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Construction

Construction activities, although temporary in nature, can sometimes result in significant adverse impacts. A project's construction activities may affect a number of technical areas analyzed for the operational period, such as air quality, noise, and traffic. This chapter assesses the potential for the Proposed Project to result in significant adverse impacts during construction.

Introduction

This chapter provides an assessment of the potential for construction of the Proposed Project to result in significant adverse impacts during the construction period. The Proposed Project would consist of the demolition of the existing buildings on the Development Site and the subsequent construction of multiple new buildings,[1] as well as public realm improvements. In total, the Proposed Project would consist of approximately 2.19 million gross square feet (gsf) of a mix of academic, health care, Life Sciences, and retail space along with space for the Office of the Chief Medical Examiner (OCME). The proposed buildings would be arranged around a mid-block public open space fronting East 25th Street.

The public realm improvements would take the form of a new publicly accessible open space, a replacement bridge over Franklin D. Roosevelt (FDR) Drive at East 25th Street to make it ADA accessible, a tie-in to the Kips Bay Coastal Resiliency (KBCR) project's planned flood protection to the northeast along FDR Drive and protection along East 25th Street,[2] including a connection to the existing floodwall at the U.S. Department of Veterans Affairs New York Harbor Healthcare System's

[1] As design progresses for the Proposed Project, it is likely that the building on the eastern portion of the Development Site (i.e., Building A) would be designed as two buildings with independent utility systems to accommodate separation between the public school and CUNY facilities.

[2] Absent the KBCR project, the Proposed Project would incorporate standalone flood protections with independent utility into the design.

Manhattan campus (U.S. Corbin VA Facility), and a widening of the demapped portion of the former East 26th Street (former East 26th Street) located between FDR Drive and First Avenue to accommodate two-way traffic flow.

Principal Conclusions

Governmental oversight of construction in New York City is extensive and involves a number of City, State, and Federal agencies, each with specific areas of responsibility. Construction at the Development Site would be subject to government regulations and oversight and would employ general construction practices typical of sites within New York City. The Proposed Project would also comply with the requirements of the New York City Noise Control Code.

Transportation

Traffic

Activities related to construction would generate construction worker and delivery trips. To assess the potential for construction traffic impacts that may result from construction of the Proposed Project, the 23 intersections were also analyzed during the construction peak quarter. Construction activities would be highest during the third quarter of 2029 (Q3 2029) and would generate 482 construction worker auto trips, 92 construction worker taxi trips, and 86 construction truck trips during the AM construction peak hour and 482 construction worker auto trips, 92 construction worker taxi trips and 20 construction truck trips during the PM construction peak hours. Construction trucks would be required to use the New York City Department of Transportation (NYC DOT)-designated truck routes to travel to the project area and would then use local streets to access the construction entrances.

Significant construction traffic impacts were identified at eight of the 23 intersections analyzed during the AM construction peak hour, and seven of the 23 intersections during the PM construction peak hour. Standard traffic capacity improvements typically implemented by NYC DOT), such as signal timing modifications, could potentially provide full or partial mitigation at some of the significantly impacted intersections. These mitigation measures are being explored and will be studied further in conjunction with NYC DOT between the Draft and Final EIS. In addition, NYC DOT is currently in the process of developing the Second Avenue Bus and Bike Lane Enhancements project which could result in changes to vehicular and pedestrian operations at intersections along Second Avenue. Should the plan be adopted prior to the release of the Final EIS, the transportation analysis will be updated to incorporate these changes and, as a result, the traffic impact results in the Final EIS may be different than those identified in the Draft EIS. Should traffic mitigation measures be determined to not be feasible, the impacts to the intersections listed below would remain unmitigated.

Parking

Construction workers would generate an estimated maximum daily parking demand of 603 spaces during the Q3 2029 peak quarter. This parking demand would be accommodated by off-street parking supply within a one-quarter mile radius of the Development Site. A parking utilization survey was conducted and determined that there would be approximately 966 spaces available during the

weekday midday period and would be sufficient to accommodate the construction worker parking demand.

Transit and Pedestrians

Based on information provided by NYC DOT, it is anticipated that approximately 56 percent of construction workers would commute to the Development Site by public transportation (45 percent by subway and 11 percent by bus). During Q3 2029, when construction worker volumes would be highest, approximately 1,916 construction workers would be expected to be working on the site, of which approximately 862 workers would be expected to travel to the site by subway and approximately 211 workers would be expected to travel to the site by bus. It is expected that most construction workers (approximately 80 percent) would arrive during the AM construction peak hour and depart during the PM construction peak hour (approximately 690 subway trips and approximately 169 bus trips during the AM and PM construction peak hours).

Construction-related transit trips would be significantly lower than transit trips generated during the operational peak hours and, as these trips would occur outside of the commuter peak hours, significant transit construction impacts are not expected at any new locations not identified in the operational analyses. It is possible, however, that there could be significant impacts at pedestrian elements (sidewalks, corner reservoir areas, or sidewalks) analyzed under operational conditions despite construction-related pedestrian volumes being lower than operational volumes. Detailed analyses will be conducted at 13 pedestrian elements during the period between the Draft EIS and Final EIS to make this determination as well as to evaluate potential measures to mitigate significant impacts.

Air Quality

To assess the potential for the Proposed Project to result in impacts related to air emissions, an emissions intensity analysis was performed. Activities occurring between September 2027 to August 2028 were determined to be the peak period for construction air quality emissions. Based on the results of the emissions intensity analysis for on-site emissions (consisting of construction equipment, trucks and fugitive dust[3] from construction of foundations for the buildings, and truck idling and moving on paved and unpaved roads). A detailed mobile sources analysis was conducted to evaluate the impacts from off-site construction traffic. The results of the on-site construction assessment indicate that the Proposed Project would not exceed the applicable air quality standards and *de minimis* criteria based on a comparison with a detailed analysis for a project of similar size. The dispersion modeling analysis of construction-related air emissions for on-road source determined that particulate matter ($PM_{2.5}$ and PM_{10}), and carbon monoxide (CO) concentrations would be below their corresponding *de minimis* thresholds or National Air Quality Ambient Standards (NAAQS), respectively. Therefore, construction of the Proposed Project would not result in significant adverse air quality impacts due to construction sources.

[3] Significant atmospheric dust arises from the mechanical disturbance of granular material exposed to the air. Dust generated from these open sources is termed "fugitive" because it is not discharged to the atmosphere in a confined flow stream. Common sources of fugitive dust include unpaved roads, agricultural tilling operations, aggregate storage piles, and heavy construction operations.

Noise

To assess the potential for the Proposed Project to result in noise impacts during construction, a quantified noise analysis was conducted.

Construction noise from mobile sources was evaluated for the 6:00 AM to 7:00 AM peak period, when construction traffic would be greatest. Construction noise from mobile sources would not increase by 3 dBA or more, and there would be no significant adverse noise impact due to construction mobile sources.

Construction noise from stationary sources was evaluated for 11 phases of construction, since there would be overlapping activities for demolition, foundation, superstructure and exterior and interior fit-out associated with the Proposed Project. Construction of the Proposed Project is predicted to result in elevated noise levels at several of the analyzed receptors during limited periods of time during the overall construction period. South of the Development Site, at the U.S. Corbin VA Facility, construction is predicted to result in noise level increases up to approximately 18.4 dBA over a two-month period. To the west of the Development Site, at the NYU facilities along First Avenue, construction is predicted to result in noise level increases up to 11.9 dBA over a four-month period. North of the Development Site, at the Office of the Chief Medical Examiner (OCME), construction is predicted to result in noise level increases up to approximately 12.5 dBA over a three-month period. Such exceedances may be intrusive but would be only temporary and of limited duration. At each of these locations, it is expected that because all but one of the buildings have central HVAC systems, approximately 30 to 35 dBA attenuation (depending on the building) can be achieved with a closed-window condition resulting in interior noise levels that are close to the CEQR interior noise levels for these types of uses (i.e., 45 dBA (L_{10}) for residential and community facility uses and 50 dBA (L_{10}) for office or equivalent spaces).[4] At the location with window air conditioning units, approximately 25 dBA of attenuation is expected.

Because these increases are predicted to occur only on a portion of each building over a limited period of the construction duration (up to four months total depending on the location) and would result in maximum interior noise levels close to the CEQR interior noise recommendation, the Proposed Project would not result in significant adverse construction noise impacts at these locations. At the other receptors, including residential receptors, increases in noise levels from Proposed Project construction are predicted to be less than 10 dBA, and significant adverse construction noise impacts would not occur.

Vibration

Construction activities have the potential to generate ground-borne vibration that can potentially cause structural or architectural damage or annoy people in nearby vibration-sensitive spaces, such as residences. The most substantial sources of construction vibration are equipment associated with the excavation and foundation phase, such as pile drivers, drill rigs, bulldozers, and jack hammers.

There are no buildings within 90 feet of the Development Site listed by the New York City Landmarks Preservation Commission (LPC) or the State and/or National Register of Historic Places (S/NR) which would require special protections from potential damage due to vibration. There is the potential for construction vibration from some construction equipment, such as pile drivers, to cause annoyance in nearby residences. However, these construction activities would only occur for limited periods of

[4] A field survey was conducted to confirm that nearby buildings are capable of providing the attenuation described above.

time at any particular location and there would be no significant adverse impact as a result of construction vibration.

Other Technical Areas

In terms of construction effects on land use, neighborhood character, socioeconomic conditions, community facilities, and open space, preliminary analyses found that no significant adverse impacts would occur due to construction of the Proposed Project.

In terms of construction effects on historic resources, if necessary, based on the results of the Alternatives Analysis, mitigation measures would be developed in consultation with Division for Historic Preservation Office (OPRHP) and LPC and undertaken as part of the Proposed Project. Compliance with any mitigation measures required would be memorialized through a Memorandum of Agreement. Compliance with the Memorandum of Agreement would preclude the potential for significant adverse impacts on historic resources to occur during construction and operation of the Proposed Project.

With respect to hazardous materials, the completion of a RAP and CHASP would be memorialized through the assignment of an (E)-Designation on the Development Site to ensure investigation, mitigation, and remediation of any hazardous materials would be completed in a safe, and comprehensive manner. Compliance with the (E)-Designation would preclude the potential for significant adverse hazardous materials impacts to occur during construction and operation of the Proposed Project.

With respect to Water and Sewer Infrastructure, the Proposed Project would require a State Pollutant Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity. In addition, the Applicant will be required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets criteria set forth by NYSDEC. With the implementation of a SWPPP, there would be no significant adverse impacts to water resources due to construction of the Proposed Project.

Methodology

This construction assessment follows the guidelines set forth in the *CEQR Technical Manual* and the Final Scope of Work. As discussed in **Chapter 1, Project Description** and above, the existing buildings would be demolished, and new buildings and public realm improvements would be constructed. Construction is projected to last up to 78 months, occurring in a single phase. The Proposed Project would be fully operational by the end of 2031, the build year. Because construction activities would cumulatively exceed a two-year period and would involve the simultaneous construction of multiple buildings, an assessment of the potential for construction activities to result in adverse environmental effects was warranted to examine the potential construction effects in the areas of transportation, air quality, and noise and vibration.

Construction Regulations and General Practices

Construction Oversight

Governmental oversight of construction in New York City is extensive and involves a number of City, State, and Federal agencies, each with specific areas of responsibility, as follows.

- The New York City Department of Buildings (DOB) has primary oversight of construction. DOB oversees compliance with the New York City Building Code to ensure that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect both workers and the general public during construction. Areas of oversight include installation and operation of equipment such as cranes and lifts, sidewalk sheds, safety netting, and scaffolding.
- The New York City Department of Environmental Protection (DEP) enforces the New York City Noise Code, reviews and approves any needed Remedial Action Plans (RAPs) and associated Construction Health and Safety Plans (CHASPs) as well as the removal of fuel tanks and abatement of hazardous materials. DEP also regulates water disposal into the sewer system and reviews and approves any rerouting of wastewater flow.
- FDNY has primary oversight of compliance with the New York City Fire Code and the installation of tanks containing flammable materials.
- The New York City Department of Transportation Office of Construction Mitigation and Coordination (NYC DOT OCMC) reviews and approves any traffic lane and sidewalk closures.
- New York City Transit (NYCT) is responsible for bus stop relocations and subsurface construction within 200 feet of a subway, if needed.
- The LPC approves studies and testing to prevent loss of archaeological resources and to prevent damage to architectural resources.
- The New York State Department of Environmental Conservation (NYSDEC) regulates disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. NYSDEC also regulates discharge of water into rivers and streams.
- The New York State Department of Labor (DOL) licenses asbestos workers.
- The New York State Department of Transportation (NYSDOT) reviews and approves any traffic lane closures on its roadways, should any be necessary.
- The U.S. Environmental Protection Agency (EPA) has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons, however, much of its responsibility is delegated to the state level.
- The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

Construction Hours

New York City regulates the hours of construction work through the New York City Noise Control Code, as amended in December 2005 and effective July 1, 2007. Construction typically would be limited to weekdays between the hours of 7:00 AM and 3:00 PM or 3:30 PM with some exceptions as described below. Noise limits are set for certain specific pieces of construction equipment. The City may permit work outside of these hours to accommodate: (1) emergency conditions; (2) public

safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. The DOB issues these work permits, and for new building construction, like the Proposed Project, approval of a noise mitigation plan from the DEP under the City's Noise Code is also required.

In New York City, construction work typically occurs on weekdays and begins at 7:00 AM, with most workers arriving between 6:00 AM and 7:00 AM. Work typically ends at 3:00 PM or 3:30 PM, with some exceptions when certain critical tasks (e.g., finishing a concrete pour for a floor deck, completing the drilling of piles, or completing the bolting of a steel frame erected that day) require that the workday be extended beyond normal work hours. Any extended workdays generally last until approximately 5:30 PM or 6:00 PM and do not include all construction workers on-site, but only those involved in the specific task requiring additional work time. For work outside of normal construction hours, work permits are obtained from DOB prior to such work commencing. The numbers of workers and pieces of equipment in operation for work outside normal hours is generally limited to those needed to complete the authorized task. Overall, the level of activity for any work outside of normal construction hours is less than a normal workday.

Construction Practices

Access, Deliveries and Staging Area

Access to construction sites is controlled. Work areas are fenced off, and limited access points for workers and construction-related trucks are provided. Typically, worker vehicles are not allowed into the construction area, and workers or trucks without a need to be on the site are not allowed entry. After work hours, the gates are closed and locked. Security guards may patrol the construction site after work hours and over weekends to prevent unauthorized access.

Material deliveries to the site are controlled and scheduled. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers are employed at each of the construction site's access points. Flaggers are typically supplied by either the subcontractor on-site at the time or by the construction manager. The flaggers control trucks entering and exiting the project site so that they would not interfere with one another. In addition, they provide an additional traffic aid as trucks enter and exit the on-street traffic streams.

Lane and Walkway Closures

Temporary curb-lane and sidewalk closures are typical for construction projects in New York City. To manage such closures, a Maintenance and Protection of Traffic (MPT) plan is developed consistent with NYC DOT requirements. NYC DOT OCMC reviews and approves MPT plans, and the implementation of the closures is also coordinated with NYC DOT OCMC. In general, construction managers for major projects on adjacent sites also coordinate their activities to avoid delays and inefficiencies.

Public Safety

A variety of measures are employed to ensure public safety during construction at sites within New York City. Examples include the use of sidewalk bridges to provide overhead protection for pedestrians passing by the construction site and the employment of flaggers to control trucks

entering and exiting the construction site, to provide guidance to pedestrians, and/or to alert or slow down the traffic. Other safety measures include following DOB requirements during the installation and operation of tower cranes to ensure safe operation of the equipment and the installation of safety nettings on the sides of the project as the superstructure advances upward to prevent debris from falling to the ground. These safety measures are required as part of a Site Safety Plan reviewed and approved by DOB.

Rodent Control

Construction projects in New York City typically include provisions for a rodent (i.e., mouse and rat) control program with provisions for this formalized in construction contracts for the development. Rodent control programs are typically carried out throughout construction, beginning with surveying and baiting appropriate areas prior to construction and providing for proper site sanitation and maintenance during construction. Signage is posted, and coordination is conducted with appropriate public agencies. Only EPA- and NYSDEC-registered rodenticides are permitted, and the contractor is required to implement the rodent control program in a manner that is not hazardous to the general public, domestic animals, and non-target wildlife.

Air Emissions Reduction Program

In addition to the measures described above, New York City manages construction air emissions by mandating emission reduction measures through NYC Law 77 and the New York City Air Pollution Control Code. In addition, EPA has requirements for nonroad diesel engines. These include the following:

- Fugitive Dust Control Plans. In compliance with the NYC Air Pollution Control Code regarding control of fugitive dust, contractors are required to ensure that all trucks carrying loose material use water as a dust suppression measure, that wheel-washing stations be established for all trucks exiting the construction site, that trucks hauling loose material be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the site, that streets adjacent to the site be cleaned as frequently as needed by the construction contractor, and that water sprays be used for transfer of spoils to ensure that materials are dampened as necessary to avoid the suspension of dust into the air.
- Clean Fuel. Ultra-low sulfur diesel (ULSD) is required to be used for all diesel engines.[5]
- Restrictions on Vehicle Idling. New York City's local law restricts unnecessary idling. On-site vehicle idle time is restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.
- Perimeter Fencing. Perimeter fencing, which is required at construction sites (8-foot minimum), reduces both fugitive dust and tailpipe emissions from reaching sensitive receptors.
- Nonroad Diesel Engines. Federal standards for nonroad diesel engines were first adopted in 1994 for engines over 50 hp and were phased in from 1996 to 2000 (Tier 1 standards). Subsequently, more stringent regulations were adopted (Tier 1-3 standards) and phased in from 2000 to 2008 and most recently, Tier 4 standards were adopted and phased in from 2008 to 2015. These regulations address emissions of particulate matter (PM) and nitrogen oxide (NO_x). Based on

[5] This is a federal requirement since 2010.

these regulations, NYC Local Law 77 (which applies to publicly funded City projects), requires nonroad diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract, such as concrete mixing and pumping trucks) to use best available tailpipe technology for reducing diesel particulate matter (DPM) emissions. The use of diesel particulate filters (DPF) in Tier 3 emission standard for diesel engines for construction equipment achieves the same emission reductions as a newer Tier 4 emission standard for diesel engines.

In addition to these requirements, there are other measures to reduce construction air emissions that are common practice on construction sites throughout New York City:

- Diesel Equipment Reduction. To the extent practical, hoists and small equipment, such as lifts, compressors, welders, and pumps, use electric engines that operate on grid power instead of diesel power engines. This is a common practice that has been achieving wider use as technology improves.
- Source Location and Shielding. To reduce concentration increments at sensitive receptors, large emissions sources and activities such as concrete trucks, generators, and large compressors can be located away from the sensitive receptors to the extent practical.

Noise Reduction Measures

Noise from construction activities and some construction equipment is regulated by the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113). Additionally, construction of the Proposed Project would incorporate some noise control measures that go beyond those required by the Code. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the New York City Noise Control Code. These measures could include a variety of source and path controls.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented in accordance with the New York City Noise Control Code:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction. **Table 16-10** shows the noise levels for construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Project.
- As early in the construction period as logistics allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders and water pumps (i.e., early electrification) to the extent feasible and practicable. Where electrical equipment cannot be used, diesel or gas-powered generators and pumps would be located within buildings to the extent feasible and practicable.
- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, trucks would not be allowed to idle more than 3 minutes at the construction site per Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

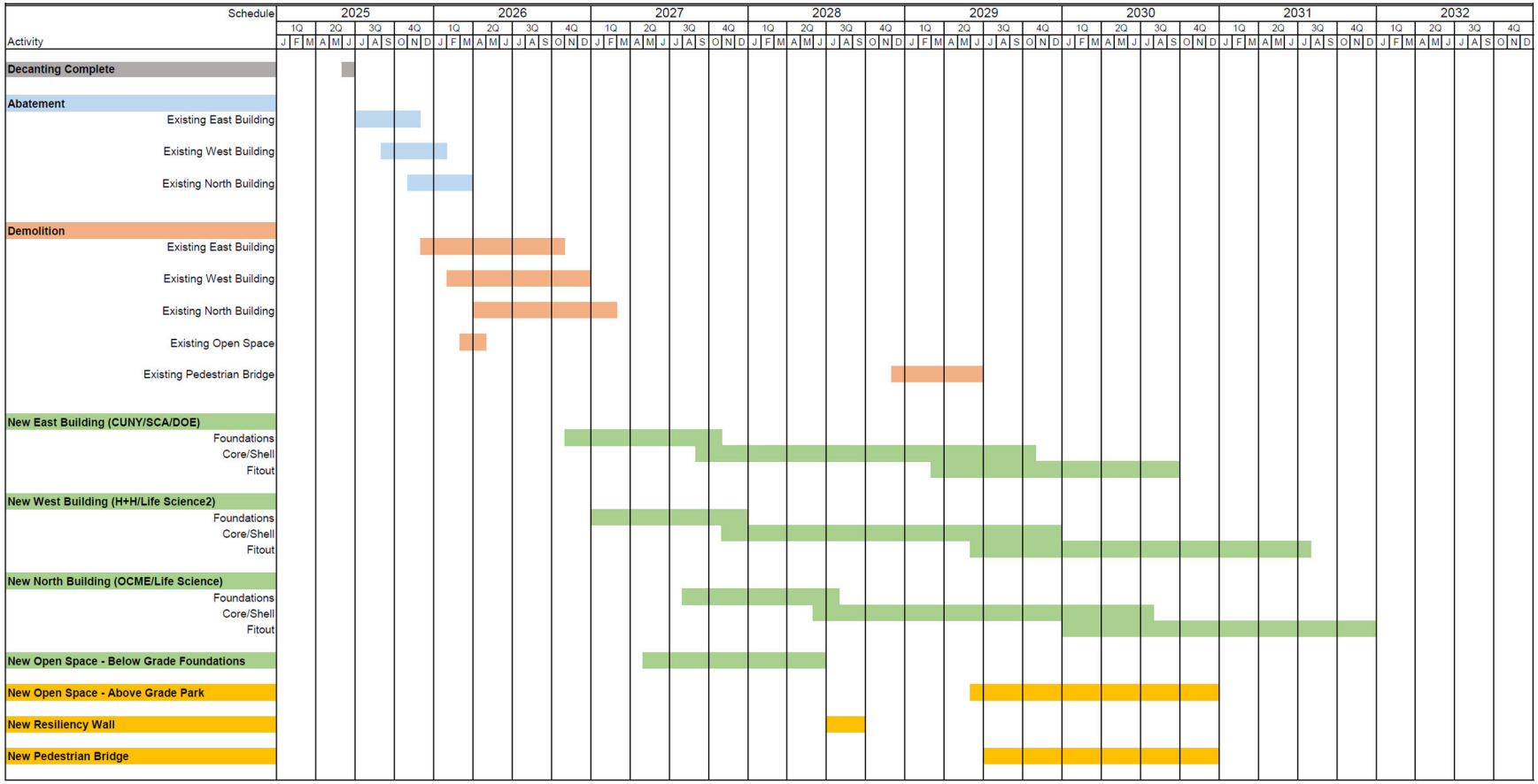
In addition, the New York City Noise Control Code limits construction activities to weekdays between the hours of 7:00 AM and 6:00 PM and requires that a Construction Noise Mitigation Plan be implemented.

Construction Description

Construction Schedule

Figure 16-1 shows the anticipated construction schedule for the Proposed Project as well as the sequencing of construction stages as currently anticipated. The details of the construction schedule are described further below.

Figure 16-1 Anticipated Construction Schedule



Source: Hunter Roberts Construction Group

No-Action Condition

Absent the Proposed Project, the Development Site would remain in its existing condition, accommodating existing community facility uses such as the CUNY Hunter Campus. No construction would occur under the No-Action condition, and it is assumed that no public realm improvements would be implemented.

With-Action Condition

As discussed above and in **Chapter 1, Project Description**, in the future With-Action condition, the Development Site would be redeveloped with a total of approximately 2.19 million gsf of academic, health care, life science, and retail space, as well as space for OCME. Space for parking uses would be provided as would new public open space.

As shown in **Figure 16-2**, construction of the Proposed Project would involve the demolition of the three existing buildings on the Development Site and overlapping construction of the Proposed Project's new buildings, along with the implementation of public realm improvements including the construction of a new open space, resiliency improvements, and an ADA-compliant pedestrian bridge. Construction of the Proposed Project would occur in a single phase beginning in mid-2025 (Q3 2025) and is expected to be completed in December 2031 (Q4 2031) with a 78-month total construction period.

Construction of each building would follow parallel processes of abatement, demolition, and new construction, which would be staggered by several months, with activities occurring first at the East Building, followed by the West Building and then the North Building. After completion of the decanting process for the entire site in Q2 2025, abatement would occur from Q3 2025 to Q1 2026. Demolition of each existing building would commence following the completion of building abatement. Demolition of the existing buildings would last from Q4 2025 until Q1 2027. Following demolition, construction of the new buildings would occur from Q4 2026 to Q4 2031. Construction of each building's foundation would take approximately 12 months, followed by 26 months for core/shell construction, and 19 to 26 months for fitout. For the new East Building, foundation construction would occur from Q4 2026 to Q4 2027, core/shell construction would occur from Q3 2027 to Q4 2029 (overlapping the foundation by about two months), and interior fitout would take place from Q1 2029 to Q3 2030 (overlapping the core/shell by about eight months). For the new North Building, foundation construction would occur from Q1 2027 to Q4 2027, core/shell construction would occur from Q4 2027 to Q4 2029 (overlapping the foundation by about two months), and interior fitout would take place from Q2 2029 to Q3 2031 (overlapping the core/shell by about six months). For the new West Building, foundation construction would occur from Q3 2027 to Q3 2028, core/shell construction would occur from Q3 2028 to Q3 2030 (overlapping the foundation by about two months), and interior fitout would take place from Q2 2030 to Q4 2031 (overlapping the core/shell by about seven months).

Construction of the proposed public realm improvements would take place concurrent with the proposed building redevelopment. Following demolition of the existing open space in Q1 to Q2 2026, below-grade foundation for the new open space would occur from Q2 2027 to Q2 2028, followed by construction of the new above-grade open space from Q2 2029 to Q4 2030. Construction of the resiliency wall would take place during Q3 2028. The existing pedestrian bridge would be demolished from Q4 2028 to Q2 2029, immediately followed by construction of the new pedestrian bridge from Q3 2029 to Q4 2030.

Construction Activities

For conservative analysis purposes it is assumed that no construction is proposed on-site in absence of the Proposed Actions. Construction of the Proposed Project would be subject to government regulations and oversight detailed above and would employ the general construction practices described above.

Abatement and Demolition

The first steps in the construction schedule for the Proposed Project are abatement and demolition of the existing buildings. The interior of each building would be deconstructed to the floor plates and structural columns. As the interior of each building is being deconstructed, the existing elevators and other vertical transportation shafts would be used to move debris to ground level. During this stage, the existing open space located along East 25th Street would be used as space for laydown and storage. Demolition and abatement activities would begin with the East Building and progress to the North Building and West Building.

