | | | | 15-Min. Pedestrian Vol. | | | |
| | | | | | Down (Enter) | Up (Exit) | V/SVCD Ratio | LOS | Down (Enter) | Up (Exit) | V/SVCD Ratio | LOS |
| Platform Level/ To Manhattan | 5.8 | 4.8 | 0.75 | 1.00/1.00 | 309 | 7 | 0.582 | B | 135 | 6 | 0.258 | A |
| Platform Level/ To Queens | 5.8 | 4.8 | 0.75 | 0.90/0.90 | 51 | 6 | 0.114 | A | 83 | 8 | 0.183 | A |
| Mezzanine Level | 7.4 | 6.4 | 0.80 | 0.90/0.90 | 13 | 8 | 0.028 | A | 14 | 7 | 0.028 | A |
| Upper Level | 7.4 | 6.4 | 0.90 | 0.90/0.90 | 13 | 8 | 0.026 | A | 14 | 7 | 0.026 | 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 = [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)

## 2018 WITH ACTION CONDITION—BUS LINE-HAUL LEVELS

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

As described in Section E, "Transportation Analysis Methodologies," impacts on bus line-haul levels are considered significant if a proposed action would result in operating conditions above guideline capacities. As shown in **Table 14-45**, the Q102 and Red Bus routes would continue to operate within the guideline capacity, with the exception of the Q102 in the eastbound direction during the PM peak period. These projected increases in bus ridership are in excess of the guideline capacities and constitute a significant adverse bus line-haul impact.

Potential measures to mitigate the significant adverse bus line-haul impact include scheduling additional buses to increase capacity. NYCT routinely monitors changes in bus ridership and would make the necessary service adjustments where warranted. These 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 21, "Mitigation Measures."

## 2018 WITH ACTION CONDITION—TRAMWAY LINE-HAUL LEVELS

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

As described in Section C, "Transportation Analysis Methodologies," impacts on tramway line-haul levels are considered significant if a proposed action would result in operating conditions above guideline capacities. As shown in **Table 14-46**, the tramway would continue to operate within the guideline capacity. Therefore, the proposed project would not result in any significant adverse tramway line-haul impacts in the interim Phase 1 (2018) With Action condition.

**Table 14-45**
**2018 With Action Bus Line-Haul Analysis**

| Route- Direction | Maximum Load Point | Hourly Volume | Buses/ Hour | Passengers per Bus | Capacity/ Bus | Capacity Shortfall |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 10th Street at 41st Avenue | 151 | 4 | 38 | 54 | No |
| | Roosevelt Island: Tram Station West | 132 | 4 | 33 | 54 | No |
| | Roosevelt Island: Subway Station | 105 | 4 | 27 | 54 | No |
| **Q102- Westbound** | Queens: 8th Street at Astoria Blvd | 136 | 3 | 46 | 54 | No |
| | Roosevelt Island: 543 Main Street | 102 | 3 | 34 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 92 | 3 | 31 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 160 | 8 | 20 | 55 | No |
| | Tram Station West (With Action) | 41 | 8 | 6 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 411 | 8 | 52 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 188 | 8 | 24 | 55 | No |
| **PM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 27th Street at 30th Avenue | 121 | 2 | (61)* | 54 | Yes |
| | Roosevelt Island: Tram Station West | 82 | 2 | 41 | 54 | No |
| | Roosevelt Island: Subway Station | 82 | 2 | 41 | 54 | No |
| **Q102- Westbound** | Queens: 12th Street at 41st Avenue | 100 | 2 | 50 | 54 | No |
| | Roosevelt Island: 543 Main Street | 86 | 2 | 43 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 70 | 2 | 35 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 333 | 8 | 42 | 55 | No |
| | Tram Station West (With Action) | 169 | 8 | 22 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 213 | 8 | 27 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 98 | 8 | 13 | 55 | No |

**Notes:**
**(#)*:** Indicates a significant adverse bus line-haul impact
Q102 route Maximum Load Point data was based on maximum load on bus over 2 hour survey period. One stop from both Roosevelt Island and Queens were selected for Analysis
Red Bus existing counts were increased based on comparison of May to June subway counts (increased by 14% in the AM Peak Hour)
Nine Red Buses were observed in the AM and PM peak period both in the Northbound and Southbound direction. As the schedule specifies 8 buses/hr this assumption was used for the No Action and With Action analyses.

**Table 14-46**
**2018 With Action Condition Tram Line-Haul Analysis**

| Route- Direction | Hourly Volumes | Trams/Hour | Passengers per Tram | Capacity/ Tram | Capacity shortfall |
|---|---|---|---|---|---|
| AM Peak Hour | | | | | |
| Eastbound | 99 | 8 | 13 | 109 | No |
| Westbound | 802 | 8 | 101 | 109 | No |
| PM Peak Hour | | | | | |
| Eastbound | 500 | 8 | 63 | 109 | No |
| Westbound | 256 | 8 | 32 | 109 | No |

## 2038 NO ACTION CONDITION—SUBWAY STATION OPERATIONS

Estimates of peak hour subway volumes in the 2038 No Action condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates. An annual compounded background growth rate of 0.50 percent was applied to the transit volumes from 2011 to 2016, and a growth rate of 0.25 percent was applied to the transit volumes from 2016 to 2038. In addition, trips associated with No Action projects were incorporated into the future No Action transit volumes.

The No Action peak period volume projections were allocated to the transit analysis elements described above. As shown in **Tables 14-47** through **14-49**, all station stairways, control elements, and escalators would continue to operate at acceptable levels.

**Table 14-47**
**2038 No Action Condition Subway Control Area Analysis**

| Peak Condition | Control Element | Quantity | 15-Minute Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | | | | |
| AM Peak | Two-Way Turnstile | 4 | 391 | 148 | 0.90 | 0.90 | 0.33 | A |
| PM Peak | Two-Way Turnstile | 4 | 169 | 228 | 0.90 | 0.90 | 0.22 | 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 = [Vin/ Cin* Ff ] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute 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 (if applicable)
Ff = Friction factor (if applicable)

**Table 14-48**
**2038 No Action Condition Subway Escalator Analysis**

| Station Element | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 15-Min. Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 30 | 0 | 1890 | 0.02 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 76 | 0 | 1890 | 0.05 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 110 | 0 | 1695 | 0.08 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 311 | 945 | 0.33 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 110 | 0 | 1695 | 0.07 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/Down | 1 | 40 | 63 | 1.00 | 0 | 311 | 945 | 0.33 | A |
| **PM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 74 | 0 | 1890 | 0.05 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 98 | 0 | 1890 | 0.07 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 168 | 0 | 1695 | 0.12 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 139 | 945 | 0.15 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 169 | 0 | 1695 | 0.11 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 140 | 945 | 0.15 | 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 14-49**
**2038 No Action Condition Subway Stairway Analysis**

| Stairway Location | Width | Effective Width | Surge Factor | Friction Factor (AM/PM) | AM Peak Period | | | | PM Peak Period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS |
| | | | | | Down (Enter) | Up (Exit) | | | Down (Enter) | Up (Exit) | | |
| Platform Level/ To Manhattan | 5.8 | 4.8 | 0.75 | 1.00/0.90 | 311 | 4 | 0.581 | C | 87 | 5 | 0.187 | A |
| Platform Level/ To Queens | 5.8 | 4.8 | 0.75 | 0.90/0.90 | 29 | 5 | 0.067 | A | 62 | 6 | 0.137 | A |
| Mezzanine Level | 7.4 | 6.4 | 0.80 | 0.90/0.90 | 13 | 5 | 0.025 | A | 10 | 6 | 0.021 | A |
| Upper Level | 7.4 | 6.4 | 0.90 | 0.90/0.90 | 13 | 5 | 0.023 | A | 10 | 6 | 0.020 | 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 = [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)

### 2038 NO ACTION CONDITION—BUS LINE-HAUL LEVELS

Estimates of peak hour bus volumes in the 2038 No Action condition were developed by applying *CEQR Technical Manual* recommended annual background growth rates as previously mentioned. In addition, bus trips generated by No Action projects in the study area were added to the projected 2038 volumes to generate the 2038 No Action bus volumes used in the analysis. The No Action Bus trips were assigned to the Q102 and Red Bus routes.

As shown in **Table 14-50**, under the No Action condition, the Q102 route would exceed guideline capacity for the AM and PM peak periods in the eastbound and westbound directions.

### 2038 NO ACTION CONDITION—TRAM LINE-HAUL LEVELS

As shown in **Table 14-51,** under the No Action condition, the tramway would continue to operate within the guideline capacity during the weekday AM and PM peak periods.

### 2038 WITH ACTION CONDITION—SUBWAY STATION OPERATIONS

The 1,175 (887 in and 288 out) AM peak hour and 1,337 (343 in and 994 out) PM peak hour project-generated subway trips (see **Table 14-5**) were allocated to the transit analysis elements previously described. These trips were distributed in the same manner as described for the 2018 With Action condition to yield the 2038 With Action volumes for analysis.

As shown in **Tables 14-52** and **14-54**, all station stairways and control elements would continue to operate at acceptable levels. Therefore, the proposed actions would not result in any significant adverse subway impacts.

## Table 14-50
## 2038 No Action Bus Line-Haul Analysis

| Route- Direction | Maximum Load Point | Hourly Volume | Buses/ Hour | Passengers per Bus | Capacity/ Bus | Capacity Shortfall |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 10th Street at 41st Avenue | 277 | 4 | 69 | 54 | Yes |
| | Roosevelt Island: Tram Station West | 111 | 4 | 28 | 54 | No |
| | Roosevelt Island: Subway Station | 94 | 4 | 24 | 54 | No |
| **Q102- Westbound** | Queens: 8th Street at Astoria Blvd | 178 | 3 | 59 | 54 | Yes |
| | Roosevelt Island: 543 Main Street | 76 | 3 | 25 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 44 | 3 | 15 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 141 | 8 | 18 | 55 | No |
| | Tram Station West (With Action) | 16 | 8 | 2 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 374 | 8 | 47 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 136 | 8 | 17 | 55 | No |
| **PM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 27th Street at 30th Avenue | 224 | 4 | 112 | 54 | Yes |
| | Roosevelt Island: Tram Station West | 25 | 4 | 13 | 54 | No |
| | Roosevelt Island: Subway Station | 48 | 4 | 24 | 54 | No |
| **Q102- Westbound** | Queens: 12th Street at 41st Avenue | 252 | 3 | 126 | 54 | Yes |
| | Roosevelt Island: 543 Main Street | 55 | 3 | 28 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 51 | 3 | 26 | 54 | No |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 281 | 8 | 35 | 55 | No |
| | Tram Station West (With Action) | 107 | 8 | 13 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 183 | 8 | 23 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 62 | 8 | 8 | 55 | No |

**Notes:** Q102 route Maximum Load Point data was based on maximum load on bus over 2 hour survey period. One stop from both Roosevelt Island and Queens were selected for Analysis

Red Bus existing counts were increased based on comparison of May to June subway counts (increased by 14% in the AM Peak Hour)

Nine Red Buses were observed in the AM and PM peak period both in the Northbound and Southbound direction. As the schedule specifies 8 buses/hr this assumption was used for the No Action and With Action analyses.

## Table 14-51
## 2038 No Action Condition Tram Line-Haul Analysis

| Route- Direction | Hourly Volumes | Trams/Hour | Passengers per Tram | Capacity/ Tram | Capacity shortfall |
|---|---|---|---|---|---|
| AM Peak Hour | | | | | |
| Eastbound | 82 | 8 | 10 | 109 | No |
| Westbound | 833 | 8 | 104 | 109 | No |
| PM Peak Hour | | | | | |
| Eastbound | 513 | 8 | 64 | 109 | No |
| Westbound | 244 | 8 | 31 | 109 | No |

## Table 14-52
## 2038 With Action Condition Subway Control Area Analysis

| Peak Condition | Control Element | Quantity | 15-Minute Pedestrian Volumes | | Surging Factor | Friction Factor | V/C Ratio | LOS |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | | | | |
| AM Peak | Two-Way Turnstile | 4 | 471 | 394 | 0.90 | 0.90 | 0.50 | B |
| PM Peak | Two-Way Turnstile | 4 | 445 | 323 | 0.90 | 0.90 | 0.45 | 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 = [Vin/ Cin* Ff ] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute 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 (if applicable)
Ff = Friction factor (if applicable)

## Table 14-53
## 2038 With Action Condition Subway Escalator Analysis

| Station Element | Quantity | Tread Width (in.) | Capacity (people/ minute) | Surge Factor Exiting | 15-Min. Pedestrian Volume | | Peak 15-Min. Capacity (w/o Surge) | V/C ratio | LOS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Up | Down | | | |
| **AM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 197 | 0 | 1890 | 0.14 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 145 | 0 | 1890 | 0.10 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 346 | 0 | 1695 | 0.26 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 388 | 945 | 0.41 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 346 | 0 | 1695 | 0.23 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/Down | 1 | 40 | 63 | 1.00 | 0 | 388 | 945 | 0.41 | A |
| **PM Peak Period** | | | | | | | | | |
| Platform Level/ To Manhattan | 2 | 40 | 63 | 0.75 | 101 | 0 | 1890 | 0.07 | A |
| Platform Level/ To Queens | 2 | 40 | 63 | 0.75 | 160 | 0 | 1890 | 0.11 | A |
| Mezzanine Level/ Up | 1 | 40 | 63 | 0.80 | 258 | 0 | 1695 | 0.19 | A |
| Mezzanine Level/ Up | 1 | 32 | 50 | | | | | | |
| Mezzanine Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 393 | 945 | 0.42 | A |
| Upper Level/ Up | 1 | 40 | 63 | 0.90 | 261 | 0 | 1695 | 0.17 | A |
| Upper Level/ Up | 1 | 32 | 50 | | | | | | |
| Upper Level/ Down | 1 | 40 | 63 | 1.00 | 0 | 397 | 945 | 0.42 | 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 14-54**
**2038 With Action Condition Subway Stairway Analysis**

| Stairway Location | Width | Effective Width | Surge Factor | Friction Factor (AM/PM) | AM Peak Period | | | | PM Peak Period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS | 15-Min. Pedestrian Vol. | | V/SVCD Ratio | LOS |
| | | | | | Down (Enter) | Up (Exit) | | | Down (Enter) | Up (Exit) | | |
| Platform Level/ To Manhattan | 5.8 | 4.8 | 0.75 | 1.00/1.00 | 335 | 16 | 0.643 | C | 280 | 7 | 0.528 | B |
| Platform Level/ To Queens | 5.8 | 4.8 | 0.75 | 0.90/0.90 | 85 | 10 | 0.190 | A | 145 | 11 | 0.315 | A |
| Mezzanine Level | 7.4 | 6.4 | 0.80 | 0.90/0.90 | 16 | 15 | 0.041 | A | 29 | 9 | 0.052 | A |
| Upper Level | 7.4 | 6.4 | 0.90 | 0.90/0.90 | 16 | 15 | 0.038 | A | 29 | 9 | 0.048 | 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 = [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)

## 2038 WITH ACTION CONDITION—BUS LINE-HAUL LEVELS

Peak period bus ridership levels for the 2038 With Action condition were generated by adding the incremental trips associated with the proposed project to the No Action bus line-haul volumes.

