Chapter 21: Mitigation*

21.1 Introduction

In accordance with the *City Environmental Quality Review (CEQR) Technical Manual,* where significant adverse impacts are identified, mitigation measures to reduce or eliminate the impacts to the fullest extent practicable are developed and evaluated. Measures to further mitigate adverse impacts have been evaluated between the Draft Environmental Impact Statement (DEIS) and the Final EIS (FEIS). Therefore, the FEIS includes more complete information and commitments on all practicable mitigation measures to be implemented with the Proposed Actions.

21.2 Principal Conclusions[1]

COMMUNITY FACILITIES AND SERVICES

Public Schools

As discussed in Chapter 4, "Community Facilities and Services," the Proposed Actions would result in significant adverse impacts to elementary and intermediate schools in CSD 9, Sub-district 2 and elementary schools in CSD 10, Sub-district 4. The latest Five-Year Capital Plan Proposed Amendment was issued in February 2017 and amended in November 2017, and includes elementary school capacity expansion for CSD 10, Sub-district 4 – specifically, to expand the existing P.S. 33 Annex. This expansion would add an additional 388 seats to the sub-district, and is expected to be completed by 2021. This expansion has been incorporated into the quantitative analysis presented in this FEIS. The expansion would reduce, but not eliminate, the significant adverse impacts in CSD 10, Sub-district 4 as identified and described in the DEIS.

* This chapter has been revised since the DEIS in the areas of community facilities and services, shadows, transportation, and construction to reflect further evaluation of potential mitigation measures conducted between the DEIS and FEIS in coordination between lead agency, DCP, and other involved and interested agencies.

[1] Shortly before the FEIS was completed, the School Construction Authority (SCA) released the data for the 2016-2017 school enrollment, capacity and utilization for the study area for the Proposed Actions. The analysis presented in this FEIS does not reflect the new data; however it is anticipated any such analysis reflecting the updated data would not result in significant adverse impacts not already identified in the FEIS, and the mitigation measures as proposed in the FEIS would not change.

Based on the conceptual construction schedule, CSD 9, Sub-district 2 is anticipated to exceed significant adverse impact thresholds for elementary schools in 2020 and intermediate schools in 2019 and CSD 10, Sub-district 4 is anticipated to exceed significant adverse impacts for elementary schools in 2026. To avoid the identified significant adverse elementary school impact in CSD 9, Sub-district 2, the number of incremental dwelling units that could be developed would have to be reduced to 427, generating 166 elementary school students as compared to No-Action conditions. This would represent a decrease of 1,520 DUs (78.1 percent) in CSD 9, Sub-district 2. To avoid the significant adverse intermediate school impact in CSD 9, Sub-district 2, the number of incremental dwelling units that could be developed would have to be reduced to 210 DUs, generating 34 intermediate school students as compared to the No Action condition. This would represent a decrease of 1,737 DUs (89.2 percent) in CSD 9, Sub-district 2. To avoid the significant adverse elementary school impact in CSD 10, Sub-district 4, the number of incremental dwelling units that could be developed would have to be reduced to 692 DUs, generating 270 elementary school students as compared to No-Action conditions. This would represent a decrease of 127 DUs (15.5 percent) in CSD 10, Sub-district 4. Alternatively, 594 new seats could be added to CSD 9, Sub-district 2 elementary schools, 279 new seats could be added to CSD 9, Sub-district 2 intermediate schools, and 270 new seats could be added to CSD 10, Sub-district 4 elementary schools to avoid the unmitigated significant adverse impacts.

The New York City Department of City Planning (DCP), as lead agency, has explored possible mitigation measures with the New York City School Construction Authority (SCA)/Department of Education (DOE) between DEIS and FEIS. The following administrative and capital mitigation measures would mitigate the significant adverse impacts:

- Restructuring or reprogramming existing school space under the DOE control in order to make available more capacity in existing school buildings located within CSD 9, Sub-district 2 and CSD 10, Sub-district 4;
- Relocating administrative functions to another site, thereby freeing up space for classrooms; and/or
- Creating additional capacity in the area by constructing a new school(s), building additional capacity at existing schools, or leasing additional school space constructed as part of projected development within CSD 9, Sub-district 2 and CSD 10, Sub-district 4.

To mitigate the identified elementary and intermediate school impacts resulting from the Proposed Actions, enrollment in CSD 9, Sub-district 2, and CSD 10, Sub-district 4, will be monitored. If a need for additional capacity is identified, DOE will evaluate the appropriate timing and mix of measures, identified above, to address increased school enrollment. In coordination with the SCA, if additional school construction is warranted, and if funding is available, it will be identified in the Five-Year Capital Plan that covers the period in which the capacity need would occur (refer to the DOE's letter to the City Planning Commission Chairman dated December 21, 2017, provided in Appendix C, "Agency Correspondence").

SHADOWS

As discussed in Chapter 6, "Shadows," the Proposed Actions would result in significant shadows impacts at eight open space resources. The analysis determined that six resources (Bronx School of Young Leaders, PS 306 Schoolyard, Mount Hope Playground, Goble Playground, Inwood Park, Keltch Park) would experience significant incremental shadow coverage, duration, and/or periods of complete sunlight loss that could have the potential to affect open space utilization or enjoyment. Two resources (Edward L Grant Greenstreet, Jerome Avenue/Grant Avenue Greenstreet) would not receive adequate sunlight during the growing season (at least the four to six hour minimum specified in the *CEQR Technical Manual*) as a result of incremental shadow coverage and vegetation at these resources could be significantly impacted.

There are no reasonable means to partially or fully mitigate significant adverse shadow impacts on these three open space resources; therefore, the shadow impacts would be an unavoidable significant adverse impact of the Proposed Actions. Possible measures that could mitigate significant adverse shadow impacts on open spaces may include relocating sunlight-sensitive features within an open space to avoid sunlight loss; relocating or replacing vegetation; undertaking additional maintenance to reduce the likelihood of species loss; or providing replacement facilities on another nearby site. Other potential mitigation strategies include the redesign or reorientation of the open space site plan to provide for replacement facilities, vegetation, or other features. The *CEQR Technical Manual* guidelines also discuss strategies to reduce or eliminate shadow impacts, including modifications to the height, shape, size, or orientation of a proposed development that creates the significant adverse shadow impact. DCP, as lead agency, has explored possible mitigation measures with the New York City Department of Parks and Recreation (DPR) between the DEIS and FEIS, and it was found that there are no reasonable means to partially or fully mitigate the significant adverse shadows impact. In the absence of feasible mitigation, the significant adverse impact to Bronx School of Young Leaders, PS 306 Schoolyard, Mount Hope Playground, Goble Playground, Inwood Park, Keltch Park, Edward L. Grant Greenstreet, and Jerome Avenue/Grant Avenue Greenstreet would be unavoidable.

TRANSPORTATION

Traffic

As described in Chapter 13, "Transportation," the Proposed Actions would result in significant adverse traffic impacts at 22 study area intersections during one or more analyzed peak hours; specifically, 15 lane

not all, of the anticipated traffic impacts. Implementation of the recommended traffic engineering improvements is subject to review and approval by DOT. If, prior to implementation, DOT determines that an identified mitigation measure is infeasible, an alternative and equivalent mitigation measure will be identified. [2]

Table 21-1, "Summary of Lane Groups/Intersections with Significant Adverse Traffic Impacts," lists that significant adverse impacts would be fully mitigated at all intersections except one lane group at one intersection during the weekday AM peak hour, one lane group at one intersection during the midday peak hours, 19 lane groups at eight intersections during the PM peak hour, and five lane groups at three intersections during the Saturday midday peak hour (see Figure 21-2, "Unmitigated Significant Adverse Impact Traffic Analysis Locations"). Table 21-2, "Lane Groups with Unmitigated Significant Adverse Traffic Impacts," provides a more detailed summary of the intersections and lane groups that would have significant adverse traffic impacts. In total, impacts to one or more approach movements would remain unmitigated in one or more peak hours at up to eight study intersections.

[2] Shortly before completion of the FEIS, the New York City Department of Transportation (DOT) informed the lead agency that it had implemented signal timing changes at certain intersections within the traffic study area to accommodate new Select Bus Service (SBS) traffic operations along Fordham Road. These changes may make the identified mitigation measures at the intersection of East Fordham Road and Jerome Avenue infeasible. The feasibility of implementing the identified mitigation measures at this intersection will be studied as part of the Traffic Monitoring Program. If, as a result of the monitoring, it is determined that no mitigation would be feasible, this impacted intersection would remain unmitigated.