As demolition activity progresses from soft demolition and abatement work to hard demolition work, public safety measures, such as demolition scaffolding with debris netting above overhead protection, would be installed. The construction site would be fenced off, with solid fencing to minimize interference between the persons passing by the site and the construction work. Gates for workers and for construction vehicles would be installed. An office trailer for the construction engineers and managers would be placed on the site. Also, portable toilets, dumpsters for trash, and water and fuel tankers would be brought to the site and installed. Temporary utilities would be connected to the construction trailer. During the startup period, permanent utility connections may be made, especially if the construction manager has obtained early electric power for construction use, but utility connections may be made almost any time during the construction sequence. Sidewalk overhead protection would be installed along East 25th Street, First Avenue, and former East 26th Street, and all sidewalks would remain open.

Equipment utilized during the building abatement phase would include skid steers, pile driving rigs, and concrete pumps. During demolition, excavators/loaders, generators, hoist cars, and up to two mobile cranes would also be in use.

Excavation and Foundation

Excavation and foundation work prepares the site for further construction work. Regarding excavation activities, where necessary, sheeting is installed to stabilize soil around the excavation area and excavators are then used to excavate soil. The soil is loaded onto dump trucks with front-end loaders for transport to a licensed disposal facility or for reuse on any portion of the development site that needs fill.

Water from rain and snow collected in the excavation area during construction would be removed as necessary using a dewatering pump. If dewatering is required, testing would be performed to ensure compliance with DEP sewer discharge permit/approval requirements and, if necessary, pretreatment would be conducted prior to discharge to the sewer.

Alongside excavation, construction of the new building's foundation and below-grade elements begins. Foundation work would include pile driving and columns and concrete walls would be built

to the grade level. As part of the foundation construction, concrete would be poured starting in select areas. Two mobile cranes would be used to prepare the foundation for each building, and an additional mobile crane would be used during the below-grade foundation activity for the new open space. Delivery trucks would enter the site from First Avenue, East 25th Street, or East 26th Street, depending on the construction phase.

Superstructure and Exterior Construction (Core and Shell)

Construction of the core and shell involves construction of the building's framework, core, and exterior. The superstructure is the building's framework (beams and columns) and floor decks. Construction of the core, or interior structure, includes construction of the building's elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. Construction of the exterior involves the installation of the façade (exterior walls, windows, and cladding and the roof).

During this stage concrete plank and block would be installed or all concrete would be poured for the core and the superstructure. The podium for each building would be cast in place or steel. Electric hoists would be installed and operated to facilitate these activities, including the delivery of various materials to the site.

Sidewalk sheds would be installed at the curb edge along First Avenue and East 25th Street to maintain pedestrian access (a 5-foot pedestrian walkway would be maintained along East 25th Street). The sidewalk along former East 26th Street would be closed during the superstructure phase until the end of construction.

Three tower cranes would be installed on the site: Tower Crane 1 would be located along East 26th Street near the East Building, Tower Crane 2 would be located along East 26th Street near the North Building, and Tower Crane 3 would be located along former East 25th Street near the West Building. The tower cranes would be dismantled after the completion of the superstructure for each building.

Equipment used during this stage typically includes air compressors, generators, delivery and concrete trucks, concrete pumps, concrete trowels, welding equipment, and a variety of handheld tools. Space for concrete and spray fireproofing operations and other deliveries would be provided within the site with access from First Avenue, East 25th Street, or East 26th Street, depending on the construction phase. A total of three tower cranes (one for each building) would be installed, and temporary construction elevators (hoists) would also be constructed for the delivery of materials and vertical movement of workers when necessary. Superstructure activities would also require the use of welders, and a variety of trucks.

Concurrent with the superstructure and exterior construction of the new buildings, landscaping work for the new open space would commence, involving excavators, loaders, and a mobile crane.

Interiors and Finishing

Interior fit-out activities include the construction of interior partitions, installation of lighting fixtures and interior finishes (i.e., flooring, painting, etc.); mechanical and electrical work; and lobby finishes. In addition, final cleanup and touchup of the proposed building and final building systems (i.e., electrical system, fire alarm, plumbing, etc.) testing and inspections are part of this stage of construction.

Equipment used during interior construction typically includes exterior hoists, compressors, delivery trucks, and a variety of small hand-held tools. This stage of construction is typically the quietest and does not generate fugitive dust since this work occurs within the building with the façades substantially complete.

This stage of construction is also when the construction protection measures (fencing, sidewalk enclosures, bridges, temporary sidewalks, remaining scaffolding, etc.) around the construction site would be removed. This stage of construction would also include punch list completion activities, which are typically small tasks that were not completely finished, and project commissioning to ensure compliance with contract requirements.

Number of Construction Workers and Material Deliveries

Construction is labor intensive, and the number of workers varies with the general construction task and/or building size. Likewise, material deliveries and removals generate truck trips, and the number also varies depending on the task and/or the building size. **Table 16-1** shows the estimated number of daily workers and trucks to the Development Site per quarter (i.e., three-month period) of each calendar year for the duration of construction activities. These represent the average number of daily workers and trucks within each quarter. During construction, the average number of workers would be approximately 748 workers per day, with a quarterly peak of 1,916 workers per day occurring in the third quarter of 2029. An average of 99 trucks per day is anticipated, and a maximum of 186 trucks per day are anticipated during the third quarter of 2029.

Table 16-1 Average Number of Daily Construction Workers and Trucks by Quarter

Year	2025				2026				2027				2028			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Workers	0	0	54	124	128	109	107	129	156	149	232	348	405	965	1102	1136
Trucks	0	0	7	19	52	89	87	91	81	69	99	119	101	158	148	133

Year	2029				2030				2031			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Workers	1433	1677	1916	1692	1501	1501	1234	854	796	796	519	380
Trucks	138	171	186	157	138	138	117	79	61	61	40	29

Source: Hunter Roberts Construction Group

Assessment of Project Construction

In accordance with the *CEQR Technical Manual* guidelines, this preliminary assessment evaluates the effects associated with the Proposed Projects' construction related activities on sensitive receptors located near the area of construction.

Land Use and Neighborhood Character

While construction of the new buildings under the Proposed Actions would cause temporary disruption, particularly related to noise, it is expected that such effects in any given area would be relatively short in duration, even under the worst-case construction sequencing and, therefore, would not create a neighborhood character impact. Therefore, no significant adverse construction impacts to land use and neighborhood character are expected.

Socioeconomic Conditions

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the Development Site; however, long-term lane and/or sidewalk closures are not expected during construction and therefore, would not restrict access to any existing or planned retail businesses. Utility service would also be maintained to all businesses, although there may be very short-term interruptions. Overall, construction of the Proposed Project is not expected to result in any significant adverse impacts on surrounding businesses.

Community Facilities

The construction site would be surrounded by construction fencing and barriers that would limit the potential for impacts of construction on nearby community facilities. Construction of the proposed buildings would not block or restrict access to facilities in the area and would not affect emergency response times of the New York City Police Department (NYPD) and New York City Fire Department (FDNY) given the geographic distribution of the police and fire facilities and their respective coverage areas. Therefore, no construction impacts would be expected to community facilities as a result of the Proposed Project.

Open Space

As described in **Chapter 4, Open Space** there are no existing publicly accessible open spaces on the Development Site. While Asser Levy Playground occupies a portion of the superblock directly south of the site, access to this publicly accessible open space would not be impeded during construction. In addition, measures would be implemented to control air emissions, dust, noise, and vibration on the construction site.

Historic and Cultural Resources

As discussed in **Chapter 6, Historic and Cultural Resources,** the Development Site has no archaeological significance and therefore, construction would not affect any archaeological resources.

The OPRHP indicated that the Development Site contains an S/NRHP-eligible architectural resource, the CUNY Hunter College Brookdale Campus, which is proposed to be demolished to construct the Proposed Project. An Alternatives Analysis is being prepared to determine whether an Adverse Impact (pursuant to the State Historic Preservation Act) resulting from the demolition of a historic resource can be avoided or minimized. If the Alternatives Analysis determines that the Adverse Impact cannot be avoided or minimized, then mitigation measures would be developed in consultation with OPRHP and LPC and undertaken as part of the Proposed Project. As discussed in **Chapter 6, Historic and Cultural Resources,** as the demolition of an S/NRHP-eligible building could constitute an impact, mitigation measures would be stipulated in a Memorandum of Agreement to be developed by the project sponsors in conjunction with OPRHP and LPC. As the Alternatives Analysis and potential mitigation measures are still being finalized, it is possible that the project could result in unmitigated impacts. However, it is anticipated that compliance with the Memorandum of Agreement would preclude the potential for significant adverse impacts on historic resources to occur during construction and operation of the Proposed Project. Therefore, it is

anticipated that construction of the Proposed Project would have no significant adverse impacts to historic and cultural resources.

In terms of off-site architectural resources, there are no architectural resources within 90 feet of the Development Site, and therefore, construction of the Proposed Project would not result in significant adverse impacts (Santucci September 6, 2019, Appendix B).

Hazardous Materials

As discussed in greater detail in **Chapter 8, Hazardous Materials**, the potential for significant adverse impacts related to hazardous materials resulting from the Proposed Project would be precluded through the development and implementation of a RAP and CHASP during redevelopment. These measures would be memorialized through the assignment of an (E)-Designation on the Development Site to ensure investigation, mitigation, and remediation of any hazardous materials would be completed in a safe, and comprehensive manner.

Transportation

Construction activity would extend from 2025 through 2031 and would generate construction worker and truck traffic. Because of the lengthy duration of these activities, an evaluation of construction sequencing and worker and truck projections was completed to identify potential construction traffic impacts. Construction-related vehicle trips would be higher than the Proposed Project's operational trips during both peak hours. Therefore, to assess the potential for construction traffic impacts that may result from construction of the Proposed Project, the 23 intersections analyzed for potential significant traffic impacts under operational conditions were also analyzed during the construction peak quarter. As construction-related transit and pedestrian trips would be significantly lower than transit and pedestrian trips generated during the operational peak hours, and as these trips would occur outside the commuter peak hours, significant transit and pedestrian construction impacts are expected to be no worse than impacts identified in the operational analyses.

Construction Worker Modal Splits

The number of projected construction vehicles per day were developed for the construction quarters using modal split information provided by NYC DOT for the study area. It is anticipated that construction workers would primarily travel to the Development Site via public transportation (45 percent by subway and 11 percent by bus). Approximately 40 percent of construction workers would travel to the construction site via auto (average auto occupancy of 1.27 workers per auto), three percent by taxi (single vehicle occupancy assumed), and one percent by walk.

Construction Peak Quarter and Peak Hour of Construction

Based on the above mode share and vehicle occupancy assumptions, the peak quarter for daily construction activities was identified. As shown in **Table 16-2**, the peak quarter of construction activity would occur during the third quarter of 2029 (Q3 2029). The estimated number of daily construction-related vehicle trips would be 1,758 vehicle trips (2,130 passenger car equivalent [PCE] trips).

Table 16-2 Average Number of Daily Construction Vehicle and PCE Trips by Quarter

Year	2025				2026				2027				2028			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Autos	0	0	34	78	80	68	68	82	98	94	146	220	256	608	694	716
Taxis	0	0	8	16	16	12	12	16	20	16	28	40	48	116	132	136
Trucks	0	0	13	37	105	178	174	182	163	137	197	237	202	316	297	265
Vehicles	0	0	55	131	201	258	254	280	281	247	371	497	506	1,040	1,123	1,117
PCEs	0	0	69	169	305	436	428	462	443	385	569	735	708	1,356	1,419	1,383
Year	2029				2030				2031							
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Autos	902	1,056	1,206	1,066	946	946	778	538	502	502	326	240				
Taxis	172	200	228	204	180	180	148	104	96	96	64	44				
Trucks	277	342	372	314	276	276	235	158	122	122	79	58				
Vehicles	1,351	1,598	1,806	1,584	1,402	1,402	1,161	800	720	720	469	342				
PCEs	1,627	1,940	2,178	1,898	1,678	1,678	1,395	958	842	842	549	400				

Traffic Analysis

Peak Hour Construction Worker Vehicle and Truck Trips

Construction activities would be expected to occur on weekdays beginning at 7:00 AM and ending at 3:00 PM or 3:30 PM. Auto trips by construction workers would typically occur during the hours before and after the daily work shift. Construction truck trips would typically be distributed throughout the day depending upon the specific types of construction activities taking place; most trucks would remain in the area for short durations. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon, and each truck delivery was assumed to result in one "in" trip and one "out" trip during the same hour.

The estimated daily vehicle trips for the peak quarter of construction traffic were distributed throughout the workday based on projected arrival/departure patterns of construction workers, and the projected pattern of truck deliveries based on the types of construction activities that would occur during the peak quarters for the Proposed Project. For construction workers, typical arrival patterns show that most arrivals (approximately 80 percent) occur during the 6:00 AM to 7:00 AM hour (the hour before the beginning of a regular day shift) and the same percentage of departure trips occurs during the end of the shift (the 3:00 PM to 4:00 PM hour). For trucks, deliveries are usually spread throughout the day, but the peak activity (approximately 25 percent) is anticipated to occur during the 6:00 AM to 7:00 AM hour.

The estimated number of vehicle trips generated by construction activities during the Q3 2029 peak quarter would be 660 vehicle trips (746 PCEs) during the AM peak hour (6:00 AM to 7:00 AM) and 594 vehicle trips (614 PCEs) during the PM peak hour (3:00 PM to 4:00 PM). The peak construction hourly trip projections for this peak quarter are summarized in **Table 16-3**.

Table 16-3 Construction Vehicle Trips by Hour (Q3 2029)

	Auto Trips		Taxi Trips		Truck Trips		Total Vehicle Trips			Total PCE Trips		
Hour	In	Out	In	Out	In	Out	In	Out	Total	In	Out	Total
6 AM – 7 AM	482	0	46	46	43	43	571	89	660	614	132	746
7 AM – 8 AM	121	0	11	11	19	19	151	30	181	170	49	219
8 AM – 9 AM	0	0	0	0	19	19	19	19	38	38	38	76
9 AM – 10 AM	0	0	0	0	19	19	19	19	38	38	38	76
10 AM – 11 AM	0	0	0	0	19	19	19	19	38	38	38	76
11 AM – 12 PM	0	0	0	0	19	19	19	19	38	38	38	76
12 PM – 1 PM	0	0	0	0	18	18	18	18	36	36	36	72
1 PM – 2 PM	0	0	0	0	10	10	10	10	20	20	20	40
2 PM – 3 PM	0	30	2	2	10	10	12	42	54	22	52	74
3 PM – 4 PM	0	482	46	46	10	10	56	538	594	66	548	614
4 PM – 5 PM	0	91	9	9	0	0	9	100	109	9	100	109

The AM construction peak hour increment of 660 vehicle trips (746 PCE trips) would be higher than the 501 operational vehicle trips (552 PCE trips) that would be generated by the Proposed Project during the AM operational peak hour. Similarly, the PM construction peak hour would generate 594 vehicle trips (614 PCE trips) which would be higher than the Proposed Project increment of 341 vehicle trips (354 PCE trips) during the operational PM peak hour. **Table 16-4** shows the comparison of vehicle trip increments during the construction peak quarter's peak hours and the Proposed Project's operational peak hours.

Table 16-4 Vehicle Trips Comparison – Construction vs. Operational Conditions

	Construction Peak Hour Trips		Operational Peak Hour Trips		
	6 AM – 7 AM	3 PM – 4PM	8 AM – 9 AM	12 PM – 1 PM	5 PM – 6 PM
Autos	482	482	352	317	249
Taxis	92	92	96	70	78
Ambulette	-	-	2	4	2
School Bus	-	-	3	3	0
Trucks	86	20	48	52	12
Total Vehicle Trips	**660**	**594**	**501**	**446**	**341**
PCE Trips	**746**	**614**	**552**	**502**	**354**

Construction Traffic Volumes and Levels of Service

As noted above and as shown in **Table 16-4**, the construction peak hours would be 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM. The existing AM background volumes for the Proposed Project (8:00 AM to 9:00 AM) are higher than the earlier construction peak hour. ATR volumes in the study area were reviewed and it was determined that traffic volumes during the earlier construction peak hour are about 27 percent lower than those during the Proposed Project's operational peak hour. The

existing PM background volumes for the Proposed Project (5:00 PM to 6:00 PM) are approximately five percent higher than the earlier construction peak hour (3:00 PM to 4:00 PM).

As construction-related vehicle trips would be higher than the Proposed Project's operational trips during both peak hours, the 23 operational analysis intersections listed below were analyzed during the construction peak quarter to assess the potential for significant construction traffic impacts.

- FDR Drive/Avenue C and East 23rd Street (analyzed as two intersections)
- FDR Drive and East 34th Street
- First Avenue and East 22nd Street
- First Avenue and East 23rd Street
- First Avenue and East 24th Street
- First Avenue and East 25th Street
- First Avenue and East 26th Street
- First Avenue and East 29th Street
- First Avenue and East 30th Street
- First Avenue and East 33rd Street
- First Avenue and East 34th Street
- Second Avenue and East 22nd Street
- Second Avenue and East 23rd Street
- Second Avenue and East 24th Street
- Second Avenue and East 25th Street
- Second Avenue and East 26th Street
- Second Avenue and East 30th Street
- Second Avenue and East 34th Street
- 34th Street and Queens-Midtown Tunnel Entrance
- 34th Street and Queens-Midtown Tunnel Exit
- FDR Drive and East 25th Street
- FDR Drive and East 30th Street

Traffic conditions at these 23 intersections were reviewed to determine if the intersection capacities would be consistent between the AM and PM construction peak hours and the AM and PM operational peak hours. At signalized intersections, signal timing plans were confirmed to be consistent between the AM construction and operational peak hours, and between the PM construction and operational peak hours. The number of travel lanes would also remain unchanged at most intersection approaches between the construction and operational peak hours. The only exception was to selected intersections along eastbound East 34th Street due to the presence of the bus lanes which go into effect starting at 7:00 AM, however these lanes would be effectively used as parking or bus stops and not an effective additional travel lane for general traffic.

Existing Conditions

The existing conditions traffic volumes for the AM and PM construction peak hours are shown in **Figure 16-2** through **Figure 16-5**. Detailed traffic levels of service for the analyzed intersections are provided in **Table 16-5.** Of the 23 intersections analyzed during the AM peak hour, one intersection operates at unacceptable levels of service (i.e., LOS E or F) - FDR Drive Southbound/Avenue C intersection at East 23rd Street (west side) operates at LOS E. During the PM peak hour, two intersections operate at an unacceptable level of service - FDR Drive Southbound/Avenue C intersection at East 23rd Street (west side) operates at LOS E; and the Midtown Tunnel Entrance intersection at East 34th Street operates at LOS E. Of the approximately 101 movements analyzed, 12 movements operate at unacceptable levels of service during the AM construction peak hour. During the PM peak hour, 13 movements operate at unacceptable levels of service.

Figure 16-2 Year 2019 Existing Traffic Volumes – AM Peak Hour (north side)

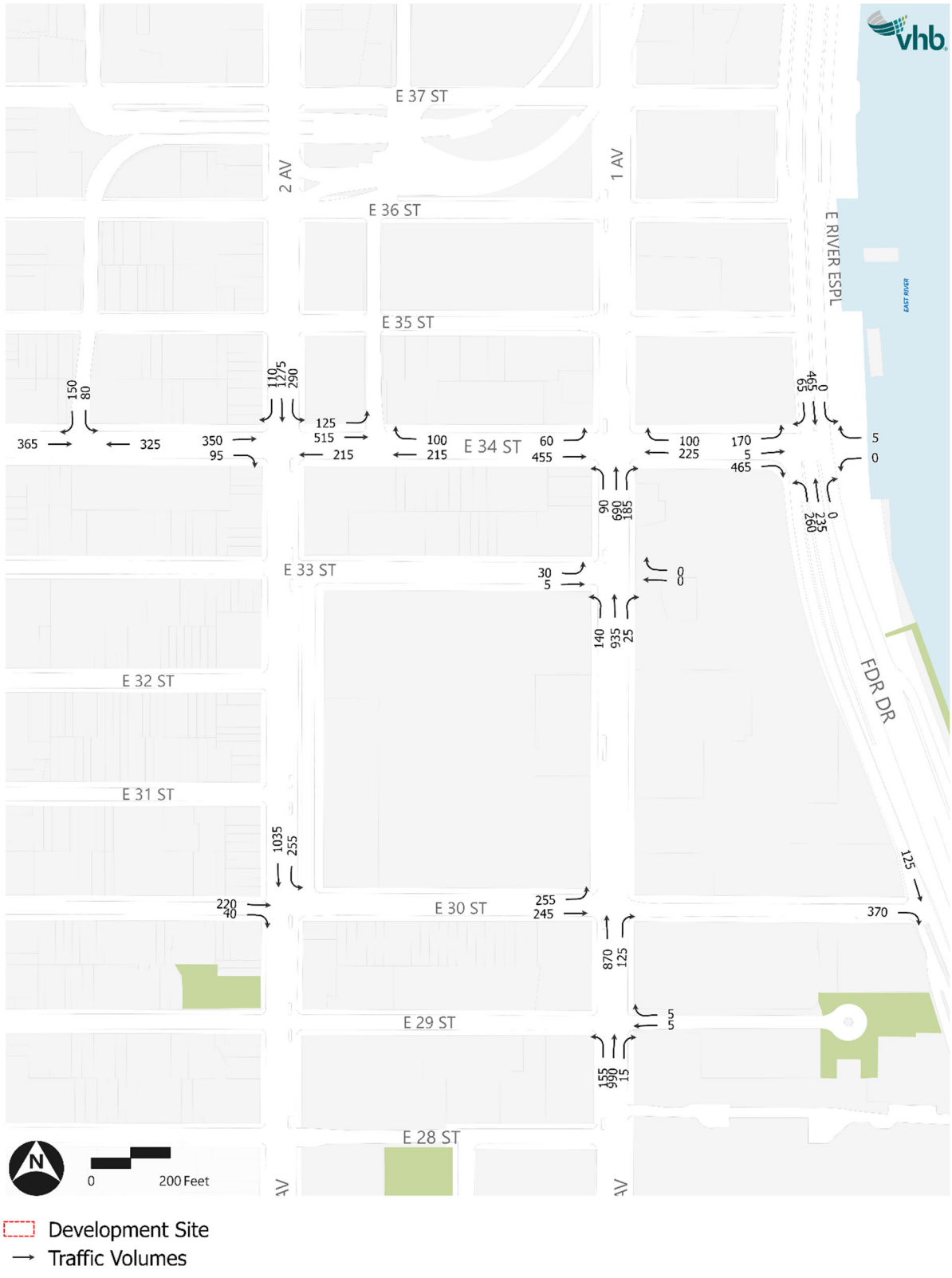


Figure 16-3 Year 2019 Existing Traffic Volumes – AM Peak Hour (south side)

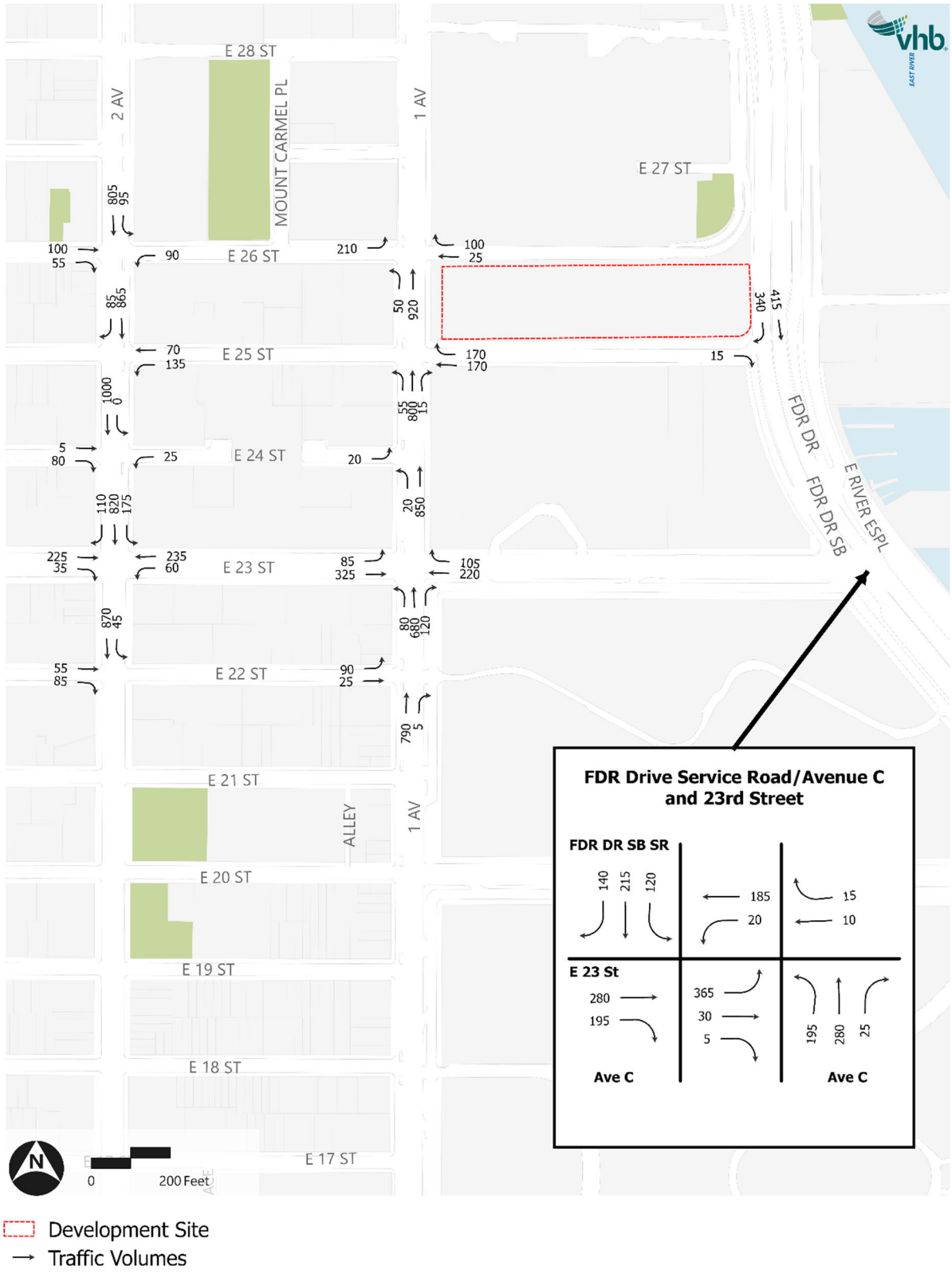


Figure 16-4 Year 2019 Existing Traffic Volumes – PM Peak Hour (north side)