As described in Section C, "Transportation Analysis Methodologies," impacts on bus line-haul levels are considered significant if a proposed action would result in operating conditions above guideline capacities.

As shown in **Table 14-55**, under the With Action condition, with the exception of the Roosevelt Island maximum load point in eastbound direction during the AM peak period, the Q102 route would exceed guideline capacity for the AM and PM peak periods in the eastbound and westbound directions. The Red Bus would exceed the guideline capacity in the southbound direction in the AM peak period and the northbound direction in the PM peak period. These projected increases in bus ridership beyond guideline capacities constitute significant adverse bus line-haul impacts.

Potential measures to mitigate the 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. These 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 21, "Mitigation Measures."

**Table 14-55**
**2038 With Action Bus Line-Haul Analysis**

| Route- Direction | Maximum Load Point | Hourly Volume | Buses/ Hour | Passengers per Bus | Capacity/ Bus | Capacity Shortfall |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 10th Street at 41st Avenue | 307 | 4 | (77)* | 54 | Yes |
| | Roosevelt Island: Tram Station West | 167 | 4 | 42 | 54 | No |
| | Roosevelt Island: Subway Station | 124 | 4 | 31 | 54 | No |
| **Q102- Westbound** | Queens: 8th Street at Astoria Blvd | 267 | 3 | (89)* | 54 | Yes |
| | Roosevelt Island: 543 Main Street | 165 | 3 | (55)* | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 213 | 3 | (71)* | 54 | Yes |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 183 | 8 | 23 | 55 | No |
| | Tram Station West (With Action) | 60 | 8 | 8 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 540 | 8 | (68)* | 55 | Yes |
| | 425 Riverwalk Commons (With Action) | 311 | 8 | 39 | 55 | No |
| **PM Peak Hour** | | | | | | |
| **Q102- Eastbound** | Queens: 27th Street at 30th Avenue | 325 | 4 | (163)* | 54 | Yes |
| | Roosevelt Island: Tram Station West | 215 | 4 | (108)* | 54 | Yes |
| | Roosevelt Island: Subway Station | 149 | 4 | (75)* | 54 | Yes |
| **Q102- Westbound** | Queens: 12th Street at 41st Avenue | 290 | 3 | (145)* | 54 | Yes |
| | Roosevelt Island: 543 Main Street | 93 | 3 | 47 | 54 | No |
| | Roosevelt Island: 425 Riverwalk Commons | 120 | 3 | (60)* | 54 | Yes |
| **Red Bus- Northbound** | RI Subway Station (Existing) | 466 | 8 | (59)* | 55 | Yes |
| | Tram Station West (With Action) | 302 | 8 | 38 | 55 | No |
| **Red Bus- Southbound** | 543 Main Street (Existing) | 244 | 8 | 31 | 55 | No |
| | 425 Riverwalk Commons (With Action) | 127 | 8 | 16 | 55 | No |

**Notes:**
**(#)*:** Indicates a significant adverse bus line-haul impact
Q102 route Maximum Load Point data was based on maximum load on bus over 2 hour survey period. One stop from both Roosevelt Island and Queens were selected for Analysis
Red Bus existing counts were increased based on comparison of May to June subway counts (increased by 14% in the AM Peak Hour)
Nine Red Buses were observed in the AM and PM peak period both in the Northbound and Southbound direction. As the schedule specifies 8 buses/hr this assumption was used for the No Action and With Action analyses.

## 2038 WITH ACTION CONDITION—TRAM LINE-HAUL LEVELS

Peak period tramway ridership for the 2038 With Action condition was generated by adding the incremental trips associated with the proposed project to the No Action tramway line-haul volumes. As shown in **Table 14-56,** under the With Action condition, the tramway would continue to operate within the guideline capacity during the weekday AM and PM peak periods. Therefore, the proposed actions would not result in any significant adverse tramway line-haul impacts.

**Table 14-56**
**2038 With Action Condition Tram Line-Haul Analysis**

| Route- Direction | Hourly Volumes | Trams/Hour | Passengers per Tram | Capacity/ Tram | Capacity shortfall |
|---|---|---|---|---|---|
| AM Peak Hour | | | | | |
| Eastbound | 166 | 8 | 21 | 109 | No |
| Westbound | 852 | 8 | 107 | 109 | No |
| PM Peak Hour | | | | | |
| Eastbound | 538 | 8 | 68 | 109 | No |
| Westbound | 334 | 8 | 42 | 109 | No |

# F. PEDESTRIANS

## 2011 EXISTING CONDITIONS

Pedestrian data were collected for a typical weekday in November 2011 at key locations near the project site during the hours of 7:00 AM to 9:30 AM, 11:00 AM to 2:00 PM, and 4:00 PM to 6:30 PM. Additional data were collected in March and April 2012 during the same time periods to; supplement the November data for locations subsequently added for analysis, calibrate the existing data, and establish a data set sufficient for analysis in accordance with procedures outlined in the *CEQR Technical Manual.*

Peak hours were determined by comparing rolling hourly averages and the highest 15-minute volumes for each element within the selected peak hours were selected for analysis. The pedestrian analysis locations are presented in Figure 14-15. The existing peak 15-minute AM, midday, and PM pedestrian analysis networks are presented in **Figure 14-33**, **Figure 14-34**, and **Figure 14-35**, respectively. As shown in **Table 14-57**, all sidewalk locations operate at acceptable LOS C or better (maximum of 6.0 PMF platoon flows for sidewalks).

## 2018 NO ACTION CONDITION

No Action 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 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 2018). Pedestrian volumes from anticipated projects in the study area were also added to arrive at the 2018 No Action pedestrian volumes. The total 2018 No Action peak 15-minute pedestrian volumes for the weekday AM, midday, and PM peak periods are presented in **Figures 14-36** to **14-38**.

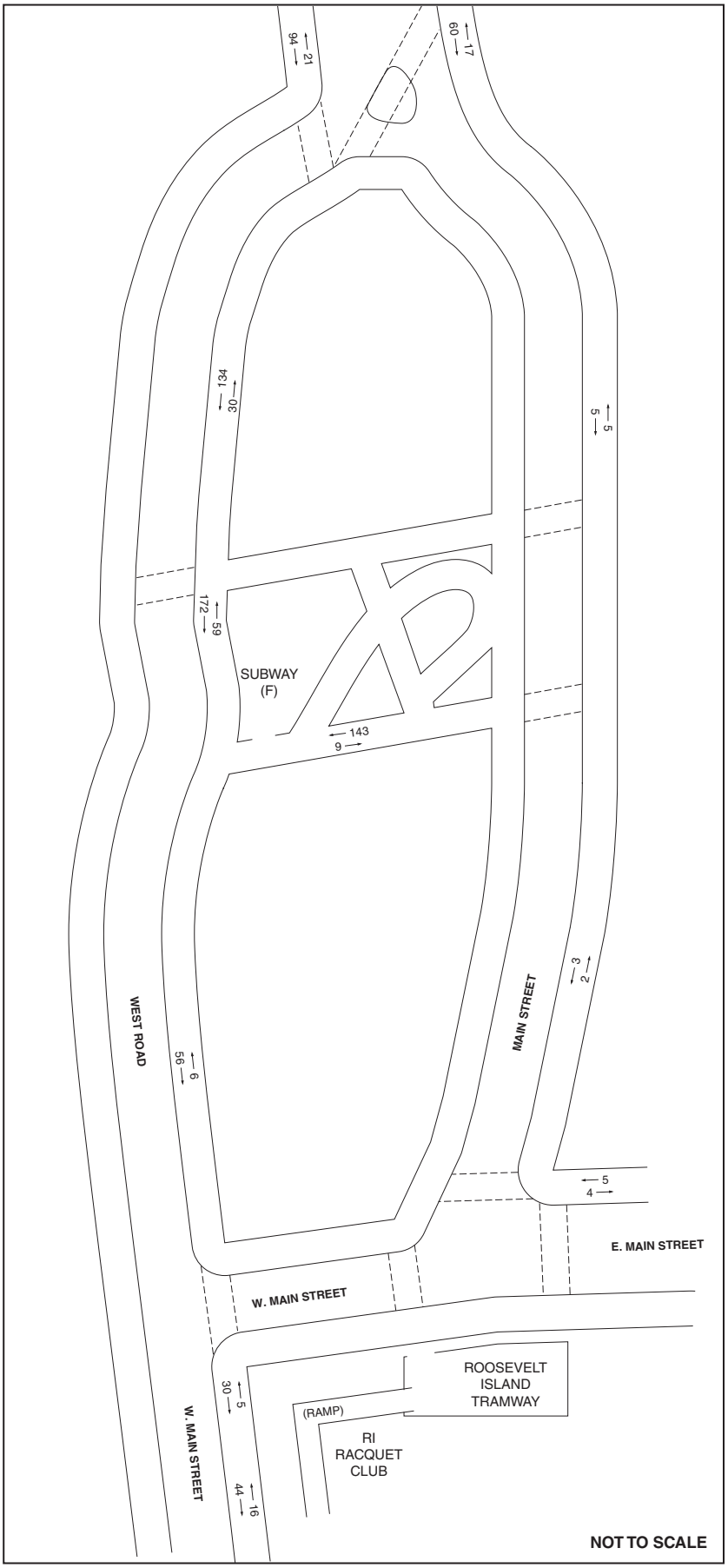
As summarized in **Table 14-58**, all sidewalk analysis locations will continue to operate at acceptable LOS C or better (maximum of 6.0 PMF platoon flows for sidewalks).

## 2018 WITH ACTION CONDITION

For the 2018 With Action condition, the project-generated pedestrian volumes were assigned to the pedestrian network considering current land uses in the area, nearby parking locations, available transit services, and pedestrian pathways connecting to/from the proposed project. Based on the peak hour project-generated pedestrian trips presented on Figures 14-9 to 14-11 in Section E, "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 projected 2018 No Action volumes to generate the 2018 With Action pedestrian volumes for analysis. The total 2018 With Action peak 15-minute pedestrian volumes are presented in **Figures 14-39** to **14-41**.

As presented in **Table 14-59**, all sidewalk locations would continue to operate at acceptable levels (within LOS C, with a maximum of 6.0 PMF in sidewalk platoon flows) or incur degradations that, when compared to the No Action condition, do not exceed the *CEQR Technical Manual* sliding scale impact thresholds (see **Table 14-12**).