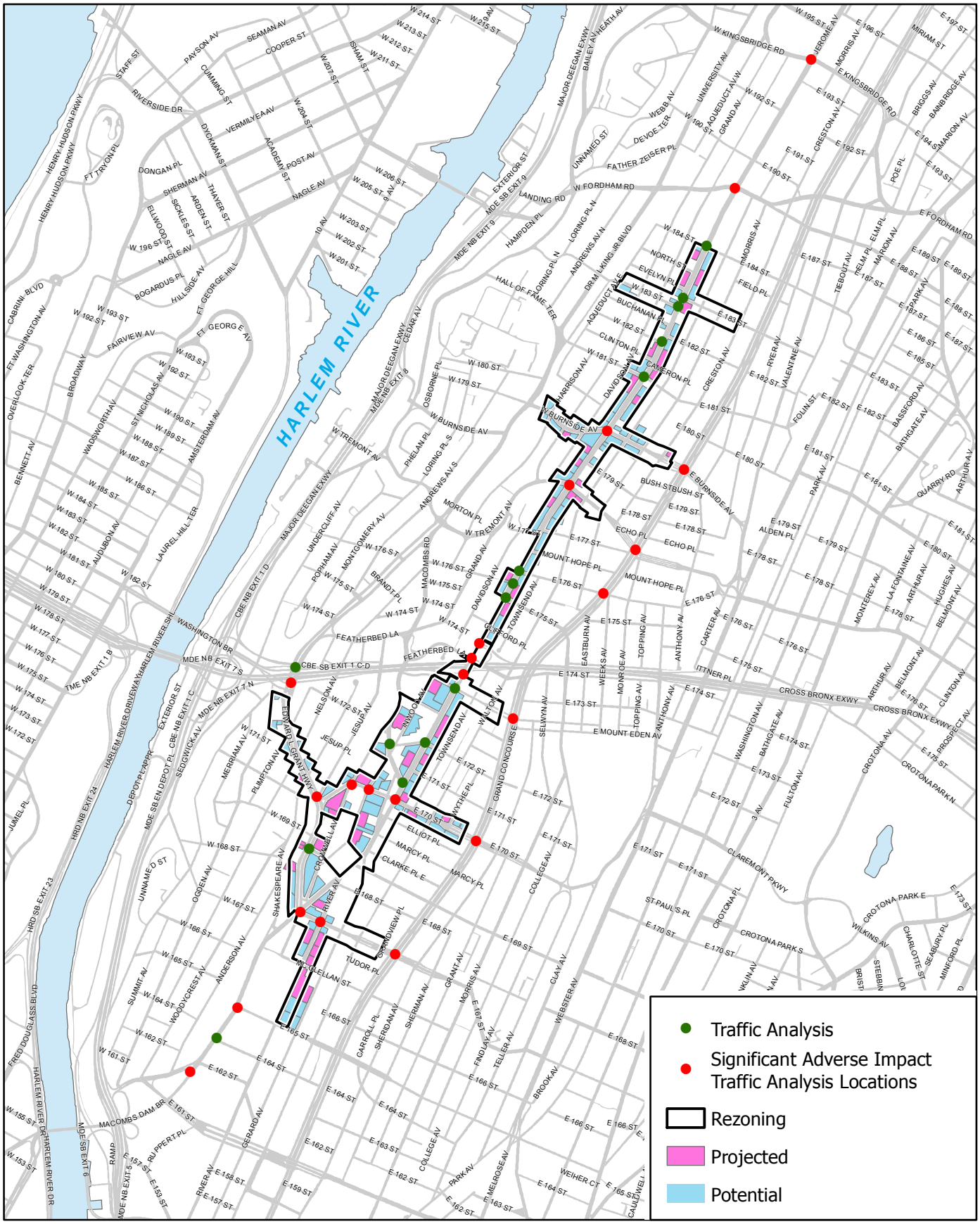

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Figure 21-1

SIGNIFICANT ADVERSE IMPACT TRAFFIC ANALYSIS LOCATIONS

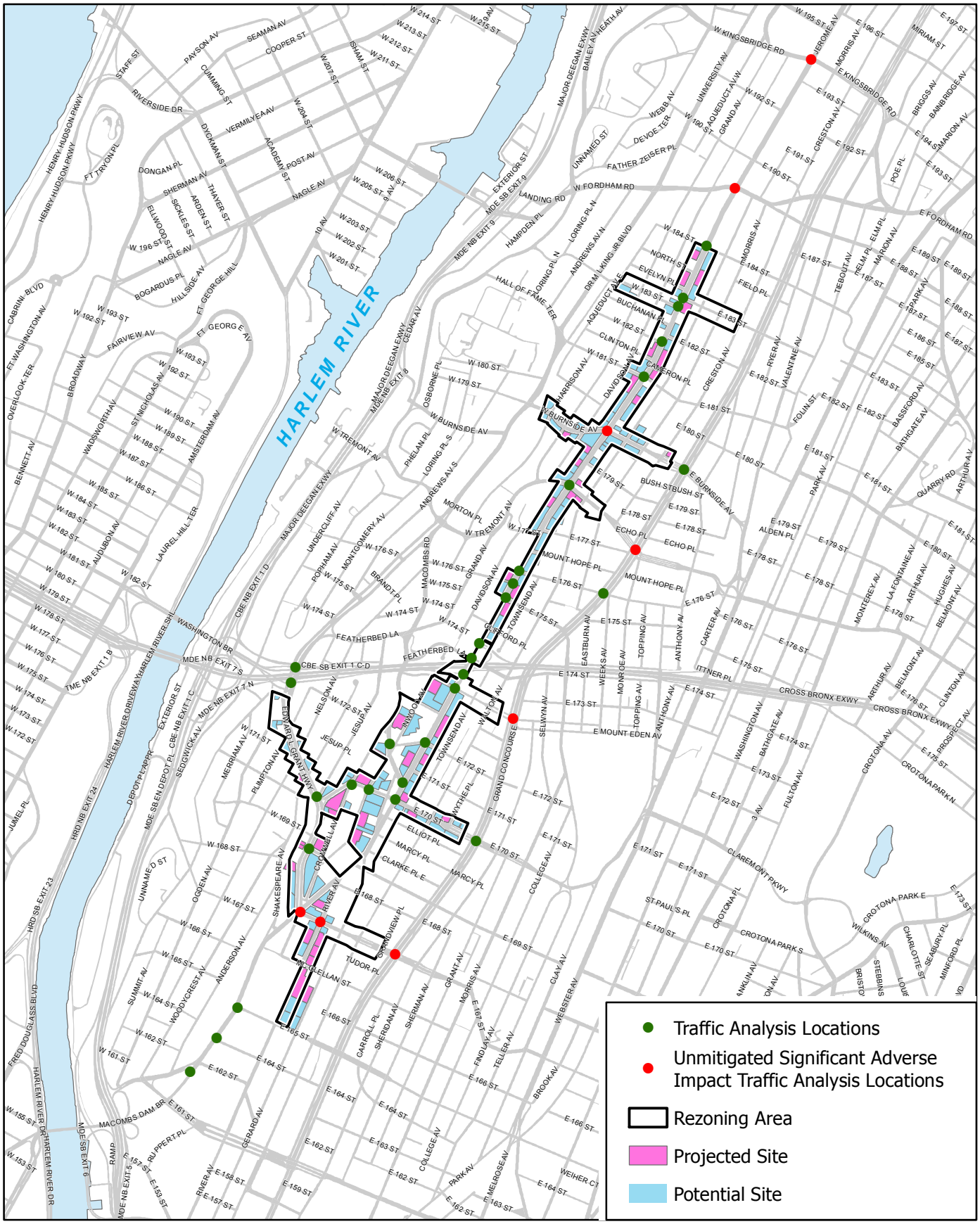

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Figure 21-2

UNMITIGATED SIGNIFICANT ADVERSE IMPACT TRAFFIC ANALYSIS LOCATIONS

Table 21-1: Summary of Lane Groups/Intersections with Significant Adverse Traffic Impacts

Peak Hour	Lane Groups/ Intersections Analyzed	Lane Groups/ Intersections with No Significant Impacts	Lane Groups/ Intersections with Significant Impacts	Mitigated Lane Groups/ Intersections	Unmitigated Lane Groups/ Intersections
Weekday AM	162/36	147/22	15/14	14/13	1/1
Weekday Midday	162/36	145/22	17/14	16/13	1/1
Weekday PM	162/36	129/16	33/20	14/12	19/8
Saturday Midday	162/36	134/17	28/19	23/16	5/3

Table 21-2: Lane Groups with Unmitigated Significant Adverse Traffic Impacts

Signalized Intersections	Peak Hour			
	Weekday AM	Weekday Midday	Weekday PM	Saturday Midday
Jerome Avenue and Kingsbridge Road	--	--	NB - LTR	NB - LTR
Jerome Avenue and Fordham Road	--	--	NB - LTR, SB - LTR	--
Jerome Avenue and Burnside Avenue	--	SB - LTR	WB - LTR, SB - LTR	WB - LTR, SB - LTR
Jerome Avenue and 167th Street			EB - LTR, EB - R, WB - LT, NB - DefL	
River Avenue and 167th Street	--	--	NB - LTR	--
Grand Concourse and Tremont Avenue	--	--	EB - TR, WB – L, NB - L	--
Grand Concourse and Mt. Eden Avenue	--	--	EB - LTR, WB - LTR, NB - L	--
Grand Concourse and 167th Street	EB - TR	--	EB – L, EB – TR, WB - TR	EB – TR, WB - L

Transit

Bus

The Proposed Actions would result in a capacity shortfall on the east and westbound Bx11, southbound Bx32, and eastbound Bx35 in the AM peak hour and on the westbound Bx11, north and southbound Bx32, and east and westbound Bx35 in the PM peak hour. The significant adverse impacts to Bx11, Bx32, and Bx35 local bus service could be fully mitigated by the addition of a total of five standard buses in the AM peak hour and six standard buses in the PM peak hour. The general policy of NYCT is to provide additional bus service where demand warrants, taking into account financial and operational constraints.

Pedestrians

Incremental demand from the Proposed Actions would significantly adversely impact one sidewalk element during one peak hour (see Figure 21-3, "Significant Adverse Impact Pedestrian Location"). The recommended mitigation measure to address this impact is discussed below. Implementation of this measure would be subject to review and approval by DOT. If, prior to implementation, DOT determines that an identified mitigation measure is infeasible, an alternative and equivalent mitigation measure will be identified.

Sidewalks

One of the 33 analyzed sidewalks would be significantly adversely impacted by the Proposed Actions—the south sidewalk of West 170th Street between Edward L. Grant Highway and Cromwell Avenue in the Saturday midday peak hour. The sidewalk at this location is eight feet wide with a five foot grass buffer between the sidewalk and the fence line of the adjacent property. Paving this five foot grass verge would increase the width of this sidewalk and fully mitigate the significant adverse impact to this sidewalk. No unmitigated significant adverse sidewalk impacts would remain upon incorporation of the recommended mitigation measures.

CONSTRUCTION

Transportation

As described in Chapter 19, "Construction," construction-related traffic would have no significant adverse impacts during the weekday construction 6-7 AM peak hour and would have significant adverse impacts at 13 intersections during the weekday construction PM peak hour (3-4 PM). Most significant adverse impacts would be mitigated with the implementation of recommended mitigation measures, but unmitigated significant adverse impacts remain at five intersections during the construction PM peak hour. No basic intersection improvement measures could mitigate the significant adverse construction-related impacts at these five intersections. A traffic monitoring program will be prepared to evaluate and assess the need for traffic mitigation, and it will be coordinated between DCP and DOT. If no additional practicable mitigation is identified, these impacts would constitute unavoidable significant adverse traffic impacts as a result of the Proposed Action.