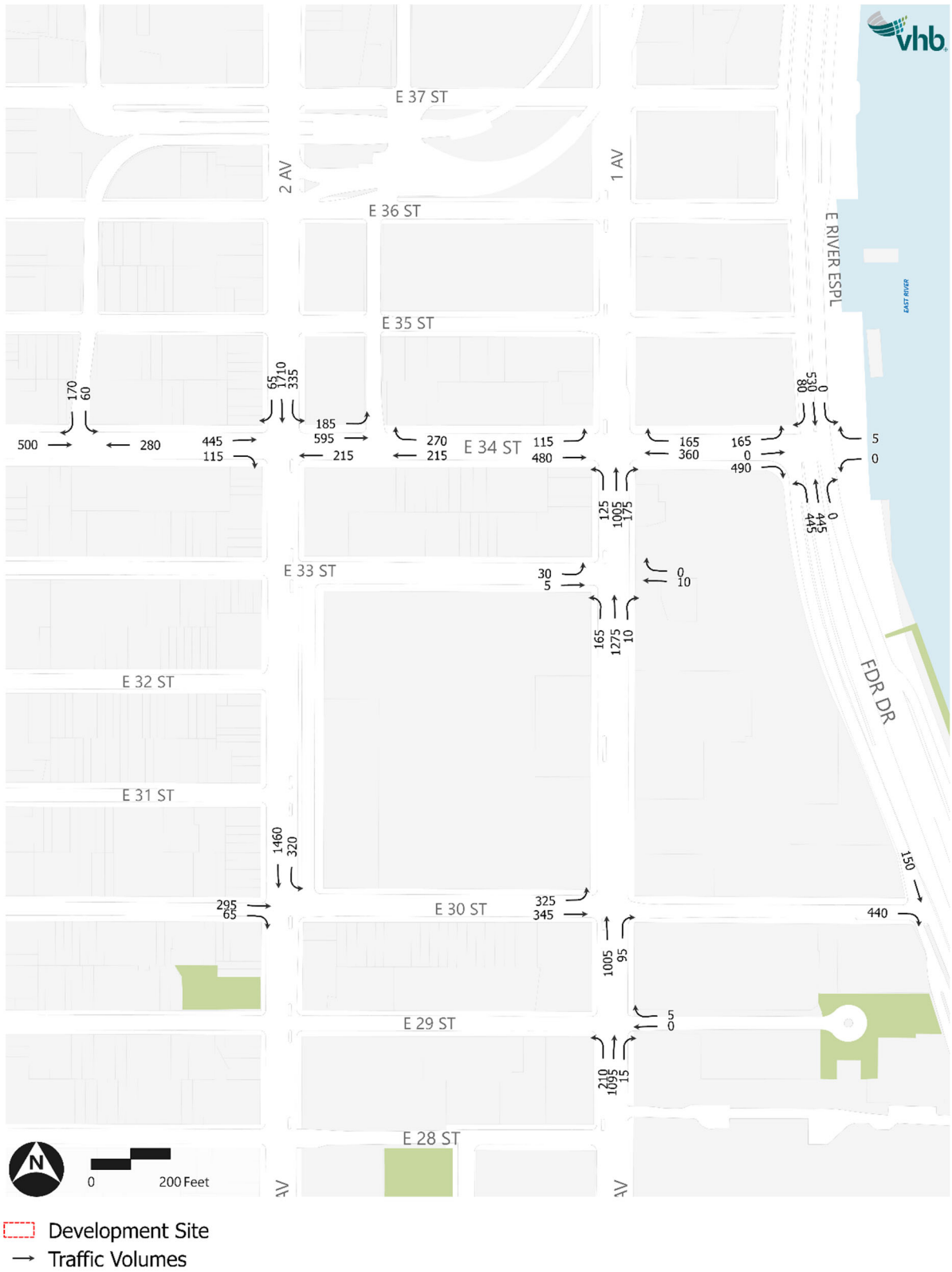


Figure 16-5 Year 2019 Existing Traffic Volumes – PM Peak Hour (south side)

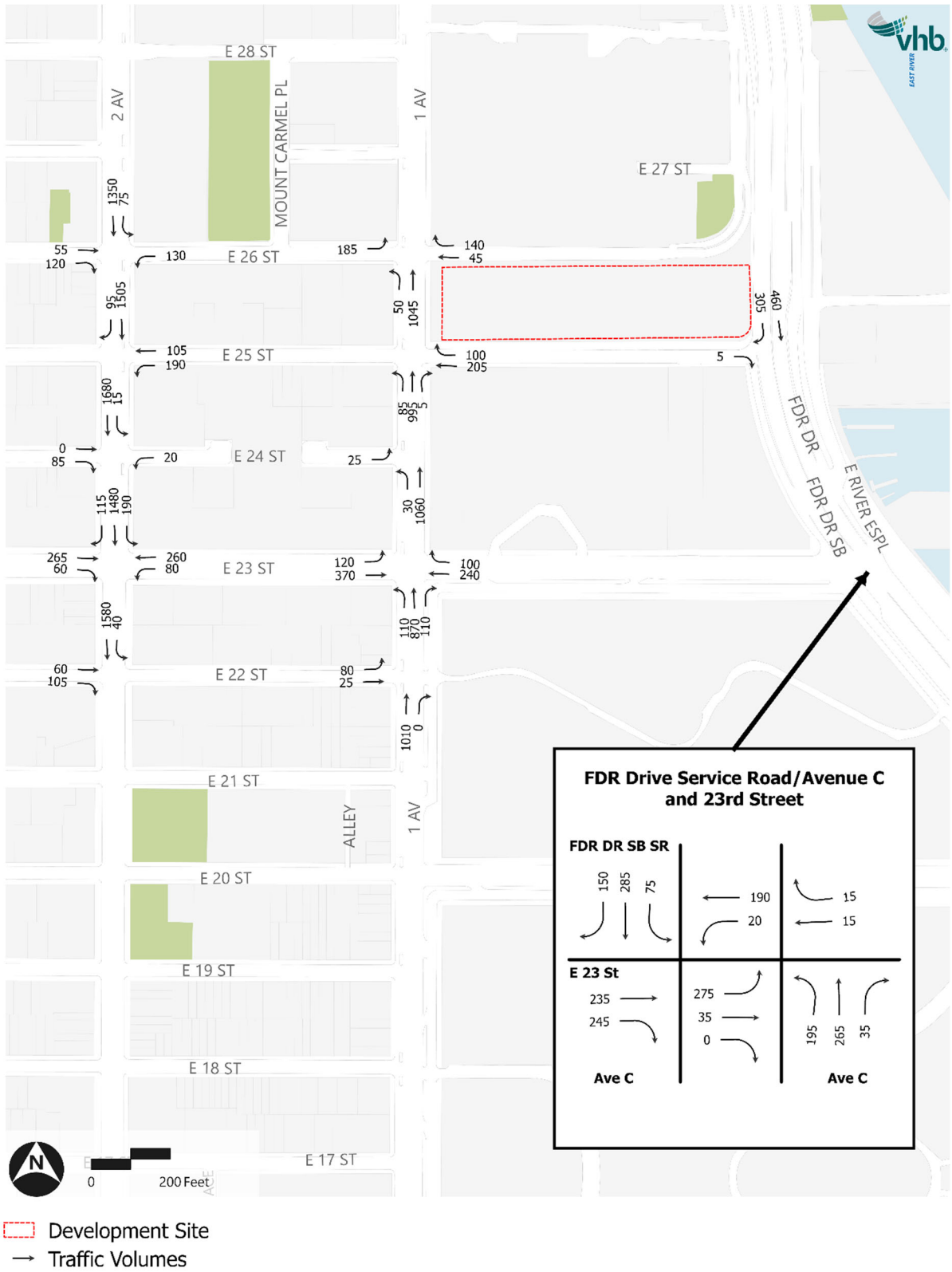


Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

Intersection & Approach		AM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS	PM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS
SIGNALIZED INTERSECTIONS									
FDR Drive Southbound / Avenue C at East 23rd Street (west side)									
East 23rd Street	EB	TR	0.73	46.0	D	TR	0.74	28.5	C
	EB	R	0.72	56.2	E	R	0.75	42.9	D
	WB	L	0.17	25.6	C	L	0.16	24.2	C
	WB	T	0.23	88.7	F	T	0.23	85.3	F
FDR Dr SB	SB	LTR	0.94	105.9	F	LTR	0.93	74.8	E
Overall Intersection[2]		-	-	**79.0**	**E**	-	-	**58.8**	**E**
FDR Drive Southbound / Avenue C at East 23rd Street (east side)									
East 23rd Street	EB	L	0.87	79.3	E	L	0.67	32.0	C
	EB	TR	0.88	82.9	F	TR	0.66	30.6	C
	WB	LTR	0.05	14.6	B	LTR	0.06	14.7	B
Avenue C	NB	LTR	0.51	21.4	C	LTR	0.49	20.6	C
Overall Intersection		-	-	**47.7**	**D**	-	-	**24.3**	**C**
FDR Drive at East 34th Street									
East 34th Street	EB	L	0.88	64.7	E	L	0.81	54.4	D
	EB	LTR	0.87	58.0	E	LTR	0.82	51.1	D
	EB	R	0.88	39.7	D	R	0.82	34.1	C
	WB	LTR	0.03	28.8	C	LTR	0.03	28.8	C
FDR Dr NB	NB	L	0.54	14.7	B	L	1.05	79.9	E
	NB	LTR	0.54	14.0	B	LTR	1.04	67.3	E
FDR Dr SB	SB	LTR	0.54	23.0	C	LTR	0.59	23.8	C
Overall Intersection		-	-	**30.3**	**C**	-	-	**49.8**	**D**
First Avenue at East 22nd Street									
East 22nd Street	EB	LT	0.29	14.0	B	LT	0.26	28.6	C
First Avenue	NB	T	0.57	24.1	C	T	0.72	56.5	E
	NB	R	0.01	15.4	B	R	0.00	0.0	A
Overall Intersection		-	-	**22.6**	**C**	-	-	**53.7**	**D**

Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
First Avenue at East 23rd Street									
East 23rd Street	EB	L	0.64	53.6	D	L	0.83	57.1	E
	EB	T	0.32	15.1	B	T	0.35	20.0	B
	WB	T	0.41	16.2	B	T	0.39	31.4	C
	WB	R	0.68	41.5	D	R	0.69	56.5	E
First Avenue	NB	L	0.64	39.1	D	L	0.80	51.4	D
	NB	T	0.55	10.1	B	T	0.73	15.7	B
	NB	R	0.54	15.6	B	R	0.52	18.1	B
Overall Intersection		-	-	**18.6**	**B**	-	-	**25.6**	**C**
First Avenue at East 24th Street									
East 24th Street	EB	L	0.05	17.7	B	L	0.06	17.8	B
First Avenue	NB	L	0.09	7.2	A	L	0.10	4.8	A
	NB	T	0.51	11.7	B	T	0.63	6.6	A
Overall Intersection		-	-	**11.7**	**B**	-	-	**6.8**	**A**
First Avenue at East 25th Street									
East 25th Street	WB	T	0.32	17.9	B	T	0.36	18.6	B
	WB	R	0.48	22.5	C	R	0.27	17.9	B
First Avenue	NB	L	0.22	3.1	A	L	0.33	7.0	A
	NB	T	0.54	3.9	A	T	0.67	6.3	A
	NB	R	0.07	1.8	A	R	0.02	5.6	A
Overall Intersection		-	-	**8.7**	**A**	-	-	**9.1**	**A**
First Avenue and East 26th Street									
East 26th Street	EB	L	0.79	40.4	D	L	0.81	50.5	D
Former East 26th Street	WB	TR	0.33	25.0	C	TR	0.47	27.6	C
First Avenue	NB	L	0.13	6.5	A	L	0.11	7.6	A
	NB	T	0.56	10.0	A	T	0.62	8.8	A
Overall Intersection		-	-	**16.6**	**B**	-	-	**16.7**	**B**

Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

Intersection & Approach		AM Peak Hour Mvt	AM V/C	AM Ctrl Delay[1]	AM LOS	PM Peak Hour Mvt	PM V/C	PM Ctrl Delay[1]	PM LOS
First Avenue at East 29th Street									
East 29th Street	WB	TR	0.03	22.0	C	TR	0.02	21.8	C
First Avenue	NB	L	0.54	6.1	A	L	0.55	9.2	A
	NB	T	0.59	2.1	A	T	0.62	6.4	A
	NB	R	0.05	0.7	A	R	0.04	6.0	A
Overall Intersection		-	-	**2.8**	**A**	-	-	**6.9**	**A**
First Avenue at East 30th Street									
East 30th Street	EB	L	0.45	24.9	C	L	0.55	26.5	C
	EB	T	0.76	39.5	D	T	0.96	62.4	E
First Avenue	NB	T	0.53	1.3	A	T	0.56	7.4	A
	NB	R	0.57	9.8	A	R	0.42	11.1	B
Overall Intersection		-	-	**12.6**	**B**	-	-	**22.1**	**C**
First Avenue at East 33rd Street									
East 33rd Street	EB	L	0.14	19.3	B	L	0.12	18.9	B
	WB	TR	0.00	0.0	A	TR	0.02	17.2	B
First Avenue	NB	L	0.29	6.8	A	L	0.33	8.7	A
	NB	T	0.56	8.1	A	T	0.72	11.3	B
	NB	R	0.05	5.2	A	R	0.03	6.6	A
Overall Intersection		-	-	**8.3**	**A**	-	-	**11.2**	**B**
First Avenue at East 34th Street									
East 34th Street	EB	L	0.33	8.4	A	L	0.79	37.6	D
	EB	T	1.01	54.3	D	T	0.92	27.2	C
	WB	T	0.64	26.8	C	T	1.02	55.8	E
	WB	R	0.60	31.2	C	R	0.83	33.5	C
First Avenue	NB	L	0.22	5.1	A	L	0.32	7.1	A
	NB	T	0.50	5.4	A	T	0.70	8.7	A
	NB	R	0.57	11.0	B	R	0.49	9.6	A
Overall Intersection		-	-	**22.3**	**C**	-	-	**22.1**	**C**

Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
Second Avenue at East 22nd Street									
East 22nd Street	EB	TR	0.61	39.3	D	TR	0.66	41.3	D
Second Avenue	SB	L	0.20	4.7	A	L	0.15	2.6	A
	SB	T	0.50	6.7	A	T	0.81	8.4	A
Overall Intersection		-	-	**11.3**	**B**	-	-	**11.6**	**B**
Second Avenue at East 23rd Street									
East 23rd Street	EB	T	0.81	69.7	E	T	1.00	71.5	E
	EB	R	0.23	48.6	D	R	0.36	22.4	C
	WB	L	0.59	72.9	E	L	0.85	70.4	E
	WB	T	0.88	84.4	F	T	0.88	44.1	D
Second Avenue	SB	L	0.77	45.8	D	L	0.86	47.2	D
	SB	T	0.49	4.4	A	T	0.79	8.9	A
	SB	R	0.40	6.1	A	R	0.48	7.0	A
Overall Intersection		-	-	**32.8**	**C**	-	-	**25.5**	**C**
Second Avenue at East 24th Street									
East 24th Street	EB	TR	0.31	27.2	C	TR	0.31	26.8	C
	WB	LT	0.12	23.9	C	LT	0.10	23.6	C
Second Avenue	SB	L	0.00	0.0	A	L	0.04	3.3	A
	SB	T	0.51	7.6	A	T	0.73	9.1	A
Overall Intersection		-	-	**9.5**	**A**	-	-	**10.2**	**B**
Second Avenue at East 25th Street									
East 25th Street	WB	LT	0.67	31.5	C	LT	0.89	48.2	D
Second Avenue	SB	T	0.42	7.8	A	T	0.61	9.6	A
	SB	R	0.33	9.6	A	R	0.35	9.1	A
Overall Intersection		-	-	**12.3**	**B**	-	-	**16.0**	**B**

Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
Second Avenue at East 26th Street									
East 26th Street	EB	TR	0.46	28.5	C	TR	0.51	30.2	C
	WB	L	0.43	31.2	C	L	0.68	47.2	D
Second Avenue	SB	L	0.47	25.4	C	L	0.36	21.3	C
	SB	T	0.37	12.7	B	T	0.53	34.3	C
Overall Intersection		-	-	**17.4**	**B**	-	-	**34.3**	**C**
Second Avenue at East 30th Street									
East 30th Street	EB	T	0.67	38.8	D	T	0.84	50.8	D
	EB	R	0.21	27.2	C	R	0.31	29.0	C
Second Avenue	SB	L	0.43	15.9	B	L	0.50	17.1	B
	SB	T	0.41	10.1	B	T	0.52	11.2	B
Overall Intersection		-	-	**15.8**	**B**	-	-	**18.7**	**B**
Second Avenue at East 34th Street									
East 23rd Street	EB	T	0.48	23.2	C	T	0.61	37.9	D
	EB	R	0.60	36.8	D	R	0.68	52.9	D
	WB	LT	0.58	29.2	C	LT	0.57	28.5	C
Second Avenue	SB	L	0.36	15.8	B	L	0.35	15.3	B
	SB	T	0.55	16.6	B	T	0.72	19.7	B
	SB	R	0.61	31.4	C	R	0.27	16.1	B
Overall Intersection		-	-	**20.4**	**C**	-	-	**24.1**	**C**
Midtown Tunnel Entrance at East 34th Street									
East 34th Street	EB	L	0.30	16.3	B	L	0.42	24.1	C
	EB	T	0.78	27.3	C	T	0.80	30.1	C
	WB	T	1.02	123.3	F	T	1.02	118.0	F
	WB	R	0.59	56.8	E	R	1.05	110.2	F
Overall Intersection		-	-	**52.4**	**D**	-	-	**62.6**	**E**

Table 16-5 Year 2019 Construction Existing Traffic Levels of Service

Intersection & Approach		AM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS	PM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS
Midtown Tunnel Exit at East 34th Street									
East 34th Street	EB	T	0.40	8.4	A	T	0.49	11.6	B
	WB	T	0.81	47.1	D	T	0.65	16.2	B
Midtown Tunnel Exit	SB	L	0.24	35.7	D	L	0.26	36.2	D
	SB	R	0.24	11.8	B	R	0.25	12.2	B
Overall Intersection		-	-	**25.2**	**C**	-	-	**15.2**	**B**
UNSIGNALIZED INTERSECTIONS									
FDR Drive Southbound at East 25th Street									
East 25th Street	EB	R	-	12.6	B	R	-	13.1	B
FDR Dr SB	SB	TR	-	0.0	A	TR	-	0.0	A
Overall Intersection		-	-	**0.3**	**A**	-	-	**0.1**	**A**
FDR Drive Southbound at East 30th Street									
East 30th Street	EB	R	-	9.9	A	R	-	10.5	B
FDR Dr SB	SB	TR	-	9.3	A	TR	-	9.7	A
Overall Intersection		-	-	**9.7**	**A**	-	-	**10.3**	**B**

[1] Control delay is measured in seconds per vehicle.

[2] Overall intersection v/c ratio is the critical lane groups' v/c ratio.

No-Action without Construction Conditions

An annual growth rate of 0.25 percent per year was assumed for the first five years (years 2019 to 2024) and a growth rate of 0.125 percent per year was assumed for the subsequent five years (years 2024 to 2029) as per the *CEQR Technical Manual* to estimate the background volumes for the 2029 No-Action without Construction condition. For the No-Action background development sites discussed in **Chapter 10, Transportation,** most of these developments were assumed to be completed and operational by Q3 2029 and vehicle trips generated by them were assigned to the roadway network with the exception being the 455 First Avenue project which would be expected to still be under construction by Q3 2029; construction trips generated from this project were incorporated into the No-Action without Construction condition. It is expected that roadway improvements projects identified in **Chapter 10, Transportation**, would also be completed by the year 2029.

The No-Action condition traffic volumes for the AM and PM construction peak hours are shown in **Figure 16-6** through **Figure 16-9**. Detailed traffic levels of service are provided in **Table 16-6**. Under future No-Action condition, two intersections would operate at an unacceptable level of service (LOS E) during the AM construction peak hour, compared to one intersection in the existing conditions. During the PM construction peak hour, four intersections would operate at unacceptable level of service (LOS E or F), compared to two in the existing conditions. There are 95 movements analyzed in

the No-Action construction peak hour – several movements would be consolidated into one or not permitted in the No-Action and With-Action conditions compared to the existing conditions. Of the 95 movements analyzed during the AM construction peak hour, 12 movements would operate at unacceptable levels of service, compared to 12 out of 101 movements in the existing conditions. Of the 95 movements analyzed in the PM construction peak hour, 18 movements would operate at unacceptable levels of service, compared to 13 out of 101 movements in the existing conditions.

Figure 16-6 Year 2029 No Action Traffic Volumes – AM Peak Hour (north side)

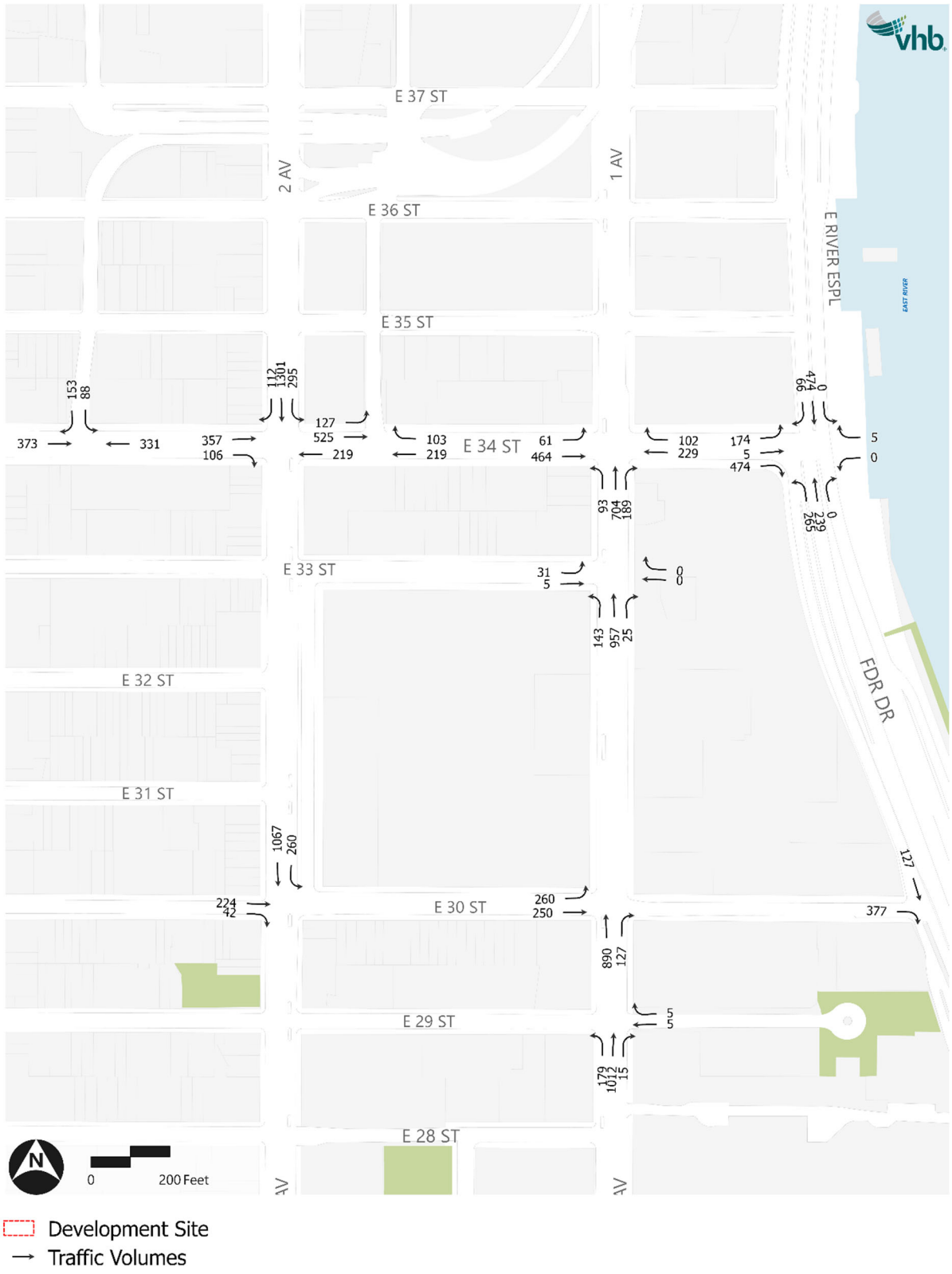


Figure 16-7 Year 29 No-Action Traffic Volumes – AM Peak Hour (south side)

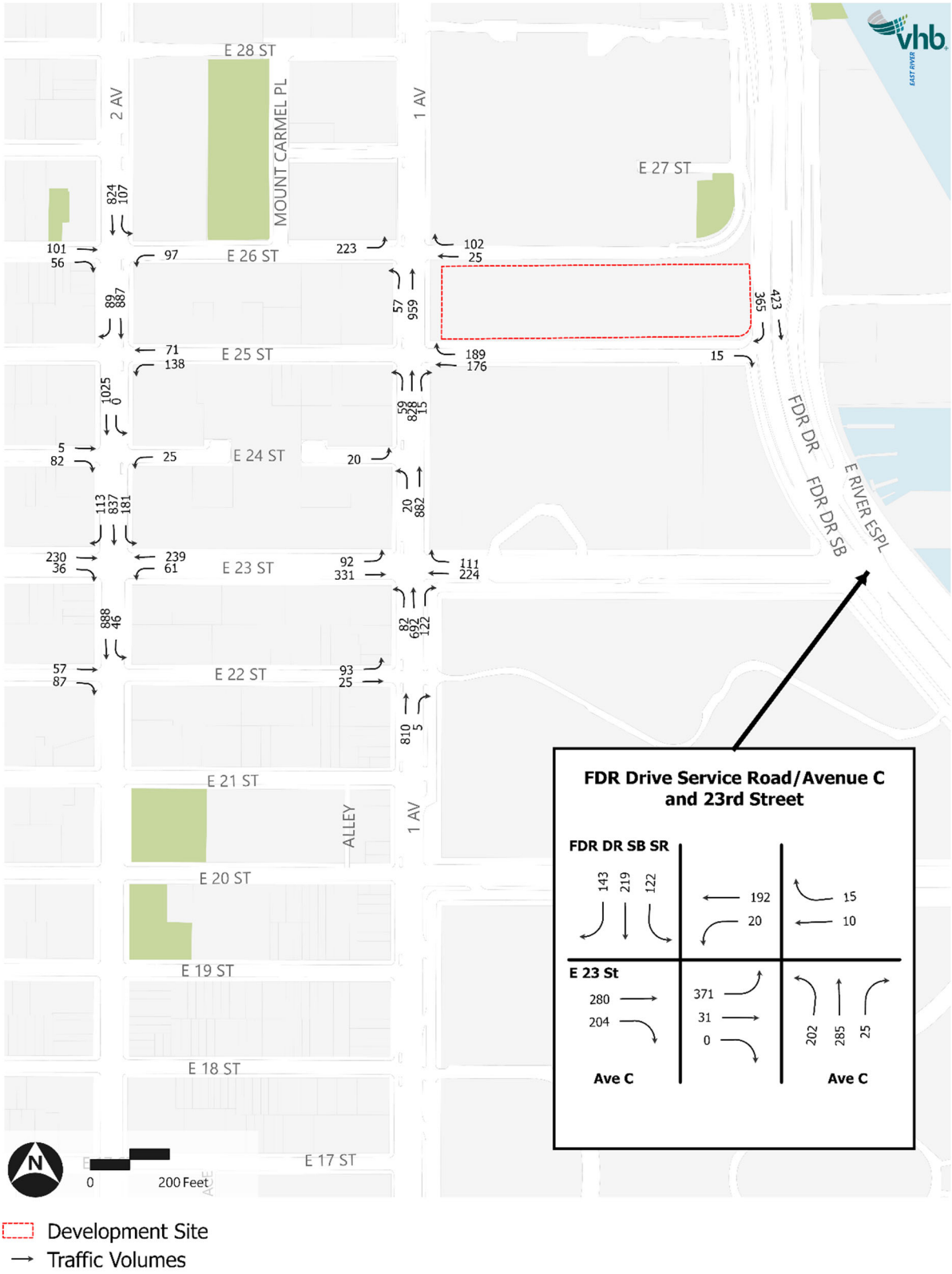


Figure 16-8 Year 2029 No Action Traffic Volumes – PM Peak Hour (north side)