10.9.12

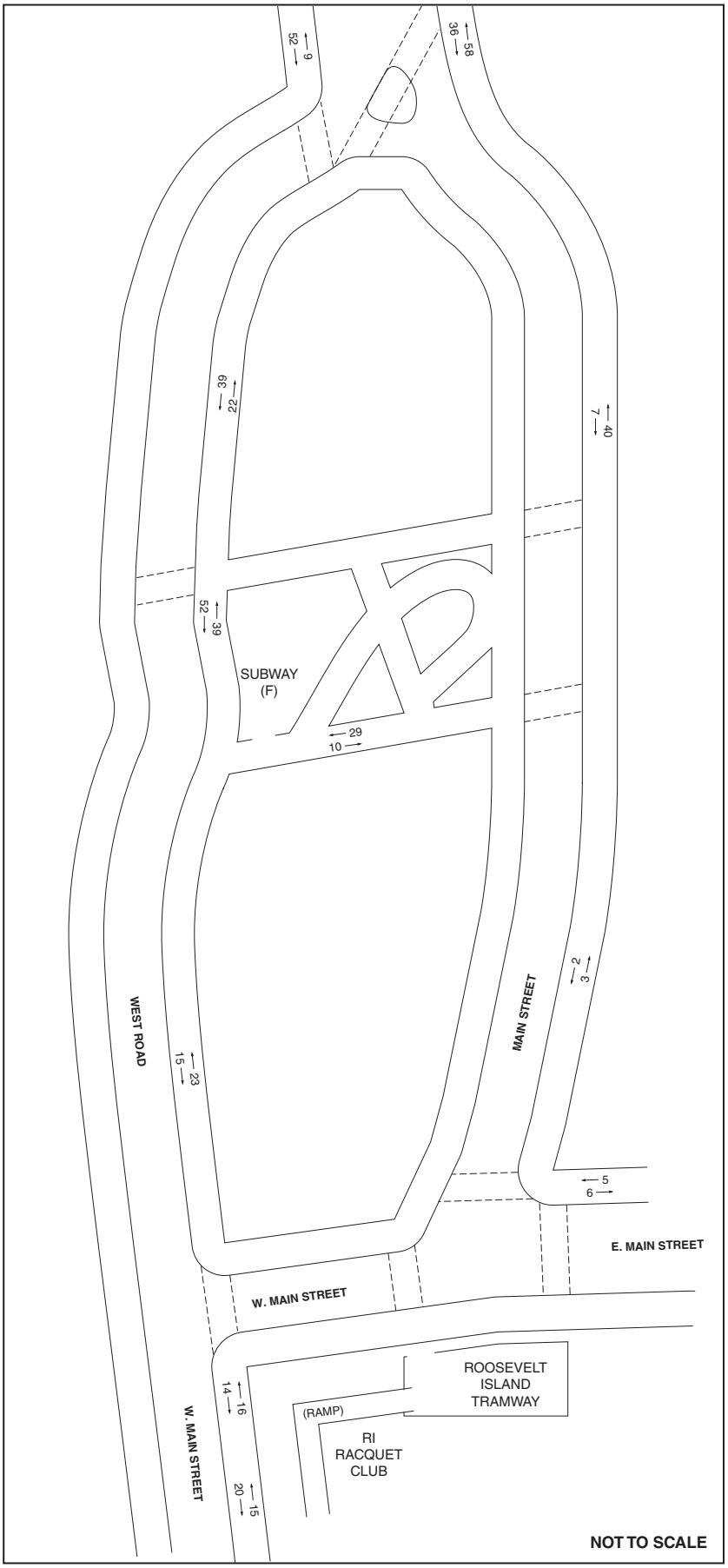



Existing Peak 15 Minute Pedestrian Volumes
AM Peak 15 Minutes

**Cornell** NYC **Tech**

**Figure 14-33**

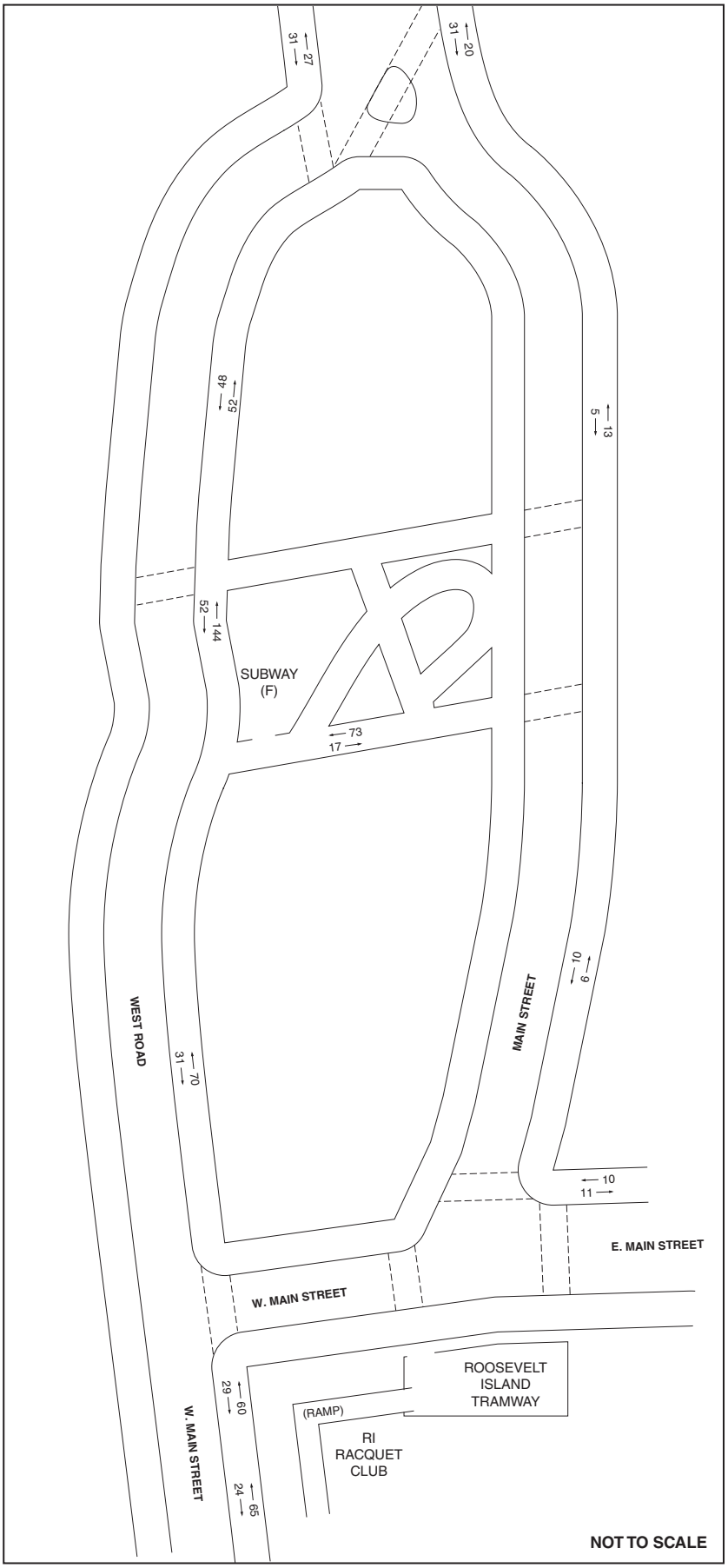
10.9.12




Existing Peak 15 Minute Pedestrian Volumes
Midday Peak 15 Minutes

**Figure 14-34**

10.9.12

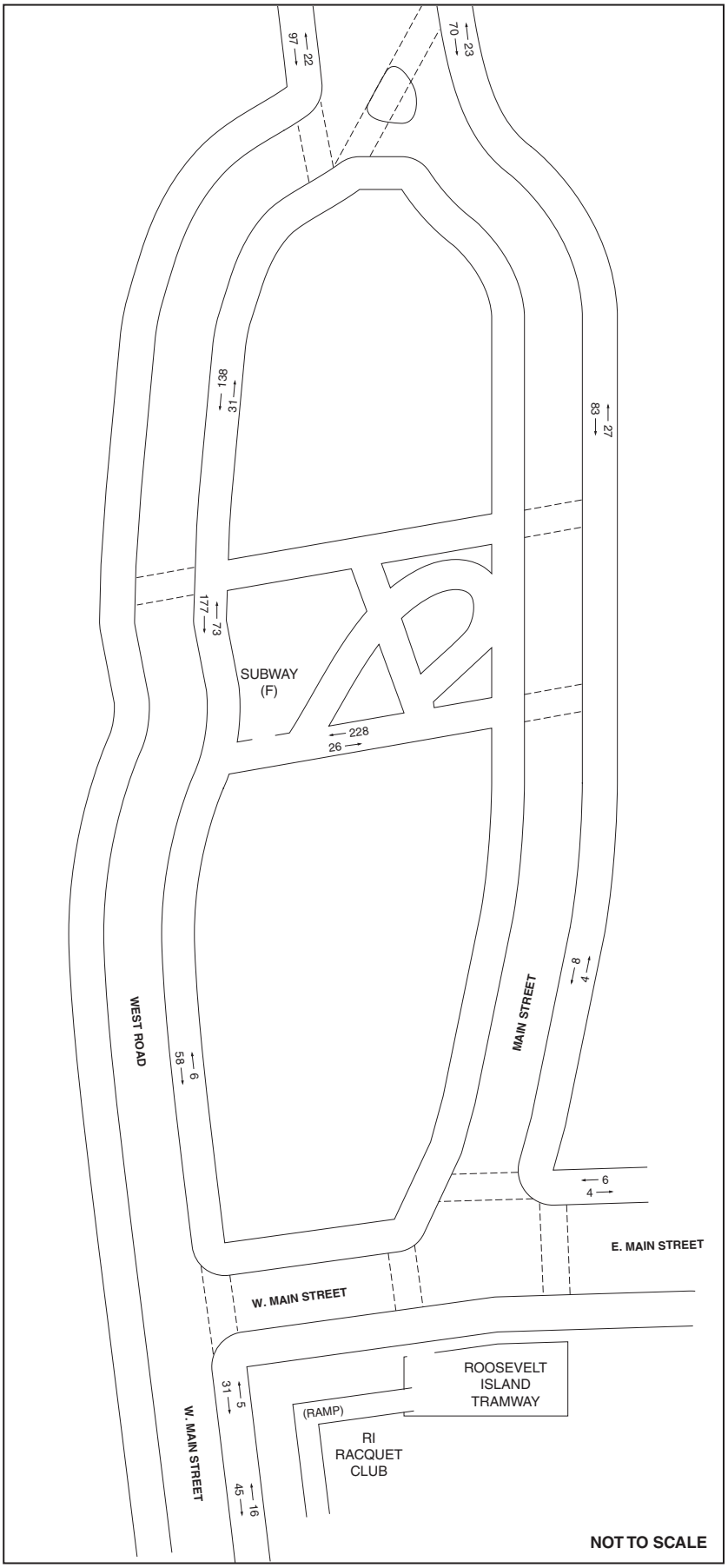



Existing Peak 15 Minute Pedestrian Volumes
PM Peak 15 Minutes

**Cornell** NYC **Tech**

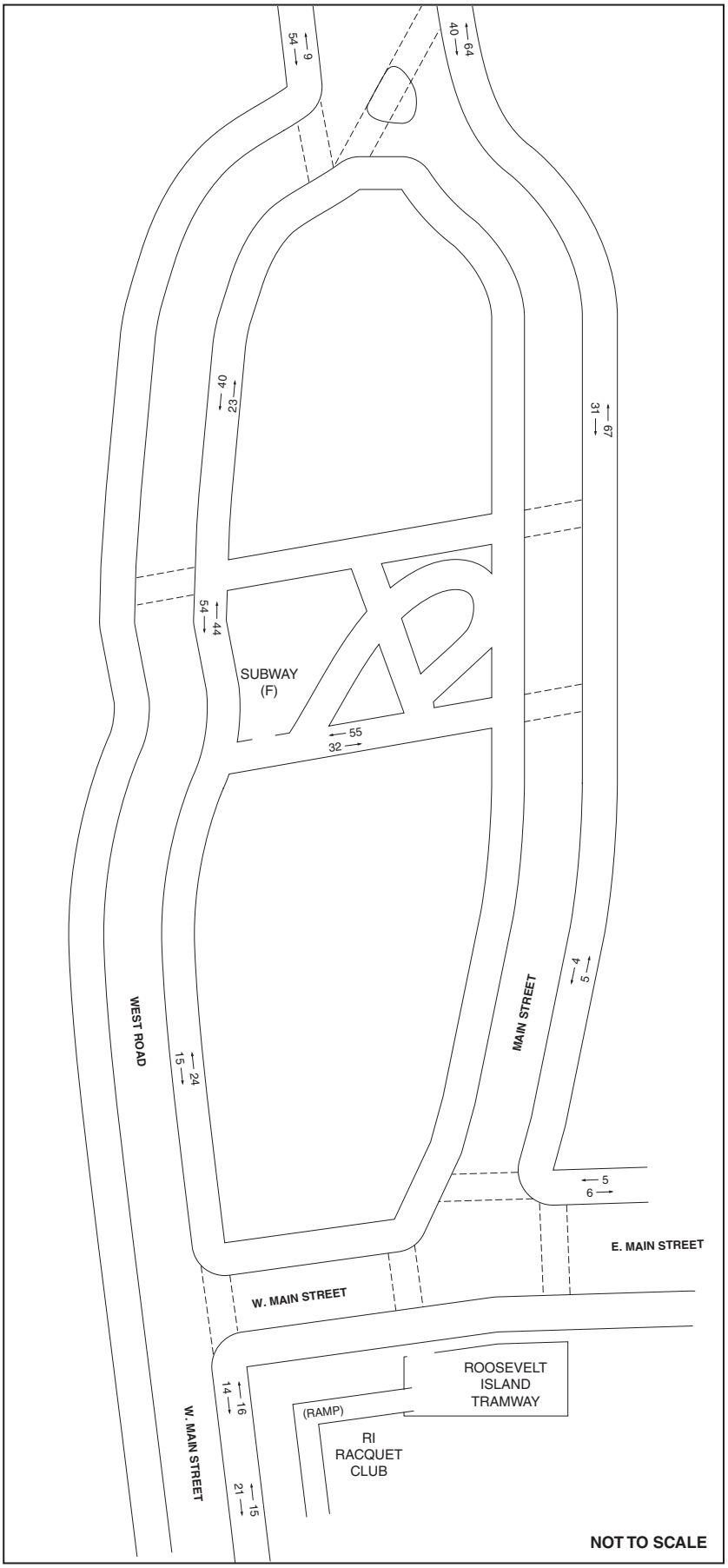
**Figure 14-35**

10.9.12




2018 No Action Peak 15 Minute Pedestrian Volumes
AM Peak 15 Minutes

10.9.12

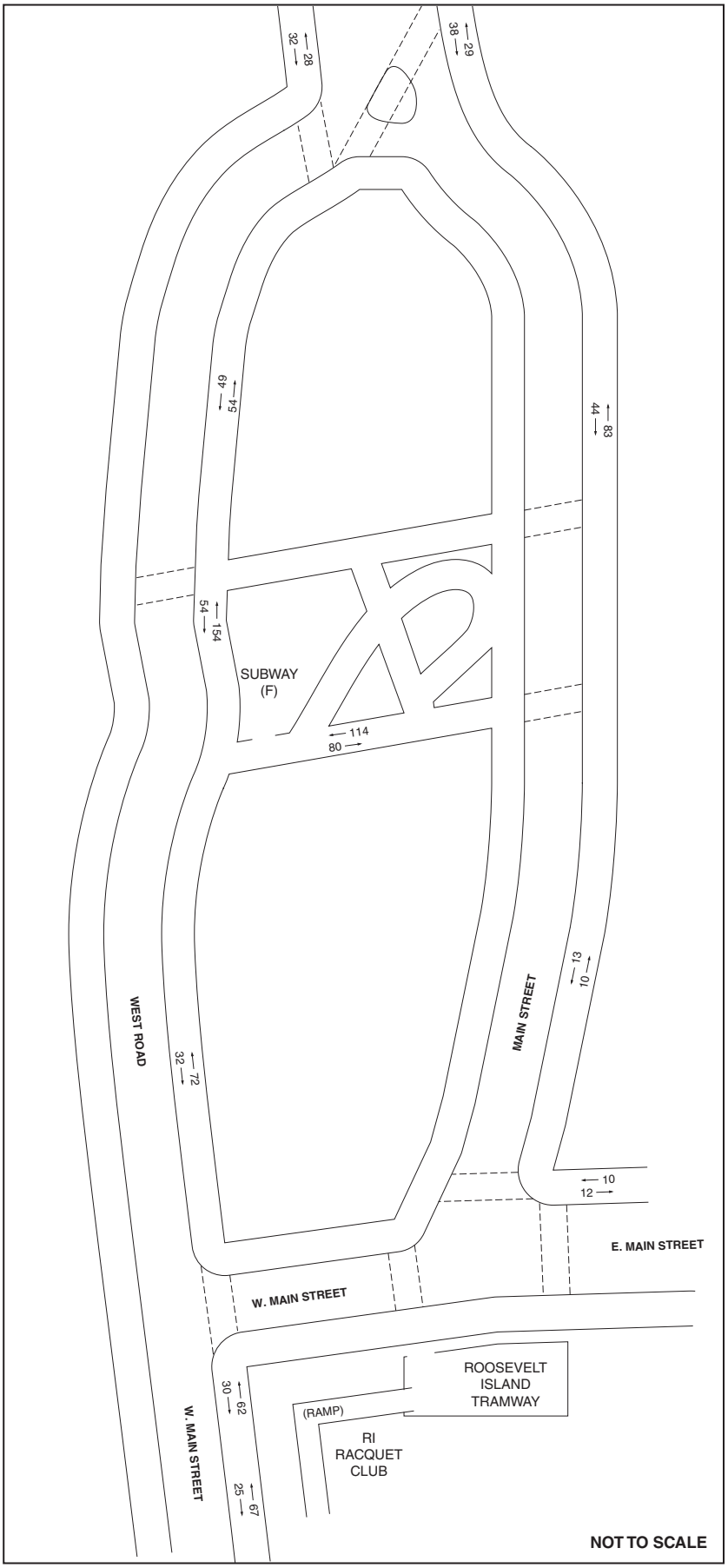



2018 No Action Peak 15 Minute Pedestrian Volumes
Midday Peak 15 Minutes

**Cornell** NYC **Tech**

**Figure 14-37**

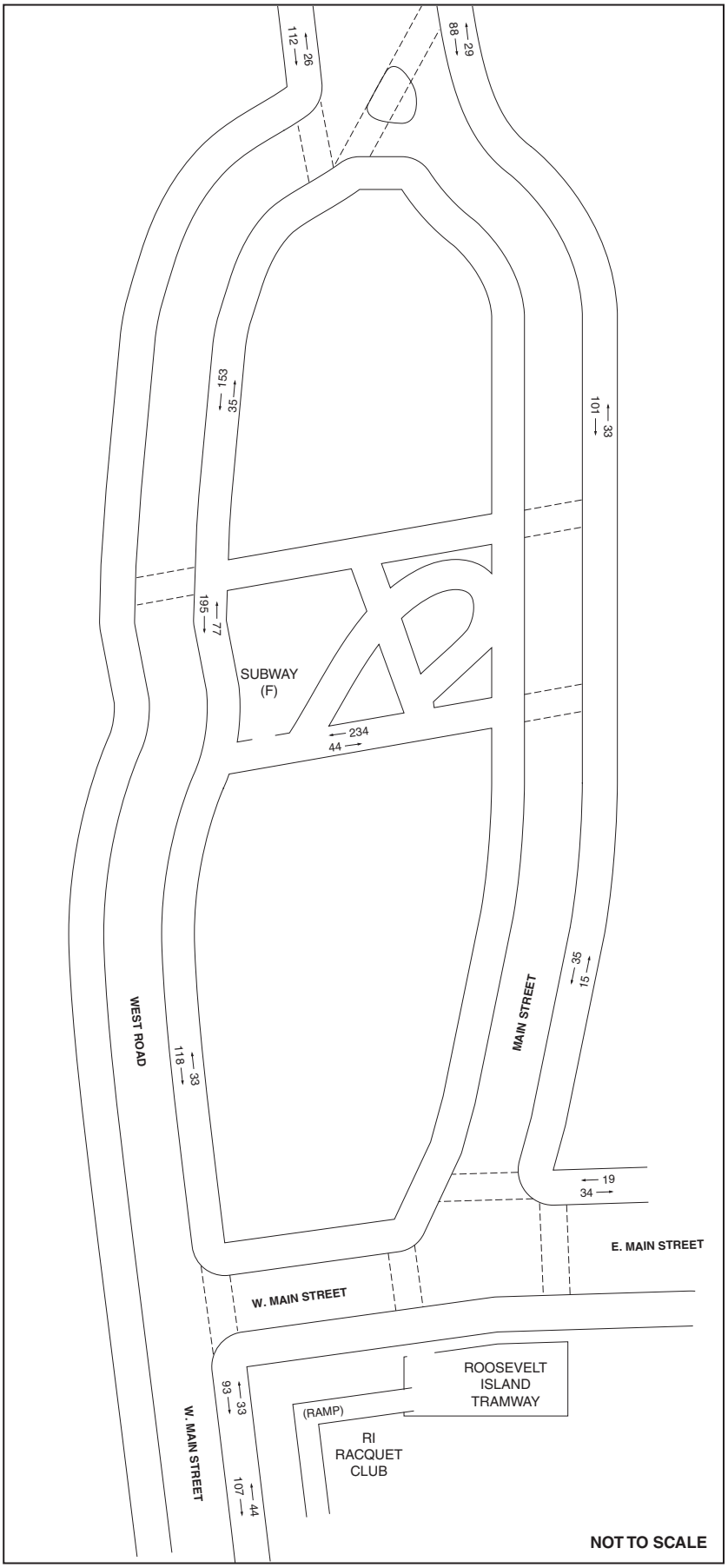
10.9.12




2018 No Action Peak 15 Minute Pedestrian Volumes
PM Peak 15 Minutes

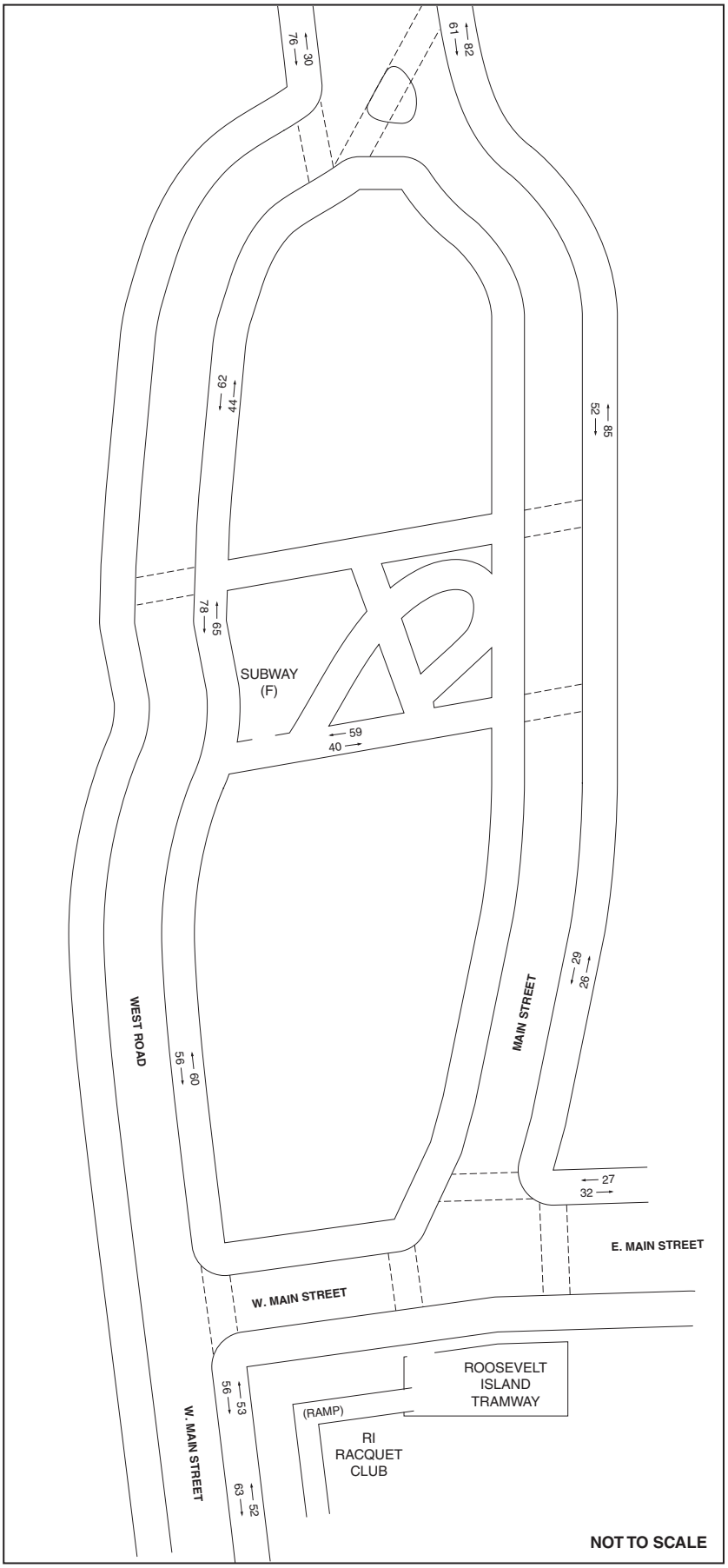
**Cornell** NYC **Tech**

**Figure 14-38**




2018 With Action Peak 15 Minute Pedestrian Volumes
AM Peak 15 Minutes

10.9.12

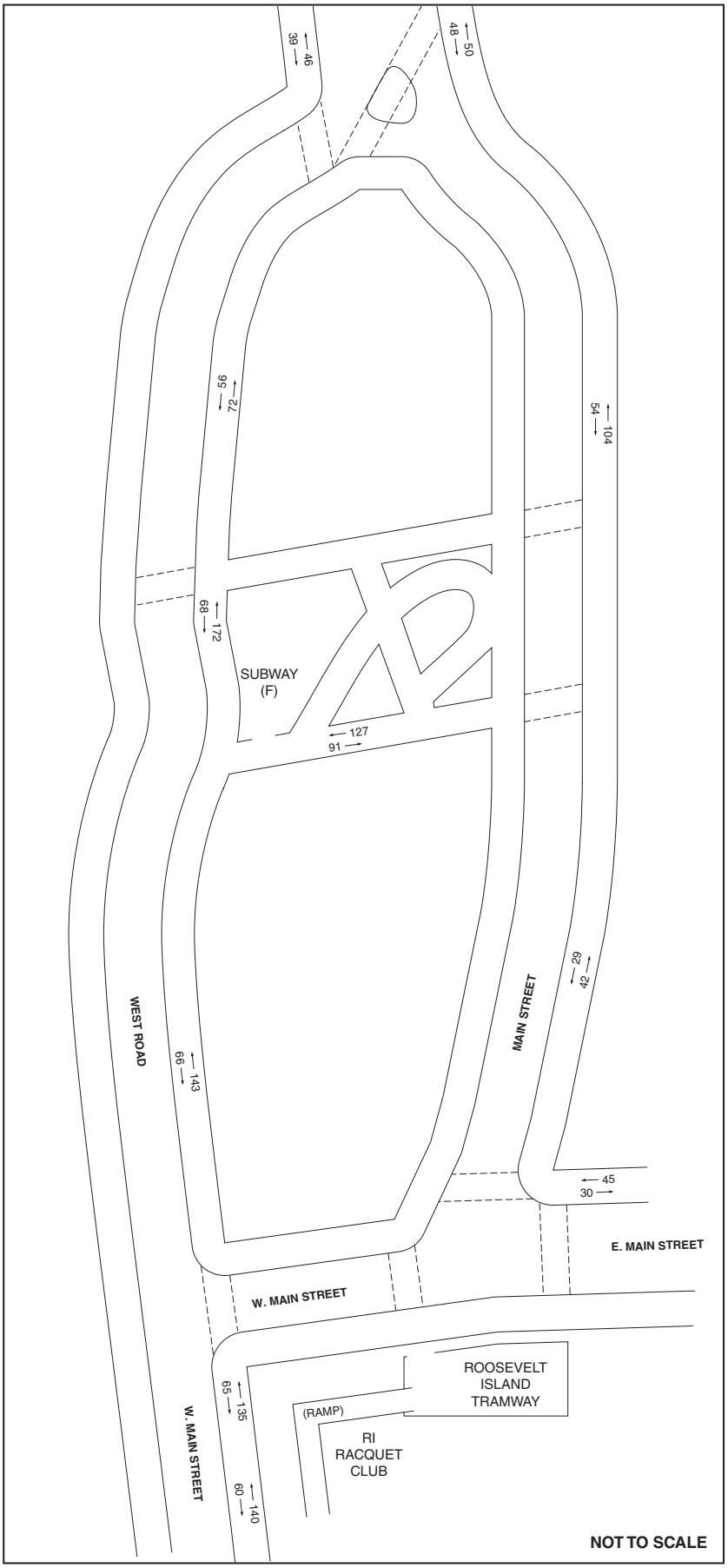



2018 With Action Peak 15 Minute Pedestrian Volumes
Midday Peak 15 Minutes

**Cornell** NYC **Tech**

**Figure 14-40**

10.9.12




2018 With Action Peak 15 Minute Pedestrian Volumes
PM Peak 15 Minutes

**Table 14-57**
**2011 Existing Conditions Sidewalk Analysis**

| No. | Location | Sidewalk | Effective Width (ft.) | 15-Min. Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 62 | 1.53 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 35 | 0.27 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 50 | 1.11 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 152 | 1.30 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 231 | 1.83 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 164 | 3.64 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 77 | 0.55 | B |
| | | West | 6.7 | 115 | 1.14 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 10 | 0.27 | A |
| 5 | East Main Street and Main Street | East | 3.6 | 5 | 0.09 | A |
| | | North | 4.4 | 9 | 0.14 | A |
| **Midday Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 38 | 0.94 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 30 | 0.23 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 35 | 0.65 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 39 | 0.33 | A |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 91 | 0.72 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 61 | 1.36 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 94 | 0.67 | B |
| | | West | 6.7 | 61 | 0.61 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 47 | 1.25 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 5 | 0.09 | A |
| | | North | 4.4 | 11 | 0.17 | A |
