Chapter 23: Mitigation

A. INTRODUCTION

The preceding chapters of this Environmental Impact Statement (EIS) discuss the potential for significant adverse impacts to result from the proposed project. Where such potential significant adverse impacts have been identified—in the areas of community facilities, shadows, historic resources, traffic and parking, transit and pedestrians, noise, construction traffic, and construction noise—measures have been examined to minimize or eliminate the anticipated impacts. These mitigation measures are discussed below.

B. COMMUNITY FACILITIES

PUBLIC SCHOOLS

The project site is located in Community School District (CSD) 14. Since the proposed project would result in the introduction of a new residential population, which would generate a demand on local school resources, the EIS assessed the effects on school capacity within a ½-mile radius of the project site and on all schools within CSD 14. As presented in Chapter 5, "Community Facilities," the new population introduced by the proposed project would result in a significant adverse impact on elementary and intermediate schools within the ½-mile study area surrounding the project site.

However, the schools analysis does not account for the K-8 school that the City has committed to building within the Greenpoint-Williamsburg rezoning with the approval of that rezoning. Although the Department of Education (DOE) *2010-2014 Five-Year Capital Plan* has budgeted for a new 738-seat elementary/intermediate school in CSD 14 to accommodate demand from the buildout of that rezoning, this school is not yet under construction, and therefore the schools analysis assumes that capacity would remain constant. Should the proposed 738-seat elementary/intermediate school be completed as planned, there would be additional elementary school capacity within CSD 14 and, depending on the location of the school, within the ½-mile study area.

According to the *CEQR Technical Manual*, if a proposed action causes an increase of five percent or more in a deficiency of available seats, a significant adverse impact may result. The proposed project is projected to add 696 elementary and 288 intermediate school students, nearly doubling the projected shortfall of school seats in the study area by 2020. The shortfall of seats that this analysis identifies within the ½-mile study area is based on conservative assumptions regarding future background growth. As described in Chapter 5, "Community Facilities," it is assumed that 6,093 new housing units would be developed in the ½-mile study area by 2020 in addition to the proposed project. Because the proposed project parcels would be developed sequentially, the potential to result in an increase in a deficiency of available school seats by five percent could occur when the proposed project completes construction of 244 residential units.

Should this high level of background growth not occur, the shortfall of elementary schools seats in the ½-mile study area would be reduced but not eliminated.

If the demand for school seats from the future background development combined with the proposed project is as high as the methodology in this analysis projects and the shortfall of school seats occurs, either one or a combination of the following measures, as noted in the *CEQR Technical Manual*, would need to be undertaken:

- Shifting the boundaries of school catchment areas within CSD 14 to move students to schools with available capacity;
- Creating new satellite facilities in less crowded schools;
- Expanding the capacity of existing schools;
- Creating new capacity by constructing or leasing new school facilities; and/or
- Other measures deemed appropriate by the New York City School Construction Authority (SCA) and DOE.

At this time, there has been no commitment to adopt any of the above-mentioned administrative actions and/or capital solutions. Preliminary discussions have been held with the SCA, and are expected to continue with SCA and DOE between the Draft and Final EIS, with regard to the provision of school space in the Refinery building. Absent a commitment to implement one or more of the above measures, the proposed project would result in an unmitigated significant adverse impact on public schools if projections prove correct.

CHILD CARE FACILITIES

Based on the most recent updates to the *City Environmental Quality Review* (*CEQR) Technical Manual*, an action may generate a sufficient number of eligible children to affect the availability of slots at publicly funded child care facilities if it produces substantial numbers of subsidized, low-to moderate-income family housing units. It is assumed for the purposes of the community facilities analysis that the proposed project could introduce up to 720 new low- to moderate-income units by 2020, and therefore it would result in an increase in demand on public child care facilities.

According to the *CEQR Technical Manual*, a significant adverse impact to public child care facilities could result if a proposed action results in: (1) a demand for slots greater than the remaining capacity of child care facilities serving the area of the proposed action; and (2) that demand constitutes an increase of 5 percent or more of the collective capacity of the child care facilities in the study area. As described in Chapter 5, "Community Facilities," the projected 128 children potentially eligible for subsidized child care in the future with the proposed project would exacerbate a deficit of slots within the study area over the No Action condition, and would constitute an increase of more than five percent of the collective capacity of the study area's public child care facilities. Therefore, the proposed project would result in the potential for a significant adverse impact on publicly-funded child care and Head Start facilities. Because the proposed project parcels would be developed sequentially, the potential to result in an increase in a deficiency of available child care slots by five percent or more could occur when the proposed project completes construction of 572 affordable residential units (upon completion of Site B, and assuming that the 32 anticipated future background developments and the Greenpoint-Williamsburg Rezoning projected sites within the 1-½ mile study area are fully

realized and the number of subsidized group child care and Head Start slots within the study area remains the same).

At this point, however, it is not possible to know exactly which type of mitigation would be most appropriate or when its implementation would be necessary, because the demand for publicly funded child care depends not only on the amount of residential development in the area but on the proportion of new residents who are children of low-income families (not all children meet the social and income eligibility criteria). Furthermore, several factors may limit the number of children in need of publicly funded child care slots. For example, families in the 1-½ mile study area could make use of alternatives to publicly funded group child care facilities. There are slots at homes licensed to provide family child care that families of eligible children could elect to use instead of publicly funded group child care facilities. Additionally, parents of eligible children are not restricted to enrolling their children in child care facilities in a specific geographical area, and could make use of public and private child care providers beyond the 1-½ mile study area (some parent/guardians choose a child care center close to their employment rather than their residence).

