A. INTRODUCTION

This chapter assesses the potential impacts of the construction of buildings expected to result on the Development Site from the Proposed Actions. The following sections discuss the potential impacts resulting from the construction of the Development Site as described in the reasonable worst case development scenario (RWCDS) presented in **Chapter 1, "Project Description."** Construction impacts, although temporary, can include noticeable and disruptive effects from an action that is associated with construction or could induce construction. As stated in the 2020 *City Environmental Quality Review* (CEQR) *Technical Manual*, determination of the significance of construction impacts and need for mitigation is generally based on the duration and magnitude of the impacts. Construction impacts are usually important when construction activity could affect traffic conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and air quality conditions.

The Proposed Actions comprise zoning map and text amendments as well as a Large Scale General Development (LSGD) special permit, and special permit to waive parking. The Proposed Actions are expected to facilitate the construction of new mixed-use buildings with residential, local retail, and community facility uses. As discussed in **Chapter 1, "Project Description,"** the Proposed Development would comprise 1,263,039 gsf of residential uses, introducing a total of 1,578 dwelling units, approximately 21,183 gsf of local retail space, and approximately 9,678 gsf of community facility space. For conservative analysis purposes it is assumed that the community facility space would be occupied by a medical office; however, it is the Applicant's intent to ultimately provide a daycare facility. Approximately 75,414 gsf (parking for approximately 16 percent of all market-rate units) would be allocated for parking on the ground- and cellar-levels of the Proposed Development in two separate garages.

Under the RWCDS, the Proposed Actions would facilitate the incremental development of approximately 1,060 total dwelling units, including 789 affordable dwelling units (848,432 gsf), 21,183 gsf of local retail uses, 9,678 gsf of community facility uses, and a net decrease of approximately 131 accessory parking spaces. The Proposed Development would be constructed in two consecutive phases beginning in first quarter 2021 with the demolition of the existing buildings and ending in late 2024.

According to the *CEQR Technical Manual*, construction duration is often broken down into short-term (less than two years) and long-term (two or more years). Where the duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require detailed assessment. As described below, as construction activity associated with the RCWDS would occur in two phases from early 2021 through late-2024, it is considered long-term and a preliminary assessment of potential construction impacts was prepared in accordance with the guidance of the *CEQR Technical Manual*, and is presented in this chapter.

The findings of the preliminary assessment identified the need to undertake more detailed construction impact assessments for air quality and noise. To conduct these detailed assessments, this chapter describes the City, state, and federal regulations and policies that govern construction, followed by the conceptual construction schedule and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the expected number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed and the methods that may be employed to avoid significant adverse construction-related impacts are presented.

For each of the various technical areas presented below, appropriate construction analysis years were selected to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of construction may not be at the same time as the heaviest construction traffic.

B. PRINCIPAL CONCLUSIONS

Construction of the Proposed Development would not result in significant adverse impacts in the areas of land use, socioeconomic conditions, open space, hazardous materials, neighborhood character, or air quality. Based on the reasonable worst case development scenario (RWCDS) construction schedule, construction activities would be spread out over a period of approximately four years. While construction of the Proposed Development would result in temporary increases in traffic during the construction period, access to residences, businesses, and institutions in the area surrounding the Project Area would be maintained throughout the construction period (as required by City regulations). While construction of the new buildings due to the Proposed Actions would cause temporary impacts, particularly related to noise, it is expected that such impacts in any given area would be relatively short term, even under the worst-case construction sequencing, and therefore would not create neighborhood character impact. Further discussions of the findings of the construction transportation, air quality, noise, community facilities, open space, historic resources, and hazardous materials analyses are provided below.

Transportation

Construction travel demand is expected to peak in the second quarter (Q2) of 2023 when traffic related to the construction of the building facade for Phase I would coincide with the construction of the concrete superstructure for Phase II. This period was therefore analyzed for potential transportation impacts during construction. It is expected that construction of the Proposed Development would generate a peak of approximately 738 workers and 18 truck deliveries per day during the second quarter of 2023.

Traffic

In order to assess construction traffic conditions, a 2023 No-Action traffic network was established based on TMC and ATR data collected for the 6 to 7 AM and 3 to 4 PM peak hours and the incremental vehicle trips by construction workers and trucks were added to this network to assess the construction With-Action condition during these peak hours. In addition to the nine intersections that were analyzed as part of the operational traffic analysis presented in Chapter 14, “Transportation,” the construction traffic analysis also included the intersections of Eastern Parkway and Washington Avenue and Franklin Avenue and Crown Street. The maximum construction-related traffic increments would be approximately 236 PCEs during the AM and 220 PCEs during the PM period. Six lane groups at five intersections are expected to have the potential for significant adverse traffic impacts as a result of construction activities, namely the northbound left-through and southbound left at Eastern Parkway and Washington Avenue, the southbound left-through-right at Washington Avenue and Empire Boulevard, the southbound right at Franklin Avenue and Empire Boulevard, the southbound through-right at Franklin Avenue and Sullivan Place, and the westbound left-right at Washington Avenue and Carroll Street, all during the 3 to 4 PM peak hour.

Transit

The Development Site is located in an area that is well served by public transportation, with two subway stations serving seven subway lines, and five local bus routes located in the vicinity of the Project Area. Transit conditions during the 6-7 AM and 3-4 PM construction peak hours are expected to be generally better than transit conditions during the analyzed operational peak hours with full build-out of the Proposed Actions; incremental demand would be lower during construction, and most construction trips would not occur during the peak hours of commuter demand. As the construction incremental transit demand projections do not exceed the *CEQR Technical Manual* analysis thresholds of 200 new subway or 50 new bus trips after being distributed to the two subway stations and various bus lines, and as these trips would occur outside of the typical commuter peak hours, there would not be a potential for significant adverse transit impacts attributable to anticipated construction worker transit trips.

Pedestrians

Pedestrian trips by construction workers would be concentrated in proximity to the Development Site and along corridors connecting the Development Site to area transit services. As these construction trips would primarily occur outside of the weekday AM and PM commuter peak periods and the weekday midday peak period—the times when area pedestrian facilities typically experience their greatest demand—the Proposed Actions' pedestrian volumes would be lower during this peak construction period than with full build-out of the Proposed Actions. After being distributed to area pedestrian elements primarily en route to the two subway stations and five local bus routes, these trips are anticipated to exceed the *CEQR Technical Manual* analysis thresholds of 200 new walk trips on several pedestrian elements analyzed in operational pedestrian analyses (in Chapter 14, "Transportation") in close vicinity of the Project Site. However, given that the 6-7 AM and 3-4 construction peak hours are outside of the typical weekday AM and PM commuter peak periods, existing pedestrian volumes would be generally lower with less project-generated trips than analyzed in the operational transportation which would resulting in similar or better at levels of service as in With-Action condition of the operational transportation at all comparable pedestrian elements. As such, construction walk trips would therefore not result in the potential for significant adverse pedestrian impacts.

Parking

Construction worker parking demand would be equivalent to approximately 279 spaces in the 2023 (Q2) peak construction period. The construction-generated parking demand would be accommodated by on-street and off-street parking within the half-mile radius. The Proposed Actions are not expected to result in significant adverse parking impacts during the 2023 Q2 peak construction period.

Air Quality

The potential air quality impacts of the Proposed Actions were examined through a detailed analysis of a worst-case overlapping construction activities for Phase I and Phase II during the 2021 (Q1) peak construction period. This period has the highest potential for air quality impacts, and other construction periods would have lower impacts by comparison. The short-term and annual time periods for analysis were selected through preparation of a monthly emissions profile based on the potential construction equipment requirements for each site. Off-road equipment, on-road haul truck, and fugitive dust emissions were quantified and impacts at receptors using the U.S. Environmental Protection Agency (EPA) models and methods consistent with the *CEQR Technical Manual*. The analysis accounts for the emission control measures mandated by existing laws and regulations applicable to private developers, including the use of ultra-low sulfur diesel (ULSD), dust control measures and idling restrictions.

No exceedance of National Ambient Air Quality Standards (NAAQS) or CEQR *de minimis* criteria are predicted for carbon monoxide (CO), 24-hour particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), or annual average nitrogen dioxide (NO_2). The construction air quality analysis results show the maximum predicted total concentrations of 24-hour PM10, one- and eight-hour CO, and annual-average NO2 are below the applicable NAAQS. In addition, the maximum predicted PM2.5 incremental concentrations would not exceed the applicable CEQR de minimis criteria of 8.9 µg/m3 in the 24-hour average period or 0.3 µg/m3 in the annual average period. Likewise, the maximum predicted CO incremental concentrations would not exceed the applicable CEQR de minimis criteria. Therefore, no significant adverse impacts on air quality are predicted during construction of the Proposed Development. Since no significant adverse impact occurs from the worst-case site construction period, no significant adverse air quality impacts would occur from the construction related to the Proposed Actions.

Noise

Detailed quantitative construction noise modeling was completed for the Proposed Development to determine typical construction noise levels for excavation, superstructure, and interior fit-out construction phases. A receptor network was developed for a study area consisting of a 400-ft radius around the Development Site. Sensitive receptor locations, such as residential properties, churches, parks, and schools close to the Project Area were selected as noise receptor sites. Multiple receptors were created along of the façade of existing buildings to capture the noise levels at different floors of the building. 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 construction of a Proposed Development would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, if construction of a Proposed Development could result in exceedances of these noise impact criteria, then further consideration of the intensity and duration of construction noise at that receptor is warranted. In addition to the CEQR construction criteria above, for the purposes of this analysis, determination of significant adverse construction noise impact would be considered based on the intensity and duration (i.e. noise level increment of 15 dBA or more for prolonged period of 12 consecutive months or more or noise level increment of 20 dBA or more for prolonged period of 3 consecutive months or more). The analysis also compared interior L10 noise levels to the CEQR interior noise guideline of 45 dBA and considered the magnitude and duration of impacts.

OPEN SPACE

Noise levels at publicly accessible and private open space locations are currently above the 55 dBA L10 (1) recommended in the *CEQR Technical Manual* noise level for outdoor areas. Proposed construction activities would exacerbate these exceedances of the recommended level in some locations as detailed further below. Although the 55 dBA L10 (1) guideline is a worthwhile goal for outdoor areas requiring serenity and quiet, this relatively low noise level is typically not achieved in parks and open space areas in New York City.

The Brooklyn Botanic Garden is largely shielded from equipment operating at ground level by intervening buildings along the east side of Washington Avenue. However, there is a gap between the buildings along Washington Avenue created by the Franklin Avenue Shuttle trench where there is a direct path for construction noise to propagate to certain portions of the garden. The maximum incremental impact is 16 dBA for month 7, representing months 1-7) (receptor #599). The total noise level would range from 54 to 71 dBA (L_{eq}) during construction. The 15 dBA impact threshold would be exceeded for up to 7 consecutive months. The maximum consecutive duration of exceedance of the CEQR screening criteria is 39 months, therefore the impact to the Brooklyn Botanic Garden is considered a potentially significant adverse impact. No practical and feasible mitigation measures have been identified that could be implemented to reduce noise levels at Brooklyn Botanic Garden to below the 55 dBA L10(1) guideline and/or eliminate project impacts. Consequently, construction activities would result in a significant adverse noise impact.

The Jackie Robinson Playground would experience a maximum construction noise increment of 19 dBA during modeled month 21 (representing months 15-22). The highest total noise level at the eastern portion of the playground during this time period of major construction on Building 2 would be approximately 76 dBA Leq. The CEQR screening criteria would be exceeded for the duration of construction (45 months), therefore the impact to the Jackie Robinson Playground is considered a potentially significant adverse impact. No practical and feasible mitigation measures have been identified that could be implemented to reduce noise levels at Jackie Robinson Playground to below the 55 dBA L10(1) guideline and/or eliminate project impacts. Consequently, construction activities would result in a significant adverse noise impact.

PUBLIC AND PRIVATE INSTITUTIONS

The Gospel Truth Church at 1051 Washington Avenue is shielded from direct exposure to construction noise paths by intervening buildings. The maximum predicted increment for this facility is approximately 1 dBA and CEQR screening thresholds would not be exceeded. Therefore, no significant adverse impacts would occur.

CUNY Medgar Evers College would experience a maximum construction noise increment of approximately 17 dBA at the worst receiver location (receptor #307) during month 21 (representing months 15-22). CEQR screening criteria would be exceeded for up to 45 months and the 15 dBA incremental impact threshold exceeded for up to 10 months. However, these increments are due to the low existing noise level and the maximum exterior noise level predicted during construction is 71 dBA Leq. Based on field observations, CUNY Medgar Evers College appears to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 33-44 dBA, and would not exceed the CEQR interior noise guideline of 45 dBA L10. Therefore, considering the magnitude and duration of impact, the construction noise impact to CUNY Medgar Evers College is not considered a significant adverse impact.

At P.S. 375 Jackie Robinson School, the maximum construction noise increment would be 26 dBA (L_{eq}) and the 20 dBA (L_{eq}) increment threshold would be exceeded for 22 consecutive months. Absolute $L_{eq(1\text{-}hr)}$ noise levels at the third and fourth floor exterior would be as high as 83 dBA (Leq). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, P.S. 375 appears to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 44-58 dBA, exceeding the CEQR interior noise guideline by up to 13 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to P.S.375 is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

RESIDENTIAL AND MIXED-USE BUILDINGS

This section discusses in detail the residential and mixed-use buildings exceeding the CEQR screening criteria for at least 24 consecutive months or exceeding the 15 dBA/20 dBA increment criteria.

921 WASHINGTON AVENUE

This residential building is to the west of 109 Montgomery Street and is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 16 dBA (Leq). The exceedance of the 15 dBA threshold would have a duration of approximately 8 months (represented by Month 21). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 921 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 41-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 59-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 921 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

941 WASHINGTON AVENUE

The residential building at 941 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 22 dBA (L_{eq}). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). The 15 dBA incremental threshold would be exceeded for up to 39 consecutive months and the 20 dBA incremental threshold would be exceeded for up to 10 consecutive months. Based on field observations, at least a portion of the residences of 941 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 45-56 dBA, exceeding the CEQR interior noise guideline by up to 11 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 63-74 dBA, exceeding the CEQR interior noise guideline by up to 29 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 941 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

961 WASHINGTON AVENUE

The residential building at 961 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 17 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 10 consecutive months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 961 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 48-58 dBA, exceeding the CEQR interior noise guideline by up to 13 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 66-76 dBA, exceeding the CEQR interior noise guideline by up to 31 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 961 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

975 WASHINGTON AVENUE

The residential building at 975 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 18 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 7 consecutive months. The exceedance of the CEQR screening criteria would persist for 45 months. Based on field observations, at least a portion of the residences of 975 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 46-59 dBA, exceeding the CEQR interior noise guideline by up to 14 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 64-77 dBA, exceeding the CEQR interior noise guideline by up to 32 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 975 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

995 WASHINGTON AVENUE

The newly constructed residential building at 995 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 17 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 7 consecutive months. The exceedance of the CEQR screening criteria would persist for 39 months. Based on field observations, the residences of 995 Washington Avenue appear to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-57 dBA, exceeding the CEQR interior noise guideline by up to 12 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 995 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

1015 WASHINGTON AVENUE

The residential building at 1015 Washington Avenue (on the southeast side of the project site) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 32 dBA (L_{eq}). The 20 dBA increment threshold would be exceeded for 14 consecutive months (during the excavation and foundation work on Building 1). The exceedance of the CEQR screening criteria would persist for 39 months, although the magnitude of incremental impact would be reduced by 10 dBA after the first seven months and continue to decline through the remainder of construction. Based on field observations, at least a portion of the residences of 1015 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 42-64 dBA, exceeding the CEQR interior noise guideline by up to 19 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 60-82 dBA, exceeding the CEQR interior noise guideline by up to 37 dBA. Considering the magnitude and duration of impact, the construction noise impact to 1015 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

1035 WASHINGTON AVENUE

The residential building at 1035 Washington Avenue (directly south of the project site) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 29 dBA (L_{eq}). The 20 dBA increment threshold would be exceeded for 14 consecutive months. The exceedance of the CEQR screening criteria would persist for 39 months, although the magnitude of impact would be reduced substantially once the Building 1 exterior is completed (providing shielding of this building from the noise generated by the subsequent construction of Building 2). Based on field observations, at least a portion of the residences of 1035 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 41-62 dBA, exceeding the CEQR interior noise guideline by up to 17 dBA. For units with window AC units, the CEQR interior noise guideline would not be exceeded after the first 14 months of construction.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 59-80 dBA, exceeding the CEQR interior noise guideline by up to 35 dBA. Considering the magnitude and duration of impact, the construction noise impact to 1035 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

104 MONTGOMERY STREET

The residential building at 104 Montgomery Street (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 18 dBA (L_{eq}).). The 15 dBA incremental threshold would be exceeded for up to 10 consecutive months. The exceedance of the CEQR screening criteria would persist for 45 months. Based on field observations, the residences of 104 Montgomery Street appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 48-57 dBA, exceeding the CEQR interior noise guideline by up to 12 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 104 Montgomery Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

109 MONTGOMERY STREET

This is a newly constructed residential building with direct line-of-sight to the construction site across Montgomery Street. 109 Montgomery Street is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 19 dBA (Leq). The highest increment would occur over a period of approximately 8 months represented by Month 21). The 15 dBA incremental threshold would be exceeded for up to 32 consecutive months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, the residences of 109 Montgomery Street appear to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-52 dBA, exceeding the CEQR interior noise guideline by up to 7 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 109 Montgomery Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

12 CROWN STREET

The residential building at 12 Crown Street and is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 12 dBA (Leq). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 12 Crown Street appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 61-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 12 Crown Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

49 CROWN STREET

The residential tower at 49 Crown Street would experience a maximum increment of 18 dBA (Leq). Due to the height of the tower, many receptors would have direct line of sight to the construction site and would be affected by equipment operating at high elevations as well. The exceedance of the 15 dBA increment threshold would have a duration of approximately 39 months. Based on field observations, the residences of 49 Crown Street appear to have double-glazed or insulated glass windows and Packaged Terminal Air Conditioners. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 33-43 dBA, and would not exceed the CEQR interior noise guideline. Therefore, considering the magnitude and duration of impact, the construction noise impact to 49 Crown Street is not considered a significant adverse impact.

54 CROWN STREET (FUTURE DEVELOPMENT SITE)

The schedule for the development of this No-Action development site is unknown. If it was developed before the Proposed Development, it could experience construction noise impacts. The potential future building predicted to exceed CEQR noise impact screening criteria with a maximum increment of 23 dBA (Leq). The exceedance of the 15 dBA increment threshold would have a duration of approximately 39 months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). As a new development, 54 Crown Street is assumed to have double-glazed or insulated glass windows and Packaged Terminal Air Conditioners or central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 45-55 dBA, exceeding the CEQR interior noise guideline by up to 10 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 54 Crown Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

1720 BEDFORD AVENUE

The residential tower complex at 1720 Bedford Avenue would experience a maximum increment of 20 dBA (Leq). Due to the height of the towers, many receptors would have direct line of sight to the construction site and would be affected by equipment operating at high elevations as well. The longest consecutive duration of exceedance of the 20 dBA threshold would be approximately 8 months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 1720 Bedford Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 38-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 56-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 1720 Bedford Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

MOBILE SOURCE SCREENING

In the peak construction truck month during 6-7 AM hour, the screening threshold (doubling of noise PCEs or a 3 dBA increase over existing conditions) would not be exceeded along Washington Avenue. However, the screening threshold would be exceeded directly adjacent to the site on Montgomery St (increase from 69 existing noise PCES to 689 in peak truck month) and Franklin Ave (increase from 266 existing noise PCES to 492 in peak truck month). The detailed construction noise modeling includes the cumulative impact of on-site equipment plus truck traffic on the roads surrounding the site (including both roadways that exceed the mobile source screening) and this constitutes the worst-case construction noise impact. The receptors that would experience potential mobile source noise impacts are already included in the cumulative construction noise analysis that includes both mobile and stationary equipment. The impact of a maximum of nine trucks in the 6-7am hour would be negligible in comparison to the worst-case impact when both trucks and on-site equipment are operating simultaneously. Therefore, further detailed analysis of mobile source impacts as a distinct impact topic is not warranted given that the screening is only exceeded adjacent to the construction site.