| **PM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 101 | 2.49 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 89 | 0.67 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 89 | 1.65 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 90 | 0.77 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 196 | 1.56 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 100 | 2.22 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 51 | 0.36 | A |
| | | West | 6.7 | 58 | 0.58 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 18 | 0.48 | A |
| 5 | East Main Street and Main Street | East | 3.6 | 16 | 0.30 | A |
| | | North | 4.4 | 21 | 0.32 | A |

**Note:** PMF = pedestrians per minute per foot

## Table 14-58
## 2018 No Action Condition Sidewalk Analysis

| No. | Location | Sidewalk | Effective Width (ft.) | 15-Min. Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 64 | 1.58 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 36 | 0.27 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 61 | 1.13 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 254 | 2.17 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 250 | 1.98 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 169 | 3.76 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 93 | 0.66 | B |
| | | West | 6.7 | 119 | 1.18 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 110 | 2.93 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 12 | 0.22 | A |
| | | North | 4.4 | 10 | 0.15 | A |
| **Midday Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 39 | 0.96 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 30 | 0.23 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 36 | 0.67 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 87 | 0.74 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 98 | 0.78 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 63 | 1.40 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 104 | 0.74 | B |
| | | West | 6.7 | 63 | 0.63 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 98 | 2.61 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 9 | 0.17 | A |
| | | North | 4.4 | 11 | 0.17 | A |
| **PM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 104 | 2.57 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 92 | 0.70 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 92 | 1.70 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 194 | 1.66 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 208 | 1.65 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 103 | 2.29 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 67 | 0.48 | A |
| | | West | 6.7 | 60 | 0.60 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 127 | 3.39 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 23 | 0.43 | A |
| | | North | 4.4 | 22 | 0.33 | A |