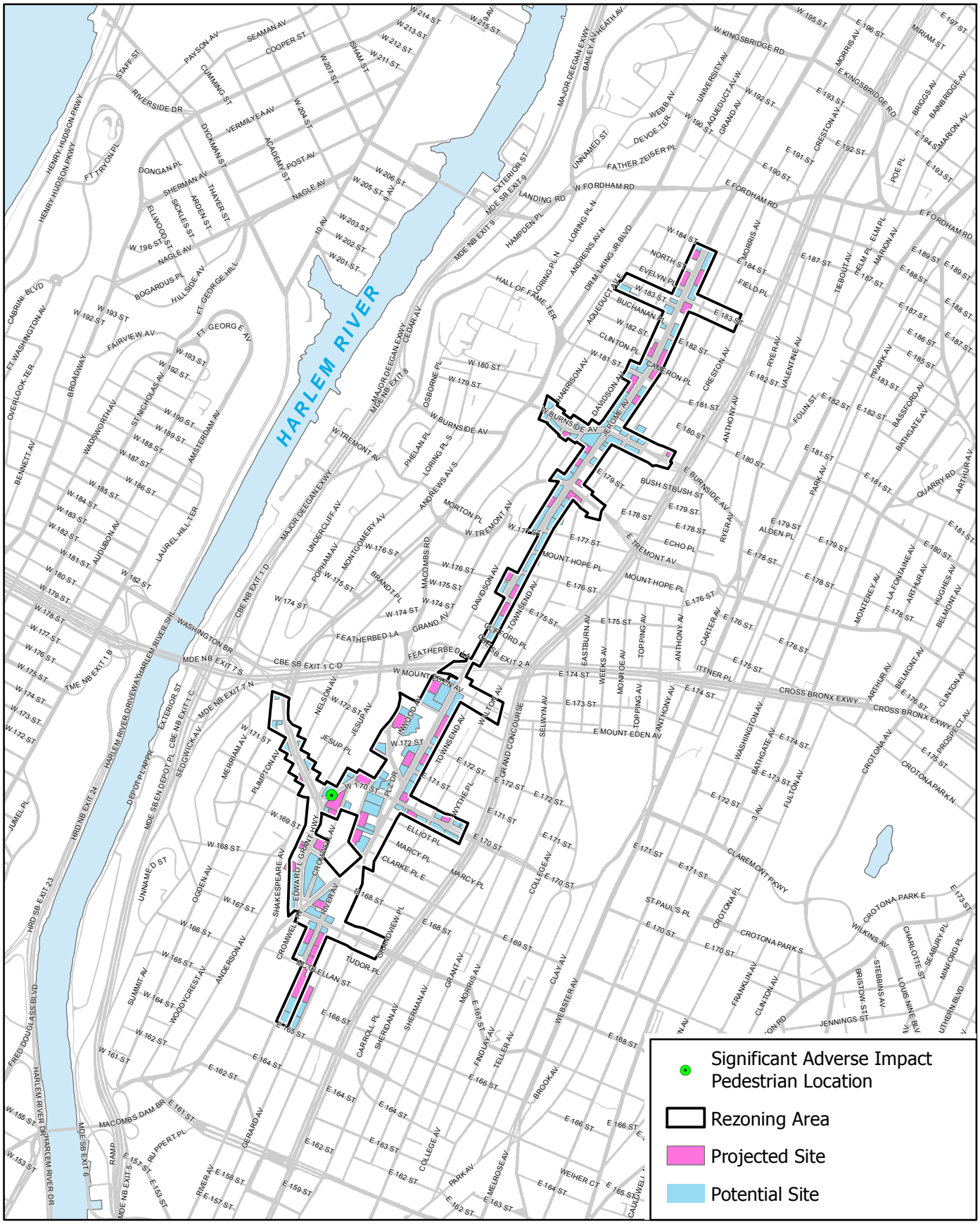

Figure 21-3

SIGNIFICANT ADVERSE IMPACT PEDESTRIAN LOCATION

Noise

As discussed in Chapter 19, "Construction," construction activities associated with the Proposed Action would occur on multiple development sites within the same geographic area and, as a result, has the potential to increase interior noise levels of existing adjacent commercial and residential buildings. These increases would likely approach or marginally exceed the impact threshold for short periods of time. The same potential to exceed the noise limits exist during other construction quarters bordering the peak construction period.

The findings indicate that noise levels above the CEQR impact threshold are expected at several existing buildings adjacent to Projected Development Sites 33, 34, 35, 36 and to Projected Development Sites 43, 44, 45. For Projected Development Sites 33, 34, 35, 36 the highest noise levels are projected to be at top-level receptor locations adjacent to existing commercial and residential buildings on Cromwell Street between West Clarke Place and East 170th Street. For Projected Development Sites 43, 44, 45 the highest noise levels are projected to be at mid-level receptor locations adjacent to existing residential buildings o Gerard Street between McLellan Street and West 167th Street.

Although these locations are expected to experience exterior noise levels significantly above CEQR limits, for those buildings with double-paned glazed-glass windows and a closed ventilation system, it would keep interior noise levels for those buildings below or near the CEQR 50-dBA L10 impact threshold for commercial buildings and the CEQR 45-dBA L10 impact threshold for residential buildings. The interior noise levels of these adjacent buildings would likely approach or marginally exceed the CEQR L10 impact thresholds for short periods of time. The same potential for noise impacts also exist for similar noise-level increases at these and/or other receptor locations in the immediate vicinity of Project Development Sites 33, 34, 35, 36 and 43,44,45 during other construction quarters bordering this peak construction period (i.e., second quarter of 2018 and third quarter of 2022). If the peak construction scenario conservatively assumed for simultaneous construction on Project Development Sites 33, 34, 35, 36 and 43, 44, 45, the Proposed Action would result in a significant adverse construction noise impact.

Noise Reduction Measures

Construction of the Proposed Projected would be required to follow the requirements of the NYC Noise Control Code for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the NYC Noise Code. These measures could include a variety of source and path controls.

The following proposed mitigation measures go beyond the noise control measures already identified in Chapter 19, "Construction," and may partially mitigate significant adverse impacts (and substantially reduce construction-related noise levels) at some locations:

- Noise barriers constructed from plywood or other materials at a height of 12 to 16 feet utilized to provide shielding;

- Utilization of isolation pads between pile driver hammer and piles;
- Acoustical shrouds surrounding the pile driver hammer and piles;
- Electric cranes or cranes with exhaust silencers that have lower noise emission levels; and
- Excavators with exhaust silencers that have lower noise emission levels.

Between the DEIS and FEIS, the above mitigation measures, which are intended to address the pieces of construction equipment that would produce the highest noise levels, were explored, and it was found that there are no reasonable means to ensure measures be employed that would fully mitigate the significant adverse construction noise impacts. The proposed measures discussed above are considered partial mitigations only. Consequently, these impacts would not be completely eliminated and they would constitute an unmitigated significant adverse construction noise impact, as is discussed in Chapter 22, "Unavoidable Adverse Impacts."

21.3 Community Facilities and Services[3]

PUBLIC SCHOOLS

As discussed in Chapter 4, "Community Facilities and Services," in the future with the Proposed Actions, the elementary and intermediate school enrollment of Sub-district 2 of CSD 9 is anticipated to exceed the significant adverse impact threshold in the years 2020 and 2019 (respectively) based on the conceptual construction schedule. CSD 9, Sub-district 2 elementary schools would increase from a No-Action utilization rate of 128.7 percent to 151.5 percent in the With-Action condition (a 22.8 percentage point increase). CSD 9, Sub-district 2 intermediate schools would increase from a No-Action utilization rate of 125.9 to 171.2 in the With-Action condition (a 45.3 percentage point increase). As CSD 9, Sub-district 2 elementary and intermediate schools would operate over capacity in the future with the Proposed Actions with an increase of five percentage points or more to their collective utilization rates between the No-Action and With-Action conditions, significant adverse impacts to this sub-district would result.

In the future with the Proposed Actions, the elementary school enrollment of Sub-district 4 of CSD 10 is anticipated to exceed the significant adverse impact threshold in the year 2026 based on the conceptual

[3] Shortly before the FEIS was completed, the School Construction Authority released the data for the 2016-2017 school enrollment, capacity and utilization for the study area. The analysis does not reflect the new data in the existing conditions, however, the analysis may be updated in the future as part of a Technical Memorandum to the FEIS. It is expected that changes in the analysis reflecting the updated data would not result in new or increased significant adverse impacts identified in the FEIS, and the mitigation measures as proposed in the FEIS would not change.

construction schedule. CSD 10, Sub-district 4 elementary schools would increase from a No-Action utilization rate of 107.4 percent to 113.3 percent in the With-Action condition (a 5.9 percentage point increase). As CSD 10, Sub-district 4 elementary schools would operate over capacity in the future with the Proposed Actions with an increase of five percentage points or more to their collective utilization rates between the No-Action and With-Action conditions, significant adverse impacts to this sub-district would result.

In the RWCDS, 1,947 incremental DUs would be developed within CSD 9, Sub-district 2 (compared to the No-Action condition), which would result in significant adverse impacts on elementary schools within the sub-district that are projected to occur in the year 2020, based on the conceptual construction schedule. To avoid the identified significant adverse elementary school impact in CSD 9, Sub-district 2, the number of incremental dwelling units that could be developed would have to be reduced to 427, generating 166 elementary school students as compared to No-Action conditions. This would represent a decrease of 1,520 DUs (78.1 percent) in CSD 9, Sub-district 2. An increase of 166 elementary school students within Sub-district 2 of CSD 9, would increase the No-Action utilization rate in the sub-district by less than five percentage points and would be below the *CEQR Technical Manual* threshold and thus, not a significant adverse impact.

In the RWCDS, 1,947 incremental DUs would be developed within CSD 9, sub-district 2 (compared to the No-Action condition), which would result in significant adverse impacts on intermediate schools within the sub-district that are projected to occur in the year 2019, based on the conceptual construction schedule. To avoid the significant adverse intermediate school impact in CSD 9, Sub-district 2, the number of incremental dwelling units that could be developed would have to be reduced to 210 DUs, generating 34 intermediate school students as compared to the No Action condition. This would represent a decrease of 1,737 DUs (89.2 percent) in CSD 9, Sub-district 2. The 34 intermediate school students within CSD 19, Sub-district 2 would increase the No-Action utilization rate in the sub-district by less than five percentage points and would similarly be below the *CEQR Technical Manual* threshold that would be considered a significant adverse impact.

In the RWCDS, 819 incremental DUs would be developed within CSD 10, Sub-district 4 (compared to the No-Action condition), which would result in significant adverse impacts on elementary schools within the sub-district that are projected to occur in the year 2026, based on the conceptual construction schedule. To avoid the significant adverse elementary school impact in CSD 10, Sub-district 4, the number of incremental dwelling units that could be developed would have to be reduced to 692 DUs, generating 270 elementary school students as compared to No-Action conditions. This would represent a decrease of 127 DUs (15.5 percent) in CSD 10, Sub-district 4. An increase of 270 elementary school students within Sub-district 4 of CSD 10, would increase the No-Action utilization rate in the sub-district by less than five percentage points and would be below the *CEQR Technical Manual* threshold and thus, not a significant adverse impact.

While the Proposed Actions would also result in 398 and 66 incremental DUs in Sub-districts 1 and 3 of CSD 9, no significant adverse public school impacts would occur in these sub-districts in the 2026 With-Action condition. Additionally, the 819 DUs in Sub-district 4 of CSD 10 would not create a significant adverse impact on intermediate schools in the 2026 With-Action condition and therefore would not require mitigation measures.

Table 21-3, "Elementary and Intermediate School Impact Thresholds and Mitigation School Seats," below, indicates the number of incremental dwelling units within CSD 9, Sub-district 2 and CSD 10, Sub-district 4 that would result in a significant adverse impact requiring mitigation, as well as the number of additional elementary and intermediate schools that would need to be provided in order to mitigate the identified significant adverse impacts. In accordance with the *CEQR Technical Manual* impact criteria, the number of seats needed to mitigate the significant adverse impacts would either: (1) reduce the incremental increase in the sub-district's elementary or intermediate school capacity to less than five percent over the No-Action condition; or (2) reduce the With-Action utilization rate to less than 100 percent.

Table 21-3: Elementary and Intermediate School Impact Thresholds and Mitigation School Seats

District and Sub-District and Grade Level	Impact Thresholds[1]	Mitigation Seats Needed to Fully Mitigate the Significant Adverse Impact
CSD 9, Sub-District 2, Elementary	427 DUs (166 students)	594
CSD 9, Sub-District 2, Intermediate	210 DUs (34 students)	279
CSD 10, Sub-District 4, Elementary	692 DUs (270 students)	49
Notes: [1]Represents increment over No-Action Condition		

Source: The Calladium Group, 2017.