PROJECT-ON-PROJECT

The highest predicted construction noise level on Building 1 during the construction of Building 2 in month 36 is 75 dBA Leq (occurring on floors 6-10 of the north façade). Incremental construction noise impacts on the north façade of Building 1 range between 14 and 20 dBA depending on the specific receptor location and floor. Proposed Development. The typical exterior to interior attenuation level for recent construction buildings with PTAC or central air condition is 30 dBA. Based on this, the highest interior noise level during construction would be 48 dBA L10, which exceeds the CEQR interior noise guideline. However, the duration of impact would be less than six months because of the decreasing Building 2 equipment requirements in subsequent construction months (primarily interior fit-out and site finishing). Therefore, based on the limited duration and limited geographic extent of the impact, the project-on-project impact is not a significant adverse construction noise impact.

Proposed Development

As described below, this analysis is based on the site plan and the conceptual construction schedule; it is possible that the actual construction may be of less magnitude, in which case construction noise would be less intense than the analysis predicts. It should also be noted that even the locations that experience incremental increases in construction-related noise would not be exposed to continuous noise—construction noise by its nature is intermittent and even in the peak construction periods there would be times when noise levels would be below the conservative noise levels predicted for impact assessment purposes.

Community Facilities

According to the *CEQR Technical Manual*, construction impacts to community facilities are possible if a community facility would be directly affected by construction (e.g., if construction would disrupt services provided at the facility or close the facility temporarily, etc.). The Proposed Actions would not result in physical change to any existing community facilities during the site's construction.

In addition, while construction of the Proposed Development would result in temporary increases in traffic during the construction period, access to and from local community facilities would not be affected during the construction period. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care services. New York City Police Department (NYPD) and New York City Fire Department (FDNY) emergency services and response times would not be materially affected by construction due to the geographic distribution of the police and fire facilities and their respective coverage areas.

Open Space

While no open space resources are located on the Development Site or in the Project Area, the Jackie Robinson Playground is located immediately east of the Development Site and the Brooklyn Botanic Garden is located approximately 130 feet west of the Development Site (at its nearest point). As such, access to existing open space resources would not be limited. If any construction staging would occur adjacent to a New York City Department of Parks and Recreation (NYC Parks) resource, the Applicant would be required to apply for a construction permit with NYC Parks, which would limit the length of time a construction project may block an open space resource and dictate how the area must be restored following construction. No publicly accessible open space would be impeded during construction. In addition, while construction of the new buildings due to the Proposed Actions would cause temporary impacts, particularly related to noise, it is expected that such impacts in any given area would be relatively short term, even under the worst-case construction sequencing, and therefore would not create an open space impact. Therefore, no significant construction impacts to open space are expected.

Historic and Cultural Resources

The NYC Landmarks Preservation Commission (LPC) determined that the Development Site was not sensitive for prehistoric and/or historic archaeological remains. In addition, as described in Chapter 7, "Historic and Cultural Resources," the Project Area encompasses the former Consumers Park Brewing Company complex, an S/NR-eligible historic resource. However, in the futures both without and with the Proposed Actions, the existing buildings on the Development Site, including the S/NR-eligible Consumer Park Brewery Company complex structures, would be demolished. Therefore, the Proposed Actions would not result in any new direct impacts to historic architectural resources as compared to No-Action conditions. The Brooklyn Central Office's Bureau of Fire Communications is the only historic resource within 400-feet of the Project Area that is a designated NYCL and is eligible for listing on the S/NR. As the Proposed Actions are Project Area-specific, they would not result in any direct impacts to surrounding historic resources.

Hazardous Materials

Any potential construction-related hazardous materials would be avoided by the placement of an (E) designation for the Development Site. Demolition of building interiors, portions of buildings, or entire buildings are regulated by the New York City Department of Buildings (NYCDOB) and require abatement of asbestos prior to any intrusive construction activities, including demolition. The U.S. Occupational Safety and Health Administration (OSHA) regulates construction activities to prevent excessive exposure of workers to contaminants in the building materials, including lead paint. New York State Solid Waste regulations control where demolition debris and contaminated materials associated with construction are handled and disposed of. Adherence to these existing regulations would prevent impacts from construction activities on the Development Sites.

C. REGULATORY FRAMEWORK

Governmental Coordination and Oversight

The governmental oversight of construction in New York City is extensive and involves a number of City, state, and federal agencies. **Table 20-1** shows the main agencies involved in construction oversight and each agency's areas of responsibility. The primary responsibilities lie with New York City agencies. The New York City Department of Buildings (NYCDOB) has the primary responsibility for ensuring that the construction meets the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, NYCDOB enforces safety regulations to protect both construction workers and the public. The areas of responsibility include the enforcement of regulations pertaining to the installation and operation of construction equipment, such as cranes and lifts, sidewalk sheds, and safety netting and scaffolding. The New York City Department of Environmental Protection (NYCDEP) enforces 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) and the NYCDEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), approves Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs), regulates water disposal into the sewer system, and oversees dust control for construction activities. The New York City Fire Department (FDNY) has primary oversight for compliance with the New York City Fire Code and for the installation of tanks containing flammable materials. The New York City Department of Transportation (NYCDOT) reviews and approves any traffic lane and sidewalk closures. The New York City Landmarks Preservation Commission (NYCLPC) approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

On the state level, the New York State Department of Environmental Conservation (NYSDEC) regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (NYSDOL) licenses asbestos workers. New York City Transit (NYCT) is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway. On the federal level, the U.S. Environmental Protection Agency (EPA) has wide ranging authority over environmental matters, including air emissions, noise emission standards, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level. The U.S. Occupational Safety and Health Administration (OSHA) sets standards for work site safety.

TABLE 20-1
Construction Oversight in New York City

Agency	Area(s) of Responsibility
New York City	
Department of Buildings (NYCDOB)	Primary oversight for Building Code and site safety
Department of Environmental Protection (NYCDEP)	Noise, hazardous materials, dewatering, dust
Fire Department (FDNY)	Compliance with Fire Code, tank operation
Department of Transportation (NYCDOT)	Traffic lane and sidewalk closures
Landmarks Preservation Commission (NYCLPC)	Archaeological and historic architectural protection
New York State	
Department of Labor (NYSDOL)	Asbestos workers
New York City Transit (NYCT)	Bus stop relocation; any subsurface construction within 200 feet of a subway
Department of Environmental Conservation (NYSDEC)	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan, Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency (EPA)	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration (OSHA)	Worker safety

D. CONCEPTUAL CONSTRUCTION SCHEDULE AND ACTIVITIES

This chapter presents a description of the construction process for the purposes of analyzing construction activities that may result in environmental impacts. It is not intended to describe the precise construction methods that may ultimately be used, nor is it intended to dictate or confine the construction process.

Actual construction methods and materials may vary between development sites, depending in part on how the construction contractors choose to implement their work to be most cost-effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications will require that construction contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. Construction of each development site would follow applicable federal, state, and local laws for building and safety, as well as local noise ordinances, as appropriate.

Construction Sequencing

A reasonable worst-case for the anticipated schedule of construction activities and phases was developed for the purposes of assessing potential construction impacts (see **Figure 20-1**). As shown in the figure, construction of the Proposed Development is anticipated to begin in early 2021 with site preparation activities for Phase I, followed by the start of site preparation activities for Phase II in early 2022. Construction activities for the Proposed Development would span four years, with all construction activities expected to be completed during the 2024 analysis year.

Typical Construction Activities

Overview

Construction of mid-rise or large-scale buildings in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of field offices, installation of temporary power and communication lines, and the erection of site perimeter fencing. Then, if there is an existing building on the site, any potential hazardous materials (such as asbestos) are abated, and the building is then demolished with some of the materials recycled and the debris taken to a licensed disposal facility. For sites requiring new or upgraded public utility connections, these activities are undertaken next (e.g., electrical connections, and installation of new water or sewer lines and hook-ups, etc.). Excavation and removal and/or addition and re-grading of the soils is the next step, followed by construction of the foundations. When the below-grade construction is completed, construction of the core and shell of the new building begins. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit out begins. During the busiest time of building construction, the upper core and structure are built while the mechanical/electrical connections, exterior cladding, and interior finishing progress on lower floors. Finally, site work, including landscaping, and other site work associated with a particular building site, like completing or resurfacing new access roadways and sidewalks (or for waterfront sites, completing the associated segments of waterfront esplanade and upland connections) is undertaken, and site access and protection measures required during construction are removed.

General Construction Tasks

ABATEMENT, DEMOLITION, AND REMEDIATION

Development of the Proposed Development would require the demolition of the Golombeck Spice buildings. Prior to demolition, a New York City-certified asbestos investigator would inspect the buildings for asbestos-containing materials (ACMs). If ACMs are found, these materials would be removed by a NYSDOL-licensed asbestos abatement contractor prior to any building demolition. Asbestos abatement is strictly regulated by DEP, the NYSDOL, the EPA, and OSHA to protect the health and safety of construction

960 Franklin Avenue, Brooklyn, NY
Preliminary Construction Schedule

	Start	Finish	Approx (Months)
Phase 1 New Construction			
Excavation and Foundations	08/01/20	03/01/21	7.1
Excavcaion - 12,177 cy	08/01/20	10/01/20	2.0
Piles - 204 ea	08/01/20	10/01/20	2.0
Caissons - 251 ea	08/01/20	02/01/21	6.1
Concrete - 4,050	09/01/20	03/01/21	6.0
Site Utilities	10/01/20	02/01/21	4.1
Concrete Superstructure (+/- 25,000 cy)	02/01/21	10/15/21	8.5
Temp hoist	05/01/21	11/01/22	18.3
Intretior Rough in	05/01/21	07/15/22	14.7
Building Façade (6,500 ea CW pnls and 37,600 sf	05/01/21	03/08/22	10.4
Elevator installation (7 ea)	06/01/21	05/30/22	12.1
Interior Finishes (855 apts)	11/01/21	05/15/23	18.7
Inspections	05/15/23	07/15/23	2.0
TCO		08/01/23	36.5
Demolition of Existing Buidings	03/01/21	08/01/21	5.1
Phase 2 New Construction			
Excavation and Foundations	08/03/21	05/06/22	9.2
Excavcaion - 10,790 cy	08/03/21	10/01/21	2.0
Piles - 204 ea	08/03/21	10/01/21	2.0
Caissons - 251 ea	08/03/21	01/31/22	6.0
Concrete - 3,608	09/06/21	05/06/22	8.1
Site Utilities	11/12/21	04/14/22	5.1
Concrete Superstructure (23,650 cy)	04/04/22	02/01/23	10.1
Temp hoist	08/11/22	03/01/24	18.9
Intretior Rough in	08/11/22	11/01/23	14.9
Building Façade (6,200 CW pnls and 41,265 sf brick)	08/11/22	07/01/23	10.8
Elevator installation (7 ea)	09/11/22	10/09/23	13.1
Interior Finishes (760 apts)	02/11/23	09/01/24	18.9
Inspections	08/01/24	11/01/24	3.1
TCO		11/25/24	40.3

Source: Suffolk Construction Company

workers and nearby residents and workers. Depending on the extent and types of ACMs, these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. These regulations specify abatement methods, including wet removal of ACMs that minimize asbestos fibers from becoming airborne. The areas of the building ACMs would be isolated from the surrounding area with a containment system and a decontaminant system. The types of these systems would depend on the type and quantity of ACMs and may include hard barriers, isolation barriers, and/or critical barriers. Specially trained and certified workers wearing personal protective equipment would remove the ACMs and place them in bags or containers lined with plastic sheering for disposal at an asbestos-permitted landfill. After the abatement is complete and the work areas have passed a visual inspection, if applicable, the general demolition work can begin. At the same time that the ACMs are being abated, removal of other materials that could be hazardous could take place. These other materials may include fluorescent light bulbs that contain mercury, lead based paints (LBPs), and transformers that contain polycyclic biphenyls (PCBs).

General demolition is the next step. First, any economically salvageable materials are removed. Then, the building is deconstructed using large equipment. Typical demolition requires solid temporary walls around the building to prevent the accidental dispersal of building materials into areas accessible to the general public. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities.

CONSTRUCTION STARTUP TASKS

The following tasks are considered to be typical startup work to prepare for site construction. Construction startup work prepares a site for the construction work and would involve the installation of public safety measures, such as fencing, sidewalk sheds, and Jersey barriers. The construction site would be fenced off, typically with solid fencing to minimize interference between the persons passing by the site and the construction work. Gates for workers and for trucks would be installed, and sidewalk sheds and Jersey barriers would be erected. Trailers for the construction engineers and managers would be hauled to the site and installed. 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 trailers. 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 at almost any time during the construction sequence.

EXCAVATION AND FOUNDATION

First, piles would be installed along the perimeter of the construction site to hold back soil around the excavation area. Next, excavators would be used for the task of digging the building foundations. Any excavated soil to be removed from the project site would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse elsewhere on the project site or on another construction site. This stage of construction would also include construction of the Proposed Development’s foundation. As described in greater detail below under “Hazardous Materials,” to reduce the potential for public exposure to contaminants during excavation activities, construction activities would be performed in accordance with all applicable regulatory requirements. Specifically, all construction subsurface soil disturbances would be performed in accordance with RAPs and CHASPs approved by one or more of the NYSDEC, OER, and DEP.

SUPERSTRUCTURE AND EXTERIOR FACADE

Construction of the buildings’ cores would include construction of the buildings’ frameworks (installation of beams and columns) and floor decks; elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment; core stairs; and restroom areas. Exterior construction involves the installation of the façade (exterior walls, windows, and cladding and the roof). Temporary construction elevators (hoists) would be constructed for the delivery of materials and vertical movement of workers, when necessary.

INTERIOR AND FINISHING

This stage would include the construction of interior partitions, installation of lighting fixtures, amenity construction, interior finishes (floor, painting, millwork, glass and glazing, door and hardware, etc.), mechanical and electrical work (such as the installation of elevators), and plumbing and fire protections fit-out work. This stage of construction is typically the quietest, as most of the construction activities would occur within the buildings with the facades substantially complete. This stage of construction would include the final finishing of the buildings and grounds. Construction of various components of the Proposed Development would occur over a number of years, with construction activities and intensities varying, depending upon which components of the overall development are underway at a given time.

Following is a general outline of anticipated construction stages on the Development Site.

- Months 1-5: Abatement, site clearance, remediation, excavation, and foundation. The first five months of construction would entail abatement, site clearance (including demolition of existing buildings); remediation; digging, pile-driving, pile capping, and excavation for the foundation; and reinforcing and pouring of the foundation. Typical equipment used for these activities would include excavators, backhoes, tractors, pile-drivers, hammers, and cranes. Trucks would arrive at the site with pre-mixed concrete and other building materials and would remove any excavated material and construction debris.
- Months 6-24: Underground parking foundation, erection of the superstructure, and façade and roof construction. Once the foundations have been completed, the construction of the building's steel framework, parking ramp, and decking would take place. This process involves the installation of beams, columns and decking, and would require the use of cranes, derricks, hoists, and welding equipment, as warranted. This stage of construction would also include the assembly of exterior walls and cladding, as well as roof construction.
- Months 14-38: Mechanical installation, interior and finishing work. This would include the installation of heating, ventilation and air conditioning (HVAC) equipment and ductwork; installation and checking of elevator, utility, and life safety systems; and work on interior walls and finishes. During these activities, hoists and cranes would continue to be used, and trucks would remain in use for material supply and construction waste removal. It should be noted that since much of this stage of construction would occur when the building is fully enclosed, disruption to the surrounding neighborhood would be minimized.

The phases, duration, and overlap of construction activities specific to Phase I and Phase II of the Proposed Development are identified in **Figure 20-1**. It should be noted that the actual duration of such activities could vary. For example, the time necessary for each activity would vary depending upon such factors as work hours, traffic restrictions, and contractors' means and methods. Other factors would include the number and type of utilities requiring relocation and the location, and condition of nearby surface and subsurface structures.

Estimate of Construction Workers and Construction Period Trucks

Worker and truck projections were based on projections from the development team and are site-specific. The resultant estimate of the number of trucks and workers per quarter are summarized in **Table 20-2**.

For conservative analysis purposes, no credit was taken for construction activities associated with No-Action conditions. As indicated in **Table 20-2**, over the duration of the approximately four-year analysis period, the number of daily construction workers would average 352, the number of daily construction worker vehicles would average 130, and the number of daily construction trucks would average 11. The number of daily construction trucks would peak in the first quarter of 2022 (24 trucks), while the number of daily construction workers and construction worker vehicles would peak in the second quarter of 2023 (at 738 and 272, respectively). The number of peak construction trucks and worker vehicles would also peak in the second quarter of 2023.

For the purposes of establishing a reasonable worst-case for the construction assessment, based on the conceptual construction schedule presented in **Figure 20-1**, the second quarter of 2023 was selected as the construction peak year for the transportation assessment in this chapter. As shown in **Figure 20-1**, in 2023, both phases of the Proposed Development would be under construction. It should be noted that, while 2023 (Q2) was identified as the peak construction traffic period (as it represents the period during which the cumulative construction worker and truck trips would peak), as discussed in the following sections, different peak periods were identified for other technical areas, as appropriate, in accordance with *CEQR Technical Manual* criteria.

TABLE 20-2
Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day

Year	2020				2021				2022				2023				2024			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Construction Workers	0	0	0	0	26	84	82	103	361	478	554	629	692	738	683	506	329	160	120	80
Construction Worker Vehicles[1]	0	0	0	0	10	31	30	38	133	176	204	232	255	272	252	186	121	59	44	29
Construction Trucks	0	0	0	0	5	9	9	17	24	21	9	14	16	18	14	7	4	3	2	1
Total Construction Vehicles (Worker Vehicles + Trucks) in PCEs[2]	0	0	0	0	13	34	33	47	130	162	172	200	220	236	216	156	101	50	37	24

	Project Daily	
	Peak Quarter	Average
Construction Workers	738	352
Construction Worker Vehicles	272	130
Construction Trucks	18	11
Total Construction Vehicles (Worker Vehicles + Trucks) in PCEs[2]	236	114

Note:
Peak construction vehicle period highlighted in orange.
[1] Based on 2000 Census reverse journey to work data for employees in the construction industry (Brooklyn census tracts 213, 215, 217, 219, 235, 327)
[2] Passenger Car Equivalents (PCEs) assume each truck trip is equivalent to two passenger cars.