Possible mitigation measures for this significant adverse impact include adding capacity to existing facilities if determined feasible through consultation with ACS or providing a new child care facility within or near the project site. As a City agency, ACS does not directly provide new child care facilities, instead it contracts with providers in areas of need. ACS is also working to create public/private partnerships to facilitate the development of new child care facilities where there is an area of need. As part of that initiative, ACS may be able to contribute capital funding, if it is available, towards such projects to facilitate the provision of new facilities.

The applicant will work with ACS to develop appropriate measures to provide additional capacity, if needed, as the project is completed. Absent the implementation of any needed mitigation measures, the proposed project could have an unmitigated significant adverse impact on child care facilities.

C. SHADOWS

The analysis in Chapter 7, "Shadows," found that the proposed project's development on Site A would result in a significant adverse shadows impact on the 1.8-acre Grand Ferry Park. During the fall, winter, and early spring the utility of the park will be significantly impacted due to increased shadows on sun-sensitive features used by park visitors (e.g., benches, picnic tables, etc.) and the park's vegetation would also be adversely affected. The significant adverse impact would occur upon full construction of Site A, which is projected to be completed in 2020.

During the warmer months (April through October), all areas of the park would continue to get several hours of sun in the morning, and most areas of the park would get sun later in the afternoon as well. However, several hours of new midday shadow would be cast on the park. In December, under the No Action condition, sunlight is already limited throughout the day, and the proposed project would remove all or most of the remaining sunlight for about two hours around midday. Portions of the park would continue to receive direct sunlight throughout the day during the spring, summer, and fall.

The several hours of incremental midday shadow would cause a significant adverse impact to the users of this open space during the fall, winter, and early spring, and would likely also adversely impact the park's vegetation. Most trees and many plants require a minimum of between four to six hours of sunlight to maintain healthy growth during normal conditions. As

discussed in Chapter 7, "Shadows," the long duration of increased shadow during the spring, as well as the increased shadows during the remainder of the year, have the potential to reduce the amount of sunlight to a level below that needed for plant and tree survival.

The *CEQR Technical Manual* identifies several different measures that could mitigate significant adverse shadow impacts on open spaces. These measures include: relocating facilities 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. CEQR guidelines also discuss alternatives that may reduce or eliminate shadow impacts, including reorientation of building bulk or reorientation of the site plan. Due to the narrowness of the project site and its immediate proximity to Grand Ferry Park, it is not possible to alter the site plan so as to avoid a substantial amount of shadow being cast on this open space. In order to substantially reduce the extent of incremental shadows on the park on the March 21/September 21 analysis day, the Site A tower (maximum zoning envelope) would need to be reduced in height from 300 feet to approximately 130 feet. On the December 21 analysis day, when shadows are longest, even the 60-foot-high building in the No Action scenario would cast large shadows on the park for most of the analysis day, leaving only small areas of sun on the north side. In order to prevent the proposed project's additional shadow from removing the remaining sunlight for about two hours on December 21, the Site A building would have to be limited in height to a 70-foot-high podium with no tower. A 70-foot building would also cast very little incremental shadow on March 21/September 21. It should be noted that the proposed project would create approximately four acres of new public open space, including a connection to Grand Ferry Park. During all seasons, the project-created open space would provide new sunlit areas during times when Grand Ferry Park is experiencing areas of incremental shadow.

Due to the physical constraints of the site, relocating facilities within the park to avoid sunlight loss is not a viable mitigation option. Of the measures listed above, potentially feasible mitigation for the significant adverse impact on Grand Ferry Park could include replacing some vegetation with more shade-tolerant species; undertaking additional maintenance to reduce the likelihood of species loss; providing additional maintenance funding and/or helping to enhance other nearby open spaces. The applicant will consult with DPR and the DCP between the DEIS and FEIS to develop suitable mitigation to partially offset this significant adverse impact to park users and the park's vegetation. If feasible mitigation is found, the impact will be considered partially mitigated. In the absence of feasible mitigation, the proposed project would result in an unmitigated significant adverse shadow impact on Grand Ferry Park.

D. HISTORIC RESOURCES

As described in Chapter 8, "Historic Resources," the buildings on the project site have been determined eligible for listing on the State and National Registers of Historic Places (S/NR). The proposed project would demolish all structures—with the exception of the Refinery—on the project site. Therefore, the proposed project would have a significant adverse impact on architectural resources. This adverse impact would occur when the S/NR-eligible buildings are demolished on the site. Measures to partially mitigate the impact, which could include archival photographic documentation and the reuse of industrial artifacts within the proposed project, will be developed in consultation with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) between the DEIS and FEIS. The mitigation measures would be set forth in a

Memorandum of Agreement (MOA) to be signed by the project sponsors, SHPO, and the United States Army Corps of Engineers (USACE).

E. TRAFFIC AND PARKING

As discussed in Chapter 17, "Traffic and Parking," a number of intersections in the study area would experience significant traffic impacts as a result of vehicular traffic generated by the proposed project. The traffic analysis results show that in the 2020 future with the proposed project conditions, the proposed project would result in significant traffic impacts at 19, 10, 23, and 6 intersections during the weekday AM, midday, and PM, and Saturday midday peak hours, respectively. Significantly impacted locations for the three peak hours in the primary and secondary study areas are summarized in Table 23-1.