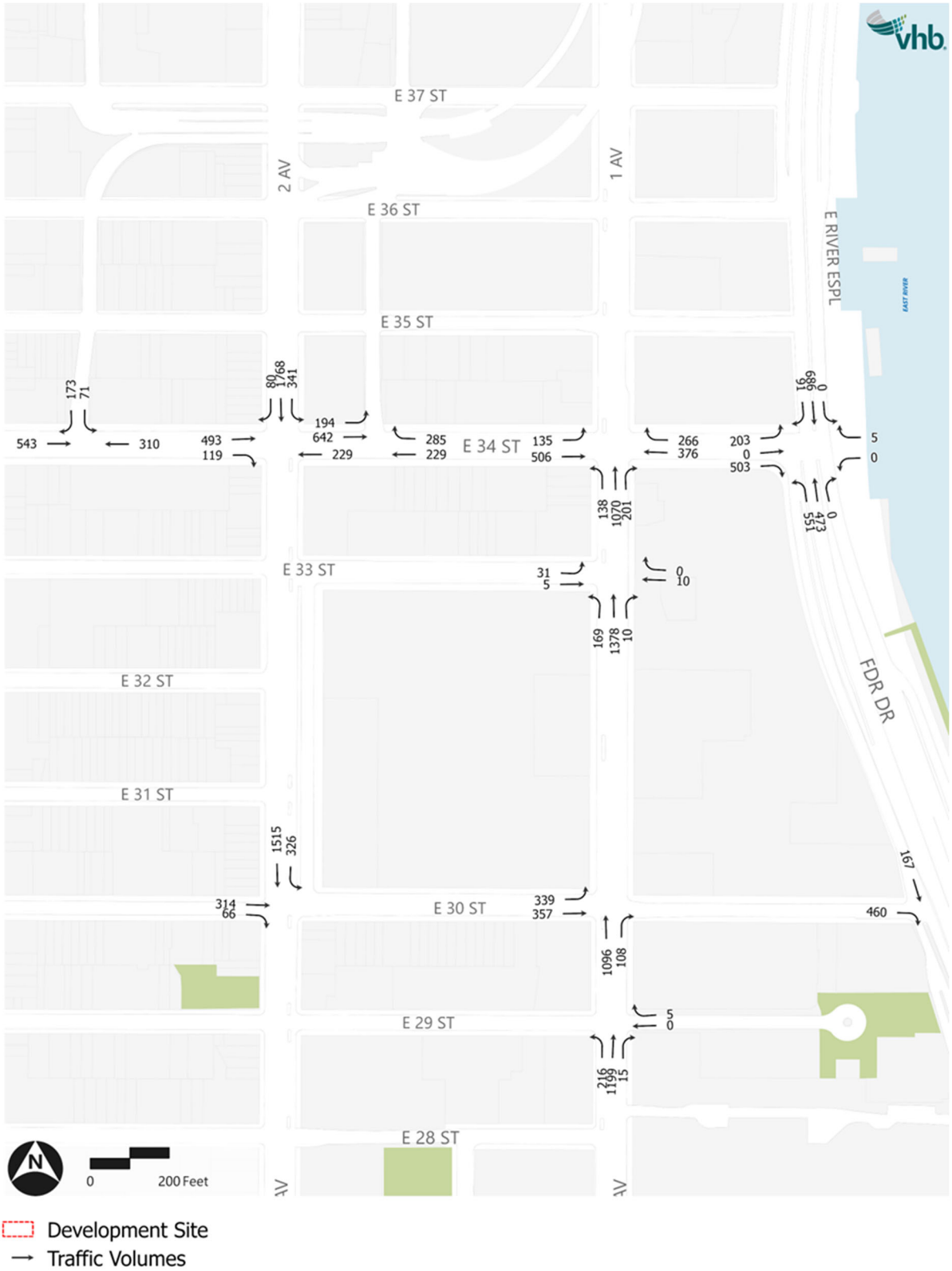


Figure 16-9 Year 2029 No Action Traffic Volumes – PM Peak Hour (south side)

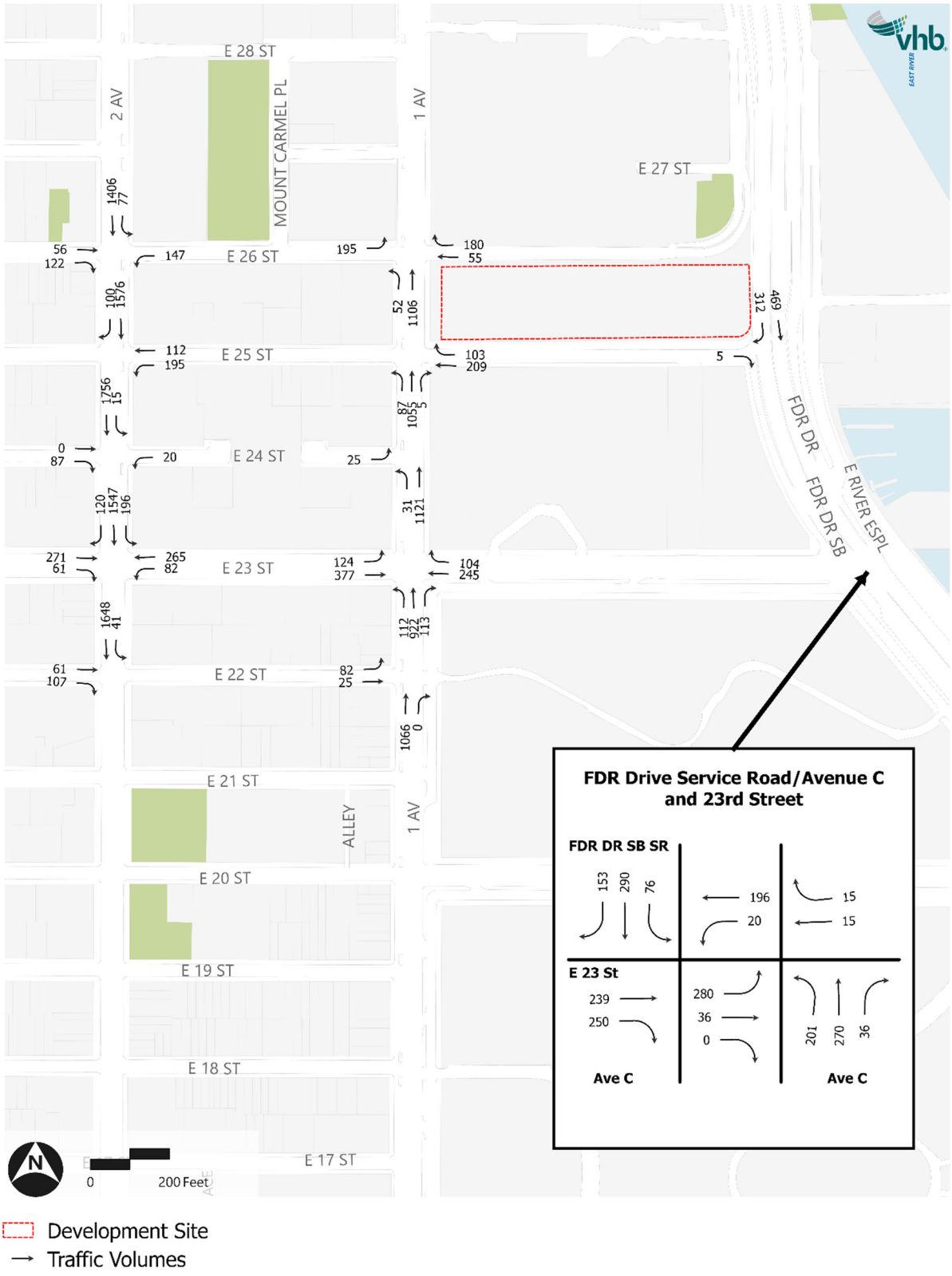


Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

Intersection & Approach		AM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS	PM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS
SIGNALIZED INTERSECTIONS									
FDR Drive Southbound / Avenue C at East 23rd Street (west side)									
East 23rd Street	EB	TR	0.74	47.3	D	TR	0.75	29.0	C
	EB	R	0.74	57.9	E	R	0.75	42.9	D
	WB	L	0.17	25.8	C	L	0.16	24.5	C
	WB	T	0.24	88.7	F	T	0.24	85.3	F
FDR Drive SB	SB	LTR	0.96	107.3	F	LTR	0.95	84.8	F
Overall Intersection[2]		-	-	**80.2**	**F**	-	-	**63.3**	**E**
FDR Drive Southbound / Avenue C at East 23rd Street (east side)									
East 23rd Street	EB	L	0.88	85.7	F	L	0.68	33.2	C
	EB	TR	0.89	92.2	F	TR	0.69	32.4	C
	WB	LTR	0.06	14.8	B	LTR	0.06	14.7	B
Avenue C	NB	LTR	0.52	21.8	C	LTR	0.50	20.9	C
Overall Intersection		-	-	**51.2**	**D**	-	-	**25.1**	**C**
FDR Drive at East 34th Street									
East 34th Street	EB	L	0.75	51.8	D	L	0.82	45.2	D
	EB	LTR	0.76	52.6	D	LTR	0.80	44.7	D
	EB	R	0.75	24.8	C	R	0.81	14.1	B
	WB	LTR	0.02	30.2	C	LTR	0.03	32.0	C
FDR Drive NB	NB	L	0.76	45.2	D	L	1.44	240.4	F
	NB	LTR	0.76	44.6	D	LTR	1.45	245.2	F
FDR Drive SB	SB	LTR	0.60	26.3	C	LTR	0.81	33.4	C
Overall Intersection		-	-	**35.3**	**D**	-	-	**118.7**	**F**
First Avenue at East 22nd Street									
East 22nd Street	EB	LT	0.29	17.1	B	LT	0.25	26.5	C
First Avenue	NB	T	0.59	24.7	C	T	0.76	74.9	E
	NB	R	0.01	15.4	B	R	0.00	0.0	A
Overall Intersection		-	-	**23.6**	**C**	-	-	**70.1**	**E**

Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
First Avenue at East 23rd Street									
East 23rd Street	EB	L	0.69	56.8	E	L	0.86	56.2	E
	EB	T	0.33	15.2	B	T	0.36	19.8	B
	WB	T	0.41	16.1	B	T	0.40	31.5	C
	WB	R	0.72	45.2	D	R	0.73	59.7	E
First Avenue	NB	L	0.66	40.7	D	L	0.82	52.8	D
	NB	T	0.56	10.6	B	T	0.78	18.1	B
	NB	R	0.57	16.9	B	R	0.54	19.4	B
Overall Intersection		-	-	**19.6**	**B**	-	-	**26.9**	**C**
First Avenue at East 24th Street									
East 24th Street	EB	L	0.05	17.7	B	L	0.06	17.8	B
First Avenue	NB	T	0.55	13.2	B	T	0.70	7.2	A
Overall Intersection		-	-	**13.3**	**B**	-	-	**7.4**	**A**
First Avenue at East 25th Street									
East 25th Street	WB	T	0.33	18.1	B	T	0.37	18.7	B
	WB	R	0.54	24.1	C	R	0.28	18.0	B
First Avenue	NB	LT	0.63	5.1	A	LT	0.81	8.4	A
	NB	R	0.07	1.8	A	R	0.02	6.4	A
Overall Intersection		-	-	**10.0**	**B**	-	-	**10.6**	**B**
First Avenue and East 26th Street									
East 26th Street	EB	L	0.85	46.1	D	L	1.00	95.2	F
Former East 26th Street	WB	TR	0.34	25.1	C	TR	0.60	31.0	C
First Avenue	NB	LT	0.64	11.4	B	LT	0.70	9.7	A
Overall Intersection		-	-	**18.8**	**B**	-	-	**23.8**	**C**
First Avenue at East 29th Street									
East 29th Street	WB	TR	0.03	22.0	C	TR	0.02	21.8	C
First Avenue	NB	LT	0.79	5.9	A	LT	0.85	9.9	A
	NB	R	0.05	0.8	A	R	0.04	6.2	A
Overall Intersection		-	-	**6.0**	**A**	-	-	**9.9**	**A**

Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
First Avenue at East 30th Street									
East 30th Street	EB	L	0.46	25.2	C	L	0.57	25.8	C
	EB	T	0.78	40.8	D	T	1.00	68.5	E
First Avenue	NB	T	0.55	1.4	A	T	0.61	8.4	A
	NB	R	0.58	6.9	A	R	0.48	11.0	B
Overall Intersection		-	-	**12.7**	**B**	-	-	**23.1**	**C**
First Avenue at East 33rd Street									
East 33rd Street	EB	L	0.14	19.4	B	L	0.12	18.9	B
	WB	TR	0.00	0.0	A	TR	0.02	17.2	B
First Avenue	NB	L	0.30	6.8	A	L	0.34	8.5	A
	NB	T	0.57	7.7	A	T	0.79	12.5	B
	NB	R	0.05	5.1	A	R	0.03	6.2	A
Overall Intersection		-	-	**7.9**	**A**	-	-	**12.2**	**B**
First Avenue at East 34th Street									
East 34th Street	EB	L	0.33	8.4	A	L	0.98	68.5	E
	EB	T	1.03	59.5	E	T	0.98	37.5	D
	WB	T	0.65	44.8	D	T	1.11	80.3	F
	WB	R	0.61	48.5	D	R	1.35	182.7	F
First Avenue	NB	L	0.27	6.3	A	L	0.41	8.9	A
	NB	T	0.51	6.0	A	T	0.75	10.5	B
	NB	R	0.58	11.8	B	R	0.57	11.7	B
Overall Intersection		-	-	**27.1**	**C**	-	-	**44.5**	**D**
Second Avenue at East 22nd Street									
East 22nd Street	EB	TR	0.62	40.0	D	TR	0.67	42.4	D
Second Avenue	SB	LT	0.56	7.9	A	LT	0.88	11.5	B
Overall Intersection		-	-	**12.5**	**B**	-	-	**14.6**	**B**

Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
Second Avenue at East 23rd Street									
East 23rd Street	EB	T	0.83	71.3	E	T	1.06	89.5	F
	EB	R	0.24	48.4	D	R	0.36	21.2	C
	WB	L	0.61	74.7	E	L	0.89	79.3	E
	WB	T	0.90	86.6	F	T	0.89	46.3	D
Second Avenue	SB	L	0.80	50.1	D	L	0.89	52.2	D
	SB	T	0.50	4.5	A	T	0.83	11.0	B
	SB	R	0.41	7.1	A	R	0.51	7.5	A
Overall Intersection		-	-	**33.9**	**C**	-	-	**29.5**	**C**
Second Avenue at East 24th Street									
East 24th Street	EB	TR	0.32	27.3	C	TR	0.31	26.7	C
	WB	LT	0.12	23.9	C	LT	0.10	23.6	C
Second Avenue	SB	LT	0.52	7.6	A	T	0.77	9.2	A
Overall Intersection		-	-	**9.5**	**A**	-	-	**10.3**	**B**
Second Avenue at East 25th Street									
East 25th Street	WB	LT	0.53	21.5	C	LT	0.71	24.8	C
Second Avenue	SB	T	0.49	10.8	B	T	0.73	14.1	B
	SB	R	0.29	10.4	B	R	0.31	10.2	B
Overall Intersection		-	-	**12.7**	**B**	-	-	**15.7**	**B**
Second Avenue at East 26th Street									
East 26th Street	EB	TR	0.42	26.1	C	TR	0.46	27.4	C
	WB	L	0.36	25.2	C	L	0.60	38.0	D
Second Avenue	SB	L	0.37	23.0	C	L	0.25	19.8	B
	SB	T	0.40	14.3	B	T	0.58	51.3	D
Overall Intersection		-	-	**17.6**	**B**	-	-	**46.2**	**D**

Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

		AM Peak Hour				PM Peak Hour			
Intersection & Approach		**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**	**Mvt**	**V/C**	**Ctrl Delay[1]**	**LOS**
Second Avenue at East 30th Street									
East 30th Street	EB	T	0.69	39.9	D	T	0.94	66.4	E
	EB	R	0.23	27.7	C	R	0.31	29.2	C
Second Avenue	SB	L	0.40	15.2	B	L	0.47	16.2	B
	SB	T	0.38	9.8	A	T	0.49	10.8	B
Overall Intersection		-	-	**15.6**	**B**	-	-	**20.8**	**C**
Second Avenue at East 34th Street									
East 23rd Street	EB	T	0.47	22.8	C	T	0.64	38.3	D
	EB	R	0.67	42.1	D	R	0.70	53.3	D
	WB	LT	0.59	30.3	C	LT	0.61	32.6	C
Second Avenue	SB	L	0.25	13.7	B	L	0.27	13.9	B
	SB	T	0.69	19.5	B	T	0.92	29.3	C
	SB	R	0.57	27.8	C	R	0.31	16.6	B
Overall Intersection		-	-	**21.9**	**C**	-	-	**30.0**	**C**
Midtown Tunnel Entrance at East 34th Street									
East 34th Street	EB	L	0.30	17.6	B	L	0.45	29.6	C
	EB	T	0.80	30.4	C	T	0.89	62.0	E
	WB	T	1.04	130.8	F	T	1.09	120.5	F
	WB	R	0.60	56.9	E	R	1.22	162.9	F
Overall Intersection		-	-	**56.0**	**E**	-	-	**89.3**	**F**
Midtown Tunnel Exit at East 34th Street									
East 34th Street	EB	T	0.41	8.6	A	0.53	13.7	B	0.53
	WB	T	0.82	48.4	D	0.72	19.9	B	0.72
Midtown Tunnel Exit	SB	L	0.26	35.9	D	0.27	36.4	D	0.27
	SB	R	0.26	12.1	B	0.27	12.4	B	0.27
Overall Intersection		-	-	**25.8**	**C**	-	**17.3**	**B**	-

Table 16-6 Year 2029 Construction No-Action Traffic Levels of Service

Intersection & Approach		AM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS	PM Peak Hour Mvt	V/C	Ctrl Delay[1]	LOS
UNSIGNALIZED INTERSECTIONS									
FDR Drive Southbound at East 25th Street									
East 25th Street	EB	R	-	12.9	B	R	-	13.2	B
FDR Drive SB	SB	TR	-	0.0	A	TR	-	0.0	A
Overall Intersection		-	-	**0.3**	**A**	-	-	**0.1**	**A**
FDR Drive Southbound at East 30th Street									
East 30th Street	EB	R	-	10.0	A	R	-	11.0	B
FDR Drive SB	SB	TR	-	9.3	A	TR	-	10.0	B
Overall Intersection		-	-	**9.8**	**A**	-	-	**10.7**	**B**

[1] Control delay is measured in seconds per vehicle.

[2] Overall intersection v/c ratio is the critical lane groups' v/c ratio.

With-Action with Construction Condition

Construction activities would generate 482 construction worker auto trips, 92 construction worker taxi trips, and 86 construction truck trips during the AM construction peak hour and 482 construction worker auto trips, 92 construction worker taxi trips and 20 construction truck trips during the PM construction peak hour. Construction trucks would be required to use NYC DOT-designated truck routes to get to the project area and would then use local streets to access the construction site.

The projected construction-related vehicle trips during the AM and PM construction peak hours are shown in **Figure 16-10** through **Figure 16-13**. The With-Action with Construction condition traffic volumes for the AM and PM construction peak hours are shown in **Figure 16-14** through **Figure 16-17**. As indicated in **Table 16-7** and **Table 16-8,** eight of the 23 analysis intersections would be significantly impacted during the AM construction peak hour, and seven of the 23 intersections would be significantly impacted during the PM construction peak hour. The following intersections would be significantly impacted:

- FDR Drive Southbound/Avenue C at East 23rd Street (east side) (AM peak hour only)
- FDR Drive at East 34th Street (PM peak hour only)
- First Avenue at East 23rd Street (AM peak hour only)
- First Avenue at East 26th Street (AM and PM peak hours)
- First Avenue at East 30th Street (AM peak hour only)
- First Avenue at East 34th Street (AM and PM peak hours)
- Second Avenue at East 23rd Street (AM and PM peak hours)
- Second Avenue at East 26th Street (PM peak hour only)
- Second Avenue at East 30th Street (PM peak hour only)
- Second Avenue at East 34th Street (AM peak hour only)

› Midtown Tunnel Entrance at East 34th Street (AM and PM peak hours)

Detailed descriptions of the No-Action and With-Action Construction conditions traffic levels of service and traffic mitigation measures are presented in **Table 16-7** and **Table 16-8.** Standard traffic capacity improvements typically implemented by NYC DOT, such as signal timing modifications, could potentially provide full or partial mitigation at some of the significantly impacted intersections. These measures and additional mitigation measures will be studied further in conjunction with NYC DOT between the Draft and Final EIS. As discussed in **Chapter 18, Mitigation**, NYC DOT is currently in the process of developing the Second Avenue Bus and Bike Lane Enhancements project which could result in changes to vehicular and pedestrian operations at intersections along Second Avenue. Should the plan be adopted prior to the release of the Final EIS, the transportation analysis will be updated to incorporate these changes and, as a result, the traffic impact results in the Final EIS may be different than those identified in the Draft EIS.

Figure 16-10 Year 2029 Construction Increment Traffic Volumes – AM Peak Hour (north side)

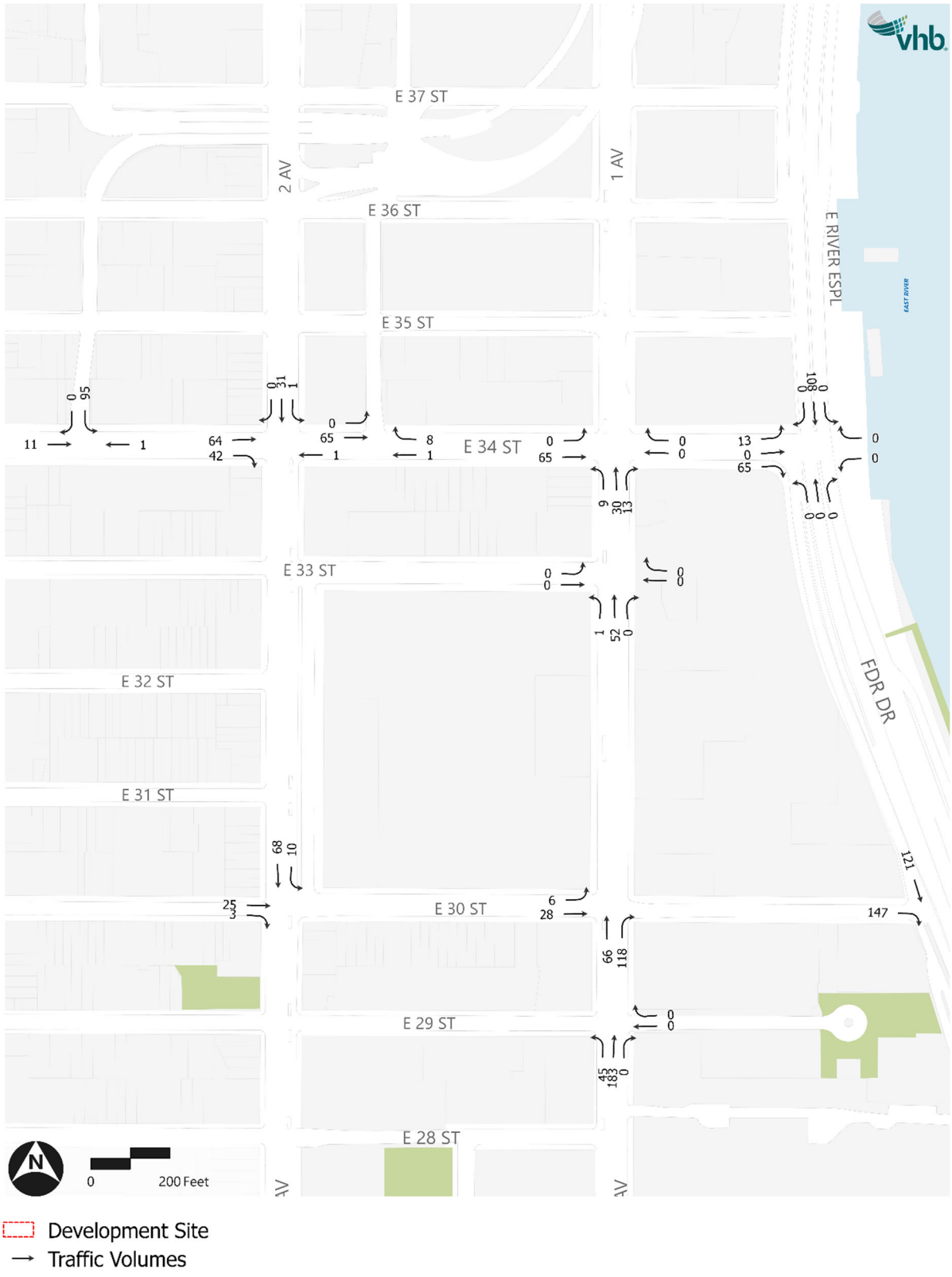


Figure 16-11 Year 2029 Construction Increment Traffic Volumes – AM Peak Hour (south side)

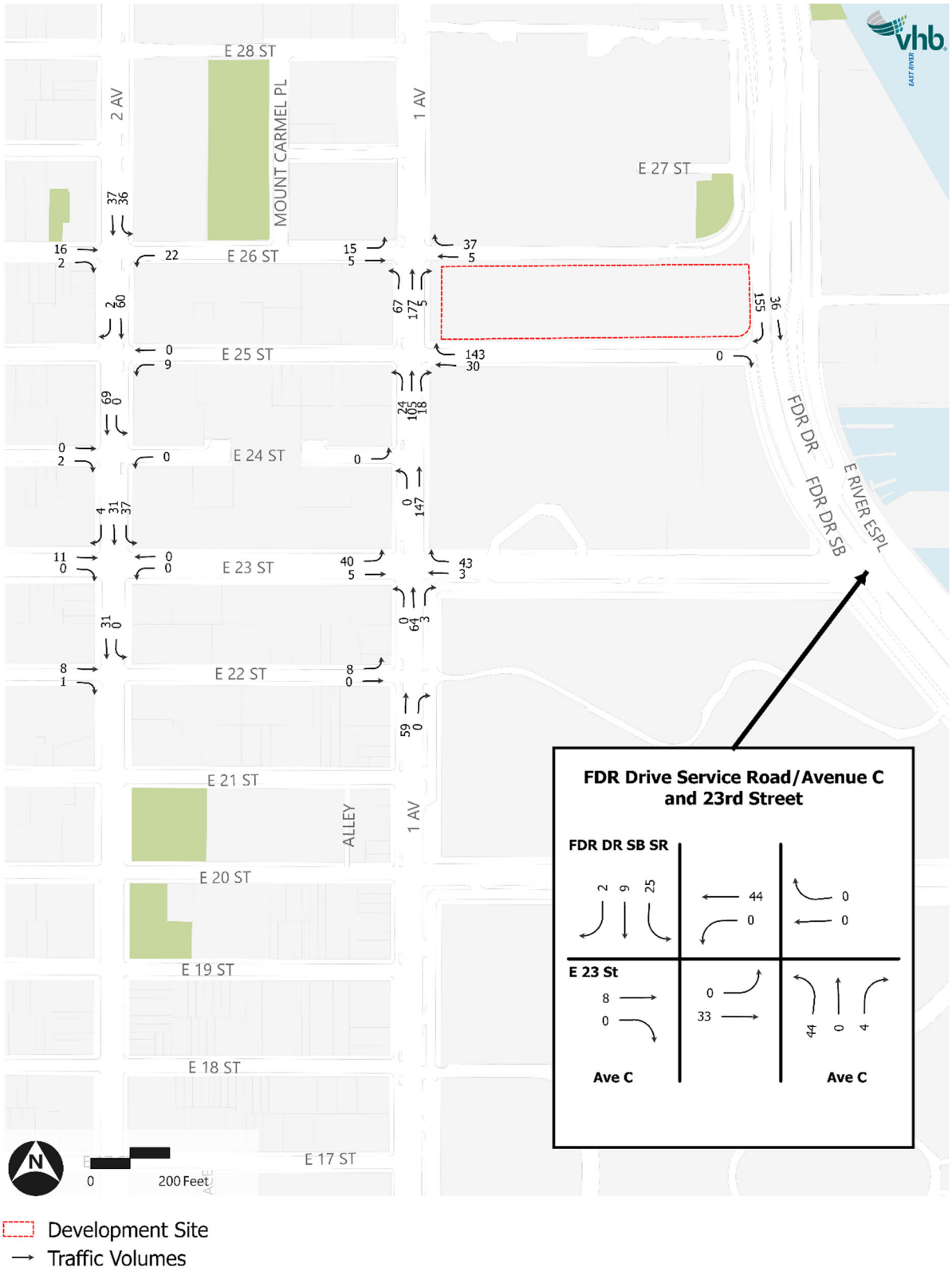


Figure 16-12 Year 2029 Construction Increment Traffic Volumes – PM Peak Hour (north side)