Measures utilized by the DOE to address increased school enrollments include:

- Restructuring or reprogramming existing school space under the DOE's control in order to make available more capacity in existing school buildings located within CSD 9, Sub-district 2 and CSD 10, Sub-district 4;
- Relocating administrative functions to another site, thereby freeing up space for classrooms; and/or
- Creating additional capacity in the area by constructing a new school(s), building additional capacity at existing schools, or leasing additional school space constructed as part of projected development within CSD 9, Sub-district 2 and CSD 10, Sub-district 4.

To mitigate the identified elementary and intermediate school impacts resulting from the Proposed Actions, enrollment in CSD 9, Sub-district 2, and CSD 10, Sub-district 4, will be monitored. If a need for additional capacity is identified, DOE will evaluate the appropriate timing and mix of measures, identified above, to address increased school enrollment. In coordination with the SCA, if additional school construction is warranted, and if funding is available, it will be identified in the Five-Year Capital Plan that

covers the period in which the capacity need would occur (refer to the DOE's letter to the City Planning Commission Chairman dated December 21, 2017, provided in Appendix C, "Agency Correspondence").

In general, the Proposed Actions would allow for the development of community facility space, including new school facilities, within the project area. It should also be noted that any new school facility would be subject to its own site selection process and separate environmental review

21.4 Shadows

As discussed in Chapter 6, Shadows, a detailed shadows analysis determined that development resulting from the Proposed Actions would result in significant adverse shadow impacts on eight open space resources. No historic resources would be affected by incremental shadows. The 146 projected and potential development sites identified in the RWCDS would result in incremental shadow coverage on 41 open space resources. The detailed shadows analysis identified significant adverse impacts at eight open space resources. The analysis determined that six resources (Bronx School of Young Leaders, PS 306 Schoolyard, Mount Hope Playground, Goble Playground, Inwood Park, Keltch Park) would experience significant incremental shadow coverage, duration, and/or periods of complete sunlight loss that could have the potential to affect open space utilization or enjoyment. Two resources (Edward L Grant Greenstreet, Jerome Avenue/Grant Avenue Greenstreet) would not receive adequate sunlight during the growing season (at least the four to six hour minimum specified in the *CEQR Technical Manual*) as a result of incremental shadow coverage and vegetation at these resources could be significantly impacted. Measures to reduce or eliminate the significant adverse shadow impacts have been explored between the DEIS and FEIS. If no feasible or practicable mitigation measures can be identified and/or implemented to mitigate these shadow impacts, the Proposed Actions would result in an unavoidable significant adverse shadow impacts on these open space resources.

BRONX SCHOOL OF YOUNG LEADERS

On March 21, May 6, and June 21, the Bronx School of Young Leaders schoolyard would receive sizeable incremental shadow coverage during the morning hours when children are likely to be at recess and during the early afternoon hours when the schoolyard would be open to the general public. Incremental shadows would predominantly affect active recreational uses such as basketball and handball courts, a baseball diamond, running track, and blacktop game areas. As shadows are not static and move from west to east throughout the day, these amenities would continue to receive some direct sunlight on these three representative analysis days (see Chapter 6, "Shadows," Figure 6-9). In addition, incremental shadows on active recreational uses during the months surrounding the summer solstice when temperatures are warmer would not significantly affect the usability of the open space.

On December 21, while the affected basketball and handball courts, baseball diamond, running track, and blacktop game areas would receive sizeable incremental shadow coverage, they would continue to receive some direct sunlight as shadows move from west to east throughout the day. Incremental shadow coverage on December 21, when temperatures would be colder and the use of the active recreational space would not be as high (compared to warmer months), would not affect the utilization or enjoyment of this open space resource. However, given the extended nature of incremental shadow coverage and periods of complete sunlight loss, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore it is expected that the Bronx School of Young Leaders would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

PS 306 SCHOOLYARD

On all four representative analysis days, the PS 306 schoolyard would receive sizeable incremental shadow coverage during the morning hours when children are likely to be at recess and early afternoon hours when the schoolyard would be open to the general public. Incremental shadows would affect a jungle-gym and bench seating. As shadows are not static and move from west to east throughout the day, these amenities would continue to receive some direct sunlight during the afternoon on these representative analysis days (see Chapter 6, "Shadows," Figure 6-9). However, given the extended nature of incremental shadow coverage and periods of complete sunlight loss, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore, it is expected that the PS 306 Schoolyard would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

MOUNT HOPE PLAYGROUND

On all four representative analysis days, the Mount Hope Playground would receive sizeable incremental shadow coverage during the late afternoon hours. Incremental shadows would affect both active (jungle-gym, basketball courts) and passive (bench seating) amenities. As shadows are not static and move from west to east throughout the day, these amenities would continue to receive some direct sunlight on these representative analysis days (see, Chapter 6, "Shadows," Figure 6-10). In addition, incremental shadows on active recreational uses during the months surrounding the summer solstice when temperatures are warmer would not significantly affect the usability of the open space. Incremental shadow coverage on December 21, when temperatures would be colder and the use of the active recreational space would not be as high (compared to warmer months), would not affect the utilization or enjoyment of this open space resource. Further, the open space would still receive adequate sunlight during the growing season (at least the four to six hours specified in the *CEQR Technical Manual*), and vegetation (trees, plantings) would not be affected. However, given the extended nature of incremental shadow coverage, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore, it is expected that the Mount Hope Playground would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

GOBLE PLAYGROUND

On March 21, May 6, and June 21 incremental shadows would generally be limited to portions of the open space that feature active recreational uses such as basketball and handball courts, a jungle-gym, and swings. As shadows are not static and move from west to east throughout the day, these amenities would continue to receive some direct sunlight on these three representative analysis days (see Chapter 6, "Shadows," Figure 6-16). In addition, incremental shadows on active recreational uses during the months surrounding the summer solstice when temperatures are warmer would not significantly affect the usability of the open space. Further, the open space would continue to receive adequate sunlight during the growing season (at least the four to six hour minimum specified in the *CEQR Technical Manual*) and vegetation would not be affected.

On December 21, while the playground would receive sizeable incremental shadow coverage, affected amenities would continue to receive some direct sunlight as shadows move from west to east throughout the day. Incremental shadow coverage on December 21, when temperatures would be colder and the use of the active recreational space would not be as high (compared to warmer months), would not affect the utilization or enjoyment of this open space resource. In addition, bench seating areas would only be temporarily affected by incremental shadows, and a number of benches would receive direct sunlight throughout the afternoon, an important period of the day for users of this resource during the winter timeframe. Further, any vegetation would not be affected by incremental shadows, as the December 21 analysis day falls outside the plant growing season defined by the *CEQR Technical Manual*. However, given the extended nature of incremental shadow coverage and periods of complete sunlight loss, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore, it is expected that Goble Playground would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

INWOOD PARK

Inwood Park is an approximately 0.36-acre open space located on West Mount Eden Avenue between Jerome Avenue and Inwood Avenue. The park is comprised of paved blacktop with trees and benches located along the perimeter.

This open space resource would experience incremental shadow coverage on all four representative analysis days, with incremental shadow duration ranging from approximately 6 hours and 2 minutes on December 21 to 12 hours and 4 minutes on June 21 (see Chapter 6, "Shadows," Figure 6-14). While the park would receive sizeable incremental shadow coverage, shadows are not static and would move from west to east throughout the day, allowing the affected benches and trees to continue to receive some direct sunlight on all representative analysis days (see Chapter 6, "Shadows," Figure 6-14). In addition, the open space would continue to receive adequate sunlight during the growing season (at least the four to

six hour minimum specified in the *CEQR Technical Manual*) and any vegetation present would not be affected.

On December 21, trees and vegetation would not be affected by incremental shadows, as the December 21 analysis day falls outside the plant growing season defined by the *CEQR Technical Manual*. In addition, some benches would receive direct sunlight throughout the afternoon, an important period of the day for users of this resource during the winter timeframe. Bench seating would also be available nearby at Jerome Playground South, which is located approximately one block to the east of Inwood Park. However, given the extended nature of incremental shadow coverage, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore, it is expected that Inwood Park would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

KELTCH PARK

On the March 21, May 6, and June 21 representative analysis days, incremental shadows would be concentrated in the morning and afternoon hours. As shadows are not static and move from west to east throughout the day, the park's amenities would continue to receive some direct sunlight on these three representative analysis days (see Chapter 6, "Shadows," Figure 6-21). Between 11:15 AM and 2:08 PM, the park would not receive any incremental shadow coverage and would receive adequate sunlight during the growing season (at least the four to six hour minimum specified in the *CEQR Technical Manual*). On December 21, which falls outside the plant growing season defined by the *CEQR Technical Manual*, vegetation would not be affected. However, given the extended nature of incremental shadow coverage, incremental shadows may have the potential to affect the public's enjoyment of this resource, and therefore, it is expected that Keltch Park would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

EDWARD L GRANT GREENSTREET

This open space resource serves as a median for Edward L Grant Highway, stretching the entire length of the street from University Avenue in the north to Jerome Avenue in the south. Each block of the Greenstreet is predominantly paved with trees interspersed at varying intervals.

This Greenstreet would experience incremental shadow coverage on all four representative analysis days ranging from 6 hours 2 minutes on December 21 to 9 hours 46 minutes on June 21 (see Chapter 6, "Shadows," Table 6-4). While incremental shadows would last up to 9 hours 46 minutes, the areas affected by incremental shadows are predominantly paved and feature few trees. As shadows are not static and move from west to east throughout the day, the Greenstreet would continue to receive some direct sunlight on all representative analysis days (see Chapter 6, "Shadows," figures 6-17, 6-19, 6-20, 6-25, 6-26). However, some areas of the Edward L Grant Greenstreet could be significantly impacted and the Greenstreet may no longer be able to support a variety of plant life, as compared to the No-Action

condition. Therefore, Edward L. Grant Greenstreet would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

JEROME AVENUE/EDWARD L GRANT HIGHWAY GREENSTREET

On all four representative analysis days, the Jerome/Grant Greenstreet would receive sizeable incremental shadow coverage during the morning and late afternoon hours. Incremental shadows would primarily affect plantings found within the open space. As shadows are not static and move from west to east throughout the day, these amenities would continue to receive some direct sunlight on these representative analysis days (see Chapter 6, "Shadows," Figure 6-26). Though the open space would continue to receive uninterrupted direct sunlight throughout portions of the afternoon, it may not receive adequate sunlight during the growing season (at least the four to six hour minimum specified in the *CEQR Technical Manual*) and as a result, this open space resource may no longer be able to support a variety of plant life, as compared to the No-Action condition. Therefore, it is expected that Jerome Avenue/ Edward L. Grant Highway Greenstreet would experience a significant adverse shadow impact due to development resulting from the Proposed Actions.

Possible measures that could mitigate significant adverse shadow impacts on open spaces may include relocating sunlight-sensitive features within an open space to avoid sunlight loss; relocating or replacing vegetation; undertaking additional maintenance to reduce the likelihood of species loss; or providing replacement facilities on another nearby site. Other potential mitigation strategies include the redesign or reorientation of the open space site plan to provide for replacement facilities, vegetation, or other features. The *CEQR Technical Manual* guidelines also discuss strategies to reduce or eliminate shadow impacts, including modifications to the height, shape, size, or orientation of a proposed development that creates the significant adverse shadow impact.