Construction Work Hours

Construction activities for buildings in the City generally take place Monday through Friday, with exceptions that are discussed separately below. In accordance with City laws and regulations, construction work at the Proposed Development would generally begin at 7 AM on weekdays, with workers arriving to prepare work areas between 6 and 7 AM. Construction work activities would typically finish around 3:30 PM, but on some occasions, the workday could be extended depending upon the need to complete some specific tasks beyond normal work hours, such as completing the drilling of piles, finishing a concrete pour for a floor deck, or completing the bolting of a steel frame erected that day. The extended workday would generally last until about 6 PM and would not include all construction workers on-site, but just those involved in the specific tasks requiring additional work time.

Occasionally, Saturday or overtime hours may be required to complete some time-sensitive tasks. Weekend work requires a permit from the NYCDOB and, in certain instances, approval of a noise mitigation plan from NYCDEP under the City's Noise Code. The New York City Noise Control Code, as amended in December 2005 and effective July 1st, 2007, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM or on weekends) may be permitted only to accommodate: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of City agencies; (iv) construction activities with minimal noise impacts; and (v) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the number of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. The typical weekend workday would be on Saturday from 7 AM with worker arrival and site preparation to 5 PM for site cleanup.

Construction Staging Areas, Sidewalk and Lane Closures

Construction staging areas, also referred to as "laydown areas," are sites that would be used for the storage of materials and equipment and other construction-related activities. Work zones are those areas where the construction is occurring. Field offices for contractors and construction managers would be situated at staging areas or in existing office space near the work areas. Staging areas would typically be fenced and lit for security and would adhere to New York City Building Codes.

Staging areas of adequate size and proximity to the construction sites are essential to minimize construction traffic and to provide adequate space and access for construction activities. It is anticipated that construction staging would most likely occur on the Development Site and may in some cases, extend within the curb and travel lanes and sidewalks of public streets adjacent to the construction site. As is typical with construction projects in New York City, it is anticipated that some sidewalks immediately adjacent to the Development Site would be closed to accommodate heavy loading areas for at least several months of the construction period for each site and that portions of adjacent roadways may need to be temporarily closed during certain limited periods of construction. Pedestrians would either use a temporary walkway in a sectioned-off portion of the street or be diverted to walk on the opposite side of the street. The construction manager would be required to demonstrate how they intend to reduce disruptions due to vehicle deliveries and staging and the closures of adjacent sidewalks and public streets, which would be reviewed and approved by DOT. In addition, detailed MPT plans for any temporary sidewalk and lane closures would be submitted for approval to the NYCDOT Office of Construction Mitigation and Coordination (OCMC), the entity that insures critical arteries are not interrupted, especially in peak travel periods. Builders would be required to plan and carry out noise and dust control measures during construction.

Appropriate protective measures for ensuring pedestrian safety surrounding the Development Site would be implemented under these plans. Construction activities would also be subject to compliance with the New York City Noise Code and by the EPA noise emission standards for construction equipment. In addition, there would be requirements for street crossing and entrance barriers, protective scaffolding, and compliance with applicable construction safety measures.

E. PRELIMINARY ASSESSMENT

In accordance with the guidance of the *CEQR Technical Manual*, this preliminary assessment evaluated the effects associated with the Proposed Actions' construction-related activities including transportation (traffic, transit, pedestrians and parking), air quality, noise, land use and neighborhood character, socioeconomic conditions, community facilities, open space, historic and cultural resources, and hazardous materials.

Transportation

The construction transportation analysis assesses the potential for construction activities to result in significant adverse impacts to traffic, transit, and pedestrians. The analysis is based on the peak worker and truck trips during construction of the Proposed Development; these are developed based on several factors including worker modal splits, vehicle occupancy, truck passenger car equivalents (PCEs), and arrival/departure patterns.

Construction Worker Modal Splits and Vehicle Occupancy

Construction worker modal splits and vehicle occupancy rates were based on the latest available U.S. Census data for workers in the construction industry (2000 Census data was used as this is the latest Census where the Reverse-Journey-to-Work dataset was available); based on the data, it is anticipated that approximately 46.8 percent of construction workers would commute to the project site using private vehicles and at an average occupancy of approximately 1.27 persons per vehicle. Similarly, it is expected that approximately 50.0 percent of construction workers would commute to the project site via transit, and the remaining 3.2 percent would walk to the project site.

Daily Workforce and Truck Deliveries

To assess a reasonable worst-case analysis of potential transportation-related effects during construction, the daily combined workforce and truck trip projections in the peak quarter were used as the basis for estimating peak-hour construction trips. It is expected that construction of the Proposed Development would generate a peak of approximately 738 workers and 18 truck deliveries per day during the second quarter of 2023. These estimates of construction activities are discussed further below.

Traffic

CONSTRUCTION-WORKER VEHICLE AND TRUCK TRIPS

Similar to other construction projects in NYC, most of the construction activities at the project site are expected to take place in the early morning and late midday periods, from 7:00 AM to 3:30 PM. While construction truck trips would occur throughout the day, most trucks would remain in the area for short durations, and construction workers would commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips (one "in" and one "out") and would start arriving to the project site during the hour before each work shift. Construction truck deliveries typically peak during the hour before each shift (25 percent), overlapping with construction worker arrival traffic. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would generally occur during the hour before and after each work shift. In accordance with the *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of two while other vehicles have a PCE of one.

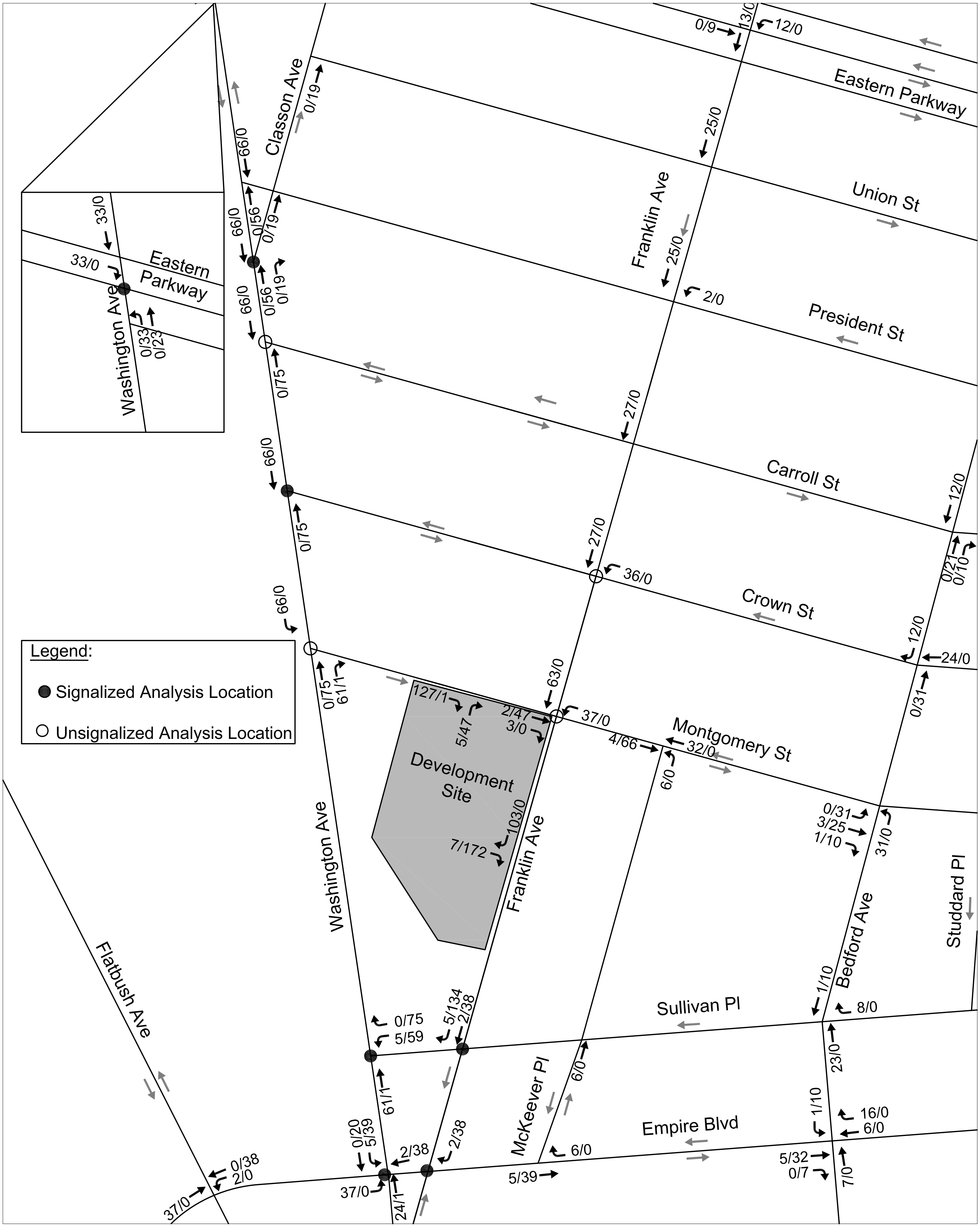
As shown in **Table 20-3**, the maximum construction-related traffic increments would be approximately 236 PCEs during the AM period (6:00 AM to 7:00 AM) and 220 PCEs during the PM period (3:00 PM to 4:00 PM). These incremental construction PCEs would exceed the *CEQR Technical Manual* threshold of 50 vehicle-trips.

TABLE 20-3
2023(Q2) Hourly Construction Vehicle Trip Projections (in PCEs)

Time Period	Construction Worker Auto Trips			Construction Truck Trips			Total Construction Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	218	0	218	9	9	18	227	9	236
7-8 AM	54	0	54	4	4	8	58	4	62
8-9 AM	0	0	0	4	4	8	4	4	8
9-10 AM	0	0	0	4	4	8	4	4	8
10-11 AM	0	0	0	3	3	6	3	3	6
11 AM-12 PM	0	0	0	3	3	6	3	3	6
12-1 PM	0	0	0	3	3	6	3	3	6
1-2 PM	0	0	0	2	2	4	2	2	4
2-3 PM	0	13	13	2	2	4	2	15	17
3-4 PM	0	218	218	1	1	2	1	219	220
4-5 PM	0	41	41	1	1	2	1	42	43
Total	272	272	544	36	36	72	308	308	616

As shown in **Figure 20-2**, the projected AM and PM peak construction vehicle trips were assigned to the surrounding roadway network, with trucks assigned to DOT-designated truck routes. While there would not be enough on-site parking to accommodate all construction workers driving to the Proposed Development Site, construction worker vehicles were conservatively assigned to/from the site's two frontages on Franklin Avenue and Montgomery Street. Based on the assigned incremental traffic and as shown in **Figure 20-2**, a total of eleven intersections would exceed the *CEQR Technical Manual* analysis threshold and therefore require detailed traffic analysis. These intersections include nine intersections that were analyzed as part of the operational traffic analysis presented in **Chapter 14, "Transportation,"** and the intersections of Eastern Parkway and Washington Avenue and Franklin Avenue and Crown Street. Analysis methodologies in accordance with guidance prescribed in the *CEQR Technical Manual*, and as detailed in **Chapter 14, "Transportation,"** were followed to assess the potential construction traffic effects.

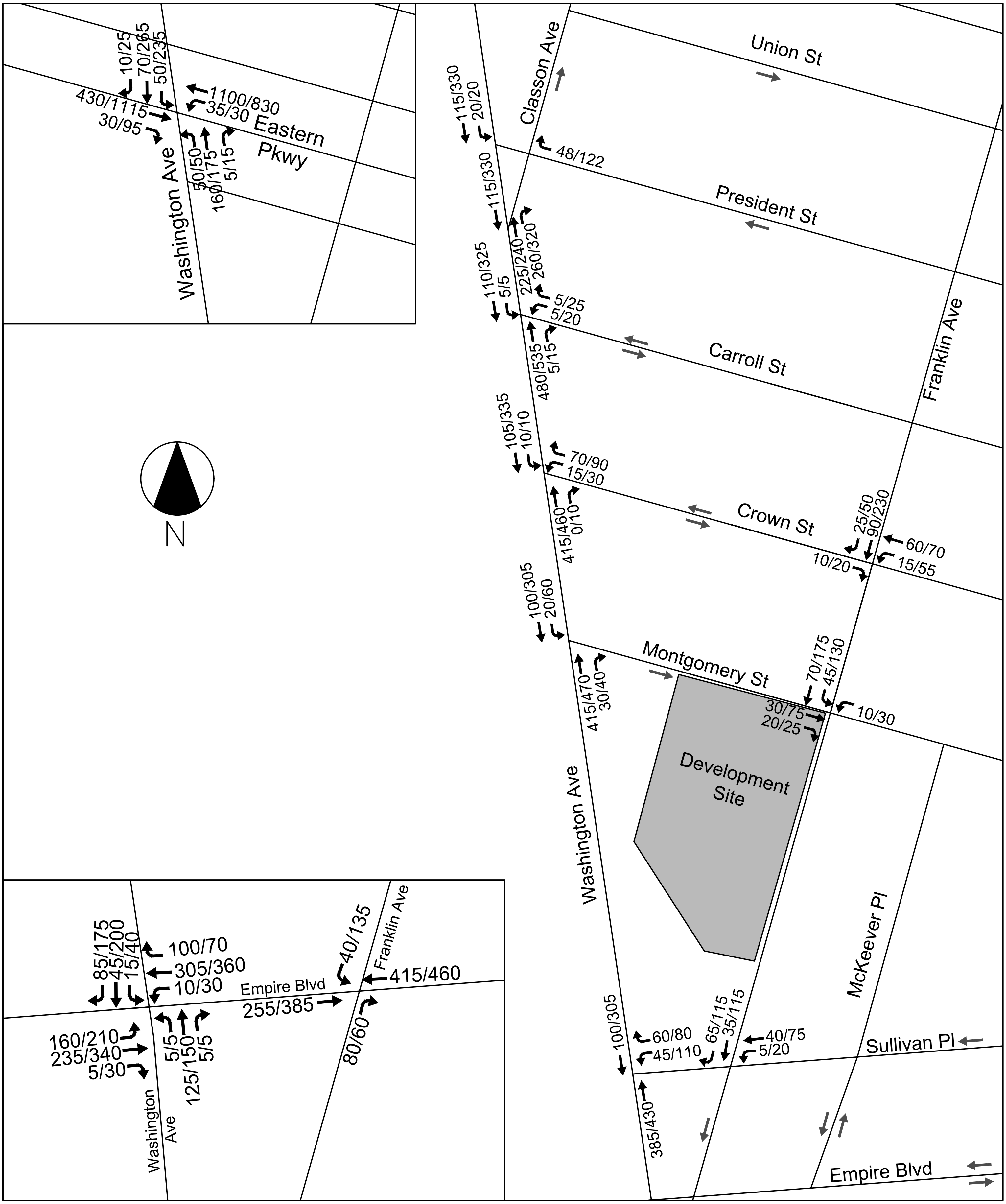
In order to assess construction traffic conditions, a 2019 Existing traffic network (see **Figure 20-3**) was established based on TMC and ATR data collected for the 6 to 7 AM and 3 to 4 PM peak hours. The volume-to-capacity (v/c) ratios, delays and levels of service for all lane groups at all analyzed intersections in both construction peak periods under Existing conditions are provided in **Table 20-4**. A lane group is considered congested if it operates at LOS E or F and/or with a v/c ratio of 0.90 or above. A v/c ratio of 1.00 or above reflects capacity conditions. As shown in **Table 20-4,** all analyzed lane groups are currently operating at an uncongested LOS D or better with exception to a total of three lane groups at two signalized intersections: (1) the northbound left-through lane group at Washington Avenue and Eastern Parkway which operates at LOS E and F in the AM and PM peak hours, respectively, (2) the southbound left lane group at Washington Avenue and Eastern Parkway which operates at LOS F in the PM peak hour, and (3) the westbound through lane group at Franklin Avenue and Empire Boulevard which operates at LOS E in the PM peak hour.



960 Franklin Avenue Rezoning

Figure 20-2

Weekday Construction AM/PM Peak Hour Traffic Assignments



Existing Weekday Construction AM/PM Peak Hour Traffic Volumes

TABLE 20-4
Existing Traffic Levels of Service

Signalized Intersections	Approach	Lane Group	Weekday AM Peak Hour V/C Ratio	Weekday AM Peak Hour Delay (sec/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour V/C Ratio	Weekday PM Peak Hour Delay (sec/veh)	Weekday PM Peak Hour LOS
Washington Ave & Eastern Pkwy.	EB	T	0.31	13.2	B	0.74	21.1	C
	EB	R	0.06	11.0	B	0.19	12.4	B
	WB	L	0.11	11.8	B	0.27	17.8	B
	WB	T	0.74	21.3	C	0.53	16.3	B
	NB	LT	0.85	72.0	E *	0.97	96.2	F *
	NB	R	0.03	38.9	D	0.09	40.1	D
	SB	L	0.26	31.6	C	1.04	110.6	F *
	SB	TR	0.22	30.7	C	0.70	44.0	D
Washington Ave.& Classon Ave.	NB	TR	0.72	15.1	B	0.77	18.7	B
	SB	T	0.16	6.6	A	0.42	9.2	A
Washington Ave. & Crown St.	WB	LR	0.39	32.5	C	0.51	36.2	D
	NB	TR	0.56	11.5	B	0.58	12.0	B
	SB	LT	0.18	7.0	A	0.41	9.2	A
Washington Ave. & Sullivan Pl.	WB	L	0.20	28.6	C	0.42	32.8	C
	WB	R	0.18	28.0	C	0.29	29.9	C
	NB	T	0.54	11.1	B	0.54	11.2	B
	SB	T	0.14	6.6	A	0.37	8.7	A
Washington Ave. & Empire Bvld.	EB	L	0.37	16.8	B	0.55	20.7	C
	EB	TR	0.39	40.5	D	0.63	45.9	D
	WB	L	0.09	37.2	D	0.34	46.6	D
	WB	TR	0.66	46.6	D	0.64	45.9	D
	NB	LTR	0.34	30.1	C	0.39	31.0	C
	SB	LTR	0.24	27.7	C	0.57	33.9	C
Franklin Ave. & Empire Blvd	EB	T	0.15	8.0	A	0.23	8.5	A
	WB	T	0.81	54.8	D	0.92	67.3	E *
	NB	R	0.32	38.8	D	0.24	37.1	D
	SB	L	0.21	37.0	D	0.59	47.7	D
Franklin Ave. & Sullivan Pl.	WB	LT	0.15	24.6	C	0.29	26.8	C
	SB	TR	0.21	12.3	B	0.43	15.4	B

Unsignalized Intersections	Approach	Lane Group	Weekday AM Peak Hour V/C Ratio	Weekday AM Peak Hour Delay (sec/veh)	Weekday AM Peak Hour LOS	Weekday PM Peak Hour V/C Ratio	Weekday PM Peak Hour Delay (sec/veh)	Weekday PM Peak Hour LOS
Washington Ave. & Carroll St.	WB	LR	0.03	13.7	B	0.21	22.8	C
	SB	LT	0.01	8.9	A	0.01	10.0	B
Washington Ave. & Montgomery St.	SB	LT	0.02	9.1	A	0.10	10.4	B
Franklin Ave. & Crown St.	EB	R	-	7.2	A	-	7.4	A
	WB	LT	-	7.9	A	-	9.2	A
	SB	TR	-	8.0	A	-	10.4	B
Franklin Ave. & Montgomery St.	EB	TR	-	7.4	A	-	8.7	A
	WB	L	-	7.7	A	-	8.6	A
	SB	LT	-	8.3	A	-	11.2	B

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

A 2023 No-Action traffic network (see **Figure 20-4**) was establish by applying an annual background rate as recommended in the *CEQR Technical Manual* for projects in Brooklyn. Additionally, the assignment for the No-Action development sites (detailed in **Chapter 14, "Transportation,"**) were also conservatively applied to the No-Action network.