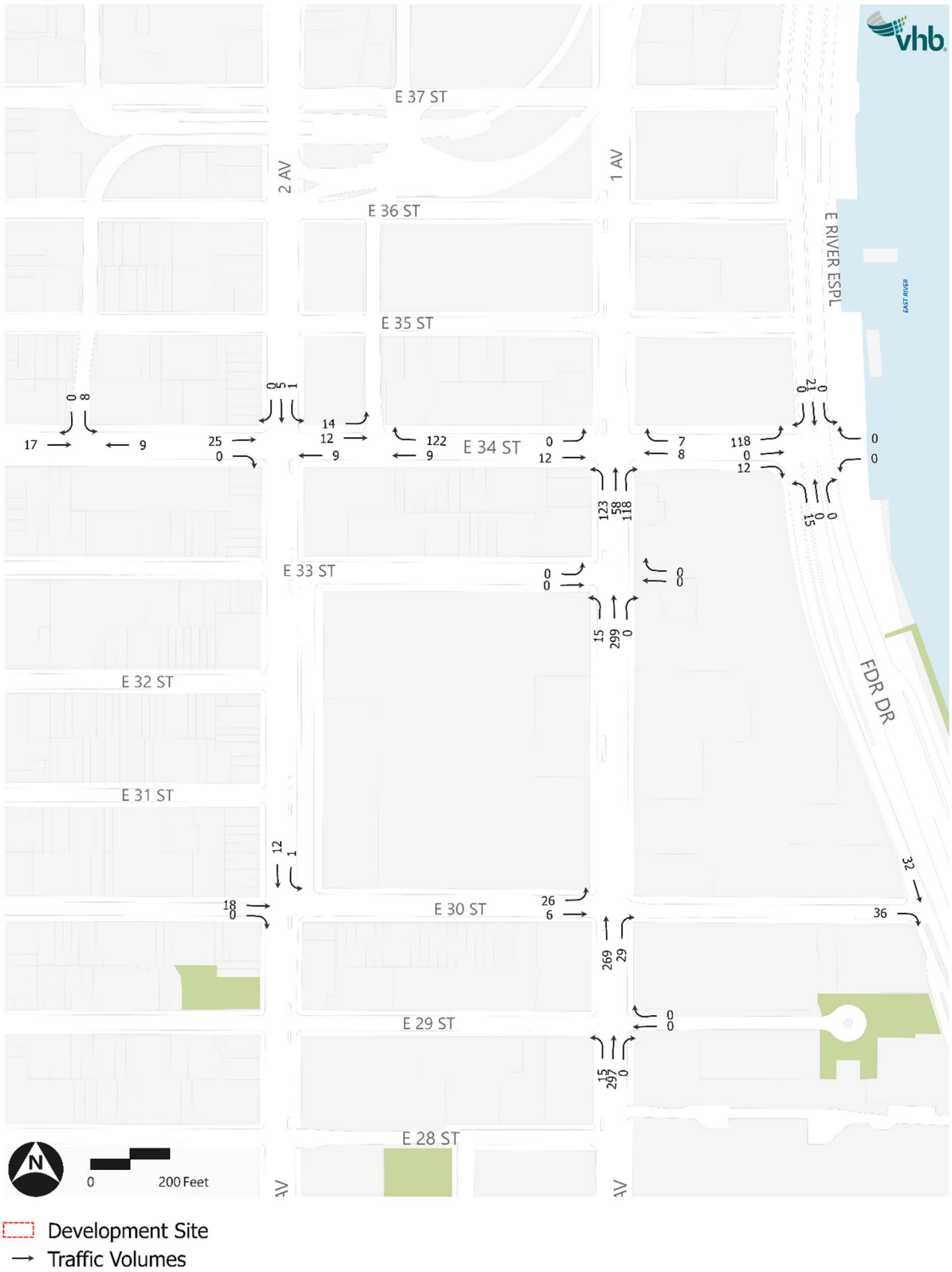


Figure 16-13 Year 2029 Construction Increment Traffic Volumes – PM Peak Hour (south side)

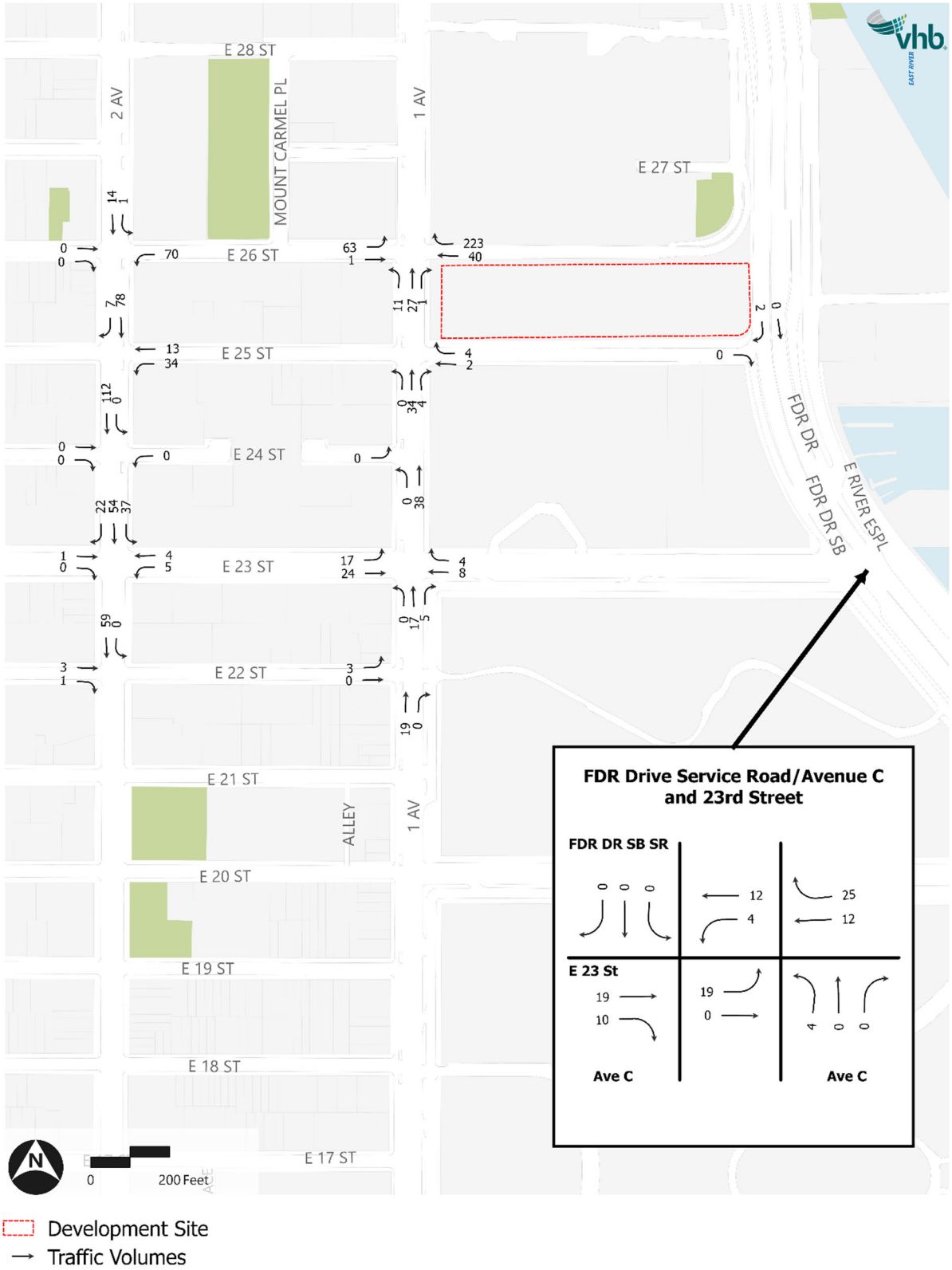


Figure 16-14 Year 2029 Construction With-Action Traffic Volumes – AM Peak Hour (north side)

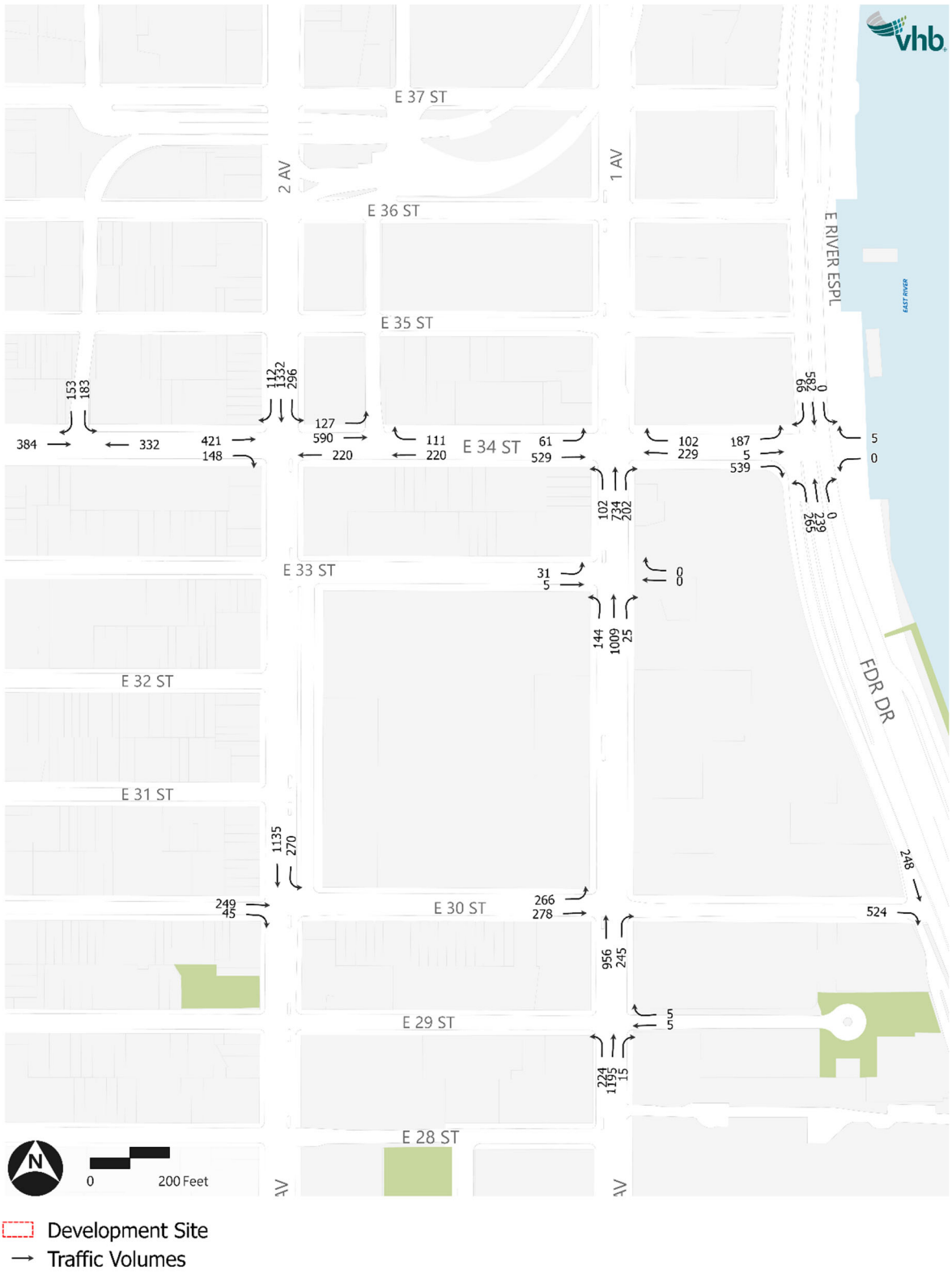


Figure 16-15 Year 2029 Construction With-Action Traffic Volumes – AM Peak Hour (south side)

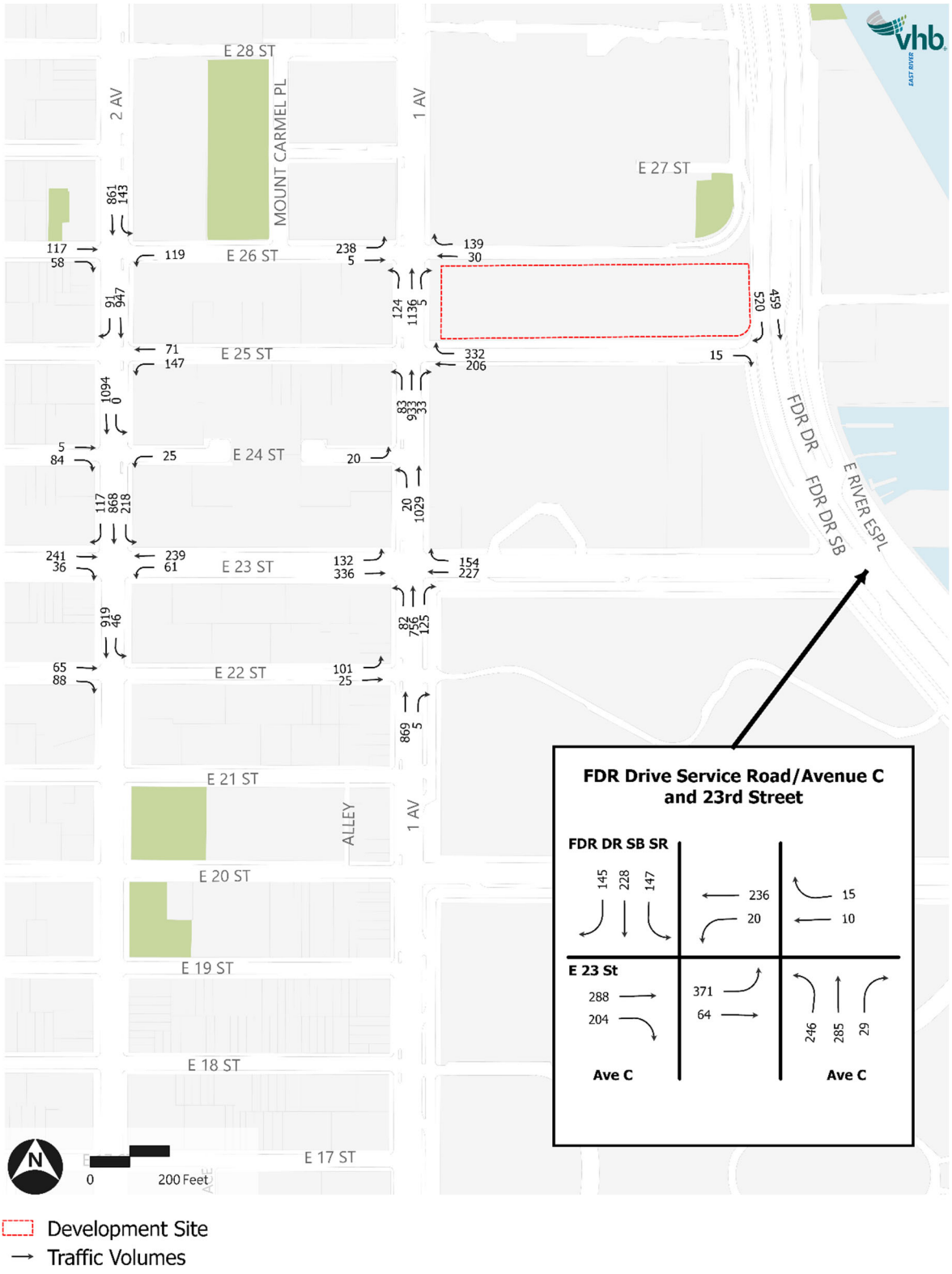


Figure 16-16 Year 2029 Construction With-Action Traffic Volumes – PM Peak Hour (north side)

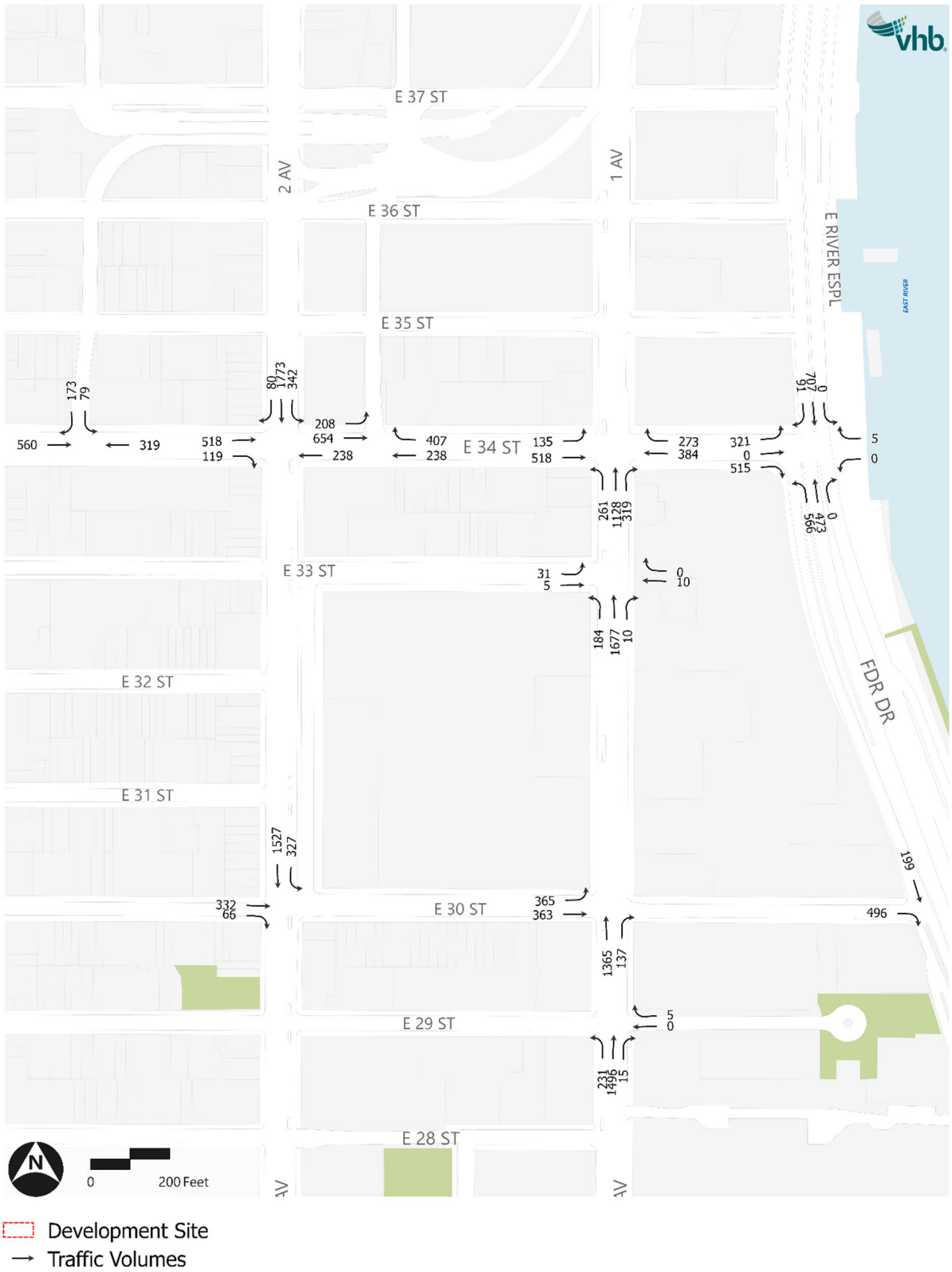


Figure 16-17 Year 2029 Construction With-Action Traffic Volumes – PM Peak Hour (south side)