Possible mitigation measures were explored in consultation with NYC Department of Parks and Recreation between the DEIS and FEIS and it was found that there are no reasonable means to partially or fully mitigate the significant adverse shadows impact. In the absence of feasible mitigation, the significant adverse impact to Bronx School of Young Leaders, PS 306 Schoolyard, Mount Hope Playground, Goble Playground, Inwood Park, Keltch Park, Edward L Grant Greenstreet, and Jerome Avenue/Grant Avenue Greenstreet would be unavoidable.

21.5 Transportation

TRAFFIC

As described in Chapter 13, "Transportation," the Proposed Actions would result in significant adverse traffic impacts at 22 study area intersections during one or more analyzed peak hours; specifically, 15 lane groups at 14 intersections during the weekday AM peak hour, 17 lane groups at 14 intersections during the midday peak hour, 33 lane groups at 20 intersections during the PM peak hour, and 28 lane groups at 19 intersections during the Saturday midday peak hour.

As demonstrated below, most of these impacts could be mitigated through the implementation of traffic engineering improvements, including:

- Modification of traffic signal phasing and/or timing
- Elimination of on-street parking within 100 feet of intersections to add a limited travel/turn lane, known as "daylighting"

The types of mitigation measures proposed herein are standard measures that are routinely identified by the City and considered feasible for implementation. Table 21-5, "Proposed Traffic Mitigation Measures," summarizes the recommended mitigation measures for each of the intersections with significant adverse traffic impacts during the weekday AM, midday, and PM, and Saturday midday peak hours. Implementation of the recommended traffic engineering improvements is subjected to review and approval by DOT. If, prior to implementation, DOT determines that an identified mitigation measure is infeasible, an alternative and equivalent mitigation measure will be identified. The impacts would remain unmitigated in the absence of the application of mitigation measures.

As discussed previously in Chapter 13, "Transportation," the With-Action RWCDS includes the development of a total of 45 projected development sites that were identified and are considered for the purposes of the transportation analyses (see Chapter 13, "Transportation," Figure 13-1, "Traffic Study Areas"). Table 13-1, "RWCDS No-Action and With-Action Land Uses," lists the total anticipated No-Action and With-Action land uses on projected development sites in 2026 in the RWCDS. As listed in Table 13-1, in the RWCDS, the Proposed Actions would facilitate the incremental development of up to approximately 3,250 dwelling units (DUs); 35,575 square feet (sf) of commercial uses; and 72,272 sf of community facility uses (including 53,896 sf for a community center and 21,083 sf for a day-care center); as well as a net reduction of 47,795 sf of industrial uses and 99 accessory parking spaces.

Tables 21-6 through 21-9 show the v/c ratios, delays, and levels of service (LOS) for impacted lane groups at each intersection with implementation of these mitigation measures and compares them to No-Action and With-Action conditions for the weekday AM, midday, and PM, and Saturday midday peak hours,

respectively. (The Action-With-Mitigation level of service analyses for all lane groups at each impacted intersection are listed in Appendix E2, "Level of Service (LOS) Tables and Parking Regulations") According to CEQR *Technical Manual* criteria, an impact is considered fully mitigated when the resulting LOS degradation under the Action-with-Mitigation condition compared to the No-Action condition is no longer deemed significant following the impact criteria described in Chapter 13, "Transportation." Tables 21-6 through 21-9 demonstrate that significant adverse impacts would be fully mitigated at all intersections except one lane group at one intersection during the weekday AM peak hour, one lane group at one intersection during the midday peak hours, 19 lane groups at eight intersections during the PM peak hour, and five lane groups at three intersections during the Saturday midday peak hour. Table 21-2, "Lane Groups with Unmitigated Significant Adverse Traffic Impacts," provides a more detailed summary of the intersections and lane groups that would have significant adverse traffic impacts. In total, impacts to one or more approach movements would remain unmitigated in one or more peak hours at up to eight study intersections. Consequentially, these impacts would constitute unavoidable significant adverse traffic impacts as a result of the Proposed Action (refer to Chapter 22, "Unavoidable Adverse Impacts").

Table 21-5: Proposed Traffic Mitigation Measures

Intersection	Signal Phase	No-Action Signal Timing (Seconds)				Proposed Signal Timing (Seconds)				Recommended Mitigation
		AM	MD	PM	SAT MD	AM	MD	PM	SAT MD	
Jerome Avenue and Kingsbridge Road	EB/WB	54	39	54	39	54	36	54	39	- Transfer 3 seconds of green time from EB/WB to NB/SB during Midday. - PM and Saturday are unmitigatable.
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	52	37	52	37	52	40	52	37	
	Ped	7	7	7	7	7	7	7	7	
Jerome Avenue and Fordham Road	EB/WB	81	56	86	78	75	51	86	72	- Transfer 5 seconds of green time from EB/WB to NB/SB during Midday; 6 seconds on Saturday; 7 seconds during AM. - PM is unmitigatable.
	NB/SB	39	34	34	42	45	39	34	48	
Jerome Avenue and Burnside Avenue	EB/WB	60	60	60	60	60	60	60	60	- Midday, PM and Saturday are unmitigatable.
	NB/SB	60	60	60	60	60	60	60	60	
Jerome Avenue and Tremont Avenue	EB/WB	57	57	57	57	58	58	60	60	- Transfer 1 seconds of green time from NB/SB to EB/WB during AM and Midday, 3 seconds during PM, and on Saturday.
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	56	56	56	56	55	55	53	53	
Jerome Avenue and Featherbed Lane	EB/WB	30	30	30	30	31	31	31	31	- Transfer 1 second of green time from NB/SB to EB/WB during AM, Midday, PM and Saturday.
	NB/SB	60	60	60	60	59	59	59	59	
Jerome Avenue and SB I-95 Off Ramps	WB	45	45	45	45	45	45	43	44	- Transfer 2 seconds of green time from WB to NB/SB during PM. - Transfer 1 second of green time from WB to NB/SB on Saturday.
	NB/SB	45	45	45	45	45	45	47	46	
Jerome Avenue and NB I-95 Off Ramps	EB	43	43	43	43	40	42	41	42	- Transfer 3 seconds of green time from EB to SB-L during AM; 1 second during Midday and Saturday. - Transfer 2 seconds during PM, 1 second for NB/SB and 1 second for SB-L.
	NB/SB	32	32	32	32	32	32	33	32	
	SB-L	15	15	15	15	18	16	16	16	
Jerome Avenue and Macombs Dam Bridge	EB	21	21	26	21	22	22	27	21	- Transfer 1 second of green time from NB/SB to EB during AM, Midday, and PM.
	Ped	31	31	31	31	31	31	31	31	
	NB/SB	38	38	33	38	37	37	32	38	
Jerome Avenue and 170th Street	EB/WB	31	31	31	31	33	34	35	34	- Transfer 2 seconds of green time from NB/SB to EB/WB during AM; 3 during Midday and on Saturday. - Transfer 4 seconds of green time from NB/SB to EB/WB during PM
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	52	52	52	52	50	49	48	49	
Jerome Avenue and 167th Street	EB/WB-R	28	28	28	28	29	28	28	29	- Transfer 1 second of green time from NB/SB to EB/WB during AM and Saturday. - PM is unmitigatable.
	WB/NE	30	30	30	30	30	30	30	30	
	NB/SB	32	32	32	32	31	32	32	31	
Jerome Avenue and E. 165th Street	WB	36	36	36	36	37	36	37	36	- Transfer 1 second of green time from NB/SB to WB during AM and PM.
	NB/SB	54	54	54	54	53	54	53	54	

Table 21-5 (continued): Proposed Traffic Mitigation Measures

Intersection	Signal Phase	No-Action Signal Timing (Seconds)				Proposed Signal Timing (Seconds)				Recommended Mitigation
		AM	MD	PM	SAT MD	AM	MD	PM	SAT MD	
Grand Concourse and 176th Street	EB/WB	38	41	38	41	39	43	39	41	- Transfer 1 second of green time from NB/SB to EB/WB during AM and PM; 2 seconds Midday
	SB/SB-L	15	15	15	15	15	15	15	15	
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	60	57	60	57	59	55	59	57	
Grand Concourse and Burnside Avenue	EB/WB	42	42	42	42	42	42	42	43	Transfer 1 second of green time from NB/SB to EB/WB on Saturday
	NB-L/SB-L	16	16	16	16	16	16	16	16	
	NB/SB	62	62	62	62	62	62	62	61	
Grand Concourse and Tremont Avenue	EB/WB	36	36	36	36	37	37	36	38	- Transfer 1 second of green time from NB/SB to EB/WB in the AM and Midday. - Transfer 2 seconds of green time from NB/SB; increase NB-L/SB-L 1 second, and EB/WB 1 second on Saturday. - PM is unmitigatable
	NB-L/SB-L	16	16	16	16	16	16	16	17	
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	61	61	61	61	60	60	61	58	
Grand Concourse and Mt. Eden Avenue	EB/WB	42	42	42	42	49	43	42	43	- Transfer 3 seconds of green time from NB/SB; increase NB-L/SB-L 2 seconds, and EB/WB 1 second during Midday. - Transfer 2 seconds of green time from NB/SB; increase NB-L/SB-L 1 second, and EB/WB 1 seconds on Saturday. - PM is unmitigatable.
	NB-L/SB-L	15	15	15	15	15	17	15	16	
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	56	56	56	56	56	53	56	54	
Grand Concourse and 170th Street	EB/WB	45	45	45	45	45	45	44	45	- Transfer 1 second of green time from EB/WB, 1 second of green time from NB/SB, and increase NB-L/SB-L green time by 2 seconds during PM. - Transfer 1 second of green time from NB/SB to NB-L/SB-L on Saturday.
	NB-L/SB-L	15	15	15	15	15	15	17	16	
	NB/SB	60	60	60	60	60	60	59	59	
Grand Concourse and 167th Street	EB/WB	42	43	42	43	42	48	42	43	- Transfer 5 seconds of green time from NB/SB to EB/WB in the Midday. -AM, PM, and Saturday are unmitigatable.
	SB-L	15	15	15	15	15	15	15	15	
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	56	55	56	55	56	50	56	55	
Cromwell Avenue and 170th Street	EB/WB	50	50	50	50	50	50	50	49	- Transfer 1 second of green time from EB/WB to NB/SB on Saturday.
	NB/SB	40	40	40	40	40	40	40	41	
River Avenue and 167th Street	EB/WB	52	52	52	52	54	50	52	50	- Transfer 2 seconds from EB/WB to NB/SB during Midday and on Saturday. - PM is unmitigatable.
	Ped	7	7	7	7	7	7	7	7	
	NB/SB	31	31	31	31	36	33	31	33	
Edward L. Grant Highway and W. 170th Street	EB/WB	40	40	40	40	42	44	42	42	- Transfer 2 seconds of green time from NB/SB to EB/WB during AM, PM, and Saturday. - Transfer 4 seconds from NB/SB to EB/WB during Midday.
	NB/SB	80	80	80	80	78	76	78	78	
Inwood Avenue and W. 170th Street	EB/WB	46	46	46	46	47	46	46	48	- Transfer 1 second from NB to EB/WB during AM. - Daylight EB approach to allow for two 10'' lanes for Midday and PM. Transfer 2 seconds of green time from NB to EB/WB on Saturday.
	Ped	7	7	7	7	7	7	7	7	
	NB	30	30	30	30	29	30	30	28	
	Ped	7	7	7	7	7	7	7	7	
University Avenue and Washington Bridge Off-Ramps	EB	30	30	30	30	31	30	31	31	- Transfer 1 second of green time from NB/SB2 to EB during AM, PM, and Saturday.
	NB2/SB2	33	33	35	33	32	33	34	32	
	NB/SB	27	27	25	27	27	27	25	27	

Source: STV Incorporated, 2017.