The volume-to-capacity (v/c) ratios, delays and levels of service for all lane groups at the analyzed intersections in both peak periods under No-Action conditions are provided in **Table 20-5**. As shown in **Table 20-5**, a total of five lane groups at four intersections (three signalized and one stop-controlled) are expected to deteriorate in level of service (LOS) in one or more peak hours from existing conditions to the No-Action conditions. These lane groups include:

- the northbound left-through lane group at Washington Avenue and Eastern Parkway (signalized) is expected to deteriorate from LOS E to LOS F in the weekday AM peak hour;
- the westbound left-right lane group at Washington Avenue and Crown Street (signalized) is expected to deteriorate from LOS C to LOS D in the weekday AM peak hour;
- the eastbound left movement at Washington Avenue and Empire Boulevard (signalized) is expected to deteriorate from LOS B to LOS C in the weekday AM peak hour;
- the westbound left movement at Washington Avenue and Empire Boulevard (signalized) is expected to deteriorate from LOS D to LOS F in the weekday PM peak hour; and
- the westbound left-right lane group at Washington Avenue and Carroll Street (unsignalized) is expected to deteriorate from LOS C to LOS D in the weekday PM peak hour.

Also shown in **Table 20-5**, the following three lane groups that are congested in the weekday AM and PM peak hours under Existing conditions would continue to be congested under No-Action conditions: the northbound left-through lane group at Washington Avenue and Eastern Parkway in the weekday AM and PM peak hours; the southbound left movement at Washington Avenue and Eastern Parkway in the weekday PM peak hour; and the westbound through movement at Franklin Avenue and Empire Boulevard in the weekday PM peak hour. Under the No-Action conditions, the westbound left movement at Washington Avenue and Empire Boulevard becomes congested at LOS F in the weekday PM peak hour.

TABLE 20-5
No-Action Traffic Levels of Service

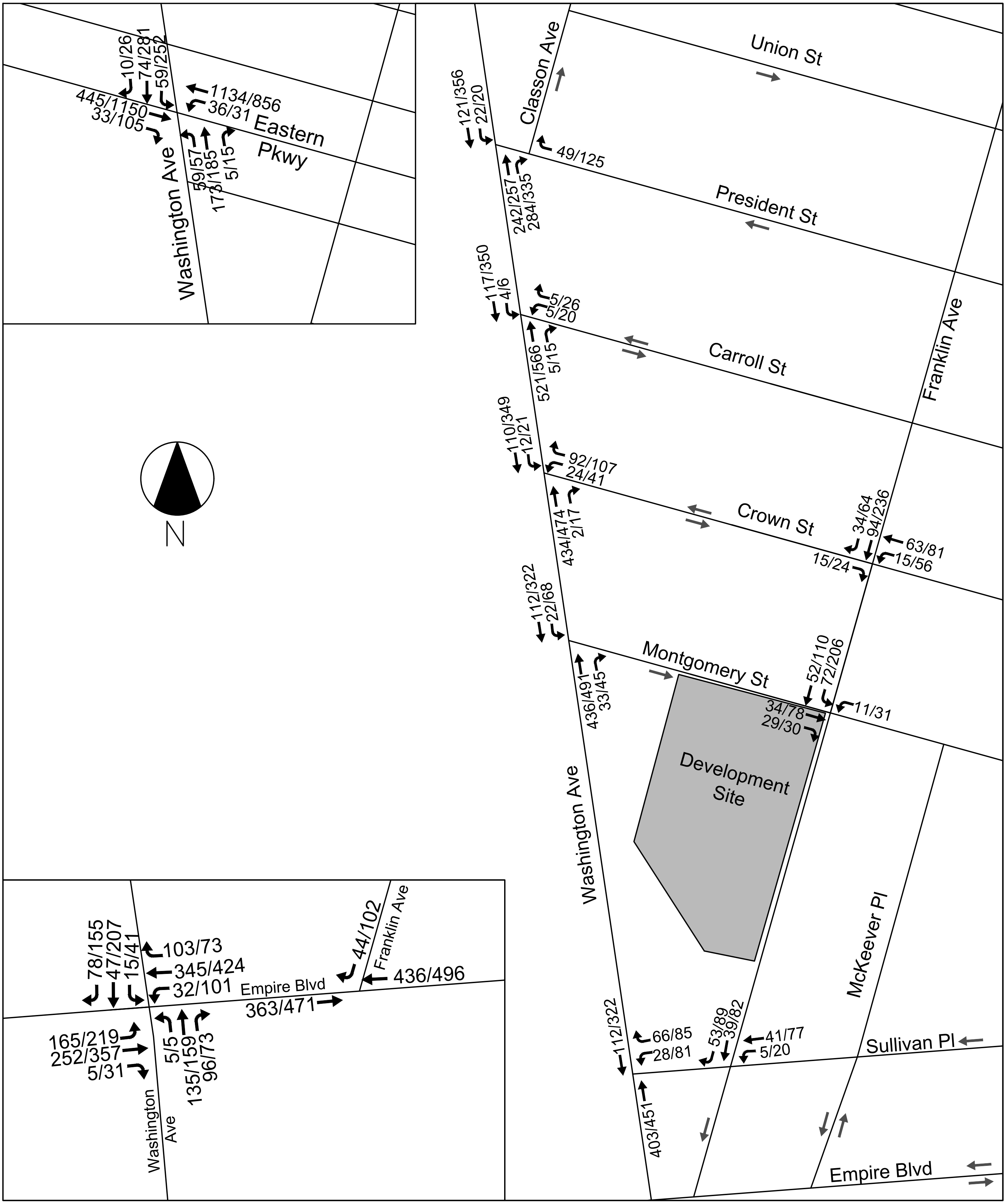
Signalized Intersections	Approach	Lane Group	Weekday AM Peak Hour – Existing V/C Ratio	Delay (sec/veh)	LOS	Weekday AM Peak Hour – No-Action V/C Ratio	Delay (sec/veh)	LOS	Weekday PM Peak Hour – Existing V/C Ratio	Delay (sec/veh)	LOS	Weekday PM Peak Hour – No-Action V/C Ratio	Delay (sec/veh)	LOS
Washington Ave & Eastern Pkwy.	EB	T	0.31	13.2	B	0.32	13.4	B	0.74	21.1	C	0.76	21.9	C
	EB	R	0.06	11.0	B	0.07	11.1	B	0.19	12.4	B	0.21	12.6	B
	WB	L	0.11	11.8	B	0.12	11.8	B	0.27	17.8	B	0.30	19.3	B
	WB	T	0.74	21.3	C	0.76	22.1	C	0.53	16.3	B	0.55	16.5	B
	NB	LT	0.85	72.0	E *	0.96	90.0	F *	0.97	96.2	F *	1.07	123.5	F *
	NB	R	0.03	38.9	D	0.03	38.9	D	0.09	40.1	D	0.09	40.1	D
	SB	L	0.26	31.6	C	0.32	33.4	C	1.04	110.6	F *	1.17	153.7	F *
	SB	TR	0.22	30.7	C	0.24	30.9	C	0.70	44.0	D	0.74	46.2	D
Washington Ave.& Classon Ave.	WB	R	-	-	-	0.16	22	C	-	-	-	0.41	25.7	C
	NB	TR	0.72	15.1	B	-	-	-	0.77	18.7	B	-	-	-
	NB	T	-	-	-	0.35	11.9	B	-	-	-	0.34	14.2	B
	NB	R	-	-		0.55	15.7	B	-	-	-	0.65	21.8	C
	SB	T	0.16	6.6	A	-	-	-	0.42	9.2	A	-	-	-
	SB	LT	-	-	-	0.24	10.9	B	-	-	-	0.60	19.5	B
								A						
Washington Ave. & Crown St.	WB	LR	0.39	32.5	C	0.53	36.8	D	0.51	36.2	D	0.64	41.3	D
	NB	TR	0.56	11.5	B	0.59	12.1	B	0.58	12.0	B	0.61	12.7	B
	SB	LT	0.18	7.0	A	0.20	7.1	A	0.41	9.2	A	0.46	9.9	A
Washington Ave. & Sullivan Pl.	WB	L	0.20	28.6	C	0.13	27.4	C	0.42	32.8	C	0.31	30.3	C
	WB	R	0.18	28.0	C	0.20	28.3	C	0.29	29.9	C	0.31	30.2	C
	NB	T	0.54	11.1	B	0.56	11.6	B	0.54	11.2	B	0.57	11.7	B
	SB	T	0.14	6.6	A	0.16	6.8	A	0.37	8.7	A	0.39	9.0	A
Washington Ave. & Empire Bvld.	EB	L	0.37	16.8	B	0.48	20.8	C	0.55	20.7	C	0.72	30.9	C
	EB	TR	0.39	40.5	D	0.38	38.0	D	0.63	45.9	D	0.60	42.6	D
	WB	L	0.09	37.2	D	0.28	40.4	D	0.34	46.6	D	1.04	138.2	F *
	WB	TR	0.66	46.6	D	0.79	50.8	D	0.64	45.9	D	0.79	50.5	D
	NB	LTR	0.34	30.1	C	-	-	-	0.39	31.0	C	-	-	-
	NB	LT	-	-	-	0.29	26.9	C	-	-	-	0.32	27.5	C
	NB	R	-	-	-	0.26	26.8	C	-	-	-	0.20	25.7	C
	SB	LTR	0.24	27.7	C	0.22	25.6	C	0.57	33.9	C	0.54	31.3	C
Franklin Av. & Empire Bvld.	EB	T	0.15	8.0	A	0.20	6.2	A	0.23	8.5	A	0.26	6.5	A
	WB	T	0.81	54.8	D	0.78	49.8	D	0.92	67.3	E *	0.91	61.9	E *
	NB	R	0.32	38.8	D	-	-	-	0.24	37.1	D	-	-	-
	SB	L	0.21	37.0	D	-	-	-	0.59	47.7	D	-	-	-
	SB	R	-	-	-	0.19	40.9	D	-	-	-	0.45	47.3	D
Franklin Ave. & Sullivan Pl.	WB	LT	0.15	24.6	C	0.15	24.7	C	0.29	26.8	C	0.30	26.9	C
	SB	TR	0.21	12.3	B	0.22	12.6	B	0.43	15.4	B	0.38	14.9	B
Unsignalized Intersections	Approach	Lane Group	**Existing** V/C Ratio	Delay (sec/veh)	LOS	**No-Action** V/C Ratio	Delay (sec/veh)	LOS	**Existing** V/C Ratio	Delay (sec/veh)	LOS	**No-Action** V/C Ratio	Delay (sec/veh)	LOS
Washington Ave. & Carroll St.	WB	LR	0.03	13.7	B	0.03	14.5	B	0.21	22.8	C	0.25	26.0	D
	SB	LT	0.01	8.9	A	0.00	9.1	A	0.01	10.0	B	0.01	10.4	B
Washington Ave. & Montgomery St.	SB	LT	0.02	9.1	A	0.03	9.2	A	0.10	10.4	B	0.11	10.7	B
Franklin Ave. & Crown St.	EB	R	-	7.2	A	-	7.3	A	-	7.4	A	-	7.6	A
	WB	LT	-	7.9	A	-	8.0	A	-	9.2	A	-	9.4	A
	SB	TR	-	8.0	A	-	8.1	A	-	10.4	B	-	10.9	B
Franklin Ave. & Montgomery St.	EB	TR	-	7.4	A	-	7.5	A	-	8.7	A	-	8.8	A
	WB	L	-	7.7	A	-	7.8	A	-	8.6	A	-	8.7	A
	SB	LT	-	8.3	A	-	8.5	A	-	11.2	B	-	11.7	B

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

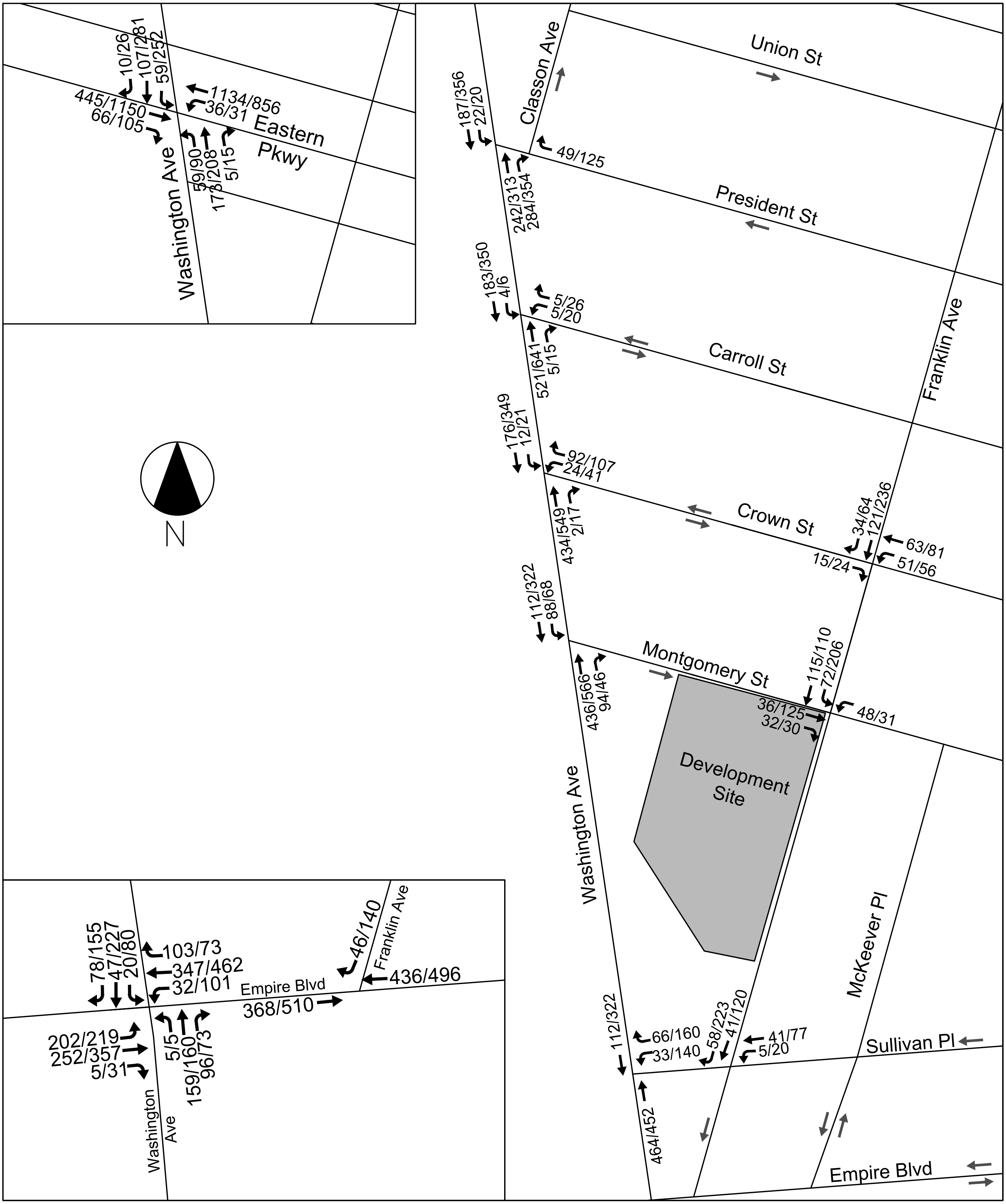
The incremental vehicle trips by construction workers and trucks (presented in **Figure 20-2**) were added to the No-Action traffic network (presented in **Figure 20-4**) to establish the With-Action traffic network shown in **Figure 20-5**. The volume-to-capacity (v/c) ratios, delays and levels of service for all lane groups at the analyzed intersections in both peak periods under With-Action conditions (construction) are provided in **Table 20-6**. As shown in **Table 20-6**, a total of seven lane groups at six intersections (four signalized and two stop-controlled) are expected to deteriorate in level of service (LOS) in one or more peak hours from No-Action conditions to the With-Action (construction) conditions. These lane groups include:

- the southbound left-through lane group at Washington Avenue and Classon Avenue/President Street (signalized) is expected to deteriorate from LOS B to LOS C in the weekday PM peak hour;
- the westbound left movement at Washington Avenue and Sullivan Place (signalized) is expected to deteriorate from LOS C to LOS D in the weekday PM peak hour;
- the westbound right movement at Washington Avenue and Sullivan Place (signalized) is expected to deteriorate from LOS C to LOS D in the weekday PM peak hour;
- the southbound left-through-right lane group at Washington Avenue and Empire Boulevard (signalized) is expected to deteriorate from LOS C to LOS D in the weekday PM peak hour;
- the southbound through-right lane group at Franklin Avenue and Sullivan Place (signalized) is expected to deteriorate from LOS B to LOS D in the weekday PM peak hour;
- the westbound left-right lane group at Washington Avenue and Carroll Street (unsignalized) is expected to deteriorate from LOS B to LOS C in the weekday AM peak hour; and
- the southbound left-through lane group at Washington Avenue and Montgomery Street (unsignalized) is expected to deteriorate from LOS A to LOS B in the weekday AM peak hour.

As shown in **Table 20-6**, six lane groups at five intersections are expected to have the potential for significant adverse traffic impacts during the 3 to 4 PM peak hour as a result of construction activities, namely the northbound left-through and southbound left at Eastern Parkway and Washington Avenue, the westbound left at Washington Avenue and Empire Boulevard, the southbound right at Empire Boulevard and Franklin Avenue, the southbound through-right at Franklin Avenue and Sullivan Place, and the westbound left-right at Washington Avenue and Carroll Street. It is worth noting that the impacted lane groups at Washington Avenue and Eastern Parkway are currently congested in the 3 to 4 PM peak hour in the existing conditions. Also, it should be noted that the construction traffic analysis conservatively assumes that all construction workers would be driving directly to and from the construction site (even though the majority of them would be dispersed to on-street and off-street parking spaces in up to a ½-mile radius around the site) and simultaneously assumes construction workers would walk through intersections' crosswalks from parking at available on-street or off-street facilities in the area. Therefore, vehicle trips would be less concentrated near the site than assumed in the analysis. Refer to Chapter 21, "Mitigation," for a discussion of mitigation considered for these significant adverse construction traffic impacts.