All of the significantly impacted locations identified in Chapter 17, "Traffic and Parking," could be mitigated by standard traffic engineering measures, such as signal timing adjustments, lane re-striping, parking prohibition, and installation of new traffic signals at unsignalized intersections.

RECOMMENDED MITIGATION MEASURES

Table 23-2 summarizes all the measures contained in the mitigation plan for the primary study area intersections for the weekday AM, midday, and PM, and Saturday midday peak hours. Measures for the secondary study area intersections are summarized in Table 23-3. Illustrative overviews of the proposed mitigation measures for the primary and secondary study area intersections are shown in Figures 23-1 and 23-2 for signal timing modifications and geometric improvements/traffic control measures. With the proposed mitigation measures in place, all of the impacted approaches/lane groups would be mitigated back to the same or better service conditions than the 2020 No Action conditions. Discussion of each affected intersection and its required mitigation follows.

PRIMARY STUDY AREA – SIGNALIZED INTERSECTIONS

Kent Avenue and Metropolitan Avenue

The impact at the westbound approach of this intersection during the weekday AM, weekday midday, and Saturday midday peak hours could be mitigated applying the following measures:

- Shifting the centerline on the westbound Metropolitan Avenue approach by approximately 2 feet to the south to create two 11-foot moving lanes; and
- Prohibiting parking along the westbound Metropolitan Avenue approach for approximately 150 feet.

The impacts at the westbound and northbound approaches of this intersection during the weekday PM peak hour could be mitigated by instituting all of the geometric improvements noted above, and by shifting 1 second of green time from the eastbound/westbound phase to the northbound/southbound phase.

The geometric changes identified above would result in the loss of approximately 6 on-street parking spaces on Metropolitan Avenue.

11.19.09



Project Site Boundary

Proposed Signal Retiming

Intersections with Proposed Signal Timing Modifications

Figure 23-1

12.21.09



Project Site Boundary

Proposed Geometric Improvements

Proposed Traffic Signal

Proposed All-Way Stop Control

Proposed Approach Daylighting

Intersections with Proposed Geometric Improvements and Traffic Control Measures

Figure 23-2

Table 23-1
2020 Future with the Proposed Project Conditions
Significantly Impacted Locations (Primary Study Area)

Intersections	Impacted Lane Group	Impacted Peak Periods			
Metropolitan Avenue and Kent Avenue					
Eastbound	LTR				
Westbound	LTR	AM	MD	PM	Saturday
Northbound	LTR			PM	
Southbound	LTR				
Kent Avenue and S. 3rd Street					
Eastbound	LTR				
Northbound	LTR			PM	
Southbound	LTR	AM		PM	
Kent Avenue and Broadway					
Eastbound	LTR				
Westbound	LTR				
Northbound	LTR				
Southbound	LTR	AM		PM	
Metropolitan Avenue and Bedford Avenue					
Eastbound	LT			PM	
Westbound	TR			PM	
Northbound	LTR				
Bedford Avenue and S. 6th Street					
Westbound	TR			PM	
Northbound	LT				
Metropolitan Avenue and Driggs Avenue					
Eastbound	TR	AM			
Westbound	LT	AM		PM	
Southbound	LTR				
Driggs Avenue and Broadway					
Eastbound	TR				
Westbound	LT	AM		PM	
Southbound	LT				
	R				
Roebling Street and S. 3rd Street					
Eastbound	LTR		MD	PM	
Northbound	TR				
Southbound	LT				
Roebling Street and S. 4th Street					
Eastbound	LR				
Westbound	L				
	TR				
Southbound	TR	AM	MD	PM	Saturday
Metropolitan Avenue and Havemeyer Street					
Eastbound	T				
Westbound	T			PM	
Northbound	LR				
Broadway and Havemeyer Street					
Eastbound	LT	AM	MD	PM	
Westbound	TR			PM	
Northbound	LTR				
Metropolitan Avenue and Marcy Avenue					
Eastbound	TR				
Westbound	L			PM	
	T				
Marcy Avenue and Broadway					
Eastbound	TR	AM		PM	
Westbound	LT	AM		PM	
Southbound	LTR				

Table 23-1 (cont'd)
2020 Future with the Proposed Project Conditions
Significantly Impacted Locations (Primary Study Area)

Intersections	Impacted Lane Group	Impacted Peak Periods			
Kent Avenue and Grand Street					
Eastbound	LTR				
Westbound	LTR	AM	MD	PM	Saturday
Northbound	LTR				
Southbound	LTR				
Kent Avenue and South 4th Street					
Eastbound	LR				
Westbound	LTR	AM	MD	PM	Saturday
Northbound	LT				
Kent Avenue and South 5th Street					
Eastbound	LTR				
Northbound	LTR			PM	
Southbound	LTR				
Kent Avenue and South 6th Street					
Eastbound	LR				
Westbound	LTR	AM	MD	PM	Saturday
Northbound	LT				
Wythe Avenue and South 2nd Street					
Westbound	LT			PM	
Wythe Avenue and South 3rd Street					
Eastbound	TR	AM		PM	
Southbound	LT				
Wythe Avenue and South 6th Street					
Westbound	LT			PM	
Broadway and Roebling Street - SBR					
Southbound	R	AM	MD	PM	Saturday
Kent Avenue and Division Avenue					
Eastbound	LTR				
Westbound	LTR				
Northbound	LTR				
Southbound	LTR	AM			
Kent Avenue and Clymer Street					
Eastbound	LR				
Westbound	LTR				
Northbound	L	AM			
	T				
Southbound	TR				
Kent Avenue and Classon Avenue - NB Service Road					
Eastbound	L				
Westbound	T				
	TR				
Northbound	L	AM			
	LTR	AM			
Flushing Avenue and Williamsburg Street - SB Service Road					
Eastbound	TR				
Westbound	L	AM	MD	PM	
	T				
Southbound	LTR			PM	
Flushing Avenue and Classon Avenue - NB Service Road					
Eastbound	L	AM	MD	PM	
	T				
Westbound	TR				
Northbound	LTR				
Kent Avenue and Williamsburg Street East					
Eastbound	L	AM			