**Note:** PMF = pedestrians per minute per foot

## Table 14-59
## 2018 With Action Condition Sidewalk Analysis

| No. | Location | Sidewalk | Effective Width (ft.) | 15-Min. Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 152 | 3.75 | C |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 127 | 0.96 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 152 | 2.81 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 278 | 2.38 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 273 | 2.17 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 189 | 4.20 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 116 | 0.82 | B |
| | | West | 6.7 | 141 | 1.40 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 133 | 3.55 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 51 | 0.94 | B |
| | | North | 4.4 | 54 | 0.82 | B |
| **Midday Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 117 | 2.89 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 110 | 0.83 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 116 | 2.15 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 99 | 0.85 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 144 | 1.14 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 106 | 2.36 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 137 | 0.97 | B |
| | | West | 6.7 | 113 | 1.12 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 131 | 3.49 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 55 | 1.02 | B |
| | | North | 4.4 | 60 | 0.91 | B |
| **PM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 209 | 5.16 | C |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 200 | 1.52 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 200 | 3.70 | C |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 218 | 1.86 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 240 | 1.90 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 128 | 2.84 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 97 | 0.70 | B |
| | | West | 6.7 | 88 | 0.85 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 157 | 4.19 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 71 | 1.31 | B |
| | | North | 4.4 | 76 | 1.14 | B |

**Note:** PMF = pedestrians per minute per foot

## 2038 NO ACTION CONDITION

No Action 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 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 2038). Pedestrian volumes from anticipated projects in the study area were also added to arrive at the 2038 No Action pedestrian volumes. The total 2038 No Action peak 15-minute pedestrian volumes for the weekday AM, midday, and PM peak periods are presented in **Figures 14-42** to **14-44**. As summarized in **Table 14-60**, all sidewalk analysis locations would continue to operate at acceptable LOS C or better (maximum of 6.0 PMF platoon flows for sidewalks).

## 2038 WITH ACTION CONDITION

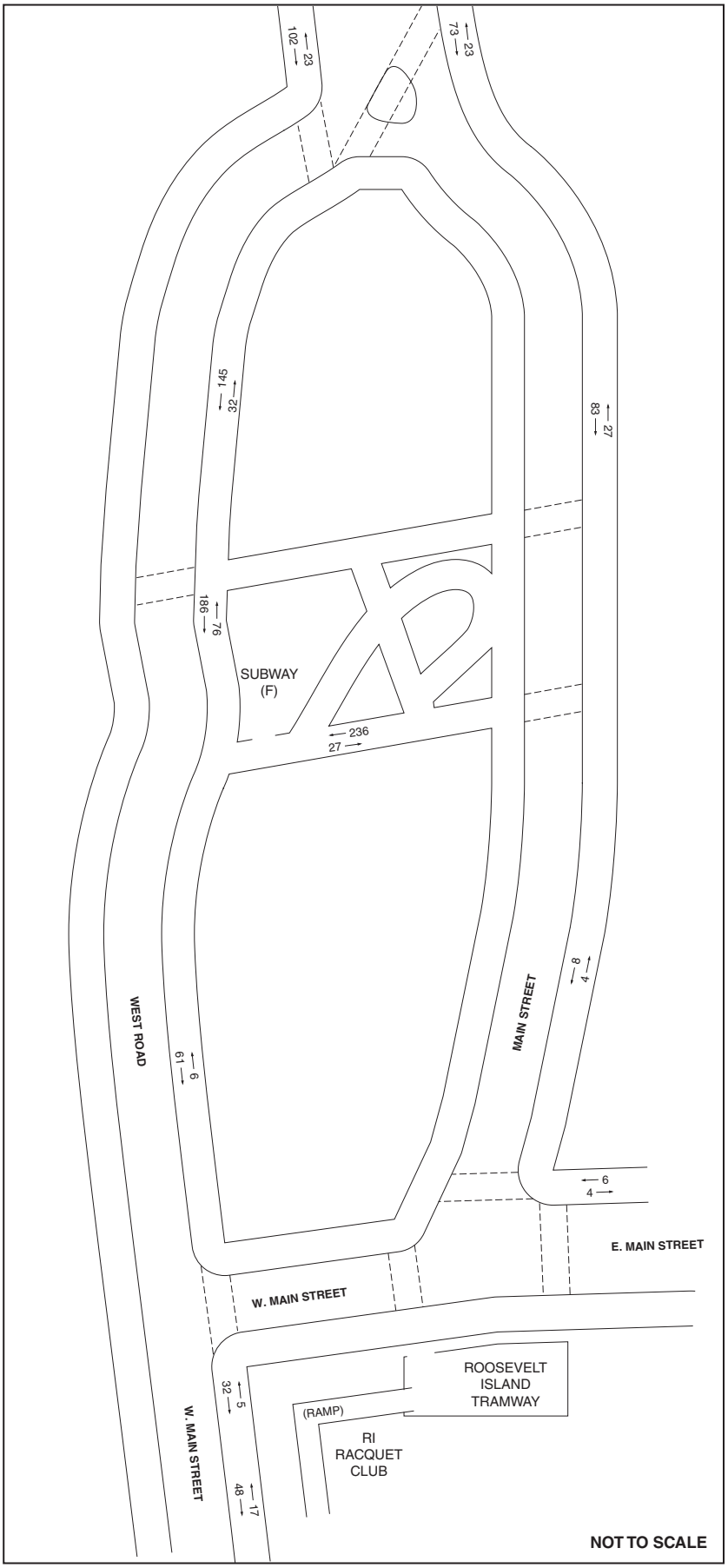
For the 2038 Full Build condition, the project-generated pedestrian volumes were assigned to the pedestrian network considering; current land uses in the area, nearby parking locations, available transit services, and future pedestrian pathways connecting to/from the proposed project. Based on the peak hour project-generated pedestrian trips presented in Section E, "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 projected 2038 No Action volumes to generate the 2038 With Action pedestrian volumes for analysis (see **Figures 14-45** to **14-47**).

As presented in **Table 14-61**, all sidewalk locations would continue to operate at acceptable levels (within LOS C, with a maximum of 6.0 PMF in sidewalk platoon flows) or incur degradations that, when compared to the No Action condition, do not exceed the *CEQR Technical Manual* impact thresholds (see **Table 14-12**), except for the two analysis locations listed below, where significant adverse pedestrian impacts have been identified.

- The West Road east sidewalk between West Main Street and the Subway Station would operate with pedestrian flow rates of 9.28 PMF, 7.06 PMF, and 11.48 PMF under the With Action condition, during the AM, midday and PM peak periods, respectively. Since this sidewalk is expected to operate under 3.5 PMF for all three peak periods (i.e., 1.65 PMF AM, 1.01 PMF midday, and 2.72 PMF PM) under the No Action condition and over 6.0 PMF under the With Action condition, the projected deterioration in operations is considered a significant adverse impact.
- The West Main Street east sidewalk between the bus stop and the Queensboro Bridge would operate with pedestrian flow rates of 7.06 PMF and 8.52 PMF under the With Action condition during the AM and PM peak periods, respectively. Since this sidewalk is expected to operate under 3.5 PMF for these two peak periods (i.e., 1.20 PMF for AM peak period and 1.78 PMF for PM peak period) under the No Action condition and over 6.0 PMF under the With Action condition, the projected deterioration in operations is considered a significant adverse impact.

Measures that can be implemented to mitigate these significant adverse pedestrian impacts are discussed in **Chapter 22**, "Mitigation."