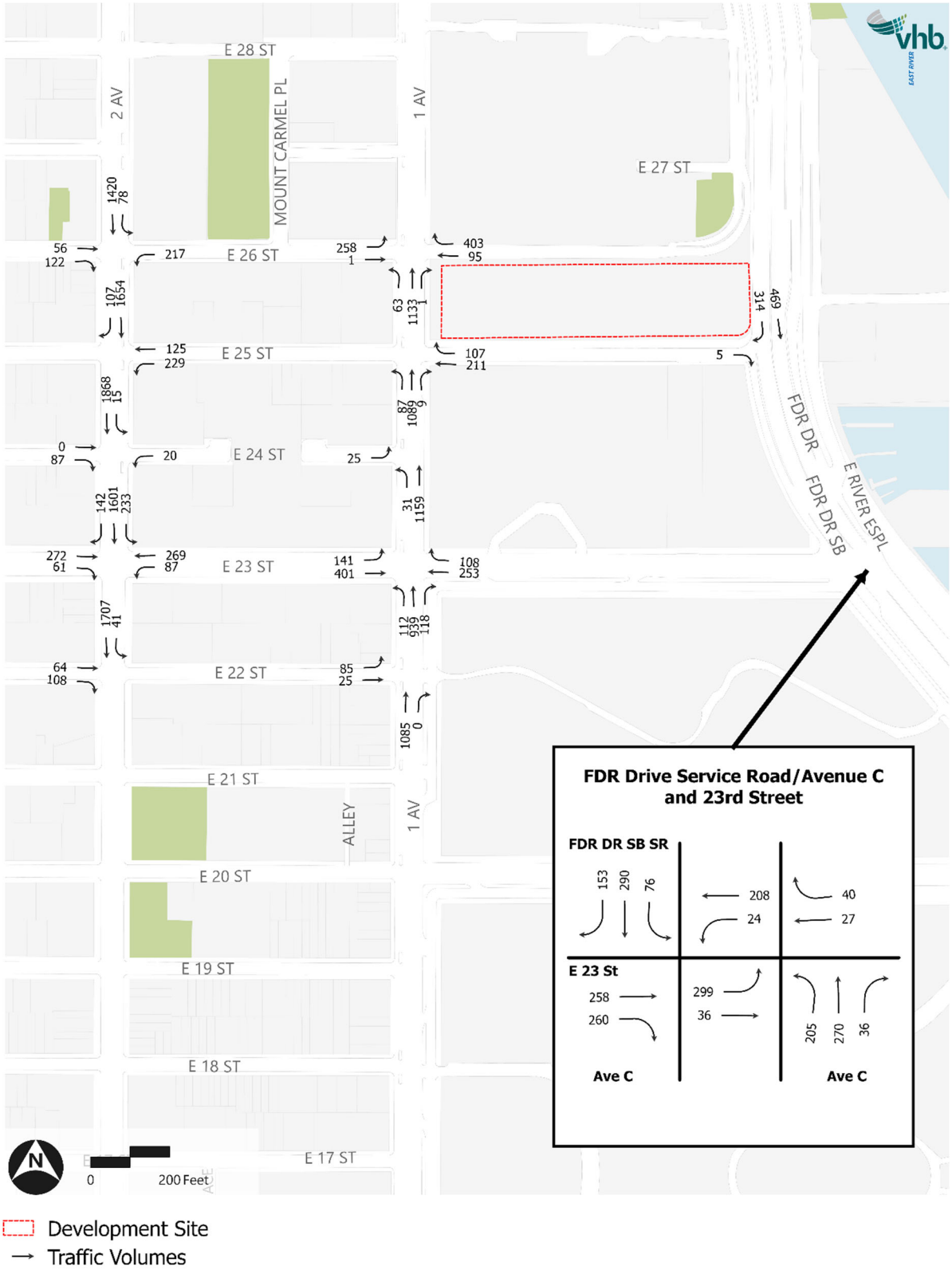


Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
SIGNALIZED INTERSECTIONS														
FDR Drive Southbound / Avenue C at East 23rd Street (west side)														
East 23rd Street	EB	TR	0.74	47.3	D	TR	0.75	47.6	D	TR	0.75	47.6	D	-Mitigation not required.
	EB	R	0.74	57.9	E	R	0.75	59.3	E	R	0.75	59.3	E	
	WB	L	0.17	25.8	C	L	0.18	25.1	C	L	0.18	25.1	C	
	WB	T	0.24	88.7	F	T	0.29	89.1	F	T	0.29	89.1	F	
FDR Drive SB	SB	LTR	0.96	107.3	F	LTR	1.03	108.4	F	LTR	1.03	108.4	F	
Overall Intersection[2]		-	-	**80.2**	**F**	-	-	**81.9**	**F**	-	-	**81.9**	**F**	
FDR Drive Southbound / Avenue C at East 23rd Street (east side)														
East 23rd Street	EB	L	0.88	85.7	F	L	0.93	109.9	F	L	0.93	109.9	F	-Unmitigable.
	EB	TR	0.89	92.2	F	TR	0.94	105.5	F	TR	0.94	105.5	F	
	WB	LTR	0.06	14.8	B	LTR	0.06	14.8	B	LTR	0.06	14.8	B	
Avenue C	NB	LTR	0.52	21.8	C	LTR	0.58	24.3	C	LTR	0.58	24.3	C	
Overall Intersection[2]		-	-	**51.2**	**D**	-	-	**60.5**	**E**	-	-	**60.5**	**E**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
FDR Drive at East 34th Street														
East 34th Street	EB	L	0.75	51.8	D	L	0.84	52.2	D	L	0.84	52.2	D	-Mitigation note required.
	EB	LTR	0.76	52.6	D	LTR	0.84	51.8	D	LTR	0.84	51.8	D	
	EB	R	0.75	24.8	C	R	0.85	27.3	C	R	0.85	27.3	C	
	WB	LTR	0.02	30.2	C	LTR	0.02	30.2	C	LTR	0.02	30.2	C	
FDR Drive NB	NB	L	0.76	45.2	D	L	0.76	45.2	D	L	0.76	45.2	D	
	NB	LTR	0.76	44.6	D	LTR	0.76	44.6	D	LTR	0.76	44.6	D	
FDR Drive SB	SB	LTR	0.6	26.3	C	LTR	0.71	29.4	C	LTR	0.71	29.4	C	
Overall Intersection[2]		-	-	**35.3**	**D**	-	-	**36.4**	**D**	-	-	**36.4**	**D**	
First Avenue at East 22nd Street														
East 22nd Street	EB	LT	0.29	17.1	B	LT	0.31	16.4	B	LT	0.31	16.4	B	-Mitigation not required
First Avenue	NB	T	0.59	24.7	C	T	0.63	27.3	C	T	0.63	27.3	C	
	NB	R	0.01	15.4	B	R	0.01	15.4	B	R	0.01	15.4	B	
Overall Intersection[2]		-	-	**23.6**	**C**	-	-	**25.7**	**C**	-	-	**25.7**	**C**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue at East 23rd Street														
East 23rd Street	EB	L	0.69	56.8	E	L	0.99	93.4	F	L	0.99	93.4	F	-Unmitigable.
	EB	T	0.33	15.2	B	T	0.33	15.9	B	T	0.33	15.9	B	
	WB	T	0.41	16.1	B	T	0.42	14.2	B	T	0.42	14.2	B	
	WB	R	0.72	45.2	D	R	1.01	92.0	F	R	1.01	92.0	F	
First Avenue	NB	L	0.66	40.7	D	L	0.66	39.7	D	L	0.66	39.7	D	
	NB	T	0.56	10.6	B	T	0.61	12.8	B	T	0.61	12.8	B	
	NB	R	0.57	16.9	B	R	0.58	16.9	B	R	0.58	16.9	B	
Overall Intersection		-	-	**19.6**	**B**	-	-	**28.5**	**C**	-	-	**28.5**	**C**	
First Avenue at East 24th Street														
East 24th Street	EB	L	0.05	17.7	B	L	0.05	17.7	B	L	0.05	17.7	B	-Mitigation not required.
First Avenue	NB	LT	0.55	13.2	B	T	0.64	18.6	B	T	0.64	18.6	B	
Overall Intersection		-	-	**13.3**	**B**	-	-	**18.6**	**B**	-	-	**18.6**	**B**	
First Avenue at East 25th Street														
East 25th Street	WB	T	0.33	18.1	B	T	0.34	18.1	B	T	0.34	18.1	B	-Mitigation not required
	WB	R	0.54	24.1	C	R	0.85	40.9	D	R	0.85	40.9	D	
First Avenue	NB	LT	0.63	5.1	A	LT	0.73	6.9	A	LT	0.73	6.9	A	
	NB	R	0.07	1.8	A	R	0.15	2.5	A	R	0.15	2.5	A	
Overall Intersection		-	-	**10.0**	**B**	-	-	**19.7**	**B**	-	-	**19.7**	**B**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue and East 26th Street														
East 26th Street	EB	L	0.85	46.1	D	LT	1.07	100.3	F	LT	1.07	100.3	F	-Unmitigable.
Former East 26th Street	WB	TR	0.34	25.1	C	TR	0.45	27.3	C	TR	0.45	27.3	C	
First Avenue	NB	LT	0.64	11.4	B	LT	0.82	28.9	C	LT	0.82	28.9	C	
	NB	-	-	-	-	R	0.01	7.4	A	R	0.01	7.4	A	
Overall Intersection		-	-	**18.8**	**B**	-	-	**39.3**	**D**	-	-	**39.3**	**D**	
First Avenue at East 29th Street														
East 29th Street	WB	TR	0.03	22.0	C	TR	0.03	22.0	C	TR	0.03	22.0	C	-Mitigation not required
First Avenue	NB	LT	0.79	5.9	A	LT	0.94	13.5	B	LT	0.94	13.5	B	
	NB	R	0.05	0.8	A	R	0.04	0.7	A	R	0.04	0.7	A	
Overall Intersection		-	-	**6.0**	**A**	-	-	**13.4**	**B**	-	-	**13.4**	**B**	
First Avenue at East 30th Street														
East 30th Street	EB	L	0.46	25.2	C	L	0.47	25.3	C	L	0.47	25.3	C	-Unmitigable.
	EB	T	0.78	40.8	D	T	0.86	48.8	D	T	0.86	48.8	D	
First Avenue	NB	T	0.55	1.4	A	T	0.59	1.7	A	T	0.59	1.7	A	
	NB	R	0.58	6.9	A	R	1.12	85.0	F	R	1.12	85.0	F	
Overall Intersection		-	-	**12.7**	**B**	-	-	**24.9**	**C**	-	-	**24.9**	**C**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue at East 33rd Street														
East 33rd Street	EB	L	0.14	19.4	B	L	0.14	19.4	B	L	0.14	19.4	B	-Mitigation not required.
	WB	TR	0	0.0	A	TR	0	0.0	A	TR	0.00	0.0	A	
First Avenue	NB	L	0.3	6.8	A	L	0.3	6.7	A	L	0.30	6.7	A	
	NB	T	0.57	7.7	A	T	0.6	7.6	A	T	0.60	7.6	A	
	NB	R	0.05	5.1	A	R	0.05	5.0	A	R	0.05	5.0	A	
Overall Intersection		-	-	**7.9**	**A**	-	-	**7.8**	**A**	-	-	**7.8**	**A**	
First Avenue at East 34th Street														
East 34th Street	EB	L	0.33	8.4	A	L	0.33	7.5	A	L	0.33	7.5	A	-Unmitigable.
	EB	T	1.03	59.5	E	T	1.18	108.2	F	T	1.18	108.2	F	
	WB	T	0.65	44.8	D	T	0.65	45.6	D	T	0.65	45.6	D	
	WB	R	0.61	48.5	D	R	0.61	49.2	D	R	0.61	49.2	D	
First Avenue	NB	L	0.27	6.3	A	L	0.29	7.8	A	L	0.29	7.8	A	
	NB	T	0.51	6.0	A	T	0.53	7.4	A	T	0.53	7.4	A	
	NB	R	0.58	11.8	B	R	0.62	14.4	B	R	0.62	14.4	B	
Overall Intersection		-	-	**27.1**	**C**	-	-	**41.5**	**D**	-	-	**41.5**	**D**	
Second Avenue at East 22nd Street														
East 22nd Street	EB	TR	0.62	40.0	D	TR	0.65	41.5	D	TR	0.65	41.5	D	-Mitigation not required.
Second Avenue	SB	LT	0.56	7.9	A	T	0.58	7.8	A	T	0.58	7.8	A	
Overall Intersection		-	-	**12.5**	**B**	-	-	**12.8**	**B**	-	-	**12.8**	**B**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Second Avenue at East 23rd Street														
East 23rd Street	EB	T	0.83	71.3	E	T	0.87	75.2	E	T	0.87	75.2	E	-Unmitigable.
	EB	R	0.24	48.4	D	R	0.24	48.1	D	R	0.24	48.1	D	
	WB	L	0.61	74.7	E	L	0.64	76.6	E	L	0.64	76.6	E	
	WB	T	0.90	86.6	F	T	0.90	86.3	F	T	0.90	86.3	F	
Second Avenue	SB	L	0.80	50.1	D	L	0.96	75.5	E	L	0.96	75.5	E	
	SB	T	0.50	4.5	A	T	0.52	4.2	A	T	0.52	4.2	A	
	SB	R	0.41	7.1	A	R	0.43	6.9	A	R	0.43	6.9	A	
Overall Intersection		-	-	**33.9**	**C**	-	-	**37.1**	**D**	-	-	**37.1**	**D**	
Second Avenue at East 24th Street														
East 24th Street	EB	TR	0.32	27.3	C	TR	0.33	27.5	C	TR	0.33	27.5	C	-Mitigation not required.
	WB	LT	0.12	23.9	C	LT	0.12	23.9	C	LT	0.12	23.9	C	
Second Avenue	SB	LT	0.52	7.6	A	LT	0.55	7.9	A	LT	0.55	7.9	A	
Overall Intersection		-	-	**9.5**	**A**	-	-	**9.7**	**A**	-	-	**9.7**	**A**	
Second Avenue at East 25th Street														
East 25th Street	WB	LT	0.53	21.5	C	LT	0.55	22.5	C	LT	0.55	22.5	C	-Mitigation not required.
Second Avenue	SB	T	0.49	10.8	B	T	0.52	11.6	B	T	0.52	11.6	B	
	SB	R	0.29	10.4	B	R	0.3	10.8	B	R	0.3	10.8	B	
Overall Intersection		-	-	**12.7**	**B**	-	-	**13.5**	**B**	-	-	**13.5**	**B**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Second Avenue at East 26th Street														
East 26th Street	EB	TR	0.42	26.1	C	TR	0.47	27.1	C	TR	0.47	27.1	C	-Mitigation not required.
	WB	L	0.36	25.2	C	L	0.47	26.8	C	L	0.47	26.8	C	
Second Avenue	SB	L	0.37	23.0	C	L	0.49	27.8	C	L	0.49	27.8	C	
	SB	T	0.4	14.3	B	T	0.42	14.7	B	T	0.42	14.7	B	
Overall Intersection		-	-	**17.6**	**B**	-	-	**19.0**	**B**	-	-	**19.0**	**B**	
Second Avenue at East 30th Street														
East 30th Street	EB	T	0.69	39.9	D	T	0.77	45.3	D	T	0.77	45.3	D	-Mitigation not required.
	EB	R	0.23	27.7	C	R	0.25	28.1	C	R	0.25	28.1	C	
Second Avenue	SB	L	0.40	15.2	B	L	0.42	15.5	B	L	0.42	15.5	B	
	SB	T	0.38	9.8	A	T	0.40	10.0	A	T	0.40	10.0	A	
Overall Intersection		-	-	**15.6**	**B**	-	-	**16.8**	**B**	-	-	**16.8**	**B**	
Second Avenue at East 34th Street														
East 23rd Street	EB	T	0.47	22.8	C	T	0.55	23.9	C	T	0.55	23.9	C	- Unmitigable.
	EB	R	0.67	42.1	D	R	0.93	76.8	E	R	0.93	76.8	E	
	WB	LT	0.59	30.3	C	LT	0.59	30.6	C	LT	0.59	30.6	C	
Second Avenue	SB	L	0.25	13.7	B	L	0.25	13.8	B	L	0.25	13.8	B	
	SB	T	0.69	19.5	B	T	0.71	19.9	B	T	0.71	19.9	B	
	SB	R	0.57	27.8	C	R	0.57	27.8	C	R	0.57	27.8	C	
Overall Intersection		-	-	**21.9**	**C**	-	-	**24.9**	**C**	-	-	**24.9**	**C**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Midtown Tunnel Entrance at East 34th Street														
East 34th Street	EB	L	0.3	17.6	B	L	0.31	18.5	B	L	0.31	18.5	B	-Unmitigable.
	EB	T	0.8	30.4	C	T	0.89	62.7	E	T	0.89	62.7	E	
	WB	T	1.04	130.8	F	T	1.04	130.4	F	T	1.04	130.4	F	
	WB	R	0.6	56.9	E	R	0.65	59.0	E	R	0.65	59.0	E	
Overall Intersection		-	-	**56.0**	**E**	-	-	**72.5**	**E**	-	-	**72.5**	**E**	
Midtown Tunnel Exit at East 34th Street														
East 34th Street	EB	T	0.41	8.6	A	T	0.42	8.9	A	T	0.42	8.9	A	-Mitigation not required.
	WB	T	0.82	48.4	D	T	0.83	48.5	D	T	0.83	48.5	D	
Midtown Tunnel Exit	SB	L	0.26	35.9	D	L	0.50	39.8	D	L	0.50	39.8	D	
	SB	R	0.26	12.1	B	R	0.26	12.2	B	R	0.26	12.2	B	
Overall Intersection		-	-	**25.8**	**C**	-	-	**27.4**	**C**	-	-	**27.4**	**C**	
UNSIGNALIZED INTERSECTIONS														
FDR Drive Southbound at East 25th Street														
East 25th Street	EB	R	-	12.9	B	R	-	14.3	B	R	-	14.3	B	-Mitigation not required.
FDR Drive SB	SB	TR	-	0.0	A	TR	-	0.0	A	TR	-	0.0	A	
Overall Intersection		-	-	**0.3**	**A**	-	-	**0.3**	**A**	-	-	**0.3**	**A**	

Table 16-7 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – AM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
FDR Drive Southbound at East 30th Street														
East 30th Street	EB	R	-	10.0	A	R	-	17.5	C	R	-	17.5	C	-Mitigation not required.
FDR Drive SB	SB	TR	-	9.3	A	TR	-	13.1	B	TR	-	13.1	B	
Overall Intersection		-	-	**9.8**	**A**	-	-	**16.1**	**C**	-	-	**16.1**	**C**	

1 Control delay is measured in seconds per vehicle.
2 Overall intersection v/c ratio is the critical lane groups' v/c ratio.
_____ Denotes a significantly impacted movement

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
SIGNALIZED INTERSECTIONS														
FDR Drive Southbound/Avenue C at East 23rd Street (west side)														
East 23rd Street	EB	TR	0.75	29.0	C	TR	0.79	30.7	C	TR	0.79	30.7	C	- Mitigation not required.
	EB	R	0.75	42.9	D	R	0.80	47.1	D	R	0.80	47.1	D	
	WB	L	0.16	24.5	C	L	0.21	25.7	C	L	0.21	25.7	C	
	WB	T	0.24	85.3	F	T	0.25	82.6	F	T	0.25	82.6	F	
FDR Drive SB	SB	LTR	0.95	84.8	F	LTR	0.95	86.1	F	LTR	0.95	86.1	F	
Overall Intersection[2]		-	-	**63.3**	**E**	-	-	**63.7**	**E**	-	-	**63.7**	**E**	
FDR Drive Southbound/Avenue C at East 23rd Street (east side)														
East 23rd Street	EB	L	0.68	33.2	C	L	0.76	40.0	D	L	0.76	40.0	D	-Mitigation not required.
	EB	TR	0.69	32.4	C	TR	0.76	38.6	D	TR	0.76	38.6	D	
	WB	LTR	0.06	14.7	B	LTR	0.14	15.7	B	LTR	0.14	15.7	B	
Avenue C	NB	LTR	0.50	20.9	C	LTR	0.5	21.0	C	LTR	0.5	21.0	C	
Overall Intersection[2]		-	-	**25.1**	**C**	-	-	**27.4**	**C**	-	-	**27.4**	**C**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
FDR Drive at East 34th Street														
East 34th Street	EB	L	0.82	45.2	D	L	1.03	77.2	E	L	1.03	77.2	E	-Unmitigable.
	EB	LTR	0.80	44.7	D	LTR	1.03	78.4	E	LTR	1.03	78.4	E	
	EB	R	0.81	14.1	B	R	0.93	21.9	C	R	0.93	21.9	C	
	WB	LTR	0.03	32.0	C	LTR	0.03	32.0	C	LTR	0.03	32.0	C	
FDR Dr NB	NB	L	1.44	240.4	F	L	1.47	251.3	F	L	1.47	251.3	F	
	NB	LTR	1.45	245.2	F	LTR	1.47	253.9	F	LTR	1.47	253.9	F	
FDR Dr SB	SB	LTR	0.81	33.4	C	LTR	0.83	34.6	C	LTR	0.83	34.6	C	
Overall Intersection[2]		-	-	**118.7**	**F**	-	-	**124.2**	**F**	-	-	**124.2**	**F**	
First Avenue at East 22nd Street														
East 22nd Street	EB	LT	0.25	26.5	C	LT	0.26	26.8	C	LT	0.26	26.8	C	-Mitigation not required.
First Avenue	NB	T	0.76	74.9	E	T	0.78	75.2	E	T	0.78	75.2	E	
	NB	R	0.00	0.0	A	R	0.00	0.0	A	R	0.00	0.0	A	
Overall Intersection[2]		-	-	**70.1**	**E**	-	-	**70.4**	**E**	-	-	**70.4**	**E**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue at East 23rd Street														
East 23rd Street	EB	L	0.86	56.2	E	L	0.98	58.2	E	L	0.98	58.2	E	-Mitigation not required.
	EB	T	0.36	19.8	B	T	0.38	18.3	B	T	0.38	18.3	B	
	WB	T	0.40	31.5	C	T	0.41	32.0	C	T	0.41	32.0	C	
	WB	R	0.73	59.7	E	R	0.75	62.9	E	R	0.75	62.9	E	
First Avenue	NB	L	0.82	52.8	D	L	0.82	52.7	D	L	0.82	52.7	D	
	NB	T	0.78	18.1	B	T	0.79	19.2	B	T	0.79	19.2	B	
	NB	R	0.54	19.4	B	R	0.56	20.3	C	R	0.56	20.3	C	
Overall Intersection		-	-	**26.9**	**C**	-	-	**27.7**	**C**	-	-	**27.7**	**C**	
First Avenue at East 24th Street														
East 24th Street	EB	L	0.08	17.8	B	L	0.06	17.8	B	L	0.06	17.8	B	-Mitigation not required.
First Avenue	NB	LT	0.70	7.2	A	T	0.72	7.8	A	T	0.72	7.8	A	
Overall Intersection		-	-	**7.4**	**A**	-	-	**8.0**	**A**	-	-	**8.0**	**A**	
First Avenue at East 25th Street														
East 25th Street	WB	T	0.37	18.7	B	T	0.37	18.7	B	T	0.37	18.7	B	-Mitigation not required.
	WB	R	0.28	18.0	B	R	0.29	18.1	B	R	0.29	18.1	B	
First Avenue	NB	LT	0.81	8.4	A	LT	0.83	9.2	A	LT	0.83	9.2	A	
	NB	R	0.02	6.4	A	R	0.04	7.1	A	R	0.04	7.1	A	
Overall Intersection		-	-	**10.6**	**B**	-	-	**11.2**	**B**	-	-	**11.2**	**B**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue and East 26th Street														
East 26th Street	EB	L	1.00	95.2	F	LT	2.00+	500+	F	LT	2.00+	500+	F	-Unmitigable.
Former East 26th Street	WB	TR	0.60	31.0	C	TR	1.27	165.2	F	TR	1.27	165.2	F	
First Avenue	NB	LT	0.70	9.7	A	LT	0.73	24.6	C	LT	0.73	24.6	C	
	NB	-	-	-	-	R	0	9.0	A	R	0	9.0	A	
Overall Intersection		-	-	**23.8**	**C**	-	-	**269.4**	**F**	-	-	**269.4**	**F**	
First Avenue at East 29th Street														
East 29th Street	WB	TR	0.02	21.8	C	TR	0.02	21.8	C	TR	0.02	21.8	C	-Mitigation not required.
First Avenue	NB	LT	0.85	9.9	A	LT	1.03	31.9	C	LT	1.03	31.9	C	
	NB	R	0.04	6.2	A	R	0.04	6.4	A	R	0.05	6.4	A	
Overall Intersection		-	-	**9.9**	**A**	-	-	**31.6**	**C**	-	-	**31.6**	**C**	
First Avenue at East 30th Street														
East 30th Street	EB	L	0.57	25.8	C	L	0.62	26.5	C	L	0.62	26.5	C	- Mitigation not required.
	EB	T	1.00	68.5	E	T	1.01	71.7	E	T	1.01	71.7	E	
First Avenue	NB	T	0.61	8.4	A	T	0.76	11.1	B	T	0.76	11.1	B	
	NB	R	0.48	11.0	B	R	0.61	9.4	A	R	0.61	9.4	A	
Overall Intersection		-	-	**23.1**	**C**	-	-	**23.5**	**C**	-	-	**23.5**	**C**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
First Avenue at East 33rd Street														
East 33rd Street	EB	L	0.12	18.9	B	L	0.12	18.9	B	L	0.12	18.9	B	-Mitigation not required.
	WB	TR	0.02	17.2	B	TR	0.02	17.2	B	TR	0.02	17.2	B	
First Avenue	NB	L	0.34	8.5	A	L	0.37	7.9	A	L	0.37	7.9	A	
	NB	T	0.79	12.5	B	T	0.96	25.1	C	T	0.96	25.1	C	
	NB	R	0.03	6.2	A	R	0.03	5.7	A	R	0.03	5.7	A	
Overall Intersection		-	-	**12.2**	**B**	-	-	**23.1**	**C**	-	-	**23.1**	**C**	
First Avenue at East 34th Street														
East 34th Street	EB	L	0.98	68.5	E	L	1.00	74.7	E	L	1.00	74.7	E	-Unmitigable.
	EB	T	0.98	37.5	D	T	1.00	53.2	D	T	1.00	53.2	D	
	WB	T	1.11	80.3	F	T	1.14	89.5	F	T	1.14	89.5	F	
	WB	R	1.35	182.7	F	R	1.38	198.8	F	R	1.38	198.8	F	
First Avenue	NB	L	0.41	8.9	A	L	0.77	18.9	B	L	0.77	18.9	B	
	NB	T	0.75	10.5	B	T	0.79	13.2	B	T	0.79	13.2	B	
	NB	R	0.57	11.7	B	R	0.91	32.9	C	R	0.91	32.9	C	
Overall Intersection		-	-	**44.5**	**D**	-	-	**51.1**	**D**	-	-	**51.1**	**D**	
Second Avenue at East 22nd Street														
East 22nd Street	EB	TR	0.67	42.4	D	TR	0.69	43.1	D	TR	0.69	43.1	D	-Mitigation not required.
Second Avenue	SB	LT	0.88	11.5	B	LT	0.91	14.0	B	LT	0.91	14.0	B	
Overall Intersection		-	-	**14.6**	**B**	-	-	**16.9**	**B**	-	-	**16.9**	**B**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Second Avenue at East 23rd Street														
East 23rd Street	EB	T	1.06	89.5	F	T	1.07	91.5	F	T	1.07	91.5	F	-Unmitigable.
	EB	R	0.36	21.2	C	R	0.36	21.2	C	R	0.36	21.2	C	
	WB	L	0.89	79.3	E	L	0.95	94.0	F	L	0.95	94.0	F	
	WB	T	0.89	46.3	D	T	0.91	48.3	D	T	0.91	48.3	D	
Second Avenue	SB	L	0.89	52.2	D	L	1.06	88.4	F	L	1.06	88.4	F	
	SB	T	0.83	11.0	B	T	0.85	13.7	B	T	0.85	13.7	B	
	SB	R	0.51	7.5	A	R	0.60	9.5	A	R	0.60	9.5	A	
Overall Intersection		-	-	**29.5**	**C**	-	-	**35.4**	**D**	-	-	**35.4**	**D**	
Second Avenue at East 24th Street														
East 24th Street	EB	TR	0.31	26.7	C	TR	0.31	26.7	C	TR	0.31	26.7	C	-Mitigation not required.
	WB	LT	0.10	23.6	C	LT	0.1	23.6	C	LT	0.10	23.6	C	
Second Avenue	SB	LT	0.77	9.2	A	T	0.82	11.1	B	T	0.82	11.1	B	
Overall Intersection		-	-	**10.3**	**B**	-	-	**12.0**	**B**	-	-	**12.0**	**B**	
Second Avenue at East 25th Street														
East 25th Street	WB	LT	0.71	24.8	C	LT	0.82	33.5	C	LT	0.82	33.5	C	-Mitigation not required.
Second Avenue	SB	T	0.73	14.1	B	T	0.76	16.5	B	T	0.76	16.5	B	
	SB	R	0.31	10.2	B	R	0.34	10.9	B	R	0.34	10.9	B	
Overall Intersection		-	-	**15.7**	**B**	-	-	**19.3**	**B**	-	-	**19.3**	**B**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Second Avenue at East 26th Street														
East 26th Street	EB	TR	0.46	27.4	C	TR	0.46	27.4	C	TR	0.46	27.4	C	- Unmitigable.
	WB	L	0.60	38.0	D	L	0.88	56.4	E	L	0.88	56.4	E	
Second Avenue	SB	L	0.25	19.8	B	L	0.25	19.9	B	L	0.25	19.9	B	
	SB	T	0.58	51.3	D	T	0.58	54.1	D	T	0.58	54.1	D	
Overall Intersection		-	-	**46.2**	**D**	-	-	**50.3**	**D**	-	-	**50.3**	**D**	
Second Avenue at East 30th Street														
East 30th Street	EB	T	0.94	66.4	E	T	0.99	78.7	E	T	0.99	78.7	E	- Unmitigable.
	EB	R	0.31	29.2	C	R	0.31	29.2	C	R	0.31	29.2	C	
Second Avenue	SB	L	0.47	16.2	B	L	0.47	16.2	B	L	0.47	16.2	B	
	SB	T	0.49	10.8	B	T	0.49	10.8	B	T	0.49	10.8	B	
Overall Intersection		-	-	**20.8**	**C**	-	-	**23.2**	**C**	-	-	**23.2**	**C**	
Second Avenue at East 34th Street														
East 23rd Street	EB	T	0.64	38.3	D	T	0.67	38.6	D	T	0.67	38.6	D	-Mitigation not required.
	EB	R	0.70	53.3	D	R	0.7	52.4	D	R	0.7	52.4	D	
	WB	LT	0.61	32.6	C	LT	0.63	35.5	D	LT	0.63	35.5	D	
Second Avenue	SB	L	0.27	13.9	B	L	0.27	14.0	B	L	0.27	14.0	B	
	SB	T	0.92	29.3	C	T	0.92	29.6	C	T	0.92	29.6	C	
	SB	R	0.31	16.6	B	R	0.31	16.6	B	R	0.31	16.6	B	
Overall Intersection		-	-	**30.0**	**C**	-	-	**30.5**	**C**	-	-	**30.5**	**C**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
Midtown Tunnel Entrance at East 34th Street														
East 34th Street	EB	L	0.45	29.6	C	L	0.48	35.2	D	L	0.48	35.2	D	-Unmitigable.
	EB	T	0.89	62.0	E	T	0.91	71.3	E	T	0.91	71.3	E	
	WB	T	1.09	120.5	F	T	1.13	118.4	F	T	1.13	118.4	F	
	WB	R	1.22	162.9	F	R	1.75	374.5	F	R	1.75	374.5	F	
Overall Intersection		-	-	**89.3**	**F**	-	-	**155.1**	**F**	-	-	**155.1**	**F**	
Midtown Tunnel Exit at East 34th Street														
East 34th Street	EB	T	0.53	13.7	B	T	0.55	14.8	B	T	0.55	14.8	B	-Mitigation not required
	WB	T	0.72	19.9	B	T	0.74	20.7	C	T	0.74	20.7	C	
Midtown Tunnel Exit	SB	L	0.27	36.4	D	L	0.28	36.5	D	L	0.28	36.5	D	
	SB	R	0.27	12.4	B	R	0.28	12.5	B	R	0.28	12.5	B	
Overall Intersection		-	-	**17.3**	**B**	-	-	**18.1**	**B**	-	-	**18.1**	**B**	
UNSIGNALIZED INTERSECTIONS														
FDR Drive Southbound at East 25th Street														
East 25th Street	EB	R	-	13.2	B	R	-	13.2	B	R	-	13.2	B	-Mitigation not required
FDR Dr SB	SB	TR	-	0.0	A	TR	-	0.0	A	TR	-	0.0	A	
Overall Intersection		-	-	**0.1**	**A**	-	-	**0.1**	**A**	-	-	**0.1**	**A**	

Table 16-8 Year 2029 Construction No-Action vs. With-Action vs Mitigation Traffic Levels of Service – PM Construction Peak Hour

Intersection & Approach		2029 No-Action				2029 With-Action				2029 Mitigation				Mitigation Measures
		Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	Mvt	V/C	Ctrl Delay[1]	LOS	
FDR Drive Southbound at East 30th Street														
East 30th Street	EB	R	-	11.0	B	R	-	12.4	B	R	-	12.4	B	-Mitigation not required
FDR Dr SB	SB	TR	-	10.0	A	TR	-	10.8	B	TR	-	10.8	B	
Overall Intersection		**-**	**-**	**10.7**	**B**	**-**	**-**	**11.9**	**B**	**-**	**-**	**11.9**	**B**	

1 Control delay is measured in seconds per vehicle.
2 Overall intersection v/c ratio is the critical lane groups' v/c ratio.
3 Traffic signal plan identifies 180 second cycle which includes two 90 second cycle plans with alternating green time allocations for each phase.
Denotes a significantly impacted movement

Deliveries

Construction trucks would be required to use NYC DOT-designated truck routes, including First Avenue, Second Avenue, and East 23rd Street and service the Development Site at the designated loading zones. The location of the loading zones is dependent on the location of the buildings under construction, and loading could potentially occur within the site with access from the three street frontages closest to where construction activities would be happening.