Notes: L = Left Turn, T = Through, R = Right Turn.

Kent Avenue and South 3rd Street

The impact at the southbound approach of this intersection during the weekday AM peak hour could be mitigated by shifting 7 seconds of green time from the eastbound phase to the northbound/southbound phase. In addition, reducing the bike lane buffer on the southbound approach by 2 feet and restriping the southbound approach to provide a 13-foot moving lane are also required.

The impacts at the northbound and southbound approaches of this intersection during the weekday PM peak hour could be mitigated by shifting 5 seconds of green time from the eastbound phase to the northbound/southbound phase. In addition, reducing the bike lane buffer on the southbound approach by 2 feet and restriping the southbound approach to provide a 13-foot moving lane are also required.

Kent Avenue and Broadway

The impact at the southbound approach of this intersection during the weekday AM peak hour could be mitigated by:

- Reducing the width of the median on the westbound approach by 10 feet and restriping this approach with one 10-foot-wide exclusive right-turn lane and one 10-foot-wide left-and-through lane; and
- Reduce the width of the center median by 4 feet and the width of the bike lane buffer by 1 foot on the southbound approach for 150 feet to allow the widening of the southbound approach from 11 feet to 16 feet.

In addition to the mitigation measures proposed for the weekday AM peak hour, the impact at the southbound approach of this intersection during the weekday PM peak hour would also require a shift of 7 seconds of green time from the eastbound/westbound phase to the northbound/southbound phase.

Metropolitan Avenue and Bedford Avenue

The impacts at the eastbound and westbound approaches of this intersection during the weekday PM peak hour could be mitigated by shifting 2 seconds of green time from the northbound phase to the eastbound/westbound phase.

Bedford Avenue and South 6th Street

The impact at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by shifting 8 seconds of green time from the northbound phase to the westbound phase.

Driggs Avenue and Metropolitan Avenue

The impacts at the eastbound and westbound approaches of this intersection during the weekday AM peak hour could be mitigated by:

- Prohibiting parking along the westbound Metropolitan Avenue approach for approximately 150 feet; and
- Shifting 5 seconds of green time from the southbound phase to the eastbound/westbound phase.