Table 21-6: Action-With-Mitigation Conditions at Impacted Lane Groups – Weekday AM Peak Hour

INTERSECTION & APPROACH		Mvt.	AM No-Action			AM With-Action			AM Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Jerome Avenue and Fordham Road											
Jerome Avenue	NB	LTR	0.88	67.6	E	1.16	147.3	F	0.92	67.5	E
Jerome Avenue and Tremont Avenue											
Tremont Avenue	EB	LTR	1.07	95.4	F	1.09	101.9	F	1.06	92.6	F
Jerome Avenue and Featherbed Lane											
Featherbed Lane	EB	DefL	1.11	152.9	F	1.13	159.0	F	1.04	127.6	F
Jerome Avenue and NB I-95 Ramps											
Jerome Avenue	SB	DefL	1.02	78.0	E	1.13	118.2	F	1.00	73.3	E
Jerome Avenue and Macombs Dam Bridge											
Jerome Avenue	EB	L	0.88	64.9	E	0.91	71.1	E	0.86	60.9	E
Jerome Avenue and 170th Street											
170th Street	EB	LTR	0.88	51.9	D	0.93	60.3	E	0.87	47.8	D
	WB	LTR	1.07	96.4	F	1.13	114.7	F	1.05	85.1	F
Jerome Avenue and 167th Street											
Edward L. Grant Highway	EB	R	0.69	36.6	D	0.83	47.7	D	0.79	43.1	D
Jerome Avenue and E. 165th Street											
E. 165th Street	WB	LR	0.94	61.8	E	0.97	67.7	E	0.94	60.0	E
Grand Concourse and 176th Street											
176th Street	EB	LTR	0.78	62.5	E	0.82	66.8	E	0.79	62.1	E
Grand Concourse and Tremont Avenue											
Tremont Avenue	EB	TR	1.38	247.1	F	1.42	263.2	F	1.37	240.1	F
Grand Concourse and 167th Street											
167th Street	EB	TR	1.04	110.4	F	1.18	156.4	F	1.18	156.4	F
Edward L. Grant Highway and W. 170th Street											
W. 170th Street	WB	LTR	1.00	84.7	F	1.06	102.9	F	0.99	80.3	F
Inwood Avenue and W. 170th Street											
W. 170th Street	EB	LT	1.02	71.6	E	1.04	77.0	E	1.00	64.2	E
University Avenue and Washington Bridge Off-Ramps											
Washington Bridge Off-Ramps	EB	R	1.03	84.6	F	1.05	90.3	F	1.00	77.2	E

Note: shaded cells indicate unmitigated delays.

Source: STV Incorporated, 2017.

Table 21-7: Action-With-Mitigation Conditions at Impacted Lane Groups – Weekday Midday Peak Hour

INTERSECTION & APPROACH		Mvt.	Midday No-Action			Midday With-Action			Midday Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Jerome Avenue and Kingsbridge Road											
Jerome Avenue	NB	LTR	1.09	104.5	F	1.29	180.0	F	1.07	94.2	F
Jerome Avenue and Fordham Road											
Jerome Avenue	NB	LTR	0.99	75.0	E	1.26	168.6	F	1.01	75.0	E
	SB	LTR	0.95	65.5	E	1.08	98.6	F	0.87	45.8	D
Jerome Avenue and Burnside Avenue											
Jerome Avenue	SB	LTR	0.68	31.8	C	0.90	49.5	D	0.90	49.5	D
Jerome Avenue and Tremont Avenue											
Tremont Avenue	EB	LTR	1.05	91.0	F	1.07	97.3	F	1.05	87.6	F
Jerome Avenue and Featherbed Lane											
Featherbed Lane	EB	DefL	1.02	116.7	F	1.09	136.8	F	1.02	113.2	F
Jerome Avenue and NB I-95 Ramps											
Jerome Avenue	SB	DefL	0.88	51.9	D	0.93	61.2	E	0.89	53.5	D
Jerome Avenue and Macombs Dam Bridge											
Jerome Avenue	EB	L	0.95	78.1	E	0.98	85.3	F	0.92	70.8	E
Jerome Avenue and 170th Street											
170th Street	WB	LTR	0.88	54.0	D	0.99	76.0	E	0.88	50.9	D
Grand Concourse and 176th Street											
176th Street	EB	LTR	0.77	56.7	E	0.85	65.3	E	0.80	57.3	E
Grand Concourse and Tremont Avenue											
Tremont Avenue	EB	TR	0.76	61.4	E	0.79	64.3	E	0.77	60.3	E
River Avenue and 167th Street											
River Avenue	NB	LTR	1.07	112.6	F	1.17	146.0	F	1.08	112.8	F
Grand Concourse and Mt. Eden Avenue											
Mt. Eden Avenue	EB	LTR	1.09	123.2	F	1.12	135.8	F	1.08	118.9	F
	WB	LTR	1.14	141.2	F	1.17	152.0	F	1.14	137.2	F
Grand Concourse Mainline	NB	L	0.53	66.7	E	0.63	73.5	E	0.53	63.0	E
Grand Concourse and 167th Street											
167th Street	EB	TR	1.15	144.4	F	1.33	213.4	F	1.16	140.7	F
Edward L. Grant Highway and W. 170th Street											
W. 170th Street	WB	LTR	0.83	55.0	D	0.98	80.7	F	0.86	56.2	E
Inwood Avenue and W. 170th Street											
W. 170th Street	EB	LT	1.04	78.8	E	1.14	114.3	F	-	-	-
		L	-	-	-	-	-	-	0.60	26.7	C
		T	-	-	-	-	-	-	0.32	16.7	B

Note: shaded cells indicate unmitigated delays.

Source: STV Incorporated, 2017.

Table 21-8: Action-With-Mitigation Conditions at Impacted Lane Groups – Weekday PM Peak Hour

INTERSECTION & APPROACH		Mvt	PM No-Action			PM With-Action			PM Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Jerome Avenue and Kingsbridge Road											
Jerome Avenue	NB	LTR	1.34	206.1	F	1.47	260.8	F	1.47	260.8	F
Jerome Avenue and Fordham Road											
Jerome Avenue	NB	LTR	1.21	163.1	F	1.66	355.4	F	1.66	355.4	F
	SB	LTR	1.34	222.4	F	1.38	239.5	F	1.38	239.5	F
Jerome Avenue and Burnside Avenue											
Burnside Avenue	WB	LTR	0.85	43.3	D	0.93	53.5	D	0.93	53.5	D
Jerome Avenue	SB	LTR	0.79	38.3	D	0.95	59.4	E	0.95	59.4	E
Jerome Avenue and Tremont Avenue											
Tremont Avenue	EB	LTR	1.23	154.6	F	1.31	188.4	F	1.21	146.1	F
	WB	LTR	1.27	173.2	F	1.31	189.1	F	1.22	147.5	F
Jerome Avenue and Featherbed Lane											
Featherbed Lane	EB	DefL	1.15	161.6	F	1.24	193.6	F	1.13	151.0	F
Jerome Avenue and SB I-95 Ramps											
Jerome Avenue	SB	DefL	0.85	45.2	D	0.94	60.5	E	0.88	47.3	D
Jerome Avenue and NB I-95 Ramps											
Jerome Avenue	SB	DefL	1.01	81.4	F	1.09	106.9	F	1.01	81.1	F
Jerome Avenue and Macombs Dam Bridge											
Jerome Avenue	EB	L	0.69	41.6	D	0.80	48.8	D	0.77	44.8	D
Jerome Avenue and 170th Street											
170th Street	WB	LTR	1.01	78.8	E	1.17	133.6	F	1.01	73.7	E
Jerome Avenue and 167th Street											
Edward L. Grant Highway	EB	LT	0.76	38.7	D	0.86	47.7	D	0.86	47.7	D
	EB	R	0.8	46.7	D	0.87	56.0	E	0.87	56.0	E
	WB	LT	0.81	39.6	D	0.95	48.0	D	0.95	48.0	D
Jerome Avenue	NB	DefL	0.88	53.8	D	1.09	106.3	F	1.09	106.3	F
River Avenue and 167th Street											
River Avenue	NB	LTR	1.00	90.5	F	1.08	113.5	F	1.08	113.5	F
Jerome Avenue and E. 165th Street											
E. 165th Street	WB	LR	1.04	84.0	F	1.07	93.0	F	1.03	81.1	F
Grand Concourse and 176th Street											
176th Street	EB	LTR	1.05	116.6	F	1.10	132.7	F	1.06	118.0	F
Grand Concourse and Tremont Avenue											
Tremont Avenue	EB	TR	1.06	119.1	F	1.12	139.7	F	1.12	139.7	F
	WB	L	0.70	66.1	E	0.75	73.3	E	0.75	73.3	E
Grand Concourse Mainline	NB	L	0.78	84.7	F	0.81	89.0	F	0.81	89.0	F
Grand Concourse and Mt. Eden Avenue											
Mt. Eden Avenue	EB	LTR	1.03	103.6	F	1.05	110.3	F	1.05	110.3	F
	WB	LTR	1.20	163.5	F	1.23	175.9	F	1.23	175.9	F
Grand Concourse Mainline	NB	L	0.72	80.9	F	0.80	90.6	F	0.80	90.6	F
Grand Concourse and 170th Street											
Grand Concourse Mainline	NB	L	0.67	76.1	E	0.83	96.0	F	0.69	73.5	E

Table 21-8 (continued): Action-With-Mitigation Conditions at Impacted Lane Groups – Weekday PM Peak Hour

INTERSECTION & APPROACH		Mvt.	PM No-Action			PM With-Action			PM Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Grand Concourse and 167th Street											
167th Street	EB	L	1.16	172.6	F	1.17	176.3	F	1.17	176.3	F
		TR	1.00	95.3	F	1.12	131.6	F	1.12	131.6	F
	WB	TR	1.15	142.2	F	1.16	145.7	F	1.16	145.7	F
Edward L. Grant Highway and W. 170th Street											
W. 170th Street	WB	LTR	0.95	72.0	E	1.03	91.8	F	0.97	74.5	E
Inwood Avenue and W. 170th Street											
W. 170th Street	EB	LT	1.13	109.4	F	1.28	169.4	F	-	-	-
		L	-	-	-	-	-	-	0.72	34.2	C
		T	-	-	-	-	-	-	0.32	15.4	B
University Avenue and Washington Bridge Off-Ramps											
Washington Bridge Off-Ramps	EB	L	1.08	103.9	F	1.11	115.1	F	1.06	94.6	F
		R	1.00	78.8	E	1.06	95.4	F	1.02	81.1	F

Note: shaded cells indicate unmitigated delays.