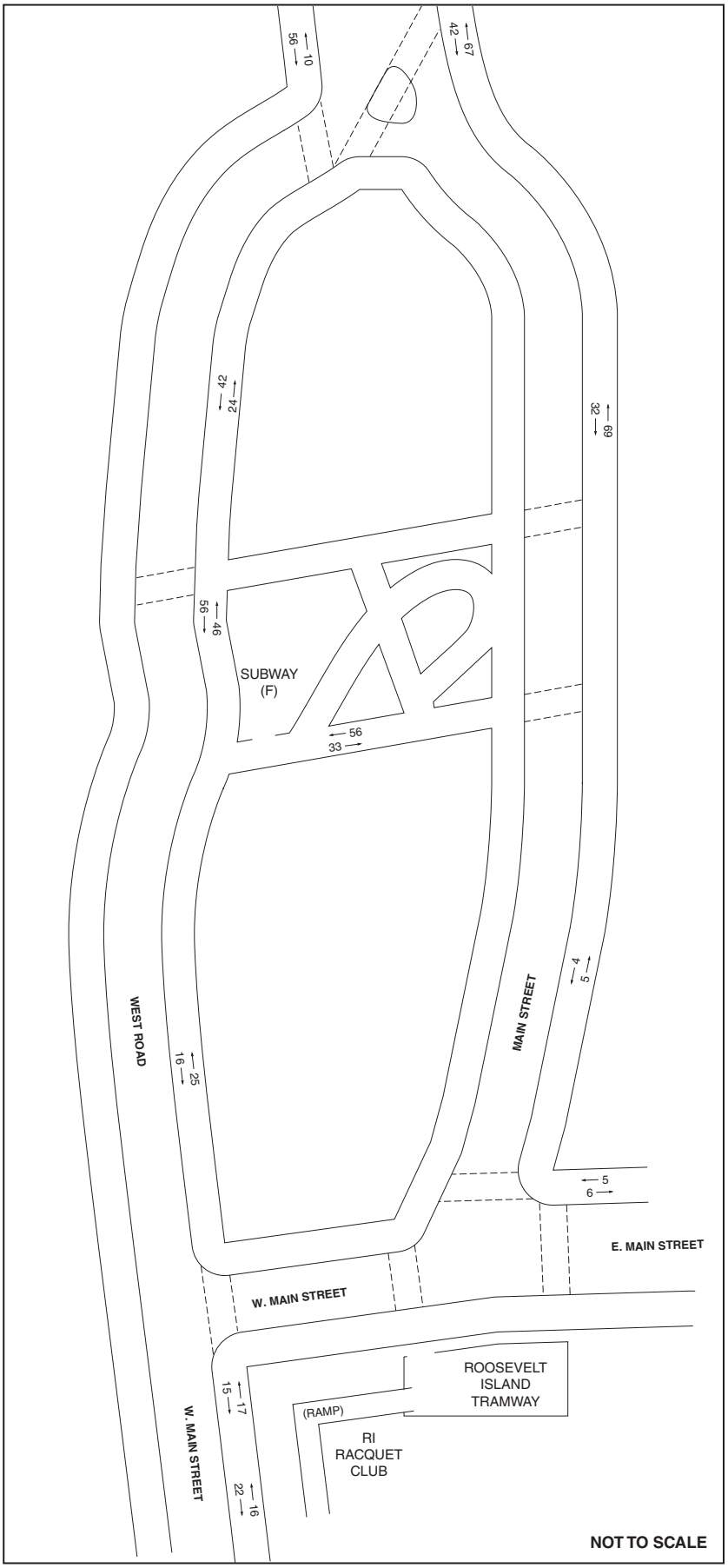
10.9.12




2038 No Action Peak 15 Minute Pedestrian Volumes
AM Peak 15 Minutes

**Figure 14-42**

10.9.12

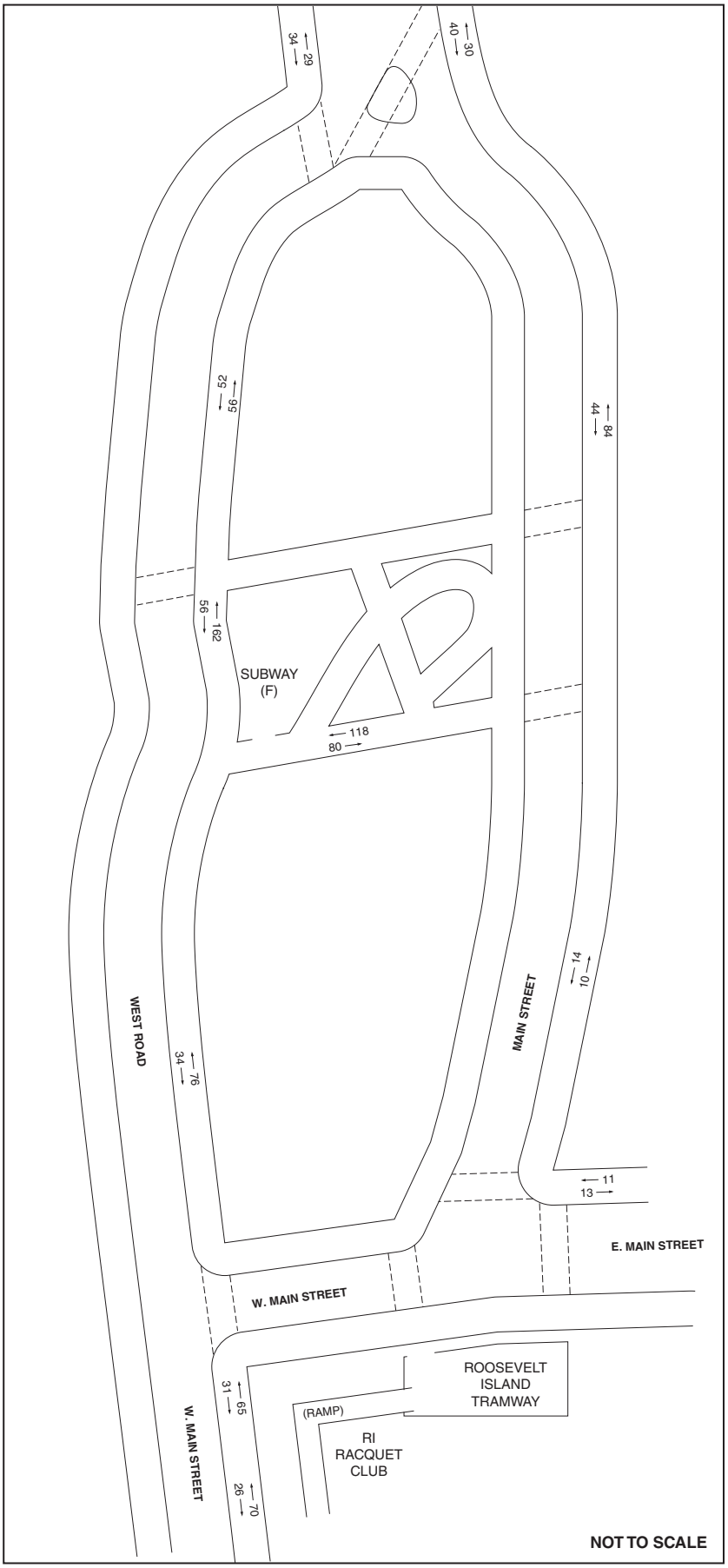



2038 No Action Peak 15 Minute Pedestrian Volumes
Midday Peak 15 Minutes

**Cornell** NYC **Tech**

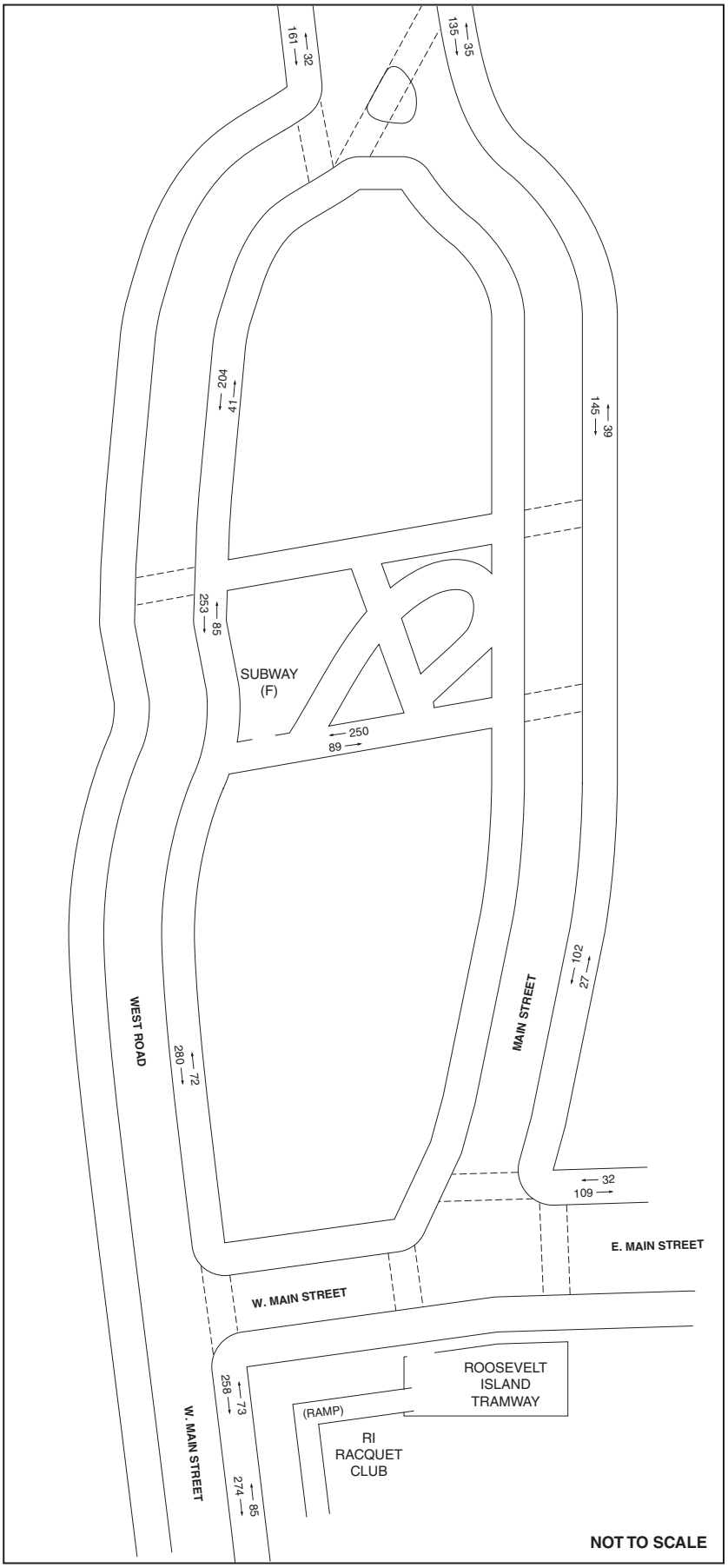
**Figure 14-43**

10.9.12

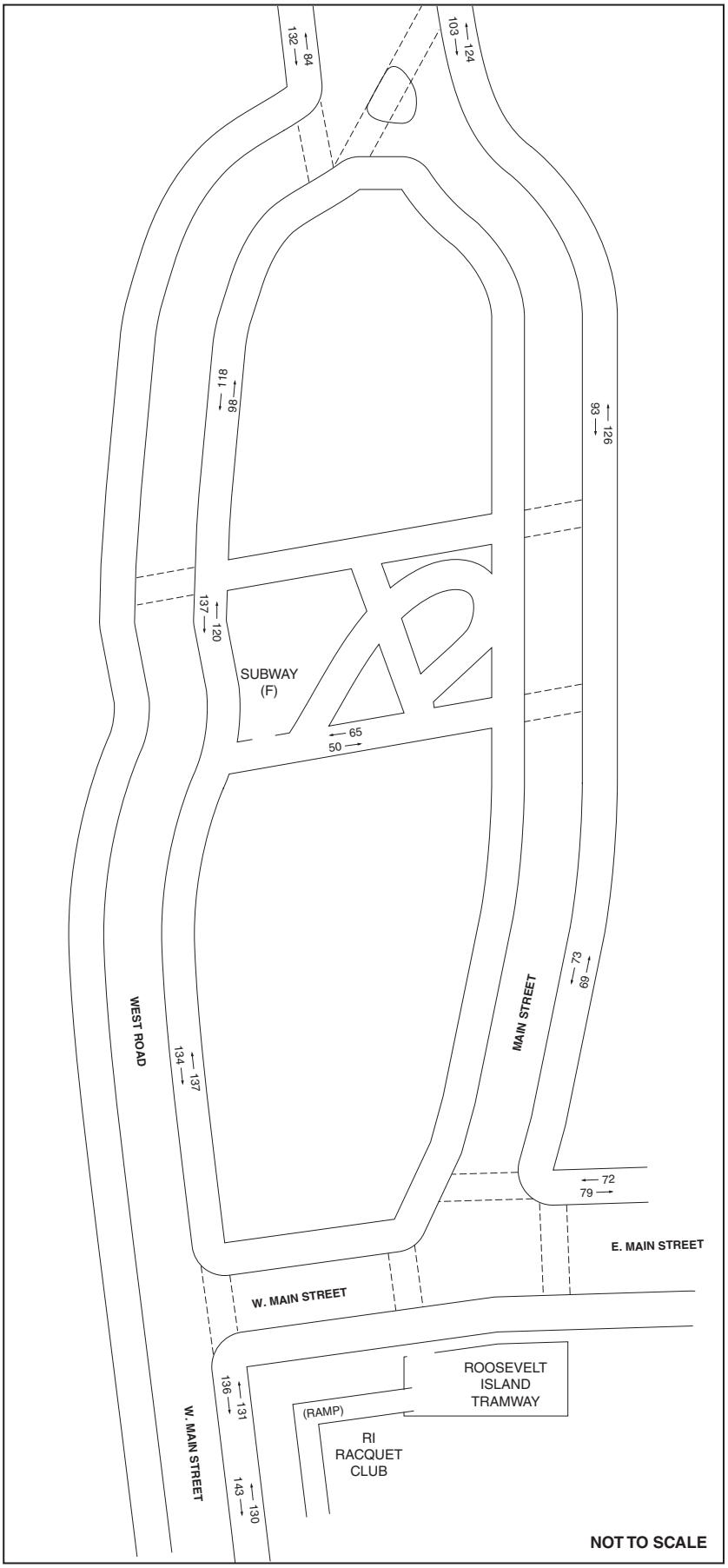



2038 No Action Peak 15 Minute Pedestrian Volumes
PM Peak 15 Minutes

**Figure 14-44**



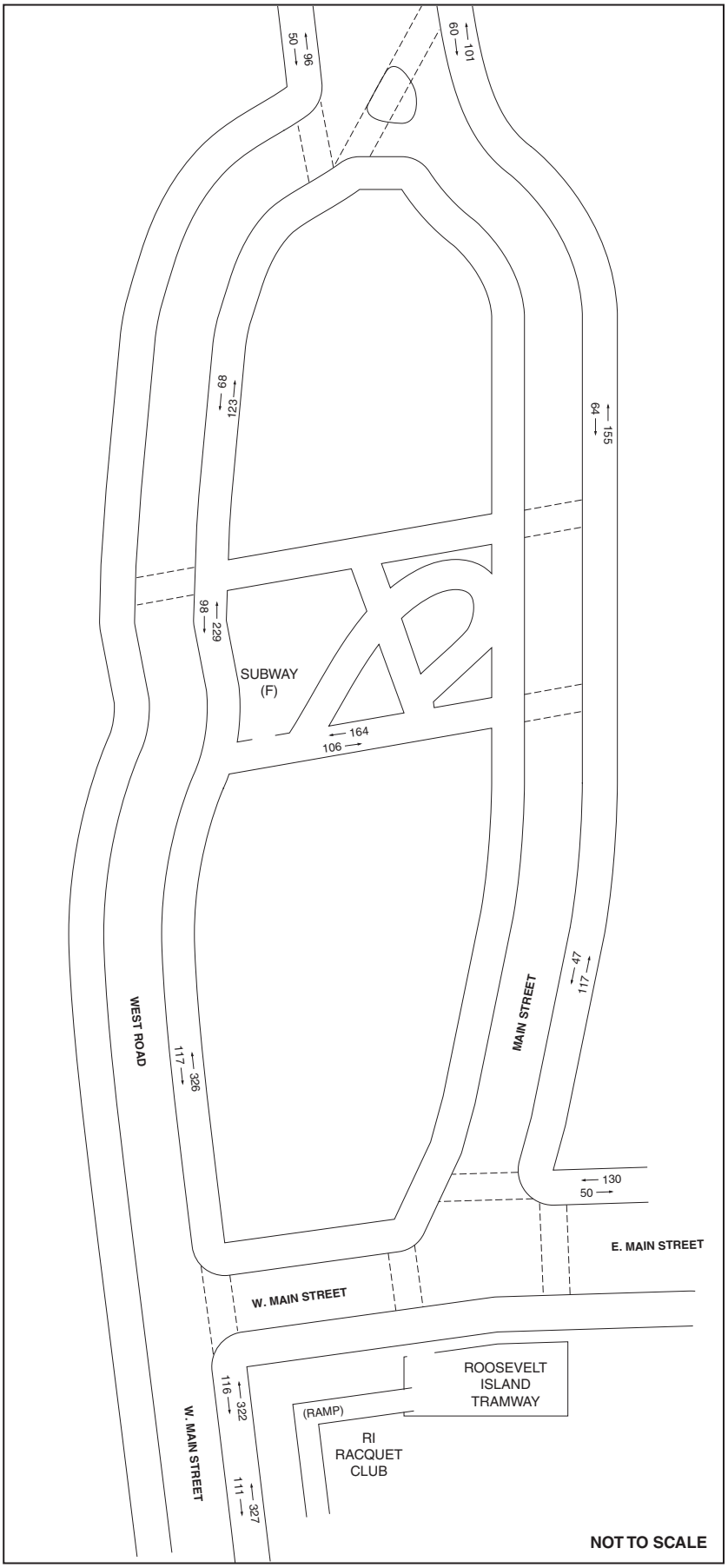

2038 With Action Peak 15 Minute Pedestrian Volumes
AM Peak 15 Minutes




2038 With Action Peak 15 Minute Pedestrian Volumes
Midday Peak 15 Minutes

**Figure 14-46**

10.9.12




2038 With Action Peak 15 Minute Pedestrian Volumes
PM Peak 15 Minutes

## Table 14-60
## 2038 No Action Condition Sidewalk Analysis

| No. | Location | Sidewalk | Effective Width (ft.) | 15-Min. Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 67 | 1.65 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 37 | 0.28 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 65 | 1.20 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 263 | 2.25 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 262 | 2.08 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 177 | 3.93 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 96 | 0.68 | B |
| | | West | 6.7 | 125 | 1.24 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 110 | 2.93 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 12 | 0.22 | A |
| | | North | 4.4 | 10 | 0.15 | A |
| **Midday Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 41 | 1.01 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 32 | 0.24 | A |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 38 | 0.70 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 89 | 0.76 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 102 | 0.81 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 66 | 1.47 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 109 | 0.77 | B |
| | | West | 6.7 | 66 | 0.66 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 101 | 2.69 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 9 | 0.17 | A |
| | | North | 4.4 | 11 | 0.17 | A |
| **PM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 110 | 2.72 | B |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 96 | 0.73 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 96 | 1.78 | B |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 198 | 1.69 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 218 | 1.73 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 108 | 2.40 | B |
| 3 | Main Street and West Road intersection | East | 9.4 | 70 | 0.50 | A |
| | | West | 6.7 | 63 | 0.63 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 128 | 3.41 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 24 | 0.44 | A |
| | | North | 4.4 | 24 | 0.36 | A |

**Note:** PMF = pedestrians per minute per foot

## Table 14-61
## 2038 With Action Condition Sidewalk Analysis

| No. | Location | Sidewalk | Effective Width (ft.) | 15-Min. Two-Way Volume | Platoon Flow | |
|---|---|---|---|---|---|---|
| | | | | | PMF | LOS |
| **AM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 376 | 9.28 | D* |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 353 | 2.67 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 381 | 7.06 | D* |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 346 | 2.96 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 343 | 2.72 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 250 | 5.56 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 165 | 1.17 | B |
| | | West | 6.7 | 210 | 2.09 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 179 | 4.77 | B |
| 5 | East Main Street and Main Street | East | 3.6 | 138 | 2.56 | B |
| | | North | 4.4 | 152 | 2.30 | B |
| **Midday Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 286 | 7.06 | D* |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 283 | 2.14 | B |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 289 | 5.35 | C |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 116 | 0.99 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 269 | 2.13 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 228 | 5.07 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 210 | 1.49 | B |
| | | West | 6.7 | 254 | 2.53 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 202 | 5.39 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 152 | 2.81 | B |
| | | North | 4.4 | 160 | 2.42 | B |
| **PM Peak 15 Minutes** | | | | | | |
| 1 | West Road between West Main Street and Subway Station | East | 2.7 | 465 | 11.48 | D* |
| | West Main Street(W) between West Main Street(N) and Bus Stop | East | 8.8 | 460 | 3.48 | C |
| | West Main Street between Bus Stop and Queensboro Bridge | East | 3.6 | 460 | 8.52 | D* |
| 2 | Plaza Pathway between West Road and Main Street | South | 7.8 | 275 | 2.35 | B |
| | West Road between Subway Station and Bus Stop | East | 8.4 | 333 | 2.64 | B |
| | West Road between Bus Stop and Main Street | East | 3.0 | 195 | 4.33 | C |
| 3 | Main Street and West Road intersection | East | 9.4 | 152 | 1.08 | B |
| | | West | 6.7 | 163 | 1.62 | B |
| 4 | Main Street between West Road and Plaza Pathway | East | 2.5 | 210 | 5.60 | C |
| 5 | East Main Street and Main Street | East | 3.6 | 171 | 3.17 | C |
| | | North | 4.4 | 188 | 2.85 | B |

**Note:** PMF = pedestrians per minute per foot
"*" denotes a significant adverse pedestrian impact.

## G. VEHICULAR AND PEDESTRIAN SAFETY

Accident data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between July 1, 2008 and June 30, 2011. The data obtained quantify the total number of reportable accidents (involving fatality, injury, or property damages in excess of $1,000), 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 July 2008 to June 2011 3-year period, a total of 30 reportable and non-reportable accidents, zero fatalities, 17 injuries, and 1 pedestrian/bicyclist-related accident occurred at the study area intersections. A rolling total of accident data identifies no study area intersections as high pedestrian accident locations in the 2008 to 2011 period. **Table 14-62** depicts total accident characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle accidents by year and location.