Table 23-2
Mitigation Measures
Primary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour (1)
Signalized Intersections				
Metropolitan Avenue and Kent Avenue	Daylight the WB approach for 150 feet. Shift the center median on the WB approach by 2 feet to the south to create two 11-feet moving lanes.	Daylight the WB approach for 150 feet. Shift the center median on the WB approach by 2 feet to the south to create two 11-feet moving lanes.	Daylight the WB approach for 150 feet. Shift the center median on the WB approach by 2 feet to the south to create two 11-feet moving lanes. Shift 1 second of green time from the EB/WB phase to the NB/SB phase	Daylight the WB approach for 150 feet. Shift the center median on the WB approach by 2 feet to the south to create two 11-feet moving lanes.
Kent Avenue and South 3rd Street	Shift 7 seconds of green time from the EB phase to the NB/SB phase. Reduce the bike lane buffer on the SB approach by 2-feet and restripe the SB approach to provide a 13-feet moving lane.	Not Impacted	Shift 5 seconds of green time from the EB phase to the NB/SB phase Reduce the bike lane buffer on the SB approach by 2-feet and restripe the SB approach to provide a 13-feet moving lane.	Not Impacted
Kent Avenue and Broadway	Reduce the width of the median on the WB approach by 10 feet for 150 feet from corner and restripe this approach for one 10-feet exclusive right-turn lane and one 10-feet left-and-through lane. Reduce the width of the center median and the width of the bike lane buffer by 4 feet and by 1 feet for 150 feet, respectively on the SB approach. Restripe the SB approach to provide a 16-feet moving lane.	Not Impacted	Reduce the width of the median on the WB approach by 10 feet for 150 feet from corner and restripe this approach for one 10-feet exclusive right-turn lane and one 10-feet left-and through lane. Reduce the width of the center median and the width of the bike lane buffer by 4 feet and by 1 feet for 150 feet, respectively on the SB approach. Restripe the SB approach to provide a 16-feet moving lane. Shift 7 seconds of green time from the EB/WB phase to the NB/SB phase.	Not Impacted
Metropolitan Avenue and Bedford Avenue	Not Impacted	Not Impacted	Shift 2 seconds of green time from the NB phase to the EB/WB phase.	Not Impacted
Bedford Avenue and South 6th Street	Not Impacted	Not Impacted	Shift 8 seconds of green time from the NB phase to the WB phase.	Not Impacted
Metropolitan Avenue and Driggs Avenue	Daylight the WB approach for 150 feet. Shift 5 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted	Shift 4 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted
Driggs Avenue and Broadway	Shift 6 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted	Shift 5 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted
Roebling Street and South 3rd Street	Not Impacted	Shift 1 second of green time from the NB/SB phase to the EB phase.	Shift 2 seconds of green time from the NB/SB phase to the EB phase.	Not Impacted
Roebling Street and South 4th Street	Shift 5 seconds of green time from the EB/WB phase to the SB phase.	Shift 2 seconds of green time from the EB/WB phase to the SB phase.	Shift 2 seconds of green time from the EB/WB phase to the SB phase.	Shift 1 seconds of green time from the EB/WB phase to the SB phase.
Metropolitan Avenue and Havemeyer Street	Not Impacted	Not Impacted	Daylight the WB approach for 150 feet.	Not Impacted
Broadway and Havemeyer Street	Shift 3 seconds of green time from the NB phase to the EB/WB phase.	Shift 3 seconds of green time from the NB phase to the EB/WB phase.	Shift 3 seconds of green time from the NB phase to the EB/WB phase.	Not Impacted
Metropolitan Avenue and Marcy Avenue	Not Impacted	Not Impacted	Shift 10 seconds of green time from the EB/WB phase to the WB protected left/through phase.	Not Impacted
Marcy Avenue and Broadway	Prohibit parking along the eastern side of the SB approach for 150 feet. Install a No Standing Anytime sign on the east and west sides of Marcy Avenue (receiving segment) to prohibit parking activities for approximately 100 feet. Restripe the SB approach to provide two 11.5-feet left-through-right lanes. Shift 3 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted	Prohibit parking along the eastern side of the SB approach for 150 feet. Install a No Standing Anytime sign on the east and west sides of Marcy Avenue (receiving segment) to prohibit parking activities for approximately 100 feet. Restripe the SB approach to provide two 11.5-feet left-through-right lanes. Shift 3 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted
Unsignalized Intersections				
Kent Avenue and Grand Street	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 24 3 2 NB/SB 56 3 2 Cycle Length = 90 Seconds	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 24 3 2 NB/SB 56 3 2 Cycle Length = 90 Seconds	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 19 3 2 NB/SB 61 3 2 Cycle Length = 90 Seconds	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 24 3 2 NB/SB 56 3 2 Cycle Length = 90 Seconds
Kent Avenue and South 4th Street	Prohibit parking for 150 feet along the north and south curbs of the WB approach and shift the bicycle lane to the south curb to provide one 13-feet right turn and one 12-feet shared left-and-through lane. Reduce the northbound bicycle lane buffer by 3 feet and widen the northbound traffic lane from 11 to 14 feet. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 22 3 2 NB/SB 58 3 2 Cycle Length = 90 Seconds	Prohibit parking for 150 feet along the north and south curbs of the WB approach and shift the bicycle lane to the south curb to provide one 13-feet right turn and one 12-feet shared left-and-through lane. Reduce the northbound bicycle lane buffer by 3 feet and widen the northbound traffic lane from 11 to 14 feet. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 22 3 2 NB/SB 58 3 2 Cycle Length = 90 Seconds	Prohibit parking for 150 feet along the north and south curbs of the WB approach and shift the bicycle lane to the south curb to provide one 13-feet right turn and one 12-feet shared left-and-through lane. Reduce the northbound bicycle lane buffer by 3 feet and widen the northbound traffic lane from 11 to 14 feet. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 17 3 2 NB/SB 63 3 2 Cycle Length = 90 Seconds	Prohibit parking for 150 feet along the north and south curbs of the WB approach and shift the bicycle lane to the south curb to provide one 13-feet right turn and one 12-feet shared left-and-through lane. Reduce the northbound bicycle lane buffer by 3 feet and widen the northbound traffic lane from 11 to 14 feet. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB 24 3 2 NB/SB 56 3 2 Cycle Length = 90 Seconds
Kent Avenue and South 5th Street	Not Impacted	Not Impacted	Install 6-feet curbside bulb-outs on the NB and SB Kent Avenue approaches. Shift the center median on the SB approach by 1 feet to the east and reduce the bike lane buffer on the NB receiving segment by 1 feet. Restripe the SB approach to provide a 15-feet moving lane. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB 11 3 2 NB/SB 69 3 2 Cycle Length = 90 Seconds	Not Impacted