Source: STV Incorporated, 2017.

Table 21-9: Action-With-Mitigation Conditions at Impacted Lane Groups – Saturday Midday Peak Hour

INTERSECTION & APPROACH		Mvt.	Saturday Midday No-Action			Saturday Midday With-Action			Saturday Midday Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Jerome Avenue and Kingsbridge Road											
Jerome Avenue	NB	LTR	0.85	44.8	D	0.99	69.6	E	0.99	69.6	E
Jerome Avenue and Fordham Road											
Jerome Avenue	NB	LTR	0.99	84.9	F	1.23	166.0	F	1.00	81.5	F
	SB	LTR	0.91	68.3	E	1.01	90.8	F	0.83	50.6	D
Jerome Avenue and Burnside Avenue											
Burnside Avenue	WB	LTR	0.82	40.2	D	0.86	45.2	D	0.86	45.2	D
Jerome Avenue	SB	LTR	0.73	34.0	C	0.89	48.5	D	0.89	48.5	D
Jerome Avenue and Tremont Avenue											
Tremont Avenue	EB	LTR	1.09	102.7	F	1.14	119.3	F	1.06	88.3	F
	WB	LTR	1.03	83.2	F	1.10	106.8	F	1.03	78.7	E
Jerome Avenue and Featherbed Lane											
Featherbed Lane	EB	DefL	1.21	180.4	F	1.21	204.1	F	1.19	169.4	F
Jerome Avenue and SB I-95 Ramps											
Jerome Avenue	SB	DefL	0.76	37.5	D	0.84	46.2	D	0.81	41.7	D
Jerome Avenue and NB I-95 Ramps											
Jerome Avenue	SB	DefL	0.99	78.3	E	1.02	86.6	F	0.97	72.1	E
Jerome Avenue and 170th Street											
170th Street	WB	LTR	1.00	77.2	E	1.12	113.6	F	1.00	73.9	E
Jerome Avenue	NB	LTR	0.39	13.7	B	0.40	13.9	B	0.43	16.0	B
Jerome Avenue and 167th Street											
Edward L. Grant Highway	EB	R	0.74	40.7	D	0.81	47.2	D	0.78	43.2	D
River Avenue and 167th Street											
River Avenue	NB	LTR	1.14	130.4	F	1.25	174.4	F	1.14	127.6	F
Grand Concourse and Burnside Avenue											
Burnside Avenue	EB	LTR	0.83	57.4	E	0.87	61.7	E	0.83	56.7	E
	WB	LTR	0.73	52.9	D	0.78	56.3	E	0.74	52.2	D
Grand Concourse and Tremont Avenue											
Tremont Avenue	EB	L	0.74	67.5	E	0.78	72.5	E	0.70	60.2	E
	EB	TR	0.94	88.5	F	1.02	108.5	F	0.95	86.2	F
	WB	TR	0.86	72.3	E	0.91	79.9	E	0.84	67.0	E
Grand Concourse Mainline	NB	L	0.72	78.1	E	0.77	83.1	F	0.70	74.0	E
Grand Concourse and Mt. Eden Avenue											
Mt. Eden Avenue	WB	LTR	1.06	114.1	F	1.09	124.5	F	1.05	110.2	F
Grand Concourse Mainline	NB	L	0.66	75.6	E	0.72	81.0	F	0.66	72.4	E
Grand Concourse and 170th Street											
Grand Concourse Mainline	NB	L	0.47	63.4	E	0.59	70.2	E	0.54	64.9	E
Grand Concourse and 167th Street											
167th Street	EB	TR	1.04	104.4	F	1.15	141.8	F	1.15	141.8	F
	WB	L	0.76	67.3	E	0.83	80.5	F	0.83	80.5	F
Edward L. Grant Highway and W. 170th Street											
W. 170th Street	WB	LTR	1.05	98.3	F	1.11	118.1	F	1.04	92.8	F
Inwood Avenue and W. 170th Street											
W. 170th Street	EB	LT	1.16	116.7	F	1.27	160.1	F	1.16	115.4	F
Cromwell Avenue and W. 170th Street											
Cromwell Avenue	SB	LTR	0.79	35.6	D	0.87	45.2	D	0.77	33.7	C
University Avenue and Washington Bridge Off-											
Washington Bridge Off-Ramps	EB	L	1.03	86.9	F	1.04	90.8	F	0.99	74.6	E
		R	1.06	94.4	F	1.09	104.8	F	1.05	88.6	F

Note: shaded cells indicate unmitigated delays.

Source: STV Incorporated, 2017.

Effects of Traffic Mitigation on Parking Conditions

As discussed above, the proposed traffic mitigation plan would incorporate curbside parking restrictions at the eastbound approach of 170th Street at Inwood Avenue that would displace approximately four on-street parking spaces. As discussed in Chapter 13, "Transportation," sufficient parking would be available within a ¼-mile radius of the study area to accommodate projected demand during the weekday midday, weekday overnight, and Saturday midday periods. There is projected to be a parking shortfall within a ¼-mile of projected development sites 30, 32, and 33 during the weekday midday (88-space deficit) and overnight periods (453-space deficit). These shortfalls would increase by four spaces to a total of 92 spaces during the weekday midday period and 457 spaces during the weekday overnight period. As described in Chapter 13, "Transportation," this parking shortfall for the projected development sites 30, 32, and 33 would not be considered a significant adverse impact, based on *CEQR Technical Manual* criteria, due to the availability of sufficient parking outside the ¼-mile radius within the overall study area and the magnitude of available alternative modes of transportation. Therefore, the proposed traffic mitigation measure would not result in a new significant adverse impact to parking conditions.

Effects of Pedestrian Mitigation on Traffic Conditions

The proposed pedestrian mitigation measure included widening a sidewalk towards the building property line. This pedestrian mitigation measure would not change any roadway geometric or traffic signal timing/phasing operations; therefore, this measure would not result in new significant adverse traffic impacts at any of the analyzed study intersections.

Proposed Schedule for Traffic Mitigation Measures

Subject to the approval of DOT, the mitigation measures summarized in Table 21-5, "Proposed Traffic Mitigation Measures," would be implemented to mitigate the significant adverse traffic impacts resulting from full build-out of the Proposed Action in 2026. As the development of the Proposed Actions would be expected to occur over an approximately ten-year period, it is possible that some of the significant adverse traffic impacts could occur prior to full build-out in 2026. Based on the anticipated construction schedule shown in Chapter 19, "Construction," incremental vehicle trips associated with traffic generated by projected development sites could potentially result in significant adverse traffic impacts in the second quarter of 2024. At this time, implementation of some or all of the mitigation measures developed for full build-out of the Proposed Actions in 2026 would be considered at impacted intersections. A traffic monitoring program will be prepared to evaluate and assess the need for traffic mitigation, and it will be coordinated between DCP and DOT.

TRANSIT

Bus

As discussed in Chapter 13, "Transportation," the Proposed Actions would add approximately 555 and 935 incremental bus trips on nine local bus routes during the weekday AM and PM peak hours, respectively. This increment results in a capacity shortfall through the maximum load point on the east and westbound Bx11, southbound Bx32, and eastbound Bx35 in the AM peak hour and on the westbound Bx11, north and southbound Bx32, and east and westbound Bx35 in the PM peak hour. Therefore, four bus lines would be significantly adversely impacted in the AM peak hour and five bus lines would be significantly adversely impacted in the PM peak hour based on *CEQR Technical Manual* criteria. As listed in Table 21-10, "Action-With-Mitigation Local Bus Analysis," these significant adverse impacts could be fully mitigated by the addition of a total of five standard buses in the AM peak hour and six standard buses in the PM peak hour. The general policy of NYCT is to provide additional bus service where demand warrants, taking into account financial and operational constraints.

Table 21-10: Action-With-Mitigation Local Bus Analysis

Peak Hour	Route	Direction	Maximum Load Point(s)	Peak Hour Buses (1)	No-Action Available Capacity (2)	Project Increment	Available Capacity w/ Proposed Actions (2)	Additional Peak Hour Buses Needed to Accommodate Project-Generated Demand	Available Capacity with Mitigation(2)
AM	Bx11	EB	Claremont Pky and Webster Av / W 170th St and Jerome Av	13	29	93	-63	2	45
		WB	E 170th St and Jerome Ave / Claremont Pky and Webster Av	13	19	22	-3	1	51
	Bx32	SB	Morris Av and E 170th St / Morris Av and E 161st St	8	37	72	-35	1	19
	Bx35	EB	E 167th St and Grand Concourse / Webster Av and E 168th St	15	13	41	-28	1	26
PM	Bx11	WB	Claremont Pky and Webster Av	12	36	114	-78	2	30
	Bx32	NB	Morris Av and E 170th St	6	75	100	-25	1	29
		SB	Morris Av and E 170th St	5	57	69	-11	1	43
	Bx35	EB	E 167th St and Grand Concourse	10	24	45	-21	1	33
		WB	E 167th St and Grand Concourse / Webster Av and E 168th St	11	11	61	-50	1	4

Notes:
(1) Assumes service levels adjusted to address capacity shortfalls in the No-Action Condition.
(2) Available capacity based on NYCT loading guideline of 54 passengers per standard bus.

Source: STV Incorporated, 2017.

PEDESTRIANS

As described in Chapter 13, "Transportation," the Proposed Actions would result in significant adverse pedestrian impacts at one study area pedestrian element during one peak hour. Specifically, there would be a significant adverse impact to one sidewalk element during the Saturday midday peak hour, which could be mitigated through standard pedestrian mitigation measures such as sidewalk widening.

Sidewalks

A significant adverse impact is projected at the south sidewalk of West 170th Street between Edward L. Grant Highway and Cromwell Avenue during the Saturday midday peak hour in the Proposed Actions. The sidewalk at this location is eight feet wide with a five foot grass buffer between the sidewalk and the fence line of the adjacent property. Paving this five foot grass verge would increase the width of this sidewalk and mitigate the significant adverse impact during the Saturday midday peak hour. Table 21-11, "Action-With-Mitigation: Sidewalk Conditions," lists the available pedestrian space, LOS, and identified mitigation measures for each significant impact location. All costs associated with the design and construction of the sidewalk widening will be the responsibility of the City operating agency.