No-Action Weekday Construction AM/PM Peak Hour Traffic Volumes



960 Franklin Avenue Rezoning

Figure 20-5

With-Action Weekday Construction AM/PM Peak Hour Traffic Volumes

TABLE 20-6
With-Action Traffic Levels of Service

			Construction AM Peak Hour						Construction PM Peak Hour						
			No-Action			With-Action			No-Action			With-Action			
Signalized Intersections	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	
Washington Ave & Eastern Pkwy.	EB	L	0.32	13.4	B	0.32	13.4	B	0.76	21.9	C	0.76	21.9	C	
	EB	R	0.07	11.1	B	0.14	11.8	B	0.21	12.6	B	0.21	12.6	B	
	WB	L	0.12	11.8	B	0.12	11.8	B	0.30	19.3	B	0.30	19.3	B	
	WB	T	0.76	22.1	C	0.76	22.1	C	0.55	16.5	B	0.55	16.5	B	
	NB	LT	0.96	90.0	F	0.97	92.5	F	1.07	123.5	F	1.40	252.8	F	*
	NB	R	0.03	38.9	D	0.03	38.9	D	0.09	40.1	D	0.09	40.1	D	
	SB	L	0.32	33.4	C	0.32	33.4	C	1.17	153.7	F	1.39	244.8	F	*
	SB	TR	0.24	30.9	C	0.33	32.6	C	0.74	46.2	D	0.74	46.2	D	
Washington Ave.& Classon Ave.	WB	R	0.16	22.0	C	0.16	22.0	C	0.41	25.7	C	0.41	25.7	C	
	NB	TR	-	-	-	-	-	-	-	-	-	-	-	-	
	NB	T	0.35	11.9	B	0.35	11.9	B	0.34	14.2	B	0.42	15.3	B	
	NB	R	0.55	15.7	B	0.55	15.7	B	0.65	21.8	C	0.68	23.2	C	
	SB	T	-	-	-	-	-	-	-	-	-	-	-	-	
	SB	LT	0.24	10.9	B	0.35	12.1	B	0.60	19.5	B	0.61	29.5	C	
Washington Ave. & Crown St.	WB	LR	0.53	36.8	D	0.53	36.8	D	0.64	41.3	D	0.64	41.3	D	
	NB	TR	0.59	12.1	B	0.59	12.1	B	0.61	12.7	B	0.70	15.3	B	
	SB	LT	0.20	7.1	A	0.30	8.0	A	0.46	9.9	A	0.46	10.0	A	
Washington Ave. & Sullivan Pl.	WB	L	0.13	27.4	C	0.15	27.7	C	0.31	30.3	C	0.54	36.1	D	
	WB	R	0.20	28.3	C	0.20	28.3	C	0.31	30.2	C	0.58	37.3	D	
	NB	T	0.56	11.6	B	0.65	13.5	B	0.57	11.7	B	0.57	11.8	B	
	SB	T	0.16	6.8	A	0.16	6.8	A	0.39	9.0	A	0.39	9.0	A	
Washington Ave. & Empire Bvld.	EB	L	0.48	20.8	C	0.63	26.2	C	0.72	30.9	C	0.74	32.5	C	
	EB	TR	0.38	38.0	D	0.38	38.0	D	0.60	42.6	D	0.60	42.7	D	
	WB	L	0.28	40.4	D	0.29	41.0	D	1.04	138.2	F	1.06	144.2	F	*
	WB	TR	0.79	50.8	D	0.83	54.4	D	0.79	50.5	D	0.84	54.5	D	
	NB	LTR	-	-	-	-	-	-	-	-	-	-	-	-	
	NB	LT	0.29	26.9	C	0.34	27.8	C	0.32	27.5	C	0.33	27.6	C	
	NB	R	0.26	26.8	C	0.26	26.8	C	0.20	25.7	C	0.20	25.7	C	
	SB	LTR	0.22	25.6	C	0.24	25.9	C	0.54	31.3	C	0.69	36.0	D	
Franklin Ave. & Empire Blvd	EB	T	0.20	6.2	A	0.21	6.2	A	0.26	6.5	A	0.28	6.7	A	
	WB	T	0.78	49.8	D	0.78	49.8	D	0.91	61.9	E	0.91	61.9	E	
	NB	R	-	-	-	-	-	-	-	-	-	-	-	-	
	SB	L	-	-	-	-	-	-	-	-	-	-	-	-	
	SB	R	0.19	40.9	D	0.20	41.1	D	0.45	47.3	D	0.62	54.1	D	*
Franklin Ave. & Sullivan Pl.	WB	LT	0.15	24.7	C	0.15	24.7	C	0.30	26.9	C	0.30	27.0	C	
	SB	TR	0.22	12.6	B	0.28	13.6	B	0.38	14.9	B	0.91	46.2	D	*
			No-Action			With-Action			No-Action			With-Action			
Unsignalized Intersections	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	
Washington Ave. & Carroll St.	WB	LR	0.03	14.5	B	0.03	15.7	C	0.25	26.0	D	0.30	31.9	D	*
	SB	LT	0.00	9.1	A	0.00	9.2	A	0.01	10.4	B	0.01	11.2	B	
Washington Ave. & Montgomery St.	SB	LT	0.03	9.2	A	0.12	10.2	B	0.11	10.7	B	0.13	11.8	B	
Franklin Ave. & Crown St.	EB	TR	-	7.3	A	-	7.4	A	-	7.6	A	-	7.6	A	
	WB	L	-	8.0	A	-	8.5	A	-	9.4	A	-	9.4	A	
	SB	LT	-	8.1	A	-	8.6	A	-	10.9	B	-	10.9	B	
Franklin Ave. & Montgomery St.	EB	TR	-	7.5	A	-	7.9	A	-	8.8	A	-	9.5	A	
	WB	L	-	7.8	A	-	8.3	A	-	8.7	A	-	8.8	A	
	SB	LT	-	8.5	A	-	9.4	A	-	11.7	B	-	12.2	B	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

Transit

As described previously, approximately 50 percent of construction workers would be expected to commute to/from the construction sites by public transit. With a peak of 738 construction workers anticipated in 2023 (Q2), a maximum of approximately 369 construction workers would travel to/from the construction sites by public transit (including subway, commuter rail, and bus). **Table 20-7**, presents the hourly distribution of construction worker public transit trips during the 2023(Q2) construction peak.

As presented in **Table 20-7**, during the 2023(Q2) construction peak period, construction workers would generate a total of 302 public transit trips in the 6-7 AM and 3-4 PM construction peak hours. As presented in Chapter 14, "Transportation," the Project Area is served by two subway stations: the Franklin Avenue-Botanic Garden station (2, 3, 4 and 5 trains, Franklin Avenue Shuttle) and the Prospect Park station (B and Q trains, Franklin Avenue Shuttle). The Project Area is also served by a total of five local bus routes operated by New York City Transit (NYCT): the B16, B41, B43, B48, and B49. Given that the area is well-served by seven subway lines and five bus lines, the 302 transit trip are expected be distributed across all lines. As such, as these projections do not exceed the *CEQR Technical Manual* analysis thresholds of 200 new subway or 50 new bus trips after being distributed to the two subway stations and various bus lines, and as these trips would occur outside of the typical commuter peak hours, there would not be a potential for significant adverse transit impacts attributable to anticipated construction worker transit trips.

TABLE 20-7
2023(Q2) Peak Hour Construction Worker Public Transit Trips

Time Period	Construction Worker Transit Trips		
	In	Out	Total
6-7 AM	295	0	295
7-8 AM	74	0	74
8-9 AM	0	0	0
9-10 AM	0	0	0
10-11 AM	0	0	0
11 AM-12 PM	0	0	0
12-1 PM	0	0	0
1-2 PM	0	0	0
2-3 PM	0	18	18
3-4 PM	0	295	295
4-5 PM	0	56	56
Total	0	0	0

Pedestrians

As discussed above, during the 2023(Q2) peak construction period it is estimated that there would be a net increment of approximately 738 construction workers on-site daily under the Proposed Actions, approximately 50 percent of whom are expected to travel to/from the proposed rezoning area by transit, walking to and from area subway stations and bus stops. Up to an additional 3.2 percent are expected to walk to or from the proposed rezoning area. As approximately 80 percent of these trips are expected to occur during any one peak hour, net incremental construction worker travel demand on area sidewalks and crosswalks is expected to total approximately 322 trips (transit walk trips and walk-only trips, combined) in both the 6-7 AM and 3-4 PM construction peak hours. After being distributed to area pedestrian elements primarily en route to the two subway stations and five local bus routes, these trips are not anticipated to exceed the *CEQR Technical Manual* analysis thresholds of 200 new walk trips on several pedestrian elements analyzed in operational pedestrian analyses (in Chapter 14, "Transportation") in close vicinity of the Project Site. These include:

- the northwest corner (C7 in Chapter 14) of Franklin Ave and Empire Boulevard;
- the northwest and southwest corners (C8 and C9 in Chapter 14) of Sullivan Place Ave and Franklin Avenue;
- the west crosswalk (X3 in Chapter 14) of Franklin Ave and Empire Boulevard;
- the west crosswalk (X4 in Chapter 14) of Sullivan Place and Franklin Avenue;
- the west sidewalk of Franklin Street between Sullivan Place and Empire Boulevard (S5 in Chapter 14);
- the west sidewalk of Franklin Street between Sullivan Place and Montgomery Street (S6 in Chapter 14), along the project frontage; and
- the south sidewalk of Montgomery Street between Washington and Franklin Avenues (S8 in Chapter 14), along the project frontage.

However, given that the 6-7 AM and 3-4PM construction peak hours are outside of the typical weekday AM and PM commuter peak periods, existing pedestrian volumes would be generally lower with less project-generated trips than analyzed in the operational transportation analysis which would result in similar or better at levels of service as under the With-Action conditions of the operational transportation analysis for the above elements. It should be noted, based on the analyses presented in Chapter 14 "Transportation," that the above elements are expected to perform at LOS C or better under the With-Action conditions. As such, construction walk trips would therefore not result in the potential for significant adverse pedestrian impacts.

Parking

As discussed above, during the 2023(Q2) peak quarter for construction traffic, it is estimated that there would be approximately 738 workers on site daily, approximately 46.8 percent of whom would be expected to travel to the Project Area by private auto. Based on an average vehicle occupancy of 1.27 persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 272 spaces. These workers are expected to primarily park on-street and in off-street public parking facilities in proximity to the Development Site as there would be no on-site construction parking to be provided on the Development Site while under construction.

The 272 spaces of 2023(Q2) peak construction worker parking demand would be accommodated by available on-street and off-street parking within the ½-mile study area. Based on the data presented in **Table 14-30** in **Chapter 14 "Transportation,"** approximately 324 parking spaces (on- and off- street) would be available in the weekday overnight period within ½-mile of the Project Area. It should be noted that the nearest parking lot at 200 Eastern Parkway (with 80% utilization) would also be able to accommodate an additional 65 construction vehicles following its overnight closure and opening at 6am. Consequently, the construction-generated parking demand would be accommodated by on-street and off-street parking within the half-mile radius. Therefore, the Proposed Actions are not expected to result in significant adverse parking impacts during the 2023 Q2 peak construction period.

Air Quality

According to the *CEQR Technical Manual*, a quantitative assessment of air quality for construction activities is likely not warranted if the project's construction activities: (1) are considered short term, which for air quality assessments has generally been accepted as two years or less; (2) are not located near sensitive receptors; (3) do not involve the construction of multiple buildings where there is a potential for cumulative impacts from different buildings under simultaneous construction before the final build-out; and (4) would not operate multiple pieces of diesel equipment in a single location during peak construction. If a project does not meet one or more of the criteria above, a quantitative air quality assessment could be required.

As construction of the Development Site under the RWCDS would involve the construction of multiple buildings near sensitive receptors and the use of multiple pieces of diesel equipment, with construction anticipated to last more than two years, the Proposed Actions do not screen out any of these four criteria. As a result, a quantitative air quality assessment was performed. The methodologies and results of this analysis are described in the "Detailed Analysis" section, below.

Noise

According to the *CEQR Technical Manual*, an assessment of noise for construction activities is likely not warranted if the project's construction activities: (1) are considered short term; (2) are not located near sensitive receptors; (3) do not involve the construction of multiple buildings where there is a potential for cumulative impacts from different buildings under simultaneous construction before the final build-out; and (4) would not operate multiple pieces of diesel equipment in a single location during peak construction. If a project does not meet one or more of the criteria above, a quantitative noise assessment could be required.

As construction of the Development Site under the RWCDS would involve the construction of multiple buildings near sensitive receptors and the use of multiple pieces of diesel equipment, with construction anticipated to last more than two years, the Proposed Actions do not screen out any of these four criteria. As a result, a quantitative construction noise assessment was performed. The methodologies and results of this analysis are described in the "Detailed Analysis" section, below.

Other Technical Areas

Land Use and Neighborhood Character

According to the *CEQR Technical Manual*, a construction impact analysis for land use and neighborhood character is typically needed if construction would require continuous use of property for an extended duration, thereby having the potential to affect the nature of the land use and character of the neighborhood. A land use and neighborhood character assessment for construction impacts examines construction activities that would occur on the site (or portions of the site) and their duration. The analysis determines whether the type and duration of the activities would affect neighborhood land use patterns or neighborhood character. For example, a single property might be used for staging for several years, resulting in a "land use" that would be industrial in nature. Depending upon the nature of existing land uses in the surrounding area, the use of a single piece of property for an extended duration and its compatibility with neighboring properties may be assessed to determine whether it would have a significant adverse impact on the surrounding area.

Construction activities associated with the Proposed Development would affect land use on the Development Site temporarily, but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption to the nearby area. There would be construction trucks and construction workers coming to the project site. There would also be noise, sometimes intrusive, from demolition, excavation, and foundation activities, as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within the project site. In addition, throughout the construction period, measures would be implemented to control noise and dust on the project site, including the erection of construction fencing and barriers. The fencing would reduce potentially undesirable views of the construction site and buffer noise emitted from construction activities. Since none of these impacts would be continuous or ultimately permanent, they would not create significant adverse impacts on land use patterns or neighborhood character in the area. Therefore, it is expected that such impacts would be temporary and would not impact neighborhood character. Therefore, no significant construction impacts to land use and neighborhood character are expected.

Socioeconomic Conditions

According to the *CEQR Technical Manual*, construction impacts to socioeconomic conditions are possible if a project would entail construction of a long duration that could affect access to and thereby viability of a number of businesses and if the failure of those businesses has the potential to affect neighborhood character. As noted above, most construction activities would take place within the Development Site, which consists of approximately 2.76 acres. The Development Site is located on the corner of Franklin Avenue and Montgomery Street and there are no existing businesses located immediately adjacent to the Development Site on the south or west. Construction activities associated with the Proposed Development would not significantly block or restrict access to any facilities in the area, affect the operations of any nearby businesses, or obstruct thoroughfares used by customers or businesses.

Community Facilities

According to CEQR Technical Manual guidelines, construction impacts to community facilities are possible if a community facility would be directly affected by construction (e.g., if construction would disrupt services provided at a facility or close a facility temporarily, etc.). While the Proposed Development would result in construction activities immediately across Franklin Avenue from P.S. 375/Jackie Robinson School and Ebbets Field M.S. 352 (both located at 46 McKeever Place), there would be no direct effects on the schools and the schools would continue operation without disruption of services. No other community facilities would be directly affected by the proposed construction activities for an extended duration. The construction site would be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, day care facilities, and health care. Construction of the Proposed Development would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. NYPD and FDNY emergency services and response times would not be materially affected as a result of the geographic distribution of the police and fire facilities and their respective coverage areas. Therefore, no significant construction impacts to community facilities are expected as a result of the Proposed Development and further assessment is not warranted.

Open Space

According to *CEQR Technical Manual* guidelines, construction impacts to open space are possible if open space resources are taken out of service for a period of time during the construction process. No open space resources would be disrupted during the proposed construction work, nor would access to any publicly accessible open space be impeded during construction. The open space resource most proximate, Jackie Robinson Playground, is located just east of the site across Franklin Avenue. At limited times, early stage construction activities such as excavation and foundation construction may generate noise that could diminish the enjoyment of nearby open space users, but such noise disturbances would be temporary. Additionally, construction fences around the Development Site would shield the nearby open space from construction activities. Furthermore, construction activities would be required to comply with the New York City Noise Code, which regulates construction noise to reduce the effects on noise sensitive receptors including public open space. As such, no construction impacts related to open space are expected and further assessment is not warranted.

Historic and Cultural Resources

According to *CEQR Technical Manual* guidelines, construction impacts may occur on historic and cultural resources if in-ground disturbances or vibrations associated with project construction could undermine the foundation or structural integrity of nearby resources. As discussed in **Chapter 7, "Historic and Cultural Resources,"** in the futures both without and with the Proposed Actions, the existing buildings on the Development Site, including the S/NR-eligible Consumer Park Brewery Company complex structures, would be demolished. Therefore, the Proposed Actions would not result in any new direct impacts to historic architectural resources as compared to No-Action conditions. However, there is one historic resource within 400-feet of the Project Area that is a designated NYCL and is eligible for listing on the S/NR: the Brooklyn Central Office's Bureau of Fire Communications. This historic building is located on the southeast corner of block 1183, with frontage along Washington Avenue to the east and Empire Boulevard to the south. There are no other historic architectural resources eligible for listing on the S/NR or designation as NYCLs within the 400-foot study area. As this eligible historic resource is located approximately 400 feet from the Project Area the New York City Department of Building (DOB) Technical Policy and Procedure Notice (TPPN) #10/88's special protections for historic resources located within 90 feet of a construction site are not required. As such, no construction impacts related to historic or cultural resources are expected and further assessment is not warranted.

Hazardous Materials

According to the guidelines in the *CEQR Technical Manual*, any impacts from in-ground disturbance that are identified in hazardous materials studies or institutional controls, such as (E) designations or restrictive declarations, should be identified in this chapter. If the impact identified in hazardous materials studies is fully mitigated or avoided, no further analysis of the effects from construction activities on hazardous materials is needed.

As discussed in **Chapter 9, "Hazardous Materials,"** a Phase I Environmental Site Assessment (ESA) was prepared in August 2017 in order to evaluate potential contamination of the Development Site. The Phase I ESA identified Recognized Environmental Conditions (RECs). Based on the findings of the Phase I ESA, it was determined that a Phase II Environmental Site Investigation (ESI) was necessary to adequately identify/characterize the surface and subsurface soils of the Development Site, and a Phase II ESA will be required and an (E) designation for hazardous materials would be mapped on the Development Site, which would require the Project Sponsor to comply with the requirements of the (E) designation program in accordance with the Rules of the City of New York and the New York City Office of Environmental Remediation (NYCOER).

By placing an (E) designation on the Development Site, where confirmed RECs have been identified relating to soil, and/or soil vapor, the potential for an adverse impact to human health and the environment resulting from the Proposed Actions would be avoided. NYCOER would provide the regulatory oversight of any required supplemental sampling; including environmental scope, investigation, and potential remedial action during this process. Building permits are not issued by the DOB without prior NYCOER approval of the investigation and/or remediation pursuant to the provisions of Section 11-15 of the Zoning Resolution (Environmental Requirements).

The (E) designation would require that the Project Sponsor conduct any required supplemental subsurface investigations and have an approved Remedial Action Plan (RAP), where appropriate, under the review and approval of NYCOER. The RAP provided to NYCOER to satisfy the (E) designation must also include a mandatory Construction Health and Safety Plan (CHASP).

With the inclusion of the remedial measures described above, which involve the mapping of (E) designation (E-586) on the Development Site, the Proposed Actions would not result in any significant adverse impacts related to hazardous materials.

F. DETAILED ANALYSES

Air Quality

Emissions from on-site construction equipment and on-road construction-related vehicles, as well as dust generating construction activities, generally have the potential to affect air quality. Therefore, analysis of potential impacts on air quality from the construction of the Proposed Development includes a quantitative analysis of both on-site and on-road sources of air emissions. In general, much of the heavy equipment used in construction utilizes diesel-powered engines and produces nitrogen oxides (NOx) and particulate matter (PM). Fugitive dust generated by construction activities also contain PM. Finally, gasoline engines produce carbon monoxide (CO). As a result, the primary air pollutants of concern for construction activities include nitrogen dioxide (NO2), particulate matter with an aerodynamic diameter of less than or equal to ten micrometers (PM10), particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers (PM2.5), and CO.