Table 23-2 (cont'd)
Mitigation Measures
Primary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour (1)
Unsignalized Intersections				
Kent Avenue and South 6th Street	Change existing "No Parking Anytime" regulation along north curb of WB approach to "No Standing Anytime"; and stripe for one 12-feet wide exclusive right turn and one 11-feet wide shared through and left-turn lane. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 23 / 3 / 2 NB/SB / 57 / 3 / 2 Cycle Length = 90 Seconds	Change existing "No Parking Anytime" regulation along north curb of WB approach to "No Standing Anytime"; and stripe for one 12-feet wide exclusive right turn and one 11-feet wide shared through and left-turn lane. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 23 / 3 / 2 NB/SB / 57 / 3 / 2 Cycle Length = 90 Seconds	Change existing "No Parking Anytime" regulation along north curb of WB approach to "No Standing Anytime"; and stripe for one 12-feet wide exclusive right turn and one 11-feet wide shared through and left-turn lane. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 30 / 3 / 2 NB/SB / 50 / 3 / 2 Cycle Length = 90 Seconds	Change existing "No Parking Anytime" regulation along north curb of WB approach to "No Standing Anytime"; and stripe for one 12-feet wide exclusive right turn and one 11-feet wide shared through and left-turn lane. Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 23 / 3 / 2 NB/SB / 57 / 3 / 2 Cycle Length = 90 Seconds
Wythe Avenue and South 2nd Street	Not Impacted	Not Impacted	Replace Two-Way Stop-Control with All-Way Stop-Control	Not analyzed for Saturday conditions
Wythe Avenue and South 3rd Street	Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted	Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted
Wythe Avenue and South 6th Street	Not Impacted	Not Impacted	Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted
Broadway and Roebling Street - SBR (2)	Provide 3 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 31 / 3 / 2 SBR / 55 / 3 / 2 EB/WB / 19 / 3 / 2 Cycle Length = 120 Seconds	Provide 3 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 20 / 3 / 2 SBR / 40 / 3 / 2 EB/WB / 15 / 3 / 2 Cycle Length = 90 Seconds	Provide 3 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 31 / 3 / 2 SBR / 55 / 3 / 2 EB/WB / 19 / 3 / 2 Cycle Length = 120 Seconds	Provide 3 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 20 / 3 / 2 SBR / 40 / 3 / 2 EB/WB / 15 / 3 / 2 Cycle Length = 90 Seconds

Notes: L = Left Turn, T = Through, R = Right Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.
(1) The Saturday analysis is new for the DEIS.
(2) The proposed signal timing plan is developed in accordance with the upstream signalized intersection of Broadway and Roebling Street.

Table 23-3
Mitigation Measures
Secondary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour (1)
Signalized Intersections				
Kent Avenue and Division Avenue	Shift 5 seconds of green time from the EB/WB phase to the NB/SB phase.	Not Impacted	Not Impacted	Not Impacted
Kent Avenue and Clymer Street	Reduce the center median on the west side of the NB approach by 3 feet and widen the NB exclusive left-turn lane from 11-feet to 14-feet.	Not Impacted	Not Impacted	Not Impacted
Kent Avenue and Classon Avenue - NB Service Road	Shift 4 seconds of green time from the EB/WB phase to the NB phase.	Not Impacted	Not Impacted	Not Impacted
Flushing Avenue and Williamsburg Street - SB Service Road	Restripe the SB approach to provide an exclusive right-turn lane and two shared through and left-turn lanes. Provide the following revised signal timing plan: Phase / Green / Amber / Red EB/WB / 47 / 3 / 2 WBL & SBR / 8 / 3 / 2 SB / 50 / 3 / 2 Cycle Length = 120 Seconds	Restripe the SB approach to provide an exclusive right-turn lane and two shared through and left-turn lanes. Provide the following revised signal timing plan: Phase / Green / Amber / Red EB/WB / 32 / 3 / 2 WBL & SBR / 8 / 3 / 2 SB / 35 / 3 / 2 Cycle Length = 90 Seconds	Restripe the SB approach to provide an exclusive right-turn lane and two shared through and left-turn lanes. Provide the following revised signal timing plan: Phase / Green / Amber / Red EB/WB / 40 / 3 / 2 WBL & SBR / 8 / 3 / 2 SB / 57 / 3 / 2 Cycle Length = 120 Seconds	Not Impacted
Flushing Avenue and Classon Avenue - NB Service Road	Shift 4 seconds of green time from the NB phase to the EB/WB phase.	Shift 1 second of green time from the NB phase to the EB/WB phase.	Shift 1 second of green time from the NB phase to the EB/WB phase.	Not Impacted
Unsignalized Intersections				
Kent Avenue and Williamsburg Street East	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB / 42 / 3 / 2 EBT & WB / 68 / 3 / 2 Cycle Length = 120 Seconds	Not Impacted	Not Impacted	Not Impacted

Notes: L = Left Turn, T = Through, R = Right Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.
(1) The Saturday analysis is new for the DEIS.

The geometric changes identified above would result in the loss of approximately 6 on-street parking spaces on Metropolitan Avenue.

The impact at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by shifting 4 seconds of green time from the southbound phase to the eastbound/westbound phase.

Driggs Avenue and Broadway

The impact at the westbound approach of this intersection during the weekday AM and PM peak hours could be mitigated by shifting 6 and 5 seconds of green time, respectively, from the southbound phase to the eastbound/westbound phase.

Roebling Street and South 3rd Street

The impact at the eastbound approach of this intersection during the weekday midday and PM peak hours could be mitigated by shifting 1 and 2 seconds of green time, respectively, from the northbound/southbound phase to the eastbound phase.

Roebling Street and South 4th Street

The impact at the southbound approach of this intersection during the weekday AM, midday, and PM, and Saturday midday peak hours could be mitigated by shifting 5, 2, 2, and 1 seconds of green time, respectively, from the eastbound/westbound phase to the southbound phase.

Metropolitan Avenue and Havemeyer Street

The impacts at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by prohibiting parking along the westbound Metropolitan Avenue approach for approximately 150 feet.

The geometric changes identified above would result in the loss of approximately 6 on-street parking spaces on Metropolitan Avenue.

Havemeyer Street and Broadway

The impact at the eastbound approach of this intersection during the weekday AM and midday peak hours, and on the eastbound and westbound approaches during the PM peak hour, could be mitigated by shifting 3 seconds of green time from the northbound phase to the eastbound/westbound phase.

Marcy Avenue and Metropolitan Avenue

The impacts at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by shifting 10 seconds of green time from the eastbound/westbound phase to the westbound protected left-through phase.