**Table 14-62**
**Accident Summary**

| Intersection | | Study Period | | | | | | Accidents by Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North-South Roadway | East-West Roadway | All Accidents by Year | | | | Total Fatalities | Total Injuries | Pedestrian | | | | Bicycle | | | |
| | | 2008 | 2009 | 2010 | 2011 | | | 2008 | 2009 | 2010 | 2011 | 2008 | 2009 | 2010 | 2011 |
| Vernon Boulevard | 41st Avenue | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vernon Boulevard | 36th Avenue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vernon Boulevard | Broadway | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21st Street | 36th Avenue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21st Street | Broadway | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21st Street | 30th Avenue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21st Street | 27th/Newton Ave | 3 | 4 | 4 | 2 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21st Street | Hoyt Avenue S | 0 | 1 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 21st Street | Hoyt Avenue N | 1 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31st Street | 36th Avenue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W. Road | Main Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rd 10 | Main Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E. Road | Main Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E. Road | Main Street (split) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E. Road | Main St (S. of 36th) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| River Road | Main Street (North) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| River Road | Main Street (South) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W. Road | E. Road | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Main Street | Roosevelt Island Bridge Entry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Main Street | E. Road & W. Road (triangle interchange) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W. Road | Rd 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Main Street | Rd 5 (roundabout) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W. Road | Rd 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Main Street | Rd 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Note: Bold** intersections are high pedestrian accident locations.
Roosevelt Island roadway names shown above do not reflect changes made due to the proposed project's mapping actions.
**Source:** NYSDOT July1, 2008 and June 30, 2011 accident data.

# H. PARKING

## EXISTING CONDITIONS

A detailed on-street parking inventory of the area surrounding the project site was conducted in November 2011 on a typical weekday. The study area encompasses a ¼-mile radius (approximately a five-minute walk) from the project site, as recommended by CEQR guidelines. This area spans the width of the island and extends between the southern end of the Goldwater Hospital site to the south and the merge of West Main Street and West Road to the north. Parking data were collected during the mid-morning (9:30 to 11:00 AM) and mid-afternoon (2 to 4 PM) peak periods.

On-street parking inventories were collected for all public streets within the parking study area. There are approximately 185 legal on-street parking spaces within the primary parking study area; however, many of the spaces in the southern half of the parking study area are restricted to authorized vehicles. The northern half of the parking study area has more publicly accessible parking spaces, all of which are metered. Of the 185 on-street spaces within the primary parking study area, approximately 60 are publicly accessible and 125 are restricted to authorized vehicles. Overall, on-street parking spaces within this study area are about 70 percent occupied during mid-morning and mid-afternoon peak periods.

An inventory of the Motorgate garage was also conducted in November 2011 during the mid-morning and mid-afternoon hours to determine off-street parking utilization in the facility, and overnight parking data from two weeks in March 2012 were provided by the RIOC. The garage is located adjacent to the Roosevelt Island Bridge on the north side and provides direct access to the bridge, minimizing vehicular traffic on the island. Even though this garage is outside of the typical ¼-mile radius study area, it was included in the analysis since it may, in the future, need to accommodate project-generated trips. According to the *CEQR Technical Manual*, the parking study area can be extended to include facilities within a maximum of a ½-mile radius of the site.

According to RIOC, the parking capacity at the Motorgate garage is approximately 1,900 spaces. Of these spaces, 53 percent were occupied during the mid-morning and mid-afternoon periods. Overnight, according to parking data provided by RIOC, an average of 1,435 (74 percent) are occupied. As shown in **Table 14-63**, there are about 55 to 58 spaces available on-street during mid-morning and mid-afternoon peak periods, and there are approximately 900 to 910 parking spaces available at the Motorgate garage during these periods. Overnight at the Motorgate garage, there are about 165 spaces available.

**Table 14-63**
**2011 Existing Weekday Parking Inventory and Utilization**

| Parking Facility | Mid-morning Utilization | Mid-afternoon Utilization | Overnight Utilization | Inventory |
|---|---|---|---|---|
| On-Street Parking | 127 | 129 | -- | 185 |
| Motorgate Garage (Off-Street) | 1,018 | 1,027 | 1,435 | 1,929 |
| Total Parking within ¼ Mile | 1,145 | 1,156 | 1,435 | 2,114 |

## 2018 NO ACTION CONDITION

Under the 2018 No Action condition, the Southtown development would be completed. In the event that parking is not provided at the Southtown site, parking would be accommodated at the Motorgate garage. Due to general background traffic growth and the Southtown development parking needs, approximately 61 percent of on-street and off-street parking would be used during

the daytime and approximately 83 percent would be used at Motorgate garage overnight. None of the projected traffic that would be generated by the Southtown development was assigned to park on-street since there is limited publicly-accessible on-street parking in the primary parking study area; all Southtown parking was assigned to the Motorgate garage. As shown in **Table 14-64**, there would be approximately 50 to 55 spaces available on-street during mid-morning and mid-afternoon periods, and there would be about 770 to 780 spaces available at the Motorgate garage during these periods. Overnight at the Motorgate garage, there would be approximately 320 spaces available.

**Table 14-64**
**2018 No Action Weekday Parking Inventory and Utilization (Projected)**

| Parking Facility | Mid-morning Utilization | Mid-afternoon Utilization | Overnight Utilization | Inventory |
|---|---|---|---|---|
| On-Street Parking | 131 | 133 | -- | 185 |
| Motorgate – Southtown Demand | 102 | 102 | 135 | -- |
| Motorgate – Other Demand | 1,049 | 1,058 | 1,475 | -- |
| Motorgate – Total Demand | 1,151 | 1,160 | 1,610 | 1,929 |
| Total Parking within ¼ Mile | 1,282 | 1,293 | 1,610 | 2,114 |

### 2018 WITH ACTION CONDITION

It is expected that 250 spaces would be available under the 2018 With Action condition. According to parking demand projections, up to 220 parking spaces (87 percent) of the on-site parking would be used during the peak weekday midday period with about 155 parking spaces (62 percent) used overnight, as shown in **Table 14-65**. Under these conditions, on-street and off-street parking at the Motorgate garage would not need to be used by the project's parking demand.

**Table 14-65**
**Phase 1- 2018 Parking Accumulation Table**

| | Grad Students – Master's | | | Grad Students - Ph.D. Candidates | | | Academic | | | Corporate Co-location | | | Faculty | | | Postdoctoral Fellows | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HOUR** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** |
| 12 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| **8 AM** | 1 | 0 | 1 | 1 | 0 | 1 | 4 | 0 | 4 | 27 | 1 | 27 | 3 | 0 | 3 | 1 | 0 | 1 |
| 9 AM | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 4 | 22 | 0 | 49 | 1 | 1 | 3 | 1 | 0 | 2 |
| 10 AM | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 6 | 5 | 4 | 50 | 1 | 0 | 4 | 0 | 1 | 1 |
| 11 AM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 1 | 4 | 47 | 0 | 0 | 4 | 0 | 0 | 1 |
| **12 PM** | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 6 | 6 | 47 | 0 | 0 | 4 | 0 | 0 | 1 |
| 1 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 6 | 4 | 49 | 1 | 0 | 5 | 0 | 0 | 1 |
| 2 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 4 | 2 | 51 | 1 | 0 | 6 | 0 | 0 | 1 |
| 3 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 1 | 3 | 49 | 0 | 0 | 6 | 0 | 0 | 1 |
| **4 PM** | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 3 | 3 | 30 | 22 | 0 | 2 | 4 | 0 | 1 | 0 |
| 5 PM | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 3 | 24 | 1 | 0 | 1 | 3 | 0 | 0 | 0 |
| 6 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 3 | 1 | 0 | 1 | 2 | 0 | 0 | 0 |
| 7 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 8 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **1** | **1** | **--** | **3** | **3** | **--** | **7** | **7** | **--** | **83** | **83** | **--** | **7** | **7** | **--** | **2** | **2** | **--** |

**Table 14-65 (continued)**
**Phase 1- 2018 Parking Accumulation Table**

| | Admin. Support | | | Visitors | | | University Housing - External | | | Retail | | | Executive Education Center | | | GRAND TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HOUR** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** |
| 12 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 88 | 0 | 0 | 0 | 3 | 1 | 3 | 4 | 2 | 156 |
| 1 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 87 | 0 | 0 | 0 | 3 | 1 | 3 | 3 | 2 | 157 |
| 2 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |
| 3 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |
| 4 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |
| 5 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |
| 6 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 86 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 154 |
| 7 AM | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 84 | 0 | 0 | 0 | 2 | 5 | 2 | 6 | 9 | 151 |
| **8 AM** | 8 | 0 | 9 | 2 | 0 | 2 | 2 | 7 | 79 | 0 | 0 | 0 | 19 | 19 | 19 | **68** | **27** | 192 |
| 9 AM | 4 | 1 | 12 | 1 | 0 | 3 | 2 | 4 | 77 | 0 | 0 | 0 | 11 | 23 | 11 | 44 | 30 | 206 |
| 10 AM | 4 | 0 | 16 | 1 | 0 | 4 | 2 | 2 | 77 | 0 | 0 | 0 | 10 | 17 | 10 | 25 | 25 | 206 |
| 11 AM | 1 | 0 | 17 | 0 | 0 | 4 | 2 | 2 | 77 | 0 | 0 | 0 | 8 | 13 | 8 | 12 | 19 | 199 |
| **12 PM** | 1 | 1 | 17 | 0 | 0 | 4 | 2 | 2 | 77 | 0 | 0 | 0 | 40 | 20 | 40 | **49** | **29** | 219 |
| 1 PM | 0 | 1 | 16 | 0 | 0 | 4 | 2 | 2 | 77 | 0 | 0 | 0 | 8 | 17 | 8 | 17 | 24 | 212 |
| 2 PM | 0 | 1 | 15 | 0 | 0 | 4 | 2 | 2 | 77 | 0 | 0 | 0 | 7 | 17 | 7 | 14 | 22 | 204 |
| 3 PM | 0 | 1 | 14 | 0 | 0 | 4 | 3 | 2 | 78 | 0 | 0 | 0 | 21 | 14 | 21 | 25 | 20 | 209 |
| **4 PM** | 1 | 8 | 7 | 0 | 2 | 2 | 6 | 3 | 81 | 0 | 0 | 0 | 31 | 28 | 31 | **41** | **78** | 172 |
| 5 PM | 1 | 3 | 5 | 0 | 1 | 1 | 7 | 4 | 84 | 0 | 0 | 0 | 34 | 36 | 34 | 46 | 72 | 146 |
| 6 PM | 1 | 2 | 4 | 0 | 1 | 0 | 6 | 4 | 86 | 0 | 0 | 0 | 27 | 40 | 27 | 37 | 52 | 131 |
| 7 PM | 1 | 1 | 4 | 0 | 0 | 0 | 5 | 3 | 88 | 0 | 0 | 0 | 47 | 34 | 47 | 53 | 40 | 144 |
| 8 PM | 1 | 2 | 3 | 0 | 0 | 0 | 3 | 2 | 89 | 0 | 0 | 0 | 22 | 15 | 22 | 26 | 20 | 150 |
| 9 PM | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 2 | 89 | 0 | 0 | 0 | 13 | 11 | 13 | 15 | 15 | 150 |
| 10 PM | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 89 | 0 | 0 | 0 | 9 | 5 | 9 | 11 | 8 | 153 |
| 11 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 88 | 0 | 0 | 0 | 5 | 2 | 5 | 6 | 4 | 155 |
| **Total** | **24** | **24** | **--** | **4** | **4** | **--** | **51** | **51** | **--** | **0** | **0** | **--** | **320** | **320** | **--** | **502** | **502** | **--** |

It should be noted that under the proposed actions, on-site parking is not required under the 2018 With Action condition. If no parking was provided on-site under the 2018 With Action condition, daytime parking needs would be met by the available Motorgate garage spaces.

## 2038 NO ACTION CONDITION

Under the 2038 No Action condition, due to general background traffic growth and the Southtown development parking needs discussed for the 2018 No Action condition, approximately 64 percent of on-street and Motorgate garage parking would be used during the daytime and about 87 percent of the Motorgate garage would be used overnight.

As shown in **Table 14-66**, there would be approximately 45 to 50 spaces available on-street during the mid-morning and mid-afternoon periods, and there would be about 715 to 725 spaces available at the Motorgate garage during these periods. Overnight at the Motorgate garage, there would be approximately 245 spaces available.