Curb Lane Closures and Staging

Short-term roadway closures and temporary sidewalk narrowing could occur along the sides of the Development Site during specific periods of construction. During construction, parking lane closures may be required for construction activities or to be used for pedestrian walkways as a result of sidewalk closures. The south sidewalk on the former East 26th Street may need to be closed during periods of construction. However, pedestrian activities on that sidewalk are minimal and are related to the existing uses that would be relocated during construction. Sidewalk and lane closures will be finalized as the MPT plans are developed and reviewed with NYC DOT OCMC. Construction activities would not be expected to result in closure of bike lanes.

Parking

Construction workers would generate an estimated maximum daily parking demand of 603 spaces during the Q3 2029 peak quarter. This parking demand would be accommodated by off-street parking supply within a one-quarter mile radius of the Development Site. A parking utilization survey was conducted and determined that there would be approximately 966 spaces available during the weekday midday period and would be sufficient to accommodate the construction worker parking demand.

Transit

Based on information provided by NYC DOT, it is anticipated that approximately 56 percent of construction workers would commute to the Development Site by public transportation (45 percent by subway and 11 percent by bus). During Q3 2029, when construction worker volumes would be highest, 1,916 construction workers would be expected to be working on the site, of which 862 workers would be expected to travel to the construction site by subway and 211 workers by bus. It is expected that most construction workers (80 percent) would arrive during the AM construction peak hour and depart during the PM construction peak hour (690 subway trips and 169 bus trips during the AM and PM construction peak hours).

- During the AM operational peak hour, the Proposed Project would generate 2,019 subway trips and 552 bus trips, as compared to 690 subway trips and 169 bus trips during the AM construction peak hour.
- During the PM operational peak hour, the Proposed Project would generate 1,249 subway trips and 273 bus trips, as compared to 690 subway trips and 169 bus trips during the AM construction peak hour.

These construction-related transit trips would occur outside of the peak periods of transit ridership and would be distributed to the nearby transit facilities. Construction-related transit trips would also be notably lower than during the operational peak hours therefore construction transit impacts are

likely to be confined to the same or fewer locations as compared to the Proposed Project's operational condition.

Pedestrians

Construction activities would result in 1,916 daily construction workers with approximately 80 percent of those workers arriving during the AM and PM construction peak hours (1,486 construction worker trips in total during the peak hours). These construction worker trips would be distributed throughout the roadway network's pedestrian elements – sidewalk, crosswalks and corner reservoir areas – and would be assigned similarly to the project-generated operational trips – e.g., along similar routes to the same neighborhood parking garages, bus stops and subway station. In comparison, the Proposed Project would generate 3,566 pedestrian trips during the AM operational peak hour and 2,441 pedestrian trips during the PM operational peak hour. The construction-related pedestrian trips would occur outside of the commuter peak hours.

Although the amount of construction worker pedestrian trips during the construction peak hours would be lower than the amount of pedestrian trips generated by the Proposed Project during the operational analysis peak hours, and the peak of construction activities would occur outside of the commuter peak hours, construction activities may result in significant adverse pedestrian impacts to the ten pedestrian elements (five sidewalks, two crosswalks, and three corners) that were identified as being significantly impacted within the Proposed Project's operational condition. A preliminary trip assignment was also prepared and identified three pedestrian elements that would not be significantly impacted by the Proposed Project but would experience an increase in pedestrian trips of more 200 trips and a higher number of pedestrian trips during construction activities as compared to the operational condition. These pedestrian elements include the east sidewalk of First Avenue between East 26th Street and East 27th Street, the east sidewalk of First Avenue between East 28th Street and East 29th Street, and the southeast corner of the intersection of First Avenue and East 29th Street. These 13 pedestrian elements – the ten elements identified in the operational analysis plus these three additional elements -- would have the potential to be significantly impacted due to construction activities and will be studied further between the Draft and Final EIS.

Air Quality

Introduction

Construction impacts on air quality levels may occur because of particulate matter (fugitive dust) created by excavation, demolition, transfer of debris into trucks, emissions from on-site diesel equipment, and emissions from increased truck traffic to and from the Development Site on local roadways. As discussed in the *2021 CEQR Technical Manual*, the determination of whether it is sufficient to conduct a qualitative analysis of these emissions or whether a quantitative analysis is required should take into account factors such as duration of construction activities, location of the project site in relation to existing residential and other sensitive land uses and sensitive uses created by the project, the intensity of the construction activity, and the extent to which the project incorporates commitments to appropriate emission control measures.

The most intense construction activities in terms of emissions are typically from demolition, excavation, and foundation stages, since it is during these stages that the largest number of large, non-road diesel engines are employed, which combined with the fugitive dust from debris moving

operations result in the highest levels of air emissions. The other stages of construction, including superstructure, exterior façades, interior finishes and site work, typically result in lower air emissions since they require fewer pieces of heavy-duty diesel equipment. Equipment used in the latter stages of construction generally involves use of small engines, with use of electric tools dispersed vertically throughout the building, resulting in very low concentration increments in adjacent areas. Additionally, the latter stages of construction do not involve soil disturbance activities and therefore result in significantly lower fugitive dust emissions. Construction activities associated with interior finishes are shielded from nearby sensitive receptors by the proposed structures themselves.

Additionally, as described above, impacts of construction traffic emissions at intersections and streets near the Development Site were considered using *2021 CEQR Technical Manual* screening methodologies. Based on the Transportation analysis, a detailed mobile source air quality analysis is warranted for construction.

Air Quality Analysis Methodology

On-Site Construction Activity

Emission Intensity Analysis

The construction emission intensity analysis includes estimating construction $PM_{2.5}$ emissions, which are the emissions of primary concern from construction, for the full duration of construction, then comparing the peak daily $PM_{2.5}$ emissions and proximity to nearby sensitive receptors to those of a comparable project that conducted a dispersion analysis and demonstrated no significant adverse air quality impacts.

The construction analysis used an emission estimation method and a modeling approach previously developed for evaluating air quality impacts of construction projects in New York City. As the level and types of construction activities would vary from month to month, the approach includes a determination of the worst-case emission period based on a conceptual monthly construction schedule, the number of on-site construction equipment types and rated horsepower of each unit, quantities of materials to be excavated, and number of trucks arriving, working, and leaving the site. The emissions from trucks approaching and departing the site on public roadways and on traveling on site to the loading docks or the work area were also included in the emission calculations for the emission intensity analysis.

The peak cumulative short-term and annual $PM_{2.5}$ emissions were evaluated for the full construction project (abatement, demolition, building construction, and the additional construction of the proposed open space and replacement pedestrian bridge). The peak construction month and year were identified based on the highest associated $PM_{2.5}$ emissions in short-term (maximum daily emissions) and long term (based on a 12-month rolling average of maximum daily emissions).

The specific construction information used to calculate emissions generated from the construction process included, but is not limited to, the following:

- The number of construction equipment units and fuel-type to be used;
- Rated horsepower and load factors for each piece of equipment;
- Daily and annual utilization rates for each piece of equipment;
- Hours of operation on-site; and

› Average distance to approach the site, on-site, and idling time by trucks.

Emission Reduction Measures Considered

As discussed above, construction activities could affect air quality because of engine emissions from on-site construction equipment and dust-generating activities. In general, much of the heavy equipment used in construction has diesel-powered engines, which produce relatively high levels of nitrogen oxides and particulate matter. Gasoline engines produce relatively high levels of carbon monoxide. Construction activities also generate fugitive dust emissions. As a result, the air pollutants included in detailed analyses of construction activities include nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and carbon monoxide (CO), with $PM_{2.5}$ being the pollutant of greatest concern with construction and therefore considered in screening analyses to determine whether a detailed analysis including other pollutants is warranted. Since ultra-low-sulfur diesel (ULSD) would be used for all diesel engines related to construction activities due to federal and state mandates, sulfur dioxides (SO_2) emitted from those construction activities would be negligible, and an analysis of SO_2 emissions is not warranted. For more details on a description of air pollutants and standards, see **Chapter 11, Air Quality**.

As stated above, construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine particulates. To ensure that the construction of the Proposed Project results in the lowest feasible diesel particulate matter (DPM) emissions, a series of emissions reduction strategies required by DEP and state mandates would be implemented.

The air quality analysis performed to evaluate the potential for impact from the Proposed Project construction therefore assumes a combination of emission reduction measures that are mandated by law and are common practice in large-scale NYC construction projects, and follow the requirements included in NYC Law 77 and the NYC Air Pollution Control Code. These include the following:

› **Fugitive Dust Control Plans.** In compliance with the NYC Air Pollution Control Code provisions regarding control of fugitive dust, contractors would be required to ensure that all trucks carrying loose material use water as a dust suppression measure, that trucks hauling loose material be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the site, that streets adjacent to the site be cleaned as frequently as needed by the construction contractor, and that water sprays be used for transfer of spoils to ensure that materials are dampened as necessary to avoid the suspension of dust into the air. These measures would be expected to reduce dust generation by more than 50 percent.

› **Clean Fuel.** ULSD would be used exclusively for diesel engines related to construction activities for the Proposed Project. This is a federal requirement since 2010 that enables the use of tailpipe reduction technologies that reduce diesel particulate matter and SO_2 emissions.

› **Diesel Equipment Reduction.** Hoists and small equipment, such as lifts, compressors, welders, and pumps would use electric engines that operate on grid power instead of diesel power engines, to the extent practical. This is a common practice that has been achieving wider use as technology improves.

› **Restrictions on Vehicle Idling.** This would be required in compliance with local law to restrict unnecessary idling. On-site vehicle idle time would be restricted to three minutes for all

equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

- **Lower Emission Engines.** Given the construction timeframe for the Proposed Project (2025-2031), equipment meeting Tier 4 standards for diesel engines (model years 2011/12 and beyond) would be expected to be in wide use and comprise the majority of contractors' fleets. If contractors choose to use older diesel equipment, the use of DPF in Tier 3 emission standard for diesel engines (model years 2006-2011 for engine sizes between 100 and 600 hp) would be implemented. Tier 3 with DPF achieves the same $PM_{2.5}$ emission reductions as a newer Tier 4 emission standard for diesel engines. The combination of Tier 4 and Tier 3 engines with DPF would achieve DPM reductions of approximately 90 percent when compared to older uncontrolled engines.
- **Source Location and Shielding.** To reduce concentration increments at sensitive receptors, large emissions sources and activities such as concrete trucks, generators, and large compressors can be located away from the sensitive receptors to the extent practical.

Overall, these emission control measures would be expected to significantly reduce DPM emissions. In addition, as per *CEQR Technical Manual* recommendations, all necessary measures would be implemented to ensure that the NYC Air Pollution Control Code provisions regulating construction-related dust emission are followed.

Engine Exhaust Emissions

$PM_{2.5}$ emissions from on-site construction equipment were developed using the EPA MOVES4-NONROAD Emission Model. The MOVES4-NONROAD model can generate emission factors, in grams per horsepower/hour (g-hp/hr) by engine size (hp), equipment type, engine technology type, fuel type, and year of analysis. The model estimates emissions as the average emission factor by year for the county fleet sorted by the above-mentioned parameters. As an example, if New York County and the year 2022 were selected for diesel engines, the output generates emissions (g-hp/hr) for each type of equipment from 3 hp to 2,000 hp rating for each one of the model years of the County fleet going back up to 40 years. The model calculates how many pieces of equipment for each engine technology group and model year are present in the County fleet and produces the yearly average emission factor. Tier 4 engines are expected to be used for all construction equipment with model years after 2012.

Because the model years of the actual construction equipment to be used for the Proposed Project are unknown, emission factors for the different equipment types were estimated by using the weighted average (emission factor and activity level) of the model years 2016 to 2025 for vehicles operated between 2025 through 2027, and model years 2019 to 2028 for vehicles operated in 2028 or thereafter. Short-term and annual emission rates were adjusted from the peak-hour emission rates by applying usage factors for each equipment unit.

Emission rates from combustion of fuel for on-site dump trucks, concrete trucks, and other trucks anticipated to be needed for the Proposed Project construction were developed using the EPA MOVES4 Emission Model. NYC restrictions placed on idling times were applied for heavy trucks, except for concrete trucks for which one hour of idling was assumed.

Fugitive Emissions

The Development Site will be accessed by trucks during construction from entrances on either East 25th Street or former East 26th Street between First Avenue and FDR Drive. The extent of travel on unpaved roads by trucks is estimated to be less than 100 feet round trip, only during the foundation phase as construction trucks would otherwise generally use temporary loading docks set up at the perimeter of the site. Road dust emissions from trucks moving were calculated using equations from EPA's AP-42, Section 13.2.1 for paved roads. For trucks traveling on unpaved roads during the early stages of construction, dust emissions were calculated using EPA's AP-42 Section 13.2.2 equations. Average vehicle weights (i.e., unloaded going in and loaded going out) were used in the analysis and reasonably conservative travel distance was estimated for on-site travel on paved and unpaved roads.

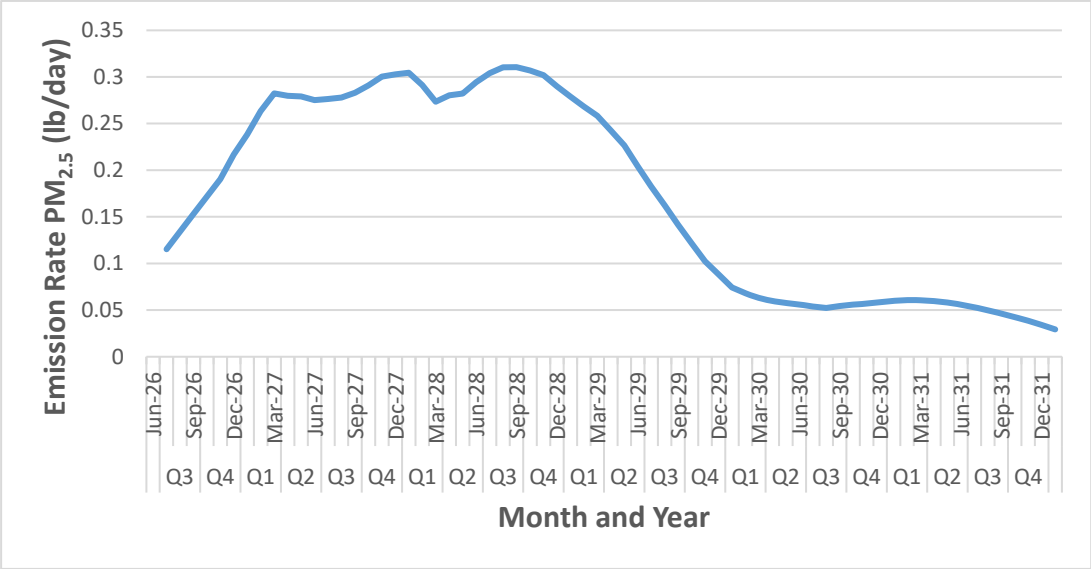
Fugitive emissions from removal of demolition and excavated material were estimated using EPA's AP-42 Section 13.2.4. The calculated fugitive emissions were adjusted to account for dust control measures (described above), which would provide at least a 50-percent reduction in $PM_{2.5}$ emissions.

Impact Assessment

Emissions Intensity Profiles

The emission intensity analysis indicated that the highest $PM_{2.5}$ emissions would result from construction activities between August 2027 to July 2028 (months 26 to 37 of construction), as illustrated in **Figure 16-18**. Activities during this period include the construction of the foundations for the Proposed Project buildings and the new open space below grade foundations, core and shell construction for the Proposed Project buildings, and the construction of the new resiliency wall.

Figure 16-18 Projected Peak 12-Month Rolling Average $PM_{2.5}$ Daily Construction Emissions



This is the peak construction period because of the simultaneous construction of foundations and core and shell construction for three large buildings. This phase is expected to yield the highest levels of non-road equipment emissions and fugitive dust emissions from transfer operations and road dust.

The month with the highest emissions month (November 2027) was estimated when emissions from the construction of the foundations for the proposed West Building, North Building, and open space overlap with the start of core and shell construction for the proposed East Building and West Building. The peak daily average emissions profile by month is illustrated in **Figure 16-19**.

Figure 16-19 Projected Peak Daily Average $PM_{2.5}$ Construction Emissions



The other phases of construction, including the abatement of buildings, and fitout for the North, West, and East Buildings would be smaller in scale and therefore have lower emissions.

Location of Nearby Sensitive Receptors

The closest receptors to construction of the Project Development Site would be located one block north of the construction site between former East 26th Street and East 28th Street at the Office of the Chief Medical Examiner, 9.6 meters (more than 30 feet) from the project site. Additional receptor locations considered are farther away and include the U.S. Corbin VA Facility to the south between East 23rd Street and East 25th Street; NYU Rory Meyers College of Nursing west of the construction site across First Avenue; and NYU College of Dentistry to the southwest of the Development Site. Greenspaces with receptors in proximity to the construction of the Development Site are located at Asser Levy Playground across the street to the south of East 25th Street and Bellevue Sobriety Garden across the street to the north of former East 26th Street.

Analysis Results

To determine whether there is a potential for construction emissions from the Development Site to adversely impact air quality levels at sensitive receptor locations in the neighborhood, the peak daily emissions were compared to the peak daily emissions developed for the recently approved 175 Park Avenue project, for which the dispersion analysis conducted indicated that there would be no potential for a significant adverse construction-period air quality impacts. **Table 16-9** summarizes the results of this comparison. As shown in this table, peak daily and annual $PM_{2.5}$ emissions from the Proposed Project would be lower than the emissions from construction of the 175 Park Avenue

project. The overall peak daily emissions from the Proposed Project would be 10 percent lower, and the overall peak annual emissions would be 42 percent lower than the corresponding construction emissions from 175 Park Avenue. The closest receptor modeled for the 175 Park Avenue project is located on the same block as the project construction site. That nearest receptor is located on the southwest corner of the Graybar Building, approximately 1.2 meters (less than 4 feet away) from the 175 Park Avenue project construction site.

Other receptors considered in the 175 Park Avenue analysis include Grand Central Station, on the same block as 175 Park Avenue, the Chrysler Building, located to the west of 175 Park Avenue, and other nearby uses.

As discussed, the closest receptor for the Proposed Project would be more than 30 feet from the Development Site, which is farther than the closest receptor modeled for the 175 Park Avenue project. Other receptors for both projects were considered. The distances from the 175 Park Avenue project to these other receptors were less than or similar to other receptors considered for the Proposed Project. Given the greater proximity of the closest receptor of 175 Park Avenue, the anticipated impact of the Proposed Project would be lower.

The air quality impacts from the Proposed Project construction activities would be lower than for the 175 Park Avenue project's construction activities due to the receptor distances and additional reasons summarized below. Therefore, as the 175 Park Avenue project predicted concentrations below the NAAQS and CEQR *de minimis* criteria for $PM_{2.5}$, construction of the Proposed Project would not result in a potential for significant adverse impacts based on the emissions intensity prepared and the comparison with the 175 Park Avenue project.

- Peak Emissions: 175 Park Avenue's peak PM2.5 short-term and long-term emissions are higher than the SPARC project's peak emissions.
- Construction Duration: The construction duration of 175 Park Avenue project is longer than the construction duration of SPARC by 32 months.
- Construction site/work areas: The 175 Park Avenue construction area is smaller than the SPARC construction area. Therefore, the concentrations from construction equipment for similar type of construction activities would be higher for 175 Park Avenue than they would be for SPARC.

The concentrations and concentration increments predicted using dispersion modeling for the 175 Park Avenue project were well below the applicable air quality standards and *de minimis* thresholds. Therefore, like the 175 Park Avenue project, the construction of the Proposed Project would not have the potential to result in a significant adverse impact on air quality.

Table 16-9 Comparison of $PM_{2.5}$ Construction Emissions

Project Name	Construction Duration (Months)	Peak Daily $PM_{2.5}$ Emissions (lb/day)	Peak Annual $PM_{2.5}$ Emissions (lb/day)
175 Park Avenue	106	0.545	0.532
SPARC Kips Bay	**78**	**0.495**	**0.310**

In addition to $PM_{2.5}$, the potential for NO_2 impacts from the construction of the Proposed Project was considered. Based on previously analyzed projects, including 175 Park Avenue, the annual NO_2

concentrations from construction activity were found not to exceed the NAAQS, if the $PM_{2.5}$ concentrations were below the CEQR *de minimis* criteria. Based on **Figure 16-2** and **Figure 16-3**, the peak construction period would last less than three years, after which the emissions would sharply decrease. During that peak construction period, the construction equipment and activity would be located on different parts of the site, as the demolition and site work for different proposed buildings commences. Therefore, any impact from the peak construction activity would not affect the same receptors over the entire peak construction period that would last less than three years. Based on the form of the 1-hour NO_2 standard (98th percentile, 1-hour daily maximum, averaged over 3 years), the shorter duration of the peak construction period, and comparison of $PM_{2.5}$ emissions calculated for other projects, 1-hour NO_2 impacts would not be expected.

Off-Site Construction Activity

Screening Assessment

As outlined in the *CEQR Technical Manual*, in this area of the City, actions that would result in the generation of 170 or more peak-hour vehicle trips at an intersection may cause adverse air quality impacts and require a detailed air quality analysis for carbon monoxide (CO).

For $PM_{2.5}$, the screening procedure outlined in the *CEQR Technical Manual* is based on determining whether the projected number of vehicle trips at an intersection exceeds thresholds based on heavy-duty diesel vehicle (HDDV) equivalents. The thresholds are as follows:

- 12 or more HDDV for paved roads with average daily traffic fewer than 5,000 vehicles;
- 19 or more HDDV for collector roads;
- 23 or more HDDV for principal and minor arterials; or
- 23 or more HDDV for expressways and limited access roads.

To determine whether any of these thresholds are exceeded, the worksheet referenced in Section 201 of the *CEQR Technical Manual* is utilized to calculate the equivalent number of HDDV equivalents at intersections in the traffic study area. The worksheet uses vehicle classification information based on the traffic data collected for the project and assigns these classifications to vehicle categories using a table referenced in the *CEQR Technical Manual*. Roadway classifications are determined by corridor at each intersection, based on NYC DOT functional class criteria and generated truck trips and worker trips during construction phase.

Based on the screening analysis, the intersection of First Avenue and East 26th Street that is predicted to have the highest increment was selected for a CO, $PM_{2.5}$ and PM_{10} mobile source detailed analysis.

The prediction of vehicle-generated emissions and their dispersion in an urban environment incorporates meteorological phenomena, traffic conditions, and physical configuration. Air pollutant dispersion models mathematically simulate how traffic, meteorology, and physical configuration combine to affect pollutant concentrations. The mathematical expressions and formulations contained in the various models attempt to describe an extremely complex physical phenomenon as closely as possible. However, because all models contain simplifications and approximations of actual conditions and interactions, and since it is necessary to predict the reasonable worst-case condition, most dispersion analyses predict conservatively high concentrations of pollutants, particularly under adverse meteorological conditions.

The mobile source analyses for the Proposed Project employ models approved by the United States Environmental Protection Agency (EPA) that have been used for evaluating air quality impacts of projects in New York City, other parts of New York State, and throughout the country. The modeling approach includes a series of conservative assumptions relating to traffic, and background concentration levels resulting in a conservatively high estimate of expected pollutant concentrations that could ensue from the Proposed Project.

On-Road Vehicle Emissions

Vehicular CO, $PM_{2.5}$ and PM_{10} engine emission factors were computed using the EPA mobile source emissions model, Motor Vehicle Emission Simulator (MOVES4.0)[6]. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type and grade, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from NYSDEC.

On-Road Fugitive Dust

$PM_{2.5}$ and PM_{10} emission rates were determined with fugitive road dust to account for their impacts. However, fugitive road dust was not included in the annual average $PM_{2.5}$ microscale analyses, per CEQR *Technical Manual* guidance for mobile source analyses. Road dust emission factors were calculated according to the latest procedure delineated by EPA[7]. An average weight of 22.5 tons and 3.0 tons was assumed for construction trucks and worker vehicles in the analyses, respectively.

Traffic Data

Traffic data for the intersection analysis were derived from existing traffic counts, construction generated trips in traffic, and other information developed as part of the traffic analysis for the Proposed Project (see above "Transportation" section). The weekday morning (6:00 AM to 7:00 AM) and afternoon (3:00 PM to 4:00 PM) peak period were analyzed.

Dispersion Model

The EPA AERMOD model (version 22112) was used in the analyses of CO, $PM_{2.5}$ and PM_{10} at the selected intersection. The intersection links were modeled using the area source option in the model and following EPA guidance.

Receptor Placement

Sensitive receptors near the intersection selected for the analysis were placed at sidewalks and at 1.8 meters above grade. The model used the same receptors for CO, PM_{10} and $PM_{2.5}$ (24-hour and annual) analyses. For the $PM_{2.5}$ annual neighborhood analysis, receptors will be placed at a distance of 15 meters from the edge of the roadway and 25 meters apart along the intersection links.

[6] EPA. Motor Vehicle Emission Simulator (MOVES): MOVES4.0 Technical Guidance. EPA- 420-F-23-019. August 2023.

[7] EPA. Compilations of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Ch. 13.2.1, NC, http://www.epa.gov/ttn/chief/ap42, January 2011.

Meteorological Data

The dispersion analysis used the latest available five years (2017-2021) of hourly meteorological observations from LaGuardia Airport National Weather Service station and upper air data obtained from the Brookhaven Station, New York. This meteorological data for the AERMOD model was obtained from the NYSDEC.

Background Concentrations

The background concentrations measured at the nearest monitoring stations are presented in Table 11-2. The data was obtained from NYSDEC for the most recent three-year period (2019, 2021 and 2022). These values were used as the background concentrations for the mobile source analysis.

Results

A microscale (detailed) analysis of the impacts of the construction-generated trips was conducted at the intersection of East 26th Street and First Avenue. Emissions of CO, PM_{10} (24-hour) and $PM_{2.5}$ (24-hour and annual) at all links were estimated using MOVES4.0 model using traffic data developed for the Proposed Project and the NYSDEC inputs for Manhattan.

The intersection analysis was conducted using the latest version of the AERMOD dispersion model and incorporated microscale receptors for the CO impacts and PM 24-hour impacts, as well as neighborhood scale receptors for the annual $PM_{2.5}$ impacts. The results of this analysis are presented in **Table 16-10**.