Marcy Avenue and Broadway

The impacts at the eastbound and westbound approaches of this intersection during the weekday AM and PM peak hours could be mitigated by eliminating parking on the east side of the southbound Marcy Avenue approach for 150 feet to provide two 11.5-foot-wide left-through-right lanes and by installing a No Standing Anytime sign on the east and west sides of Marcy Avenue (receiving segment) to prohibit parking activities for approximately 100 feet. In

addition, a shifting of 3 seconds of green time from the southbound phase to the eastbound/westbound phase is also required.

The geometric changes identified above would result in the loss of approximately 4 daytime and 6 overnight on-street parking spaces on Marcy Avenue.

PRIMARY STUDY AREA – UNSIGNALIZED INTERSECTIONS

Kent Avenue and Grand Street

The impact on the westbound approach of this intersection during the weekday AM, midday, and PM, and Saturday midday peak hours could be mitigated by installing a new traffic signal (see Table 23-2).

Kent Avenue and South 4th Street

The impact on the westbound approach of this intersection during the weekday AM, midday, and PM, and Saturday midday peak hours could be mitigated by:

- Installing a new traffic signal (see Table 23-2);
- Prohibiting parking along both curbsides of the westbound South 4th Street approach for approximately 150 feet;
- Shifting the bicycle lane on South 4th Street to the south curb to provide one 13-foot-wide right turn lane and one 12-foot-wide shared left-and-through lane; and
- Reducing the northbound Kent Avenue bicycle lane buffer by 3 feet and widening the northbound traffic lane from 11 feet to 14 feet.

The geometric changes identified above would result in the loss of approximately 12 on-street parking spaces on South 4th Street.

Kent Avenue and South 5th Street

The impact on the northbound approach of this intersection during the weekday PM peak hour could be mitigated by:

- Installing a new traffic signal (see Table 23-2);
- Installing curbside bulb-outs on the northbound and southbound Kent Avenue approaches;
- Shifting the center median on the southbound approach by 1 foot to the east and reducing the bike lane buffer on the northbound receiving segment by 1 foot in order to widen the southbound moving lane from 14 feet to 15 feet.

Kent Avenue and South 6th Street

The impact at the westbound approach of this intersection during the weekday AM, midday, and PM, and Saturday midday peak hours could be mitigated by:

- Installing a new traffic signal (see Table 23-2);
- Changing the existing “No Parking Anytime” regulation on the north side of the westbound South 6th Street approach to a “No Standing Anytime” regulation; and
- Restriping the westbound approach with one 12-foot-wide exclusive right-turn lane and one 11-foot-wide shared through and left-turn lane.

Wythe Avenue and South 2nd Street

The impact at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by replacing the existing Two-Way Stop-Control with an All-Way-Stop-Control.

Wythe Avenue and South 3rd Street

The impact at the eastbound approach of this intersection during the weekday AM and PM peak hours could be mitigated by replacing the existing Two-Way Stop-Control with an All-Way-Stop-Control.

Wythe Avenue and South 6th Street

The impact at the westbound approach of this intersection during the weekday PM peak hour could be mitigated by replacing the existing Two-Way Stop-Control with an All-Way-Stop-Control.

Roebling Street and Broadway

The impact at the southbound right-turn movement of this intersection during the four peak hours could be mitigated by installing a new traffic signal (see Table 23-2).

SECONDARY STUDY AREA – SIGNALIZED INTERSECTIONS

Kent Avenue and Division Avenue

The impact at the southbound approach of this intersection during the weekday AM peak hour could be mitigated by shifting 5 seconds of green time from the eastbound/westbound phase to the northbound/southbound phase.

Kent Avenue and Clymer Street

The impact at the northbound approach of this intersection during the weekday AM peak hour could be mitigated by reducing the median on the west side of the northbound approach by 3 feet and widening the northbound exclusive left-turn lane from 11 feet to 14 feet.

Kent Avenue and Classon Avenue – Northbound BQE Service Road

The impact at the northbound approach of this intersection during the weekday AM peak hour could be mitigated by shifting 4 seconds of green time from the eastbound/westbound phase to the northbound phase.

Flushing Avenue and Williamsburg Street West – Southbound BQE Service Road

The impact at the westbound approach of this intersection during the weekday AM and midday peak hours and at the westbound and southbound approaches during the PM peak hour could be mitigated by restriping the southbound approach with an exclusive right-turn and two shared through and left-turn lanes. In addition, a new signal phasing plan would have to be developed, as presented in Table 23-3.

Flushing Avenue and Classon Avenue – Northbound BQE Service Road

The impact at the eastbound left-turn movement of this intersection during the weekday AM, midday and PM peak hours could be mitigated by shifting 4, 1, and 1 seconds of green time, respectively, from the northbound phase to the eastbound/westbound phase.

SECONDARY STUDY AREA – UNSIGNALIZED INTERSECTIONS

Kent Avenue and Willliamsburg Street East – Northbound BQE Service Road

The impact at the eastbound left-turn movement of this intersection during the weekday AM peak hour could be mitigated by installing a new traffic signal (see Table 23-3).

Tables 23-4 and 23-5 present the levels of service for the impacted intersections in the No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation conditions for the primary study area's signalized and unsignalized intersections, respectively. Tables 23-6 and 23-7 present the levels of service for the impacted intersections in the No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation conditions for the secondary study area's signalized and unsignalized intersections, respectively.