The detailed construction air quality analysis estimates the overall construction emissions profile for the Proposed Development and evaluates the worst-case analysis time periods for short-term air quality standards and annual air quality standards. The emissions profile was based on PM2.5 emissions (exhaust and fugitive dust). For annual standards, the 12 consecutive months of construction with the highest PM2.5 emissions are month 10 to month 21. During this timeframe, construction of the Building 1 concrete superstructure, exterior façade and interior would overlap with demolition, excavation and foundation work for Building 2. The single month with the highest emissions for PM2.5 (month 21) was used for purposes of modeling short-term standards and this peak month includes 18 truck trips per day. Modeling of annual standards took into account the monthly variation in emissions over the year.

For air quality impact analysis, receptors were placed at points surrounding the Project Area (including elevated receptors on existing buildings and sidewalk receptors surrounding the project site), and dispersion models were used to predict and compare the concentration of pollutants to the National Ambient Air Quality Standards (NAAQS) and/or CEQR de minimis impact criteria, as appropriate.

Project-on-project impacts of Building 2 (Phase 2) construction on Building 1 (Phase 1) were not evaluated because the earliest Building 1 could be occupied would be construction month 36, during which time Building 2 construction activities would be transitioning to interior fit-out building work with relatively low petroleum-powered equipment requirements and low potential for impact. Therefore, significant project-on-project impacts would not occur.

Emission Control Measures

Construction activity, in general, has the potential to adversely affect air quality as a result of diesel emissions. To ensure that construction of the Proposed Development would result in the lowest practicable diesel particulate matter (DPM) emissions, an emissions reduction program would be implemented for all construction activities, consisting of the following components, which would be required of the contractor through the terms of contract documents:

Clean Fuel. Ultra-low sulfur diesel (ULSD) fuel would be used exclusively for all diesel engines throughout the construction site.

Dust Control Measures. To minimize fugitive dust emissions from construction activities, a strict fugitive dust control plan, including a robust watering program, would be required as part of contract specifications. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the construction site; truck routes within the Development Site would be either watered as needed or, in cases where such route would remain in the same place for an extended duration, the routes would be stabilized, covered with gravel, or temporarily paved to avoid the resuspension of dust; all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the Development Site; water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened, as necessary, to avoid the suspension of dust into the air. Loose materials would be watered or covered. All measures required by the portion of the New York City Air Pollution Control Code regulating construction-related dust emissions would be implemented.

Idling Restriction. In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time would also 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.

Best Available Tailpipe Reduction Technologies. Non-road diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract for the Proposed Development), including but not limited to concrete mixing and pumping trucks, would utilize the best available tailpipe (BAT) technology for reducing DPM emissions. Diesel particulate filters (DPFs) are the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel non-road engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer (OEM) or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board (CARB). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

Utilization of Newer Equipment. EPA's Tier 1 through 4 standards for non-road engines regulate the emission of criteria pollutants from new engines, including PM, CO, NOx, and hydrocarbons (HC).[1] All non-road construction equipment with a power rating of 50 hp or greater would meet at least the Tier 3 emissions standard (alternatively at least the Tier 4 final emissions standard). All non-road engines rated less than 50 hp would meet at least the Tier 2 emissions standard. In addition to these minimum performance criteria, the project requires use of newer model year equipment for certain equipment

[1] For summary of the phase in of Tiers 1-4 exhaust emission standards for non-road compression ignition (diesel) engines, see: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf

types. Specifically all diesel air compressors, diesel generators, diesel welding machines and diesel temporary hoists used onsite will be model year 2012 or newer equipment. Diesel concrete pumps will be model year 2013 or newer equipment. Alternatively, compliance with the model year requirement can be satisfied with emissions testing demonstrating proposed older model year equipment emission rates (including DPFs, as appropriate) are less than the corresponding emission rates estimated in the construction air quality analysis.

Methodology

Chapter 15, "Air Quality," contains a review of the pollutants for analysis; applicable regulations, standards, and benchmarks; and general methodology for stationary source air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in the following section.

POLLUTANTS/AVERAGING TIMES FOR DETAILED ANALYSIS

The following specific averaging times are analyzed: annual average NO2, 24 hour-average PM2.5, annual average PM2.5, and one-hour and eight-hour CO. The one-hour NO2 standard was not analyzed as explained in greater detail below.

With the promulgation of the 2010 one-hour average standard for NO2, local ground-level sources, such as on-site construction sources, may be of greater concern for this pollutant. However, construction effects are typically temporary in nature and do not persist at a single location. The monthly/annual variation in the types of equipment needed on the construction site, and the utilization of the equipment would fluctuate on an hourly basis. In addition, construction sources would move throughout a construction site over the entire construction period as opposed to sources that operate on a regular basis in a defined location such as an exhaust stack on a building. EPA's guidance on modeling one-hour NO2 standard indicates that the statistical form of the standard (98th percentile of 1-hour daily maximum concentrations, averaged over three years) makes it inappropriate for analyzing intermittent emission sources.[2] EPA states that "the intermittent nature of the actual emissions…in many cases, when coupled with the probabilistic form of the standard, could result in modeled impacts being significantly higher than actual impacts would realistically be expected to be for these emission scenarios" Furthermore, the EPA "recommends that compliance demonstrations for the one-hour NO2 National Ambient Air Quality Standards (NAAQS) be based on emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum one-hour concentrations." Construction activities are highly variable and do not represent a continuous source appropriate for assessment under the 1-hr NO2 NAAQS. In addition, there are no clear methods to predict the rate of transformation of NO to NO2 at ground-level for construction sources given the level of existing data and models. For these reasons, a one-hour NO2 analysis was not conducted for construction sources.

DETERMINING THE SIGNIFICANCE OF CONSTRUCTION AIR QUALITY IMPACTS

The State Environmental Quality Review Act (SEQRA) regulations and *CEQR Technical Manual* indicate that the significance of a predicted consequence of a project (i.e., whether it is material, substantial, large, or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of

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[2] EPA Memorandum, "Additional Clarification Regarding Application of Appendix W, Modeling Guidance for the One-Hour NO2 National Ambient Air Quality Standard," March 1, 2011.

occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected.[3] In terms of the magnitude of air quality impacts, any project predicted to increase the concentration of a criteria air pollutant to a level that would exceed the corresponding NAAQS would generally be deemed to have a potential significant adverse impact. However, the magnitude, duration, and impacted area are taken into consideration when determining if the construction impact is significant.

In addition, in order to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas (NAAs), threshold levels have been defined for certain pollutants; any project predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted. The NAAQS and CEQR *de minimis* criteria are intended for permanent project impacts and are used for screening purposes for construction impacts. If construction impacts are below these thresholds, no further assessment of the magnitude and duration of impacts is needed.

CONSTRUCTION LOCATIONS AND TIME PERIODS FOR DETAILED ANALYSIS

Based on the construction schedule for the Proposed Development, a construction resource estimate was prepared by the Applicant’s construction contractor to estimate the likely type, number, and usage data for off-road construction equipment on a monthly basis. A monthly PM2.5 emissions profile was prepared for purposes of identifying the time periods during the construction process for the greatest potential air quality impacts. The emissions profile included exhaust emissions as well as fugitive dust from soil handling during excavation. For annual standards, the 12 consecutive months with the highest PM2.5 emissions are month 10 to month 21. During this timeframe construction of the Building 1 concrete superstructure, exterior façade and interior fit-out would overlap with demolition, excavation and foundation work for Building 2. The single month with the highest emissions for PM2.5 (month 21) was used for purposes of modeling short-term standards and this peak month includes 19 truck trips per day.

ON-SITE CONSTRUCTION ACTIVITY ASSESSMENT

Engine Exhaust Emissions

Emission factors for NOx, CO, PM10, and PM2.5 from on-site construction engines were developed using the latest EPA NONROAD Emission Model, which is incorporated in EPA’s MOVES2014b model interface. The NONROAD model is based on source inventory data accumulated for specific categories of non-road equipment. The emission factors in grams per horsepower-hour for each type of equipment, with the exception of trucks, were determined from the output files for the NONROAD model (i.e., calculated from regional emissions estimates) and the application of EPA-generated post-processing scripts. With the incorporation of DPFs (as discussed under “Emission Control Measures,” above), PM emissions for diesel equipment of 50 hp or greater would be similar to Tier 4 standards. For purposes of CO and NOx emissions, equipment of 50 hp or greater would to meet Tier 3 standards. For smaller equipment less than 50 hp, Tier 2 emission factors were utilized. In addition, all diesel air compressors, diesel generators, diesel welding machines and diesel temporary hoists used onsite will be model year 2012 or newer equipment. Diesel concrete pumps will be model year 2013 or newer equipment.

[3] *CEQR Technical Manual*, Chapter 1, section 222, December 2020; and State Environmental Quality Review Regulations, 6 NYCRR §617.7

Tailpipe emission rates for NOx, CO, PM10, and PM2.5 from heavy trucks on-site (e.g., dump trucks, concrete trucks) were developed using the most recent version of the EPA Mobile Source Emission Simulator (MOVES2014b), as referenced in the *CEQR Technical Manual*. Since dump trucks and concrete trucks are not available as vehicle types directly covered in MOVES2014b, single-unit short-haul truck emissions were used to represent on-road truck activity. Dump trucks were assumed to be actively traveling on the site for two minutes per truck trip at an average speed of five miles per hour (mph). A separate idle emission factor was determined using MOVES to account for truck idling activity. Dump trucks were assumed to idle five minutes per trip to account for loading and unloading. Concrete trucks were assumed to idle for one hour per trip while unloading concrete to the concrete pumps. To meet project emission requirements (e.g., DPFs), a 2012 model year was assumed for truck PM2.5/PM10 emissions. A Tier 3 model year (2006 was assumed for CO and NOx emission rates from construction trucks.

Since, as discussed in the parking assessment of the "Transportation" section above, no on-site parking is expected to be available for construction workers during construction, workers would not be driving directly to the Project Area. Therefore, emissions associated with worker commutes were not included in the analysis.

Fugitive Emission Sources

In addition to engine emissions, fugitive dust emissions from operations (e.g., excavation and transferring of excavated materials into dump trucks) were calculated based on procedures delineated in EPA AP-42 Table 13.2.3-1.[4] The quantity of soil loaded into trucks was estimated based on the dump truck trip generation estimate described above under "Transportation." The number of dump truck trips during the initial months of excavation for Phase 1 and Phase 2 was used to determine the quantity of soil moved and potential dust emissions generated. Fugitive dust emissions from material handling would primarily be a concern during the first two months of excavation for Phase I (Months 1 and 2) and during the demolition and initial excavation for Phase II (Months 8-14). In later construction phases soil handling would be minimal, and it was assumed that on-site roadways would be appropriately stabilized and watered to prevent fugitive dust.

Fugitive dust associated with truck travel on-site was calculated based on AP-42 section 13.2.2 (unpaved roads). The average truck weight assumed was 20 tons (40,000 pounds). Per the *CEQR Technical Manual*, the average silt content assumed was 8.5% and annual average emission rates accounted for 130 days of precipitation per year.

The analysis of material handling activities and on-site truck travel accounted for a dust control plan with at least a 50 percent reduction in PM10 and PM2.5 emissions from fugitive dust through wet suppression, as discussed above in "Emission Reduction Measures."

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[4] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42), Section 13.2.3 Heavy Construction Operations.

DISPERSION MODELING

Potential impacts from non-road sources were evaluated using the latest version of the EPA/American Meteorological Society (AMS) AERMOD dispersion model (version 19191). AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources (including point, area, and volume sources), and the preferred model by both the EPA and NYSDEC. AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain, including updated treatments of the boundary layer theory, understanding of turbulence and dispersion, and handling of the interaction between the plume and terrain. The AERMOD model calculates pollutant concentrations from one or more points (e.g., exhaust stacks) and/or areas that aggregate fugitive dust and construction equipment emissions across the construction site, based on hourly meteorological data and has the capability to calculate pollutant concentrations at locations when the plume from the emission points/areas is affected by the aerodynamic wakes and eddies (downwash) produced by nearby structures.

Location of Nearby Sensitive Receptors

Residential uses are located to the west of the Development Site (along Washington Avenue), and to the south (along Sullivan Place). Jackie Robinson School (PS 375) is located directly to the east along Franklin Avenue. Open space uses are also located in the vicinity of the Development Site. The Brooklyn Botanic Gardens is located approximately 170 feet west of the Development Site, and the Jackie Robinson Playground is located east of the Development Site at the southeast corner of Franklin Avenue and Montgomery Street. The Medgar Evans Campus of the City University of New York is located approximately 250 feet east of the Development Site.

Receptors were placed at multiple elevations along the facades of the buildings facing the Development Site to represent each floor. In addition, receptors were placed to represent nearby parks and open spaces, including, but not limited to, the Brooklyn Botanic Garden and Jackie Robinson Playground. In addition, sidewalk receptors were included in the model, except for the west sidewalk of Franklin Avenue, which would be used for construction staging according to the construction logistics drawings. Receptors were also included on the No Action developments at 109-111 Montgomery Street and 40 Crown Street.

Source Simulation

During construction, various types of construction equipment would be used at different locations throughout the Development Site. Some of the equipment would be mobile and operate throughout specified areas, while some would remain fixed at distinct locations for short-term periods. Cranes and other equipment (such as generators) that would remain stationary on a short-term basis are modeled as point sources for short-term standards, while mobile equipment and dust emissions are modeled as area sources. One area source was created for Phase I and a separate area source was created for Phase 2 to appropriately geographically attribute the intensity of emissions between the two building sites. For annual average standards, all equipment was assumed to be moving around the site and thus was represented as part of the area sources.

Separate area sources were incorporated to represent the location of construction truck traffic on the streets surrounding the Development Site.

For the equipment modeled as a stationary source for short-term standards, the equipment location was estimated consistent with the construction contractor’s logistic drawings (depicting the location of cranes, concrete pumps etc.).

Meteorological Data

The meteorological data set consisted of five consecutive years of meteorological data: surface data collected at La Guardia Airport (2014-2018) and concurrent upper air data collected at Brookhaven, New York. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevations over the five-year period. These data were processed using the EPA AERMET program to develop data in a format that can be readily processed by the AERMOD model. The land uses around the Project Area where meteorological surface data were available were classified using categories defined in digital United States Geological Survey (USGS) maps to determine surface parameters used by the AERMET program.

NOx-NO2 Conversion

Annual NO2 concentrations were estimated using AERMOD's Ambient Ratio Method 2 (ARM2), a Tier 2 method for addressing NOx to NO2 conversion.

Background Concentrations

To estimate the maximum expected total pollutant concentrations, the calculated impacts from the emission sources must be added to a background value that accounts for existing pollutant concentrations from other sources. The background concentrations used for the construction air quality analysis are based on 2016-2018 NYSDEC monitoring data, as shown in **Table 20-8**, below.

TABLE 20-8
Representative Monitored Ambient Air Quality Data Used for Background Concentrations (2016-2018)

Pollutant	Site Name	Site Address	Units	Averaging Period	Concentration
CO	Queens College 2	65-30 Kissena Blvd. Flushing	ppm	1-hour	1.95
				8-hour	1.3
$PM_{2.5}$	JHS 126	JHS 126 424 Leonard Street	µg/m3	Annual	7.7
				24-hour	17.2
PM_{10}	Queens College 2	65-30 Kissena Blvd. Flushing	µg/m^3	24-hour	44
NO_2	Queens College 2	65-30 Kissena Blvd. Flushing	ppb	Annual	15.81

Sources: https://www.dec.ny.gov/docs/air_pdf/2018airqualreport.pdf

Construction Effects of the Proposed Development

Maximum predicted concentration increments and overall concentrations, including background concentrations (converted to consistent units of µg/m^3 for all pollutants), are presented in **Table 20-9**. The highest concentrations would generally occur at sidewalk receptors along Franklin Avenue or the residential buildings adjoining the southern end of the site (depending on the pollutant and averaging time), impacts at locations a greater distance from the construction would be lower than shown for the maximum impact.

TABLE 20-9
Construction Air Quality Analysis Results

Pollutant	Averaging Period	Units	Maximum Increment	Background Concentration	Total Concentration	De Minimis Criteria	NAAQS
CO	1-hour	μg/m³	472.3	2,233.9	2,706.3	-	40,000.0
	8-hour		257.2	1,489.3	1,746.5	4,255.4	10,000.0
$PM_{2.5}$	Annual	μg/m³	0.24	7.7	-	0.3	12
	24-hr		6.84	17.2	-	8.9	35
PM10	24-hr	μg/m³	8.69	44.0	52.7	-	150
NO_2	Annual	μg/m³	8.29	29.7	38.0	-	100

Notes: PM2.5 and eight-hour CO concentration increments are compared to the de minimis criteria. Increments of all other pollutants are compared with the NAAQS to evaluate the magnitude of the increments. Comparison to the NAAQS is based on total concentrations.

[1] PM2.5 *de minimis* criteria are defined as: (a) 24-hour average not to exceed more than half the difference between the background concentration and the 24-hour NAAQS; and (b) annual average not to exceed more than 0.3 μg/m3 at discrete receptor locations.

[2] 8-hour CO *de minimis* criteria are defined as: (a) an increase of 0.5 ppm or more in the maximum eight-hour average CO con-centration at a location where the predicted No-Action eight-hour concentration is equal to eight ppm or between eight ppm and nine ppm; and (b) an increase of more than half the difference between baseline (i.e., No-Action) concentrations and the eight-hour standard, when No-Action concentrations are below eight ppm.

μg/m3 - micrograms per cubic meter

PPB - parts per billion

PPM - parts per million

As shown in the table, the maximum predicted total concentrations of one- and eight-hour CO, 24-hour PM10, and annual-average NO2 are below the applicable NAAQS. In addition, the maximum predicted 24-hour PM2.5 incremental concentrations would not exceed the applicable CEQR de minimis criteria of 8.9 μg/m3. The annual average PM2.5 incremental concentration would not exceed the CEQR de minimis criteria of 0.3 μg/m3. Likewise, the maximum predicted CO incremental concentrations would not exceed the applicable CEQR de minimis criteria in the eight-hour average period. Therefore, the Proposed Development would not result in a significant construction air quality impact.

Noise

Potential impacts on community noise levels during construction of a Proposed Development can result from noise from construction equipment operation and from construction vehicles and delivery vehicles traveling to and from a construction site. Noise levels at a given location are dependent on the type and quantity of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers).. Noise levels caused by construction activities vary widely, depending on the phase of construction (e.g., demolition, superstructure, interior fit-outs, etc.) and the location of the construction activities relative to noise-sensitive receptor locations. The most significant construction noise sources are expected to be the operation of heavy equipment, such as dozers, cranes, and excavators.

Noise Reduction Measures

As previously stated, construction noise is regulated by 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), the DEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28), and the EPA's noise emission standards. These local and federal requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. For weekend and after hours work, permits would be required, as specified in the New York City Noise Control Code.

The New York City Noise Control Code also requires the adoption and implementation of a noise mitigation plan for construction sites. Standard measures included in construction noise mitigation plans include variety of source and path controls, such as ensuring that all equipment employs the manufacturer's appropriate noise reduction device(s) and that construction devices with internal combustion engines keep their engine's housing doors closed, covering portable noise-generating equipment with noise-insulating fabric, preventing vehicle engine idling on-site, etc.