Table 16-10 Mobile Source Analysis Results

Pollutant	Averaging Period	Background Concentration	Increment/Total Concentration	Impact Threshold (*De Minimis*/ NAAQS)
CO	1-hour	1.7 ppm	1.9	35 ppm
	8-hour	1.2 ppm	0.02/1.22	3.9/9 ppm
$PM_{2.5}$	24-hour	18.2 µg/m^3	2.4/20.6 µg/m^3	8.4/35 µg/m^3
$PM_{2.5}$	Annual	7.2 µg/m^3	0.005/7.205 µg/m^3	0.1/9 µg/m^3
PM_{10}	24-hour	34 µg/m^3	62.4	150 µg/m^3 (NAAQS)

Notes:
The PM_{10} concentrations include the background value of 34 µg/m^3.

As **Table 16-10** shows, the CO 1-hour and 8-hour, PM_{10} 24-hour, $PM_{2.5}$ 24-hour, and annual impacts would be below their corresponding *de minimis* thresholds or NAAQS, respectively.

Therefore, construction of the Proposed Project for both on-site and on-road sources would not result in significant adverse air quality impacts.

Noise

Construction activities have the potential to affect the noise conditions of receptors near the Development Site. Construction noise can vary widely depending on the phase of construction (e.g., demolition, excavation, foundation, steel, and concrete erection, mechanical and interior fit out) and the specific equipment and methods being used. The most significant construction noise sources at a construction site are generally back-up alarms, and equipment such as excavators, drill rigs, and

cranes. The noisiest phase of construction is typically during demolition, excavation, and foundation work. The superstructure phase of construction can also have higher noise levels associated with concrete trucks and cranes. Similar to air emissions, interior fit out typically results in lower noise emissions, since it requires fewer pieces of heavy-duty diesel equipment.

As described in the *CEQR Technical Manual,* the need to conduct a qualitative analysis of construction noise emissions or a quantitative analysis is considered based on factors such as the location of the Development Site in relation to existing residential uses or other sensitive receptors, the intensity of the construction activity, and the extent to which the project incorporates commitments to appropriate noise control measures.

Construction Analysis Fundamentals

Construction activities increase noise levels as a result of (1) the operation of construction equipment on site; and (2) the movement of construction-related vehicles (i.e., worker trips, and material and equipment trips) on the roadways to and from the construction site. The combined effect of each of these noise sources was evaluated.

Noise from the on-site operation of construction equipment at a specific receptor location near a construction site is generally calculated by computing the sum of the noise produced by all pieces of equipment operating at the construction site. For each piece of equipment, the noise level at a receptor location is a function of the following:

- The noise emission level of the equipment;
- A usage factor, which accounts for the percentage of time the equipment is operating at full power;
- The distance between the piece of equipment and the receptor;
- Topography and ground effects; and
- Shielding.

Similarly, noise levels due to construction-related traffic are a function of the following:

- The noise emission levels of the type of vehicle (e.g., auto, light-duty truck, heavy-duty truck, bus, etc.);
- Volume of vehicular traffic on each roadway segment;
- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

Construction Noise Code

As described in Construction Regulations and General Practices, the project would follow guidelines set forth by the NYCDEP Noise Code (Section 24-228). The DOB regulations require a perimeter barrier or "construction noise barrier" and when the site is within 200 feet of a receptor, the barrier shall be constructed in a specific manner (as described in the New York City Noise Code) to provide sufficient sound attenuation. Section 3307.7 of the New York City Building Code requires a solid perimeter noise barrier made from wood or other suitable material be constructed where a new building is being constructed or a building is being demolished to grade.

For the Proposed Project, a perimeter noise barrier 8 feet in height is proposed surrounding the Development Site for each phase of construction as each of the phases are constructed.

Construction Noise Impact Criteria

The construction noise impact criteria from the *CEQR Technical Manual* were also considered in the identification of adverse noise impacts. The *CEQR Technical Manual* was developed by New York City for evaluation of the environmental impacts of projects proposed in New York, based on local conditions and issues; these criteria for adverse impacts are well suited for evaluation of effects in New York City. Consideration of noise impacts using CEQR impact criteria allow New York City agencies considering issuing a permit or approval to use this analysis to meet their environmental review obligations under CEQR.

Chapter 22, Section 100 of the *CEQR Technical Manual* breaks construction duration into "short-term" and "long-term" and states that construction noise is not likely to require analysis unless it "affects a sensitive receptor over a long period of time." Consequently, the construction noise analysis considers both the potential for construction of a project to create high noise levels (the "intensity"), and whether construction noise would occur for an extended period of time (the "duration") in evaluating potential construction noise effects.

The noise impact criteria described in Chapter 19, Section 410 of the *CEQR Technical Manual* serve as a screening-level threshold for potential construction noise impacts. If the construction of a proposed project does not result in an exceedance at a specific sensitive receptor, further consideration of the intensity and duration of construction noise at that receptor is considered to determine the potential for significant adverse impacts.

Construction Noise Assessment Methodology

The detailed construction noise analysis includes both mobile and stationary construction noise sources. Stationary sources are based on typical equipment used during all phases of construction including abatement, demolition, excavation and foundation, core and shell construction, and interior fit-out. There would be overlapping construction activities during demolition, excavation, and foundation activities as well as during core and shell construction, and interior fit-out activities.

Construction mobile sources include worker vehicles and trucks. Construction noise has been evaluated for the construction mobile source peak period from 6:00 AM to 7:00 AM. During this period, there would be no construction noise from stationary sources. Construction noise from stationary sources has been evaluated for 17 different phases of construction.

Construction Mobile Source Noise Assessment

The construction mobile source noise assessment evaluated the First Avenue corridor only during the 6:00 to 7:00 AM period. Automated traffic recorder (ATR) data was collected over 24-hours at four locations throughout the study area.

The potential for construction mobile sources to increase ambient sound conditions has been determined based on proportional modeling of noise PCEs. If construction mobile sources would result in a doubling or more of PCEs, it would result in a 3 dBA or greater increase in noise levels. If PCEs would not double during construction, there would not be a significant adverse vehicular noise impact, and no further mobile source noise analysis is warranted. The *CEQR Technical Manual*

describes the process to determine PCEs. Vehicle classes are defined to have the following PCEs based on typical vehicles speeds:

- Each automobile or light truck: 1 noise PCE
- Each medium truck: 13 noise PCEs
- Each bus: 18 noise PCEs
- Each heavy truck: 47 noise PCEs

Increases in noise due to construction mobile sources are calculated using the following equation:

$$Sound\ Level\ Increase\ (Leq) = 10 * \log\left(\frac{Existing\ and\ Construction\ PCEs}{Existing\ PCEs}\right)$$

As described in the **Construction Traffic** section, the peak construction vehicle trips during the peak construction quarter (third quarter of 2029) would include 554 automobiles and 86 delivery trips in the 6:00 AM to 7:00 AM period. These vehicle trips would all travel along First Avenue to enter the construction site.

As shown in **Table 16-11**, noise from construction mobile sources between 6:00 AM and 7:00 AM would increase 2.8 dBA compared to the existing condition. As the construction mobile source noise levels would not increase by 3 dBA or more, there would be no significant adverse noise impact.

Table 16-11 Construction Mobile Source Analysis

	Intersection	Existing PCEs (6:00 to 7:00 AM)	Existing with Construction PCEs	Construction Mobile Source Sound Increase (dBA)
1	First Avenue and East 25th Street	3,008	5,777	2.8

Source: VHB, 2024.

Construction Stationary Source Noise Modelling

Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, topography, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard Organization (ISO) 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data used with the CadnaA model included site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the approximate geographic location and operational characteristics—including equipment usage rates (percentage of time operating at full power) for each piece of construction equipment operating at the Development Site, as well as noise control measures—were input to the model.

Construction equipment source strength was determined by the L_{max} levels presented in Table 22-1 of the *CEQR Technical Manual*. For construction equipment not included in this table, other reference sources, manufacturer specifications, or field measured noise levels were used.

Reflections and shielding by barriers erected on the construction site and shielding from adjacent buildings were accounted for in the model. In addition, construction-related vehicles were assigned to the adjacent roadways. The model produced A-weighted L_{eq} noise levels at each receptor location for each analysis period, as well as the contribution from each noise source. The $L_{10(1\text{-}hr)}$ noise levels were conservatively estimated by adding 3 dBA to the L_{eq} noise levels, as is standard practice.

Construction noise from stationary sources has been evaluated for the following phases:

- From Month 12 through 15, the demolition phase for the existing East Building and existing West Building would occur. Construction has been evaluated based on Month 13 as this period would have the highest construction sound emissions.
- From Month 16 through 22, the demolition phase for all three existing buildings would occur. Construction has been evaluated based on Month 16 as this period would have the highest construction sound emissions.
- From Month 23 through 24, the foundation phase for the new East Building would occur while demolition would continue on the existing North Building and existing West Building. Construction has been evaluated based on Month 24 as this period would have the highest construction sound emissions.
- From Month 25 through 26, the foundation phases for the East Building and the West Building would occur, while demolition would continue for the existing North Building. Construction has been evaluated based on Month 26 as this period would have the highest construction sound emissions.
- From Month 27 through 28, the foundation phases for the East Building and the West Building would occur. No construction activities would occur at the North Building during this time. Construction has been evaluated based on Month 28 as this period would have the highest construction sound emissions.
- From Month 29 through 31, the foundation phases for the East Building, the West Building, and open space (below grade foundation) would occur. Construction has been evaluated based on Month 30 as this period would have the highest construction sound emissions.
- From Month 35 through 36, the foundation phases for the West, and North Building as well as the Open Space (below grade foundation), and the core and shell phase of the East Building would occur. Construction has been evaluated based on Month 35 as this period would have the highest construction sound emissions.
- From Month 37 through 42, the construction phases for the Open Space (below grade foundation), and the core and shell phase of the East, West, and North Building would occur. Construction has been evaluated based on Month 40 as this period would have the highest construction sound emissions.
- From Month 43 through Month 45, the construction of the proposed Resiliency Wall would occur. Construction has been evaluated based on Month 44 as this period would have the highest construction sound emissions.

- From Month 55 through 60, the demolition phases for the existing pedestrian bridge would occur. Construction has been evaluated based on Month 55 as this period would have the highest construction sound emissions.
- From Month 61 through 72, the interior fit-out phases for the three proposed buildings would occur, while the construction of the new open spaces and pedestrian bridge would continue. Construction has been evaluated based on Month 61 as this period would have the highest construction sound emissions.

Construction Equipment Noise Emissions

Table 16-12 presents the type of equipment, the maximum sound level at 50 feet, the utilization factors (percentage of time the equipment is operating at full power), and the number of each piece of equipment that is used during each phase of construction based on the *CEQR Technical Manual*. This table does not include trucks at the Development Site such as box trucks, pickup trucks, tractor trailers, packer trucks, container trucks, and dump trucks since they are not allowed to idle more than three minutes in accordance with New York City Administrative Code §24-163.

Table 16-12 Construction Equipment by Month of Analysis

Equipment Type	Maximum Sound Level at 50 feet (dBA, L_{max})	Utilization Factor (%)	Number of Construction Equipment Pieces by Analysis Month										
			13	16	24	26	28	30	35	40	44	55	61
Skid Steers	80	40	6	18	18	18	0	0	0	0	0	0	0
Excavators/Loaders	85	40	12	15	15	19	7	10	10	6	1	3	0
Pile Driving Rigs	95	20	0	0	3	7	4	7	3	0	0	0	0
Cranes	85	16	1	2	1	3	2	1	5	5	7	3	3
Concrete Pumps	82	20	0	0	0	1	2	2	4	4	4	1	2
Generators	82	50	1	6	2	10	4	6	10	10	8	7	4
Hoist Cars	75	50	0	0	0	0	0	0	8	16	16	24	16
Concrete Trucks	85	40	0	0	0	1	2	2	3	4	4	2	0

Source: VHB, 2024

Noise Reduction Measures

Construction of the Proposed Project would be required to follow the requirements of the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) for construction noise control measures. Additionally, construction of the Proposed Project would incorporate some noise control measures that go beyond those required by the Code. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the New York City Noise Control Code. These measures could include a variety of source and path controls.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented in accordance with the New York City Noise Control Code:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction. **Table 16-10** shows the noise levels for construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Project.
- As early in the construction period as logistics allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders and water pumps (i.e., early electrification) to the extent feasible and practicable. Where electrical equipment cannot be used, diesel or gas-powered generators and pumps would be located within buildings to the extent feasible and practicable.
- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, trucks would not be allowed to idle more than 3 minutes at the construction site per Title 24, Chapter 1, Subchapter 7, Section 24-163 of the New York City Administrative Code.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

Construction Noise Assessment

As discussed in **Chapter 2, Land Use, Zoning, and Public Policy**, land uses surrounding the Development Site are predominantly public facilities and institutions with some commercial and residential uses also located nearby. **Table 16-13** details all receptor locations and land use descriptions. As shown in **Figure 16-20**, construction noise has been evaluated at 18 existing receptor locations with receptors on each floor of the building on each site (if noise sensitive).

Figure 16-20 Construction Noise Receptor Locations



Table 16-13 Construction Noise Receptor Locations and Land Use Descriptions

Receptor	Facility Name and/or Address	Land Use Description
R01	10 Waterside Plaza	Residential
R02	Asser Levy Playground	Outdoor Recreation
R03, R04, and R05	U.S. Corbin VA Facility 423 East 23rd Street	Community Facility (Hospital)
R06	NYU Dental Center 421 First Avenue	Commercial & Office Space
R07	NYU Langone Health Environmental Medicine Building 341 East 25th Street	Community Facility (Hospital)
R08	NYU College of Nursing, Dentistry, and Engineering[8] 433 First Avenue	Community Facility (Education)
R09	New York City Department of Health and Mental Hygiene Public Health Laboratory (future 455 First Avenue life science space)	Public Laboratory (Commercial & Office Space)
R10	Garden of Bellevue Hospital 461 First Avenue	Outdoor Recreation (not publicly accessible)
R11	Bellevue Hospital Center 462 First Avenue	Community Facility (Hospital)
R12	Bellevue Hospital Center: Emergency Room 462 First Avenue	Community Facility (Hospital)
R13, R14, and R15	The Office of Chief Medical Examiner 421 East 26th Street	Commercial & Office Space
R16	Bellevue Sobriety Garden 450-498 FDR Drive	Privately-owned Outdoor Recreation
R17	25 Waterside Plaza	Commercial & Office Space
R18	Peter Cooper Village 350 First Avenue	Residential

Source: VHB, 2024

Existing Ambient Noise Levels

Existing ambient sound levels at all receptor locations were determined based on measurements conducted in the study area and Cadna-A modeling of the traffic noise conditions. Measurements include those conducted during the morning peak period (7:00 AM to 9:00 AM) and the midday peak period (12:00 PM to 2:00 PM) throughout the Development Site (Sites 1 through 4) as shown in **Table 16-14**.

[8] Housed in NYU's Interprofessional Building.

Table 16-14 Ambient Sound Level Measurements

Site	Monitoring Location	Time Period	Duration	L_{eq}	L_{10}	L_{50}	L_{90}
1	First Avenue between East 25th Street and East 26th Street	Morning	20 min	72.5	73.9	65.4	61.8
		Midday	20 min	70.0	70.1	65.3	62.7
2	East 26th Street between First Avenue and FDR Drive	Morning	20 min	73.8	67.9	63.0	61.9
		Midday	20 min	73.1	69.7	63.6	62.1
3	FDR Drive between East 25th Street and East 26th Street	Morning	1 hour	80.1	81.5	80.0	78.5
		Midday	1 hour	78.2	79.3	77.7	75.8
4	East 25th Street between First Avenue and FDR Drive	Morning	20 min	65.0	66.8	64.0	62.1
		Midday	20 min	63.0	64.8	62.3	60.7

Source: Noise measurements conducted by VHB on November 14, 2023.

The ambient sound level at each receptor was determined based on the measured sound level, similarity of acoustic context, and an adjustment based on the difference in modeled sound levels at the corresponding measurement location and each specific receptor location. The background sound level assumed for any receptors along First Avenue was 70.0 dBA, which is the lower L_{eq} or L_{10} at Site 1 for morning peak period and midday peak period. The background sound level assumed for any receptors along former East 26th Street was 67.9 dBA, which is the lower L_{eq} or L_{10} at Site 2 for morning peak period and midday peak period. The background sound level assumed for any receptors along FDR Drive was 78.2 dBA, which is the lower L_{eq} or L_{10} at Site 3 for morning peak period and midday peak period. The background sound level assumed for any receptors along East 25th Street was 63.0 dBA, which is the lower L_{eq} or L_{10} at Site 4 for morning peak period and midday peak period.

Construction Noise Levels

The construction noise predictions include the equipment described in **Table 16-12**. The 8-foot perimeter walls have been included at all sites throughout the phased development as indicated on the logistics plans.

The *CEQR Technical Manual* defines 45 dBA (L_{10}) as an acceptable interior noise level limit for residential and community facility uses, as discussed in **Chapter 16, Noise**. Interior noise level of 50 dBA (L_{10}) is typically considered to be an acceptable interior noise level limit for office and commercial office spaces. These acceptable interior L_{10} noise level limits were used to determine if mitigation measures are needed at receptors where elevated noise levels are projected with construction of the Proposed Project. The L_{10} metric is calculated by adding a 3-dBA adjustment factor to the calculated L_{eq} according to FHWA's Roadway Construction Noise Model (RCNM) guidance.

Table 16-15 provides the results of the construction noise assessment at the nearest receptors to the Proposed Project, and the following sections discuss those receptors where noise increases are projected to be greater than 10 dBA.

Table 16-15 Construction Noise Assessment Results Summary

Receptor	Facility Name and/or Address	Land Use	Total L_{10} (dBA)	Change in L_{eq} (dBA)
R01	10 Waterside Plaza	Residential	83.0	1.8
R02	Asser Levy Recreational Center	Outdoor Recreation	83.0	1.8
R03	U.S. Corbin VA Facility 423 East 23rd Street	Community Facility (Hospital)	81.6	15.6
R04	U.S. Corbin VA Facility 423 East 23rd Street	Community Facility (Hospital)	84.4	18.4
R05	U.S. Corbin VA Facility 423 East 23rd Street	Community Facility (Hospital)	83.2	17.2
R06	NYU Dental Center 421 First Avenue	Commercial & Office Space	83.1	10.1
R07	NYU Langone Health, Environmental Medicine Building 341 East 25th Street	Community Facility (Hospital)	84.7	11.7
R08	NYU College of Nursing, Dentistry, and Engineering 433 First Avenue	Community Facility (Education)	84.9	11.9
R09	New York City Department of Health and Mental Hygiene Public Health Laboratory (future 455 First Avenue life science space)	Commercial & Office Space	81.9	8.9
R10	Garden of Bellevue Hospital 461 First Avenue	Outdoor Recreation	81.0	8.0
R11	Bellevue Hospital Center 462 First Avenue	Community Facility (Hospital)	81.3	5.2
R12	Bellevue Hospital Center: Emergency Room 462 First Avenue	Community Facility (Hospital)	83.3	7.2
R13	The Office of Chief Medical Examiner 421 East 26th Street	Commercial & Office Space	88.6	12.5
R14	The Office of Chief Medical Examiner 421 East 26th Street	Outdoor Recreation	87.2	11.1
R15	The Office of Chief Medical Examiner 421 East 26th Street	Commercial & Office Space	88.2	12.1
R16	Bellevue Sobriety Garden 450-498 FDR Drive	Outdoor Recreation	83.2	2.0
R17	25 Waterside Plaza	Commercial & Office Space	83.0	1.8
R18	Peter Cooper Village 350 First Avenue	Residential	76.5	3.5

Source: VHB, 2024

Receptors 03, 04, and 05 (U.S. Corbin VA Facility)

Receptors 03, 04, and 05 represent the northern façade of the existing U.S. Corbin VA Facility located along East 25th Street. At these receptors construction is predicted to produce noise levels up to low-80s dBA during the most noise-intensive stages of construction, which would occur up to approximately two months and result in noise level increases up to 18.4 dBA. Noise levels for the remainder of construction would remain in the mid to high-70s dBA. As the U.S. Corbin VA Facility building has a central heating, ventilation, and air conditioning (HVAC) system, it is expected that 30 dBA attenuation can be achieved with a closed-window condition. Therefore, maximum interior noise levels during construction would be in the low-50s dBA for the peak two months of construction, and high-40s dBA during most of the construction period, which is no more than approximately 3 dBA greater than the recommended noise level threshold for this type of use according to the *CEQR Technical Manual* noise exposure criteria. Noise levels in the mid- to high-40s dBA are comparable to typical noise levels in a commercial office setting, and while they are greater than the recommended 45 dBA threshold, the construction would typically occur during weekday daytime hours and would therefore not produce noise during nighttime hours when in-patients would be most sensitive to noise.

Receptor 06, 07 and 08 (NYU Facilities)

Receptors 06, 07, and 08 represent the eastern façade of the existing NYU facilities located along First Avenue. At these receptors, construction is predicted to produce noise levels up to mid-80s dBA during the most noise-intensive stages of construction, which would occur up to approximately four months and result in noise level increases up to 11.9 dBA. Noise levels for the remainder of construction would remain in the high-70s dBA. As the Receptor 06 and 08 buildings have central HVAC systems, it is expected that 30 to 35 dBA attenuation can be achieved with a closed-window condition. Therefore, maximum interior noise levels during construction would be in the mid-50s dBA, but high-40s dBA during most of the construction period. For Receptor 07, the building has window air conditioning units, and it is expected that 25 dBA attenuation can be achieved with a closed-window condition. Therefore, maximum interior noise levels during construction would be in the high-50s dBA, but low-50s dBA during most of the construction period.

Receptor 13, 14, and 15 (The Office of Chief Medical Examiner)

Receptors 13, 14, and 15 represent the southern façade of the existing Office of Chief Medical Examiner located along former East 26th Street, directly north of the Development Site. This facility was constructed and occupied in 2013. The proposed construction is projected to produce noise levels at this set of receptors up to mid- to high-80s dBA, which could exceed the New York City Noise Code of 85 dBA if the upper limits are realized, during the most noise-intensive stages of construction, which would have a duration of up to approximately three months and result in noise level increases of up to 12.5 dBA. Noise levels for the remainder of construction would remain in the high-70s dBA. As this is a relatively new building with well-insulated glass and a central HVAC system, it is expected that the closed-window condition of 35 dBA attenuation can be achieved. Therefore, maximum interior noise levels during construction would be in the low-50s dBA, which is close to the interior noise level goal of 50 dBA for office uses.

At these receptors, interior noise levels during construction would be in the high-40s dBA during most of the construction period, no more than approximately 3 dBA greater than the recommended noise level threshold of 45 dBA for residential/community facility use and 50 dBA for office use,

according to the *CEQR Technical Manual* noise exposure criteria. Noise levels in the high-40s dBA are comparable to typical noise levels in a commercial office setting.

During construction of the Proposed Project, it is expected that construction of the 455 First Avenue project would be underway on the site of the existing Public Health Laboratory, located west of First Avenue and north of East 26th Street. Given the location of the two projects, there would be limited potential for coincident construction activities to affect the same receptors. There are two locations—the NYU Rory Meyers College of Nursing located at 433 First Avenue and the outdoor space associated with Bellevue Hospital—that may experience elevated noise levels from coincident construction of both projects.

At the 433 First Avenue location, construction of the Proposed Project could result in elevated noise levels on the building's east façade while construction of 455 First Avenue could result in elevated noise levels at the building's northern façade (across East 26th Street). As this building was constructed in 2015 and as the building has alternate means of ventilation, 30 to 35 dBA attenuation is expected. Because of the location of the respective construction activities (one project to the north of 433 First Avenue, one to the east), the expected temporary overlap of the construction activities, and the expected attenuation of the 433 First Avenue building, no significant adverse impacts at this location would occur.

At Bellevue Garden, construction of the Proposed Project would occur south of the outdoor space associated with Bellevue Hospital across former East 26th Street. Construction at 455 First Avenue would occur west of the space across First Avenue. While there may be elevated noise levels from construction, this location is not open to the public. If noise levels reach levels such that users of the space are not comfortable, it is expected that they will visit alternate locations on a temporary basis while construction is most disruptive.

Conclusion

Construction of the Proposed Project is predicted to result in elevated noise levels at several of the analyzed receptors during limited periods of time during the overall construction period. South of the Development Site, at the U.S. Corbin VA Facility, construction is predicted to result in noise level increases up to approximately 18.4 dBA over a two-month period. To the west of the Development Site, at the NYU facilities along First Avenue, construction is predicted to result in noise level increases up to 11.9 dBA over a four-month period. North of the Development Site, at the Office of the Chief Medical Examiner, construction is predicted to result in noise level increases up to approximately 12.5 dBA over a three-month period. Such exceedances may be intrusive but would be only temporary and of limited duration. At each of these locations, it is expected that because all but one of the buildings have central HVAC systems, approximately 30 to 35 dBA attenuation (depending on the building) can be achieved with a closed-window condition resulting in interior noise levels that are close to the CEQR interior noise levels for these types of uses (i.e., 45 dBA (L_{10}) for residential and community facility uses and 50 dBA (L_{10}) for office or equivalent spaces). At the location with window air conditioning units, approximately 25 dBA of attenuation is expected.

Because these increases are predicted to occur only on a portion of each building over a limited period of the construction duration (up to four months total depending on the location) and would result in maximum interior noise levels close to the CEQR interior noise recommendation, the Proposed Project would not result in significant adverse construction noise impacts at these locations. Additionally, noise control measures would be incorporated into a construction noise mitigation plan required under the New York City Noise Control Code to further reduce the noise

impact from the construction operations. These measures could include a variety of source and path controls, such as temporary barrier shrouds around specific equipment; and substitution with the equipment of lower noise emissions, i.e., using drill rigs instead of pile driving, as well as other measures, as warranted.

At the other receptors, including residential receptors, increases in noise levels from Proposed Project construction are predicted to be less than 10 dBA, and significant adverse construction noise impacts would not occur.

Vibration

Construction activities have the potential to generate ground-borne vibration that can potentially cause structural or architectural damage or annoy people in nearby vibration-sensitive spaces, such as residences. The most substantial sources of construction vibration are equipment associated with the excavation and foundation phase, such as pile drivers and excavators.

There are no buildings within the Project Area listed by LPC or the State and/or National Register of Historic Places (S/NR) which would require special protections from potential damage due to vibration. There is the potential for construction vibration from some construction equipment, such as pile drivers, to cause annoyance in nearby residences. However, these construction activities would only occur for limited periods of time at any particular location and there would be no significant adverse impact as a result of construction vibration.

Water and Sewer Infrastructure

To protect the nearby water resources outlined in **Chapter 9, Water and Sewer Infrastructure**, the Proposed Project would require a SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001, January 2020) from the NYSDEC. This permit establishes the criteria by which construction projects are regulated and are allowed to discharge stormwater.

In addition, the Applicant will be required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets criteria set forth by NYSDEC under the SPDES General Permit for Stormwater Discharges from Construction Activity. The SWPPP would be reviewed and approved by NYSDEC and address erosion and sediment control, stormwater management, and pollution prevention practices during the construction process. No project work or equipment and materials storage will occur within or adjacent to wetlands. Various project erosion and silt controls would be installed and maintained pursuant to the New York State Standards and Specifications for Erosion and Sediment Control (2016).

With the implementation of a SWPPP, there would be no significant adverse impacts to water resources due to construction of the Proposed Project.