**Table 14-66**
**2038 No Action Weekday Parking Inventory and Utilization (Projected)**

| Parking Facility | Mid-morning Utilization | Mid-afternoon Utilization | Overnight Utilization | Inventory |
|---|---|---|---|---|
| On-Street Parking | 138 | 140 | -- | 185 |
| Motorgate - Southtown Demand | 102 | 102 | 135 | -- |
| Motorgate - Other Demand | 1,102 | 1,112 | 1,550 | -- |
| Motorgate - Total Demand | 1,204 | 1,214 | 1,685 | 1,929 |
| Grand Total Parking within ¼ Mile | 1,342 | 1,354 | 1,685 | 2,114 |

**2038 WITH ACTION CONDITION**

Up to 500 parking spaces would be provided on-site to accommodate site-generated trips under Phase 2 2038 Full Build-out With Action condition. As shown in **Table 14-67**, there would be a demand of up to approximately 615 spaces during the midday peak period and about 290 spaces during the overnight period. The additional spaces needed beyond what can be accommodated on-site would be available during the daytime period using the Motorgate garage.

It should be noted that under the proposed actions, on-site parking is not required under the 2038 With Action condition. If no parking was provided on-site under the 2038 With Action condition, daytime parking needs would be met by the available Motorgate garage parking spaces. However, there would be an overnight parking shortfall of approximately 45 spaces if parking resources are only available off-street at the Motorgate garage and on-street parking is not considered. As described earlier, approximately 60 on-street parking spaces are publically accessible and 125 are restricted to authorized vehicles during the daytime. It is not currently known whether the existing on-street parking that is restricted to authorized vehicles within the primary parking study area would continue to be signed as restricted because the design of the campus roadways has not been completed. If restricted parking regulations are not in effect overnight under 2038 conditions, additional on-street overnight parking capacity may be available to accommodate the overnight parking shortfall if no parking was provided on-site under the 2038 With Action condition. If there was not adequate overnight on-street parking capacity, there would be an overnight parking shortfall under this condition, which would potentially require overnight parking utilization further north on Roosevelt Island, where available.

**Table 14-67**
**Phase 2- 2038 Parking Accumulation Table**

| | Grad Students – Master's | | | Grad Students – Ph.D. Candidates | | | Academic | | | Corporate Co-location | | | Faculty | | | Postdoctoral Fellows | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HOUR** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** |
| 12 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 AM | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 11 | 2 | 9 | 2 | 0 | 2 | 1 | 0 | 1 |
| **8 AM** | 9 | 0 | 10 | 3 | 0 | 3 | 10 | 1 | 11 | 136 | 7 | 138 | 12 | 1 | 13 | 4 | 0 | 5 |
| 9 AM | 5 | 0 | 15 | 2 | 0 | 5 | 5 | 0 | 16 | 108 | 5 | 241 | 6 | 2 | 17 | 2 | 0 | 7 |
| 10 AM | 4 | 1 | 18 | 1 | 1 | 5 | 4 | 1 | 19 | 26 | 20 | 247 | 6 | 0 | 23 | 2 | 0 | 9 |
| 11 AM | 4 | 2 | 20 | 2 | 0 | 7 | 1 | 0 | 20 | 6 | 17 | 236 | 1 | 0 | 24 | 0 | 0 | 9 |
| **12 PM** | 5 | 5 | 20 | 2 | 2 | 7 | 1 | 1 | 20 | 28 | 28 | 236 | 1 | 1 | 24 | 0 | 0 | 9 |
| 1 PM | 2 | 4 | 18 | 1 | 1 | 7 | 1 | 0 | 21 | 29 | 16 | 249 | 0 | 1 | 23 | 0 | 0 | 9 |
| 2 PM | 2 | 3 | 17 | 1 | 1 | 7 | 0 | 1 | 20 | 17 | 9 | 257 | 0 | 1 | 22 | 0 | 0 | 9 |
| 3 PM | 1 | 4 | 14 | 0 | 2 | 5 | 0 | 1 | 19 | 6 | 8 | 255 | 0 | 1 | 21 | 0 | 0 | 9 |
| **4 PM** | 1 | 8 | 7 | 0 | 3 | 2 | 1 | 9 | 11 | 17 | 150 | 122 | 1 | 11 | 11 | 0 | 4 | 5 |
| 5 PM | 1 | 4 | 4 | 1 | 0 | 3 | 1 | 5 | 7 | 17 | 121 | 18 | 1 | 6 | 6 | 0 | 2 | 3 |
| 6 PM | 2 | 3 | 3 | 0 | 1 | 2 | 1 | 4 | 4 | 9 | 23 | 4 | 1 | 4 | 3 | 0 | 2 | 10 |
| 7 PM | 1 | 3 | 1 | 0 | 1 | 1 | 1 | 1 | 4 | 1 | 5 | 0 | 1 | 2 | 2 | 0 | 1 | 0 |
| 8 PM | 1 | 2 | 0 | 0 | 1 | 0 | 1 | 3 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 |
| 9 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 |
| 10 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 11 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| **Total** | **40** | **40** | **--** | **13** | **13** | **--** | **29** | **29** | **--** | **411** | **411** | **--** | **34** | **34** | **--** | **9** | **9** | **--** |

| | Admin. Support | | | Visitors | | | University Housing - External | | | Retail | | | Executive Education Center | | | GRAND TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HOUR** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** | **ENTER** | **EXIT** | **ACC** |
| 12 AM | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 219 | 0 | 0 | 0 | 3 | 1 | 68 | 5 | 4 | 287 |
| 1 AM | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 220 | 0 | 0 | 0 | 3 | 1 | 70 | 5 | 2 | 290 |
| 2 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 221 | 0 | 0 | 0 | 0 | 0 | 70 | 1 | 0 | 291 |
| 3 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 220 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 1 | 290 |
| 4 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 219 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 1 | 289 |
| 5 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 218 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 1 | 288 |
| 6 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 216 | 0 | 0 | 0 | 0 | 2 | 68 | 0 | 4 | 284 |
| 7 AM | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 8 | 210 | 0 | 0 | 0 | 2 | 5 | 65 | 24 | 15 | 293 |
| **8 AM** | 15 | 1 | 16 | 7 | 1 | 7 | 4 | 17 | 197 | 0 | 0 | 0 | 19 | 19 | 65 | **219** | **47** | 465 |
| 9 AM | 8 | 2 | 22 | 4 | 1 | 10 | 4 | 11 | 190 | 0 | 0 | 0 | 11 | 23 | 53 | 155 | 44 | 576 |
| 10 AM | 7 | 1 | 28 | 4 | 0 | 14 | 5 | 4 | 191 | 0 | 0 | 0 | 10 | 17 | 46 | 69 | 45 | 600 |
| 11 AM | 1 | 0 | 29 | 1 | 0 | 15 | 5 | 4 | 192 | 0 | 0 | 0 | 8 | 13 | 41 | 29 | 36 | 593 |
| **12 PM** | 1 | 1 | 29 | 1 | 1 | 15 | 5 | 5 | 192 | 1 | 1 | 0 | 40 | 20 | 61 | **85** | **65** | 613 |
| 1 PM | 0 | 1 | 28 | 0 | 1 | 14 | 5 | 5 | 192 | 1 | 0 | 1 | 8 | 17 | 52 | 47 | 46 | 614 |
| 2 PM | 0 | 1 | 27 | 0 | 1 | 13 | 4 | 5 | 191 | 1 | 1 | 1 | 7 | 17 | 42 | 32 | 40 | 606 |
| 3 PM | 0 | 1 | 26 | 0 | 1 | 12 | 7 | 5 | 193 | 0 | 1 | 0 | 21 | 14 | 49 | 35 | 38 | 603 |
| **4 PM** | 2 | 14 | 14 | 1 | 7 | 6 | 16 | 9 | 200 | 0 | 0 | 0 | 31 | 27 | 53 | **70** | **242** | 431 |
| 5 PM | 1 | 7 | 8 | 1 | 3 | 4 | 19 | 10 | 209 | 0 | 0 | 0 | 33 | 36 | 50 | 75 | 194 | 312 |
| 6 PM | 1 | 5 | 4 | 1 | 2 | 3 | 17 | 8 | 218 | 0 | 0 | 0 | 27 | 40 | 37 | 59 | 92 | 279 |
| 7 PM | 1 | 3 | 2 | 1 | 2 | 2 | 14 | 7 | 225 | 0 | 0 | 0 | 47 | 33 | 51 | 67 | 58 | 288 |
| 8 PM | 2 | 2 | 2 | 1 | 2 | 1 | 6 | 6 | 225 | 0 | 0 | 0 | 21 | 16 | 56 | 33 | 34 | 287 |
| 9 PM | 1 | 1 | 2 | 0 | 1 | 0 | 5 | 6 | 224 | 0 | 0 | 0 | 13 | 10 | 59 | 21 | 20 | 288 |
| 10 PM | 0 | 1 | 1 | 0 | 0 | 0 | 5 | 9 | 220 | 0 | 0 | 0 | 9 | 5 | 63 | 14 | 17 | 285 |
| 11 PM | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 5 | 219 | 0 | 0 | 0 | 5 | 2 | 66 | 9 | 9 | 285 |
| **Total** | **43** | **43** | **--** | **23** | **23** | **--** | **131** | **131** | **--** | **3** | **3** | **--** | **318** | **318** | **--** | **1,054** | **1,054** | **--** |

# I. CONCLUSIONS

## TRAFFIC

In accordance with *CEQR Technical Manual* guidelines, a RWCDS was developed for the Phase 1 2018 and the Phase 2 2038 Full Build-out With Action conditions to estimate the peak hour vehicular and pedestrian volumes expected as a result of the proposed actions.

Under the Phase 1 2018 With Action condition during the weekday AM peak hour, the RWCDS would generate 92 vehicle trips arriving at the project site and 51 vehicle trips leaving the project site, for a total of 143 vehicle trips. In the weekday midday peak hour, it would generate 90 inbound vehicle trips plus 70 outbound vehicle trips for a total of 160 vehicle trips. In the weekday PM peak hour, it would generate 71 inbound vehicle trips plus 108 outbound vehicle trips for a total of 179 vehicle trips. Of the 14 study area intersections analyzed (10 signalized and 4 unsignalized intersections), the proposed actions would create significant adverse traffic impacts at seven intersections in the weekday AM peak hour, four in the weekday midday peak hour, and four in the weekday PM peak hour under the Phase 1 2018 With Action condition.

Under the Phase 2 2038 Full Build-out With Action condition, during the weekday AM peak hour, the RWCDS would generate 262 vehicle trips arriving at the project site and 90 vehicle trips leaving the project site, for a total of 352 vehicle trips. In the weekday midday peak hour, it would generate 161 inbound vehicle trips plus 141 outbound vehicle trips for a total of 292 vehicle trips. In the weekday PM peak hour, it would generate 116 inbound vehicle trips plus 288 outbound vehicle trips for a total of 386 vehicle trips. There would be significant adverse traffic impacts at 10 intersections in the weekday AM peak hour, seven in the weekday midday peak hour, and 11 in the weekday PM peak hour under the Phase 2 2038 Full Build-out With Action condition.

To a large extent, many of the significant traffic impacts can be attributed to background traffic growth plus a substantial volume of No Action development generated traffic, especially over the extended period between existing conditions and year 2038. Traffic capacity improvements that would be needed to mitigate these significant impacts are addressed in Chapter 21, "Mitigation Measures."

## TRANSIT

The screening assessment summarized below in Section E, "Level 2 Screening assessment", concluded that a detailed examination of subway line-haul analysis is not warranted. However, bus and tramway line-haul analyses, and a detailed analysis of station elements at the Roosevelt Island subway station (F line) were prepared.

Under the Phase 1 2018 With Action condition, the proposed project would not result in any significant transit impacts, with the exception of the Q102 bus route in the eastbound direction during the PM peak period.

Under Phase 2 2038 Full Build-out With Action condition, the proposed project would not result in any significant subway station or tramway impact. However, it would result in significant adverse impacts on bus line-haul levels on the eastbound and westbound Q102 route during the AM and PM peak periods as well as on the Red Bus route in the southbound and northbound direction during the AM and PM peak periods, respectively. Potential measures to mitigate the

projected significant adverse bus line-haul impacts are described in Chapter 21, "Mitigation Measures."

## PEDESTRIANS

Weekday peak period pedestrian conditions were evaluated at key sidewalk elements at five intersections. Under the Phase 1 2018 With Action condition, there would be no significant adverse pedestrian impact. Under the Phase 2 2038 Full Build-out With Action condition, significant adverse impacts are anticipated for two pedestrian elements including the east sidewalk at West Road between West Main Street and the subway station during the AM, midday and PM peak periods, and the east sidewalk at West Main Street between the bus stop and the Queensboro Bridge during the AM, midday and PM peak periods. Measures that can be implemented to mitigate these significant adverse pedestrian impacts are discussed in Chapter 21, "Mitigation."

## VEHICULAR AND PEDESTRIAN SAFETY

Accident data for the study area intersections were obtained from NYSDOT for the 3-year time period between July 1, 2008 and June 30, 2011. A total of 30 reportable and non-reportable accidents, no fatalities, 17 injuries, and 1 pedestrian/bicyclist-related accident occurred at the study area intersections. A rolling total of accident data has not identified any study area locations as high pedestrian accident locations in the 2008 to 2011 period.

## PARKING

Up to 500 spaces would be built on-site under the proposed actions, with 250 spaces assumed under the Phase 1 With Action condition and 500 spaces under the Phase 2 Full Build-out With Action condition. Under Phase 1, 250 spaces would accommodate the projected daytime peak demand of approximately 220 spaces and overnight parking demand of about 155 spaces.

Under the Full Build Phase, the 500 space supply would not accommodate the projected peak daytime demand of approximately 615 spaces, but would accommodate overnight demand of about 290 spaces. There is expected to be sufficient parking elsewhere on Roosevelt Island to accommodate the projected on-site parking shortfall under the Phase 2 Full Build-out With Action condition.

It should be noted that under the proposed actions, on-site parking is not required under the 2018 or 2038 With Action condition. If no parking was provided on-site under 2018 With Action condition, parking needs would be met by the available Motorgate garage spaces.

If no parking was provided on-site under the 2038 With Action condition, daytime parking needs would be met by the available Motorgate garage spaces. However, there would be an overnight parking shortfall of about 45 spaces, which would need to be accommodated beyond ¼-mile from the site and the Motorgate garage. This would potentially require overnight parking utilization further north on Roosevelt Island, where available. There would also potentially be additional on-street overnight parking available pending the design of the campus roadways to accommodate the projected parking shortfall if no parking was provided on-site under the 2038 With Action condition. ✷