In terms of specific path control commitments, the project would include:

- An 8-ft plywood fence around the perimeter of the construction site.
- Additional path controls (such as portable barriers or shrouds around specific equipment) would be considered during the development of the construction noise mitigation plan.

In terms of source controls (i.e., reducing noise levels at the source), the following measures would be implemented in accordance with the New York City Noise 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 20-9** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the Proposed Development.
- 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.
- As early in the construction period as practicable, electrical-powered equipment would be selected for certain noisy equipment, such as, concrete vibrators, hoists, and man lifts (i.e., early electrification).

Construction Noise Impact Criteria

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 construction of a Proposed Development would not result in any exceedances of these criteria at a given receptor, then that receptor would not have the potential to experience a construction noise impact. However, as is the case with the Proposed Development, if construction would result in exceedances of these noise impact criteria, then further consideration of the intensity and duration of construction noise is warranted at that receptor. The screening level noise impact criteria for mobile and on-site construction activities are as follows:

- If the No Action $L_{eq(1)}$ noise level is less than 60 dBA, a 5 dBA or greater increase would require further consideration.
- If the No Action $L_{eq(1)}$ noise level is between 60 dBA and 62 dBA, a resultant $L_{eq(1)}$ noise level of 65 dBA or greater would require further consideration.

- If the No Action $L_{eq(1)}$ noise level is equal to or greater than 62 dBA, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10 PM and 7 AM), the threshold requiring further consideration would be 3 dBA.

In addition to the CEQR construction criteria above, for the purposes of this analysis, determination of significant adverse construction noise impact would be considered based on the intensity and duration (i.e. noise level increment of 15 dBA or more for prolonged period of 12 consecutive months or more or noise level increment of 20 dBA or more for prolonged period of 3 consecutive months or more). The analysis also compared interior L10 noise levels to the CEQR interior noise guideline of 45 dBA and considered the magnitude and duration of impacts.

The presence of window/wall attenuation measures at noise receptor sites, such as double-glazed windows and alternate means of ventilation, is considered when evaluating locations predicted to experience noise level increments from construction in excess of *CEQR Technical Manual* impact criteria for a prolonged period of 24-months or greater and in excess of additional construction noise impact criteria as mentioned earlier. An interior L_{10} noise level of 45 dBA or below for residential and community facility uses is typically considered acceptable. Receptors exceeding an interior L_{10} noise level of 45 dBA require further assessment of the magnitude and duration of the noise impact, as well as the specific type of use affected, to conclude whether or not the impact is significant.

The CEQR criteria are expressed in terms of L_{10} (or the noise level exceeded ten percent of the time), while the noise impact modeling was performed based on L_{eq} (or the energy-equivalent noise level). In a construction context, L_{10} is typically three dBA higher than L_{eq} based on extensive empirical data from the Central Artery/Tunnel Project (CA/T).[5] Therefore, an additional 3 dBA adjustment was applied to estimate L_{10} from the modeled L_{eq} results.

Construction Noise Analysis Methodology

EXISTING NOISE LEVELS

The CadnaA noise model was used to determine existing Leq(1-hr) noise levels in the study area based on AM peak hour traffic data (developed for the EIS transportation analyses) and also including noise from the Franklin Avenue Shuttle.

MOBILE SOURCES (OFF-SITE)

Peak construction truck traffic is estimated to be 33 daily truck trips during Month 14 (excavation for building 2 overlapping with construction of building 1 superstructure, exterior and interior). However, these trips would be distributed over the day and across different routes, especially high-volume truck routes such as Flatbush Avenue and Empire Boulevard. Although preliminary construction mobile source screening analysis showed potential impact on Montgomery Street and Franklin Avenue during 6 to 7 am on Month 14, truck trips would be less in the other months of the construction schedule. Therefore, when considering the intensity and duration of analyzed impacts, truck trips are not expected to be concentrated enough for a sufficient duration to result in a significant increase in noise at off-site locations.

[5] Federal Highway Administration. 2006. FHWA Roadway Construction Noise Model User's Guide. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf

ON-SITE SOURCES

A construction equipment resource estimate was prepared and reviewed by the Applicant's contractor for purposes of estimating noise impacts from on-site equipment.

The SoundPLAN model was used to quantify the construction noise sources consistent with ISO 9613-02 standards. SoundPLAN has the following benefits:

- It incorporates reflections from building surfaces in the calculations;
- It allows a three-dimensional calculation of noise propagation for receptors in multi-story buildings; and,
- It considers the effects of noise walls.

The model's emission library provides high specificity in defining emission levels, enabling accurate depictions of point, line, and area noise sources. The model takes into account absorption and reflection off the ground and buildings. While accounting for these factors, the model calculates the noise levels by calculating noise attenuation, ground contours, and shielding. SoundPLAN outputs model results as noise levels at a receptor or noise contours within a region, allowing the comprehensive assessment of potential noise impacts. Input into the SoundPLAN model included:

- Building footprints-accounting for shielding provided by existing buildings;
- Digital ground model-accounting for terrain effects on noise propagation;
- Hard and soft ground cover areas (study area is primarily hard cover, except for the Brooklyn Botanic Garden);
- Delineation of the 8-foot perimeter wall around the construction site;
- Receiver locations; and,
- Assumed construction equipment locations based on the equipment type and associated noise levels from L_{max} reference sound levels.

As shown in **Table 20-11**, construction activity associated with the Proposed Development is expected to occur over two overlapping construction periods. In total, construction of the Proposed Development is estimated to span approximately 45 months, with Building 1 expected to be constructed during an approximately 34-month period, and Building 2 expected to be constructed during an approximately 33-month period.

A peak period analysis was performed to determine the analysis periods with the greatest construction noise considering the combined impact of the overlapping Building 1 and Building 2 construction. The screening analysis was based on the anticipated construction activity schedule described above. **Table 20-10** summarizes the equipment types, usage factors, and reference noise levels used in the analysis (Lmax at 50 feet). Based on this analysis, seven months were selected for detailed modeling as shown in **Table 20-10**. **Table 20-11** also indicates the time period represented by each month and specific equipment in-use at Building 1 and Building 2 during that month.

TABLE 20-10
Construction Equipment Used in Noise Analysis

Equipment Type	Usage Factor	Lmax at 50 feet (dBA)
Loader 175 HP	*0.4*	80
Excavator, 260 HP	*0.4*	85
Backhoe/Loader 90 HP Diesel	0.4	80
Pile Drill Rig 300 HP Diesel	0.2	95
Air Compressor 50 HP Diesel	0.4	75
Jack Hammer	0.2	85
Pneumatic Hand Tools	0.5	85
Temporary Hoist*	0.5	75
Tower Crane	0.16	85
Concrete Pump Trucks	0.2	82
Concrete Mixer Trucks	0.4	85
Gasoline Generator 32 HP	0.5	82
Rebar Bending Machine 11 HP Diesel	0.2	80
Vibrator Plate Compactor 6 HP Gasoline	0.2	80
40 Ton Mobile Crane 300 HP Diesel	0.16	85
JLG Lull Forklift 130 HP Gasoline	0.2	85
Mortar Mixer 6 HP Gasoline	0.5	80
Concrete Power Trowel 11 HP Gasoline	0.5	85
Water Pumps 15 HP Gasoline	0.5	77
Welding Machine 23 HP Diesel	0.4	73

Hoist - source: Hydro Quebec, all others from *CEQR Technical Manual*

TABLE 20-11
Representative Months For Detailed Soundplan Analysis

Month for Detailed Analysis	Represents Months	Building 1 Equipment	Building 2 Equipment
Month 7	1-7	1 pile driver 1 air compressor 1 air tools 2 rebar benders 1 tower crane 1 generator 2 mobile crane 1 forklift 2 power trowel 1 water pump 3 welders 4 concrete mixer truck 2 concrete pump	None

Month for Detailed Analysis	Represents Months	Building 1 Equipment	Building 2 Equipment
Month 13	8- 14	1 air compressor 1 air tools 1 temporary hoist 1 tower crane 1 generator 1 forklift 1 concrete power trowel 2 welders 2 concrete mixer truck 2 concrete pump 2 rebar benders	1 loader 1 backhoe 1 mobile crane 1 air compressor 1 air tools 1 generator 2 Concrete mixer truck 1 Concrete pump truck
Month 21	15-22	1 temporary hoist 1 forklift 1 welder	1 loader 1 excavator 1 backhoe 1 pile driving rig 1 tower crane 2 mobile cranes 1 air compressor 1 air tools 2 rebar bender 1 generator 4 concrete mixer truck 2 concrete pump
Month 28	23-29	1 forklift 1 Backhoe	1 air compressor 1 temporary hoist 1 tower crane 1 generator 1 compactor 1 forklift 1 water pump 3 welding machines 2 concrete mixer truck 1 concrete pump 1 air tools 2 rebar bender
Month 33	30- 39	1 backhoe 1 forklift 1 mortar mixer 1 power trowel	1 air compressor 1 air tools 1 generator 1 forklift 1 temp hoist 2 power trowel 2 welders 4 concrete mixer truck 2 concrete pump
Month 44	40-47	None	2 forklift 1 welding machine
Month 50	48-52	None	1 backhoe 2 forklift 1 mortar mixer 1 power trowel

SENSITIVE RECEPTORS

A detailed receptor network was developed for a study area consisting of a 400-foot radius around the development site. Sensitive receptor locations, such as residential properties, churches, parks, and schools close to the Project Area were selected as noise receptor sites. Multiple receptors were created along of the façade of existing buildings to capture the noise levels at different floors of the building. In total, over 3,600 receiver locations were modeled. **Figure 20-6a** and **Figure 20-6b** provide an overview of the modeled receptor locations (displaying x, y receptor locations only, not the number of stories).

Known development sites were included as noise receptors, including 54 Crown Street across Montgomery St from the project site (construction not yet started as of June 2020), and the recently completed 109 Montgomery Street.

Project-on-project impacts of Building 2 construction on Building 1 were evaluated for Month 36 (two months after the completion of Building 1). This represents a worst-case condition because Building 2 construction noise levels would substantially decrease in subsequent construction months. Receptors were placed on the Building 1 north façade facing Building 2.

IMPACT ANALYSIS PROCEDURE

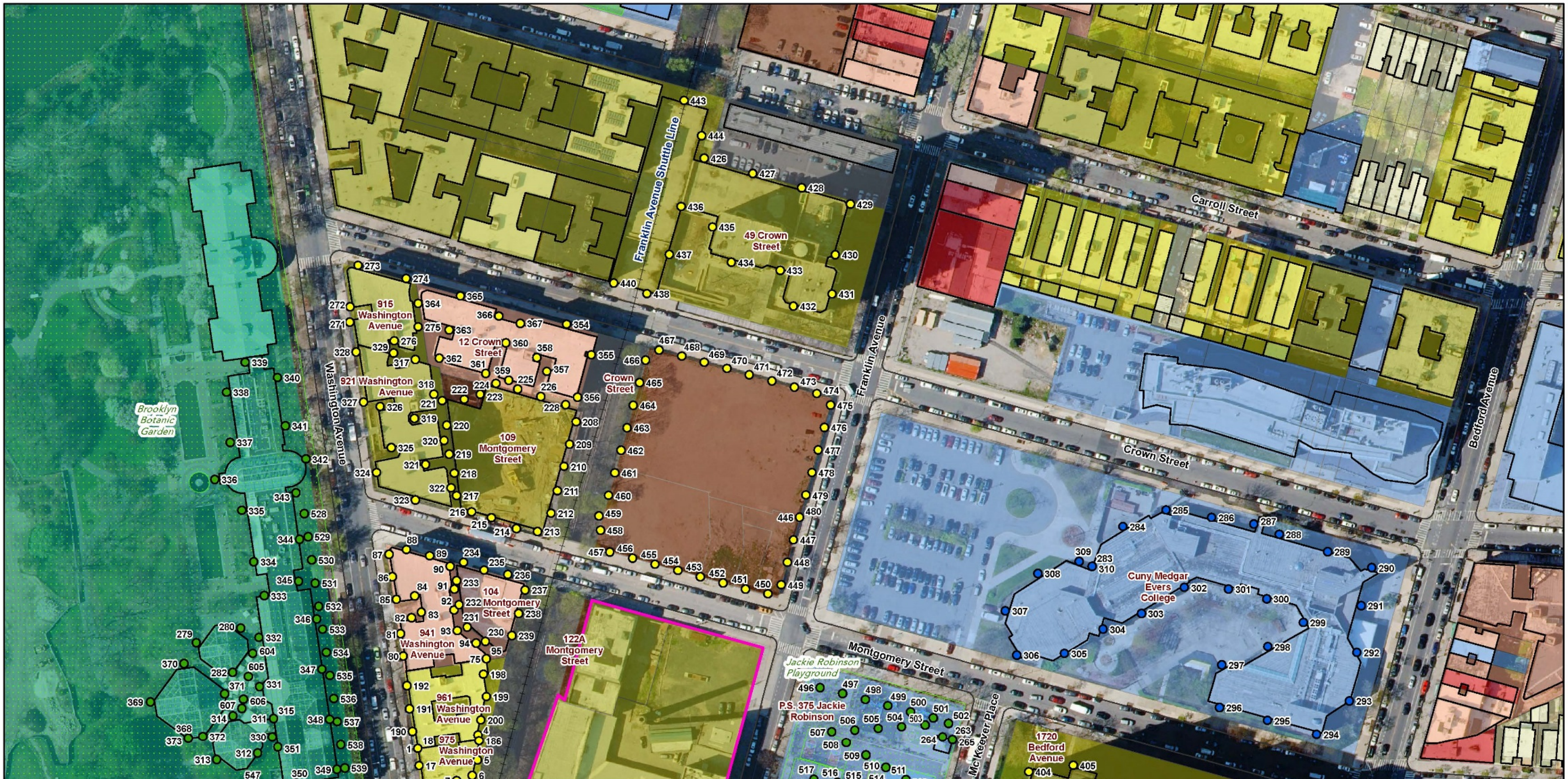
The following steps were undertaken as part of the construction noise impact assessment process:

1. As a screening measure, the CEQR noise criteria were assessed, including an assessment of the duration of exceedance. The existing 2018 predicted noise level for each receptor was used to identify the appropriate impact criterion.
2. For each receptor that could likely result in a noise impact based on the CEQR criteria, further consideration of the magnitude and duration of impact was conducted by considering:
    a. Interior noise levels (based on field observation of window/ventilation conditions) in comparison to the CEQR interior noise guideline
    b. Significance thresholds established for this project (e.g. construction noise increment of 15 dBA Leq for 12 or months or 20 dBA or greater for 3 or more months).
    c. Geographic extent of the impact
    d. Nature of the land uses affected and their typical hours of operation in comparison to the construction work hours.
3. Mitigation options were considered for those locations determined to have a potentially significant adverse impact.

Construction Noise Analysis Results

Using the methodology described and considering the noise abatement measures specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected at each of the noise receptor locations during each of the seven selected construction periods. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period at each receptor point and at each floor of the represented building. The results of the detailed construction noise analysis are summarized by address/location in **Table 20-12**.

Modeled Receptor Locations



Noise Receptor Locations

- Church
- Open Space
- Residential and Mixed-Use Buildings
- Schools
- Development Site
- Open Space and Parks

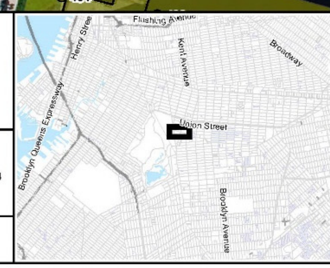
Land Use

- One and Two Family Residential
- Multi Family Walk Up Buildings
- Multi Family Elevator Buildings
- Mixed Residential and Commercial Buildings
- Commercial and Office Buildings
- Industrial and Manufacturing
- Transportation and Utility
- Public Facilities and Institutions
- Open Space and Outdoor Recreation
- Parking Facilities
- Vacant Land
- N/A

Source: NYC DCP, NYC Open Data, NYS ITS, ESRI

Coordinate System:
NAD 1983 StatePlane New York Long Island FIPS 3104
Datum: North American 1983

August 07, 2019



Construction Noise Receptor Locations

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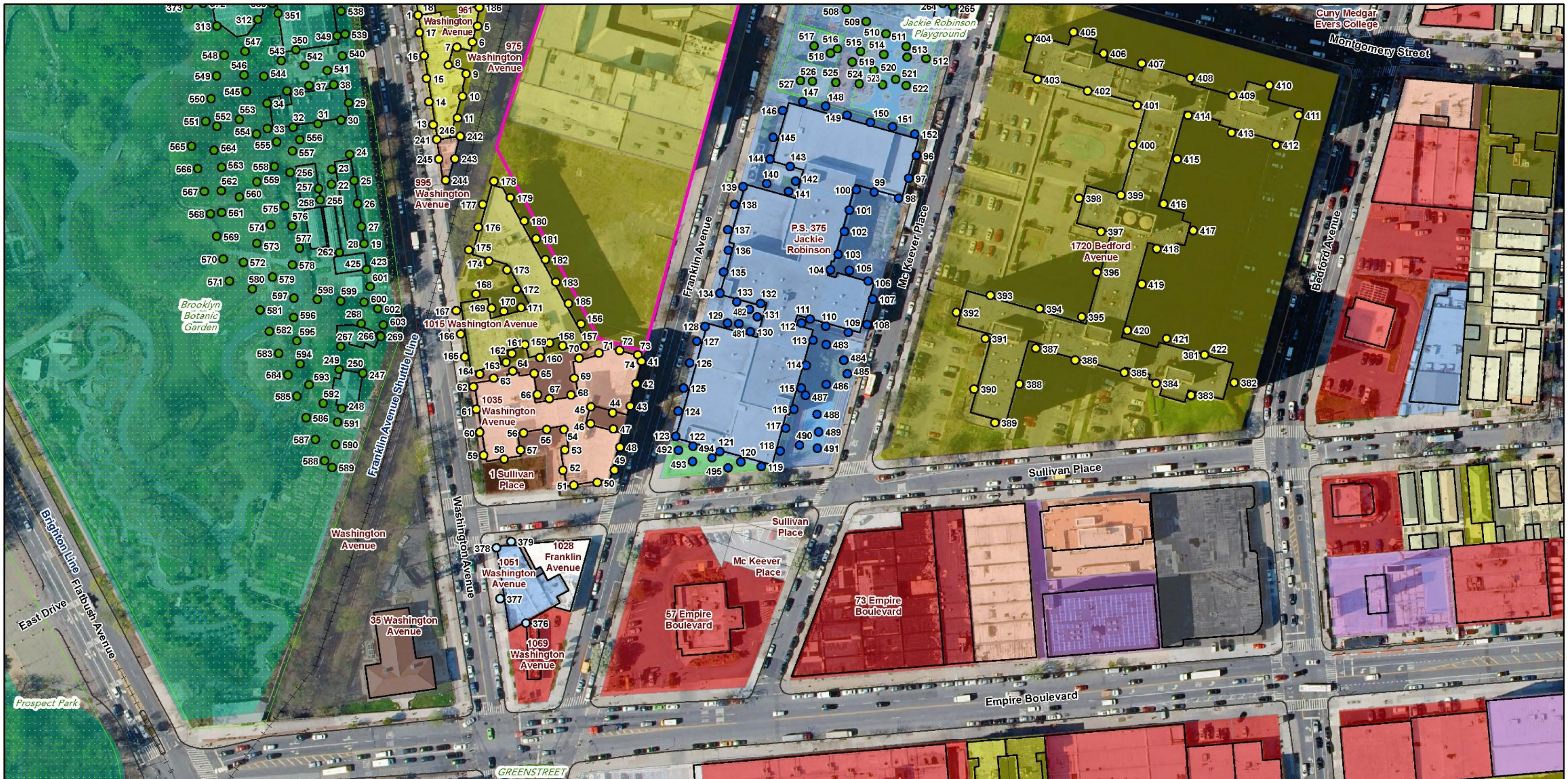
wsp