Table 21-11: Action-With-Mitigation: Sidewalk Conditions

Intersection	Sidewalk	No-Action			With-Action			Action-With-Mitigation			
		Effective Width	SFP	LOS	Effective Width	SFP	LOS	Effective Width	SFP	LOS	Mitigation Measures
Weekday AM Peak Hour											
West 170th Street between Edward L. Grant Highway and Cromwell Avenue	South	3	66.5	C	3	44.8	C	8	122.0	B	Not a significant impact in AM. 5' sidewalk widening addresses Saturday MD impact
Weekday MD Peak Hour											
West 170th Street between Edward L. Grant Highway and Cromwell Avenue	South	3	152.3	B	3	41.8	C	8	489.0	B	Not a significant impact in MD. 5' sidewalk widening addresses Saturday MD impact
Weekday PM Peak Hour											
West 170th Street between Edward L. Grant Highway and Cromwell Avenue	South	3	115.6	B	3	46.4	C	8	347.8	B	Not a significant impact in PM. 5' sidewalk widening addresses Saturday MD impact
Saturday MD Peak Hour											
West 170th Street between Edward L. Grant Highway and Cromwell Avenue	South	3	126.1	B	3	33.8	D	**8**	**93.6**	**B**	**Pave 5' grass verge (13' total width)**

Note: Bold Text indicates Mitigated Significant Adverse Impact

Source: STV Incorporated, 2017.

Effects of Traffic Mitigation on Pedestrian Conditions

Identified traffic mitigation measures were incorporated into the pedestrian Action-with-Mitigation analysis. Signal timing changes associated with traffic mitigation resulted in minor changes to available pedestrian space at analyzed crosswalks and corners. These changes did not result in new significant adverse impacts at any of the analyzed corners or crosswalks.

21.6 Construction

TRANSPORTATION

As described in Chapter 19, "Construction," construction-related traffic would have no significant adverse impacts during the construction 6-7 AM peak hour and would have significant adverse impacts at 13 intersections during the construction PM peak hour (3-4 PM). Implementation of signal timing changes only would provide mitigation for most of the anticipated traffic impacts. Table 21-12, "Proposed Traffic Mitigation Measures – Construction," summarizes the recommended mitigation measures for each of these intersections during the construction PM peak hours, which are subject to review and approval by DOT.

Table 21-12: Proposed Traffic Mitigation Measures – Construction

Intersection	Signal Phase	No-Action Signal Timing (Seconds)		Proposed Signal Timing (Seconds)		Recommended Mitigation
		AM	PM	AM	PM	
Jerome Avenue and Kingsbridge Road	EB/WB	54	54	54	54	- Unmitigatable
	Ped	7	7	7	7	
	NB/SB	52	52	52	52	
	Ped	7	7	7	7	
Jerome Avenue and Fordham Road	EB/WB	81	86	81	78	- Transfer 8 seconds of green time from EB/WB to NB/SB during PM.
	NB/SB	39	34	39	42	
Jerome Avenue and Burnside Avenue	EB/WB	60	60	60	60	- Unmitigatable
	NB/SB	60	60	60	60	
Jerome Avenue and Tremont Avenue	EB/WB	57	57	57	59	- Transfer 2 seconds of green time from NB/SB to EB/WB during PM.
	Ped	7	7	7	7	
	NB/SB	56	56	56	54	
Jerome Avenue and SB I-95 Ramps	WB	45	45	45	44	- Transfer 1 second of green time from WB to NB/SB during PM.
	NB/SB	45	45	45	46	
Jerome Avenue and Featherbed Lane	EB/WB	30	30	30	31	- Transfer 1 second of green time from NB/SB to EB/WB during PM.
	NB/SB	60	60	60	59	
Jerome Avenue and NB I-95 Ramps	EB	43	43	43	40	- Transfer 3 seconds of green time from EB to NB/SB during PM.
	NB/SB	32	32	32	35	
	SB-L	15	15	15	15	
Jerome Avenue and 170th Street	EB/WB	31	31	31	33	- Transfer 2 seconds of green time from NB/SB to EB/WB during PM.
	Ped	7	7	7	7	
	NB/SB	52	52	52	50	
Jerome Avenue and 167th Street	EB/WB-R	28	28	28	28	- Unmitigatable
	WB/NE	30	30	30	30	
	NB/SB	32	32	32	32	
River Avenue and 167th Street	EB/WB	52	52	52	52	- Unmitigatable
	Ped	7	7	7	7	
	NB/SB	31	31	31	31	
Jerome Avenue and E. 165th Street	WB	36	36	36	39	- Transfer 3 seconds of green time from NB/SB to WB during PM.
	NB/SB	54	54	54	51	
Grand Concourse and 170th Street	EB/WB	45	45	45	44	- Transfer 1 second of green time from EB/WB and 1 second from NB/SB to add 2 seconds to NB-L/SB-L during PM.
	NB-L/SB-L	15	15	15	17	
	NB/SB	60	60	60	59	
Grand Concourse and 167th Street	EB/WB	42	42	42	42	- Unmitigatable
	SB-L	15	15	15	15	
	Ped	7	7	7	7	
	NB/SB	56	56	56	56	

Source: STV Incorporated, 2017.

Most significant adverse impacts would be mitigated with the implementation of recommended mitigation measures, but unmitigated significant adverse impacts remain at five intersections during the construction PM peak hour (see Table 21-13, "Action-With-Mitigation Conditions at Impacted Lane Groups – Construction PM Peak Hour"). Four of the five unmitigated intersections are also unmitigated intersections as a result of the Proposed Actions; River Avenue and 167th Avenue is an additional unmitigated significant adverse impact. No basic intersection improvement measures could mitigate the significant adverse construction-related impacts at these five intersections; therefore, these traffic impacts would remain unmitigated (refer to Chapter 22, "Unavoidable Adverse Impacts").

Table 21-13: Action-With-Mitigation Conditions at Impacted Lane Groups – Construction PM Peak Hour

INTERSECTION & APPROACH		Mvt.	PM No-Action			PM With-Action			PM Mitigated		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS
Jerome Avenue and Kingsbridge Road											
Jerome Avenue	NB	LTR	1.22	156.7	F	1.34	204.7	F	1.34	204.7	F
Jerome Avenue and Fordham Road											
Jerome Avenue	NB	LTR	1.13	134.0	F	1.40	244.7	F	1.05	99.4	F
	SB	LTR	1.23	177.6	F	1.32	215.2	F	0.93	72.2	E
Jerome Avenue and Burnside Avenue											
Burnside Avenue	WB	LTR	0.80	38.7	D	0.87	45.4	D	0.87	45.4	D
Jerome Avenue	SB	LTR	0.73	34.6	C	0.87	47.2	D	0.87	47.2	D
Jerome Avenue and Tremont Avenue											
Tremont Avenue	EB	LTR	1.16	127.4	F	1.19	138.3	F	1.13	115.2	F
	WB	LTR	1.19	137.8	F	1.25	162.5	F	1.19	136.0	F
Jerome Avenue and SB I-95 Ramps											
Jerome Avenue	SB	DefL	0.79	38.2	D	0.85	45.6	D	0.82	41.1	D
Jerome Avenue and Featherbed Lane											
Featherbed Lane	EB	DefL	0.99	110.2	F	1.06	130.7	F	0.99	105.2	F
Jerome Avenue and NB I-95 Ramps											
Jerome Avenue	SB	DefL	0.93	62.1	E	1.01	82.1	F	0.94	63.5	E
Jerome Avenue and 170th Street											
170th Street	WB	LTR	0.99	75.7	E	1.06	94.5	F	0.98	70.0	E
Jerome Avenue and 167th Street											
Edward L. Grant Highway	EB	R	0.75	41.9	D	0.79	50.1	D	0.79	50.1	D
Jerome Avenue	NB	DefL	0.87	53.9	D	0.99	78.0	E	0.99	78.0	E
River Avenue and 167th Street											
River Avenue	NB	LTR	0.97	82.3	F	1.20	156.7	F	1.20	156.7	F
Jerome Avenue and E. 165th Street											
E. 165th Street	WB	LR	0.99	70.4	E	1.11	105.6	F	1.00	71.5	E
Grand Concourse and 170th Street											
Grand Concourse Mainline	NB	L	0.64	73.7	E	0.73	81.7	F	0.60	66.9	E
Grand Concourse and 167th Street											
167th Street	EB	L	1.04	130.8	F	1.05	136.0	F	1.05	136.0	F
		TR	0.96	83.5	F	1.14	136.6	F	1.14	136.6	F
	WB	TR	1.09	120.0	F	1.10	123.1	F	1.10	123.1	F

Note: shaded cells indicate unmitigated delays.

Source: STV Incorporated, 2017.

NOISE

As discussed in Chapter 19, "Construction," construction activities associated with the Proposed Action would occur on multiple development sites within the same geographic area and, as a result, has the potential to increase interior noise levels of existing adjacent commercial and residential buildings. These increases would likely approach or marginally exceed the impact threshold for short periods of time. The same potential to exceed the noise limits exist during other construction quarters bordering the peak construction period

The findings indicate that noise levels above the CEQR impact threshold are expected at several existing buildings adjacent to Projected Development Sites 33, 34, 35, 36 and to Projected Development Sites 43, 44, 45. For Projected Development Sites 33, 34, 35, 36 the highest noise levels are projected to be at top-level receptor locations adjacent to existing commercial and residential buildings on Cromwell Street between West Clarke Place and East 170th Street. For Projected Development Sites 43, 44, 45 the highest noise levels are projected to be at mid-level receptor locations adjacent to existing residential buildings o Gerard Street between McLellan Street and West 167th Street.

Although these locations are expected to experience exterior noise levels significantly above CEQR limits, for those buildings with double-paned glazed-glass windows and a closed ventilation system, it would keep interior noise levels for those buildings below or near the CEQR 50-dBA L10 impact threshold for commercial buildings and the CEQR 45-dBA L10 impact threshold for residential buildings. The interior noise levels of these adjacent buildings would likely approach or marginally exceed the CEQR L10 impact thresholds for short periods of time. The same potential for noise impacts also exist for similar noise-level increases at these and/or other receptor locations in the immediate vicinity of Project Development Sites 33, 34, 35, 36 and 43, 44, 45 during other construction quarters bordering this peak construction period (i.e., second quarter of 2018 and third quarter of 2022). If the peak construction scenario conservatively assumed for simultaneous construction on Project Development Sites 33, 34, 35, 36 and 43, 44, 45, the Proposed Action would result in a significant adverse construction noise impact.

Noise Reduction Measures

Construction of the Proposed Projected would be required to follow the requirements of the NYC Noise Control Code for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the NYC Noise Code. These measures could include a variety of source and path controls.

The following proposed mitigation measures go beyond the noise control measures already identified in Chapter 19, "Construction," and may partially mitigate significant adverse impacts (and substantially reduce construction-related noise levels) at some locations:

- Noise barriers constructed from plywood or other materials at a height of 12 to 16 feet utilized to provide shielding;
- Utilization of isolation pads between pile driver hammer and piles;
- Acoustical shrouds surrounding the pile driver hammer and piles;
- Electric cranes or cranes with exhaust silencers that have lower noise emission levels; and
- Excavators with exhaust silencers that have lower noise emission levels.

Between the DEIS and FEIS, the above mitigation measures, which are intended to address the pieces of construction equipment that would produce the highest noise levels, were explored and it was found that there are no reasonable means to ensure measures be employed that would fully mitigate the significant adverse construction noise impacts. The proposed measures discussed above are considered partial mitigations only. Consequently, these impacts would not be completely eliminated and they would constitute an unmitigated significant adverse construction noise impact, as is discussed in Chapter 22, "Unavoidable Adverse Impacts."