0 100 200 Feet

Modeled Receptor Locations



Noise Receptor Locations

- Church
- Open Space
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- Schools
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Land Use

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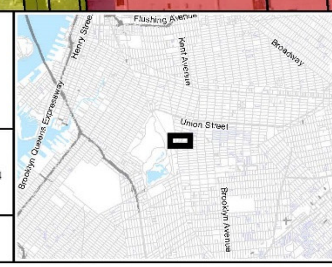
- Commercial and Office Buildings
- Industrial and Manufacturing
- Transportation and Utility
- Public Facilities and Institutions
- Open Space and Outdoor Recreation
- Parking Facilities
- Vacant Land
- N/A

Source: NYC DCP, NYC Open Data, NYS ITS, ESRI

Coordinate System: NAD 1983 StatePlane New York Long Island FIPS 3104 Datum: North American 1983

August 07, 2019



Construction Noise Receptor Locations

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0 100 200 Feet

Table 20-12 Construction Noise Analysis Results in dBA

Receptor IDs	Location	Land use	Existing Leq		Total Leq		Change in Leq (Increment)	
			Min	Max	Min	Max	Min	Max
156-185	1015 WASHINGTON AVENUE	Residential	54.3	65.8	54.8	88.7	0.1	32.4
41-74	1035 WASHINGTON AVENUE	Residential	53.4	65.8	53.7	86.9	0.1	29.0
376-379	1051 WASHINGTON AVENUE	Church	61.3	65.1	61.4	65.6	0.1	0.7
230-239	104 MONTGOMERY STREET	Residential	56.8	67.5	61.3	82.0	0.3	17.9
208-228	109 MONTGOMERY STREET	Residential	55.8	67.9	56.2	79.3	0.01	19.3
354-367	12 CROWN STREET	Residential	53.4	66.4	53.6	74.9	0.01	11.6
426- 444	49 CROWN STREET	Residential	53.4	54.5	53.5	69.7	0.1	16.3
382-422	1720 BEDFORD AVENUE	Residential	53.4	57.7	53.4	74.7	0.03	19.7
271-276, 364	915 WASHINGTON AVENUE	Residential	54.5	65.5	54.6	66.3	0.1	8.1
317- 329	921 WASHINGTON AVENUE	Residential	58.4	65.4	59.3	75.1	0.1	16.3
80-94, 187-188	941 WASHINGTON AVENUE	Residential	52	66.1	54.8	80.8	0.2	22.3
4, 95, 190-192, 198-200	961 WASHINGTON AVENUE	Residential	64.4	67.8	65.3	83.3	0.2	17.2
6-17	975 WASHINGTON AVENUE	Residential	65	68.2	65.4	84.1	0.2	18.3
242- 245	995 WASHINGTON AVENUE	Residential	65.4	69.9	65.6	83.5	0.2	16.6
22-24, 29-38, 247- 250, 256, 262, 266- 282, 313-314, 330-351, 369-370, 528- 607	Brooklyn Botanic Garden	Open Space	53.4	64.2	53.5	71.4	0.1	15.9
283- 310	CUNY Medgar Evers College	College	53.4	56	53.5	71.1	0.1	17.0
446-480	54 CROWN STREET (future no build site)	Planned Residential	53.4	67.9	53.7	82.2	0.1	23.3
496- 527	Jackie-Robinson Playground	Open Space	56.1	60.3	61.2	76.3	3.1	18.5
96- 152	PS 375 Jackie-Robinson	School	53.4	60.6	53.5	82.8	0.1	25.8

OPEN SPACE

Noise levels at publicly accessible and private open space locations are currently above the 55 dBA L10 (1) recommended in the *CEQR Technical Manual* noise level for outdoor areas. Proposed construction activities would exacerbate these exceedances of the recommended level in some locations as detailed further below. Although the 55 dBA L10 (1) guideline is a worthwhile goal for outdoor areas requiring serenity and quiet, this relatively low noise level is typically not achieved in parks and open space areas in New York City.

The Brooklyn Botanic Garden is largely shielded from equipment operating at ground level by intervening buildings along the east side of Washington Avenue. However, there is a gap between the buildings along Washington Avenue created by the Franklin Avenue Shuttle trench where there is a direct path for construction noise to propagate to certain portions of the garden. The maximum incremental impact is 16 dBA for month 7, representing months 1-7) (receptor #599). The total noise level would range from 54 to 71 dBA (L_{eq}) during construction. The 15 dBA impact threshold would be exceeded for up to 7 consecutive months. The maximum consecutive duration of exceedance of the CEQR screening criteria is 39 months, therefore the impact to the Brooklyn Botanic Garden is considered a potentially significant adverse impact. No practical and feasible mitigation measures have been identified that could be implemented to reduce noise levels at Brooklyn Botanic Garden to below the 55 dBA L10(1) guideline and/or eliminate project impacts. Consequently, construction activities would result in a significant adverse noise impact.

The Jackie Robinson Playground would experience a maximum construction noise increment of 19 dBA during modeled month 21 (representing months 15-22). The highest total noise level at the eastern portion of the playground during this time period of major construction on Building 2 would be approximately 76 dBA Leq. The CEQR screening criteria would be exceeded for the duration of construction (45 months), therefore the impact to the Jackie Robinson Playground is considered a potentially significant adverse impact. No practical and feasible mitigation measures have been identified that could be implemented to reduce noise levels at Jackie Robinson Playground to below the 55 dBA L10(1) guideline and/or eliminate project impacts. Consequently, construction activities would result in a significant adverse noise impact.

PUBLIC AND PRIVATE INSTITUTIONS

The Gospel Truth Church at 1051 Washington Avenue is shielded from direct exposure to construction noise paths by intervening buildings. The maximum predicted increment for this facility is approximately 1 dBA and CEQR screening thresholds would not be exceeded. Therefore, no significant adverse impacts would occur.

CUNY Medgar Evers College would experience a maximum construction noise increment of approximately 17 dBA at the worst receiver location (receptor #307) during month 21 (representing months 15-22). CEQR screening criteria would be exceeded for up to 45 months and the 15 dBA incremental impact threshold exceeded for up to 10 months. However, these increments are due to the low existing noise level and the maximum exterior noise level predicted during construction is 71 dBA Leq. Based on field observations, CUNY Medgar Evers College appears to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 33-44 dBA, and would not exceed the CEQR interior noise guideline of 45 dBA L10. Therefore, considering the magnitude and duration of impact, the construction noise impact to CUNY Medgar Evers College is not considered a significant adverse impact.

At P.S. 375 Jackie Robinson School, the maximum construction noise increment would be 26 dBA (L_{eq}) and the 20 dBA (L_{eq}) increment threshold would be exceeded for 22 consecutive months. Absolute $L_{eq(1\text{-}hr)}$ noise levels at the third and fourth floor exterior would be as high as 83 dBA (Leq). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, P.S. 375 appears to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 44-58 dBA, exceeding the CEQR interior noise guideline by up to 13 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to P.S.375 is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

RESIDENTIAL AND MIXED-USE BUILDINGS

This section discusses in detail the residential and mixed-use buildings exceeding the CEQR screening criteria for at least 24 consecutive months or exceeding the 15 dBA/20 dBA increment criteria.

921 WASHINGTON AVENUE

This residential building is to the west of 109 Montgomery Street and is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 16 dBA (Leq). The exceedance of the 15 dBA threshold would have a duration of approximately 8 months (represented by Month 21). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 921 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 41-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 59-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 921 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

941 WASHINGTON AVENUE

The residential building at 941 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 22 dBA (L_{eq}). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). The 15 dBA incremental threshold would be exceeded for up to 39 consecutive months and the 20 dBA incremental threshold would be exceeded for up to 10 consecutive months. Based on field observations, at least a portion of the residences of 941 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 45-56 dBA, exceeding the CEQR interior noise guideline by up to 11 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 63-74 dBA, exceeding the CEQR interior noise guideline by up to 29 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 941 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

961 WASHINGTON AVENUE

The residential building at 961 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 17 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 10 consecutive months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 961 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 48-58 dBA, exceeding the CEQR interior noise guideline by up to 13 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 66-76 dBA, exceeding the CEQR interior noise guideline by up to 31 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 961 Washington Avenue is considered a significant adverse impact. Refer to Chapter 21, "Mitigation," for a discussion of mitigation considered for this significant adverse impact.

975 WASHINGTON AVENUE

The residential building at 975 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 18 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 7 consecutive months. The exceedance of the CEQR screening criteria would persist for 45 months. Based on field observations, at least a portion of the residences of 975 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 46-59 dBA, exceeding the CEQR interior noise guideline by up to 14 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 64-77 dBA, exceeding the CEQR interior noise guideline by up to 32 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 975 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

995 WASHINGTON AVENUE

The newly constructed residential building at 995 Washington Avenue (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 17 dBA (L_{eq}). The 15 dBA incremental threshold would be exceeded for up to 7 consecutive months. The exceedance of the CEQR screening criteria would persist for 39 months. Based on field observations, the residences of 995 Washington Avenue appear to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-57 dBA, exceeding the CEQR interior noise guideline by up to 12 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 995 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

1015 WASHINGTON AVENUE

The residential building at 1015 Washington Avenue (on the southeast side of the project site) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 32 dBA (L_{eq}). The 20 dBA increment threshold would be exceeded for 14 consecutive months (during the excavation and foundation work on Building 1). The exceedance of the CEQR screening criteria would persist for 39 months, although the magnitude of incremental impact would be reduced by 10 dBA after the first seven months and continue to decline through the remainder of construction. Based on field observations, at least a portion of the residences of 1015 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 42-64 dBA, exceeding the CEQR interior noise guideline by up to 19 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 60-82 dBA, exceeding the CEQR interior noise guideline by up to 37 dBA. Considering the magnitude and duration of impact, the construction noise impact to 1015 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

1035 WASHINGTON AVENUE

The residential building at 1035 Washington Avenue (directly south of the project site) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 29 dBA (L_{eq}). The 20 dBA increment threshold would be exceeded for 14 consecutive months. The exceedance of the CEQR screening criteria would persist for 39 months, although the magnitude of impact would be reduced substantially once the Building 1 exterior is completed (providing shielding of this building from the noise generated by the subsequent construction of Building 2). Based on field observations, at least a portion of the residences of 1035 Washington Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 41-62 dBA, exceeding the CEQR interior noise guideline by up to 17 dBA. For units with window AC units, the CEQR interior noise guideline would not be exceeded after the first 14 months of construction.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 59-80 dBA, exceeding the CEQR interior noise guideline by up to 35 dBA. Considering the magnitude and duration of impact, the construction noise impact to 1035 Washington Avenue is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

104 MONTGOMERY STREET

The residential building at 104 Montgomery Street (on the opposite side of the Franklin Shuttle trench from the project site, with direct line of sight on the east facade) is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 18 dBA (L_{eq}).). The 15 dBA incremental threshold would be exceeded for up to 10 consecutive months. The exceedance of the CEQR screening criteria would persist for 45 months. Based on field observations, the residences of 104 Montgomery Street appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 48-57 dBA, exceeding the CEQR interior noise guideline by up to 12 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 104 Montgomery Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

109 MONTGOMERY STREET

This is a newly constructed residential building with direct line-of-sight to the construction site across Montgomery Street. 109 Montgomery Street is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 19 dBA (Leq). The highest increment would occur over a period of approximately 8 months represented by Month 21). The 15 dBA incremental threshold would be exceeded for up to 32 consecutive months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, the residences of 109 Montgomery Street appear to have double-glazed or insulated glass windows and central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-52 dBA, exceeding the CEQR interior noise guideline by up to 7 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 109 Montgomery Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

12 CROWN STREET

The residential building at 12 Crown Street and is predicted to exceed CEQR noise impact screening criteria with a maximum increment of 12 dBA (Leq). The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 12 Crown Street appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 43-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 61-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 12 Crown Street is considered a significant adverse impact. Refer to **Chapter 21, "Mitigation,"** for a discussion of mitigation considered for this significant adverse impact.

49 CROWN STREET

The residential tower at 49 Crown Street would experience a maximum increment of 16,3 dBA (Leq). Due to the height of the tower, many receptors would have direct line of sight to the construction site and would be affected by equipment operating at high elevations as well. The exceedance of the 15 dBA increment threshold would have a duration of approximately 39 months. Based on field observations, the residences of 49 Crown Street appear to have double-glazed or insulated glass windows and Packaged Terminal Air Conditioners. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 33-43 dBA, and would not exceed the CEQR interior noise guideline. Therefore, considering the magnitude and duration of impact, the construction noise impact to 49 Crown Street is not considered a significant adverse impact.

54 CROWN STREET (FUTURE DEVELOPMENT SITE)

The schedule for the development of this No-Action development site is unknown. If it was developed before the Proposed Development, it could experience construction noise impacts. The potential future building predicted to exceed CEQR noise impact screening criteria with a maximum increment of 23 dBA (Leq). The exceedance of the 15 dBA increment threshold would have a duration of approximately 39 months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). As a new development, 54 Crown Street is assumed to have double-glazed or insulated glass windows and Packaged Terminal Air Conditioners or central air conditioning. The building façade, with these measures, would be expected to provide approximately 30 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 45-55 dBA, exceeding the CEQR interior noise guideline by up to 10 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 54 Crown Street is considered a significant adverse impact. Refer to **Chapter 21, “Mitigation,”** for a discussion of mitigation considered for this significant adverse impact.

1720 BEDFORD AVENUE

The residential tower complex at 1720 Bedford Avenue would experience a maximum increment of 20 dBA (Leq). Due to the height of the towers, many receptors would have direct line of sight to the construction site and would be affected by equipment operating at high elevations as well. The longest consecutive duration of exceedance of the 20 dBA threshold would be approximately 8 months. The exceedance of the CEQR screening criteria would persist for the duration of construction (45 months). Based on field observations, at least a portion of the residences of 1720 Bedford Avenue appear to have double-glazed or insulated glass windows and through-window air conditioning. The building façade, with these measures, would be expected to provide approximately 28 dBA or greater window/wall attenuation. Consequently, interior L10 noise levels are predicted to be 38-50 dBA, exceeding the CEQR interior noise guideline by up to 5 dBA.

For residential units potentially lacking through-window air conditioning, a windows-open condition with 10 dBA window/wall attenuation was assessed. Consequently, interior L10 noise levels with windows open are predicted to be 56-68 dBA, exceeding the CEQR interior noise guideline by up to 23 dBA. Therefore, considering the magnitude and duration of impact, the construction noise impact to 1720 Bedford Avenue is considered a significant adverse impact. Refer to **Chapter 21, “Mitigation,”** for a discussion of mitigation considered for this significant adverse impact.

MOBILE SOURCE SCREENING

In the peak construction truck month during 6-7 AM hour, the screening threshold (doubling of noise PCEs or a 3 dBA increase over existing conditions) would not be exceeded along Washington Avenue. However, the screening threshold would be exceeded directly adjacent to the site on Montgomery St (increase from 69 existing noise PCES to 689 in peak truck month) and Franklin Ave (increase from 266 existing noise PCES to 492 in peak truck month). The detailed construction noise modeling includes the cumulative impact of on-site equipment plus truck traffic on the roads surrounding the site (including both roadways that exceed the mobile source screening) and this constitutes the worst-case construction noise impact. The receptors that would experience potential mobile source noise impacts are already included in the cumulative construction noise analysis that includes both mobile and stationary equipment. The impact of a maximum of nine trucks in the 6-7am hour would be negligible in comparison to the worst-case impact when both trucks and on-site equipment are operating simultaneously. Therefore, further detailed analysis of mobile source impacts as a distinct impact topic is not warranted given that the screening is only exceeded adjacent to the construction site.

PROJECT-ON-PROJECT

The highest predicted construction noise level on Building 1 during the construction of Building 2 in month 36 is 75 dBA Leq (occurring on floors 6-10 of the north façade). Incremental construction noise impacts on the north façade of Building 1 range between 14 and 20 dBA depending on the specific receptor location and floor. Proposed Development. The typical exterior to interior attenuation level for recent construction buildings with PTAC or central air condition is 30 dBA. Based on this, the highest interior noise level during construction would be 48 dBA L10, which exceeds the CEQR interior noise guideline. Receptors at completed and occupied Building 1 during the construction of Building 2 would not experience noise increment of 20 dBA or 15 dBA for 3 months or 12 months, respectively, and would not exceed CEQR screening threshold for more than 24 months or more. Therefore, the construction noise impact to completed and occupied Building 1 is not considered a significant adverse impact.

Vibration

Introduction

Construction activities have the potential to result in vibration levels that may result in structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibratory levels at a receiver are a function of the source strength (which is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the project site.

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant adverse impact was based on the vibration impact criterion used by LPC of a peak particle velocity (PPV) of 0.50 inches/second as specified in the NYCDOB TPPN #10/88. For non-fragile buildings, vibration levels below 2.0 inches/second would not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 65 vibration decibels (VdB) would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

Analysis Methodology

Table 20-13 shows vibration source levels for typical construction equipment.

TABLE 20-13
Vibration Source Levels for Construction Equipment

Equipment		PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (impact)	upper range	1.518	112
	Typical	0.644	104
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hydraulic Break Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.			

The source vibration levels shown in **Table 20-13** were projected to nearby receptors to estimate the levels of construction vibration that would occur in the study area.

Construction Vibration Analysis Results

The buildings of most concern with regard to the potential for structural or architectural damage due to vibration are the residential buildings are 1015 Washington Avenue and 1035 Washington Avenue, portions of which would be located within 90 feet of construction work areas. However, as a result of these structures' distances from the construction site, vibration levels at these buildings and structures would not be expected to exceed 2.0 in/sec PPV, including during pile driving, which would be the most vibration intensive activity associated with construction of the Proposed Development. Additional receptors farther away from the Development Site would experience even less vibration than those listed above, which would not be expected to cause structural or architectural damage.

The Applicant will work extensively with the MTA to ensure that the construction activities that occur adjacent to the MTA right of way do not cause any damage or disturb subway operations.

In terms of potential vibration levels that would be perceptible and annoying, the equipment that would have the most potential for producing levels that exceed the 65 VdB limit is also the pile driver. It would have the potential to produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 550 feet depending on soil conditions. However, the operation would only occur for limited periods of time at a particular location and therefore would not result in any significant adverse impacts.

Conclusions

Construction of the Proposed Development would not have the potential to result in vibration at a level that could result in architectural or structural damage to adjacent buildings because the nearby structures are separated from construction work areas by sufficient distance to avoid vibration at a level that could potentially result in damage. Furthermore, construction would result in vibration at a level that would have the potential to be noticeable or annoying only for limited periods of time. Consequently, there is no potential for significant adverse vibration impacts from the Proposed Development.