With the above mitigation measures in place, all of the impacted primary and secondary study area intersections would operate at the same or better service levels than the No Action conditions. All the proposed mitigation measures discussed above will be subject to review and approval from the New York City Department of Transportation (DOT). In addition, installation of new traffic signals at the unsignalized locations would require detailed Signal Warrant Studies, which are also subject to review and approval from DOT.

As discussed in detail in Chapter 2, "Analytical Framework," there are several development projects in and near the study area, that are anticipated to be completed prior to, or concurrent with, the planned completion of the proposed project. All of these development projects, along with the trips generated by the projected development from the *Greenpoint-Williamsburg Rezoning FEIS*, were included in the future No Action analysis. It should be noted that some of these future projects ultimately may not be constructed, thereby resulting in lower 2020 No Action traffic volume networks (as compared to the ones against which the impacts from the proposed project were evaluated). In such a case, the significant adverse traffic impacts projected to occur with the proposed project would be of lesser magnitude (thereby requiring lesser mitigation).

Because the proposed project parcels would be developed sequentially, the potential significant adverse impacts on traffic conditions in the study area would first occur with the completion of Site E on the upland parcel which involves construction of approximately 327 residential units, 6,000 sf of local retail space, 30,000 sf of supermarket space and 374 accessory parking spaces. Specifically, with the completion of Site E by the year 2013, the following study area intersections could experience significant adverse traffic impacts during one or more of the analysis peak hours:

- Kent Avenue and Broadway;
- Marcy Avenue and Broadway;
- Kent Avenue and Grand Street;
- Kent Avenue and South 4th Street;
- Kent Avenue and South 6th Street;
- Broadway and Roebling Street (Southbound Right-Turn); and
- Roebling Street and South 4th Street.

Table 23-4
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses Primary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
WEEKDAY AM PEAK HOUR												
Metropolitan Avenue and Kent Avenue												
Eastbound	LTR	0.25	29.3	C	LTR	0.26	29.4	C	LTR	0.25	29.3	C
Westbound	LTR	1.24	181.8	F	LTR	1.60	327.4	F+	DefL	0.95	87.4	F
									TR	0.40	33.5	C
Northbound	LTR	0.66	13.0	B	LTR	0.78	17.1	B	LTR	0.78	17.1	B
Southbound	LTR	0.79	19.7	B	LTR	0.84	22.7	C	LTR	0.84	22.7	C
	Intersection		38.9	D	Intersection		66.5	E	Intersection		27.4	C
Kent Avenue and S. 3rd Street												
Eastbound	LTR	0.02	25.9	C	LTR	0.08	26.6	C	LTR	0.12	32.9	C
Northbound	LTR	0.68	13.5	B	LTR	0.87	22.5	C	LTR	0.78	12.7	B
Southbound	LTR	0.83	21.8	C	LTR	1.19	116.9	F+	LTR	0.99	40.7	D
	Intersection		17.5	B	Intersection		65.1	E	Intersection		25.6	C
Kent Avenue and Broadway												
Eastbound	LTR	0.01	22.2	C	LTR	0.01	22.2	C	LTR	0.01	22.2	C
Westbound	LTR	0.55	33.1	C	LTR	0.53	32.3	C	LT	0.22	24.8	C
									R	0.28	26.5	C
Northbound	LTR	0.79	21.1	C	LTR	0.90	30.4	C	LTR	0.90	30.4	C
Southbound	LTR	0.88	30.5	C	LTR	1.09	80.7	F+	LTR	0.93	35.5	D
	Intersection		26.4	C	Intersection		52.1	D	Intersection		32.1	C
Metropolitan Avenue and Driggs Avenue												
Eastbound	TR	1.13	104.2	F	TR	1.28	165.1	F+	TR	1.14	101.7	F
Westbound	LT	0.87	46.4	D	LT	1.23	152.4	F_	LT	0.79	30.1	C
Southbound	LTR	0.74	28.8	C	LTR	0.76	30.2	C	LTR	0.88	44.5	D
	Intersection		68.3	E	Intersection		124.9	F	Intersection		67.5	E
Driggs Avenue and Broadway												
Eastbound	TR	0.45	19.8	B	TR	0.49	20.7	C	TR	0.43	15.7	B
Westbound	LT	0.99	60.7	E	LT	1.16	113.4	F+	LT	1.00	57.5	E
Southbound	LT	0.47	20.5	C	LT	0.50	21.0	C	LT	0.59	27.8	C
	R	0.12	15.1	B	R	0.12	15.1	B	R	0.14	19.1	B
	Intersection		40.2	D	Intersection		68.8	E	Intersection		40.2	D
Roebling Street and S. 4th Street												
Eastbound	LR	0.20	9.3	A	LR	0.29	10.2	B	LR	0.32	13.2	B
Westbound	L	0.07	8.1	A	L	0.07	8.1	A	L	0.07	10.4	B
	TR	0.31	10.6	B	TR	0.34	10.9	B	TR	0.38	14.1	B
Southbound	TR	1.24	160.2	F	TR	1.46	250.7	F+	TR	1.22	147.4	F
	Intersection		93.0	F	Intersection		142.5	F	Intersection		87.1	F
Broadway and Havemeyer Street												
Eastbound	LT	0.93	45.1	D	LT	1.00	60.9	E+	LT	0.92	42.2	D
Westbound	TR	0.68	23.6	C	TR	0.75	27.3	C	TR	0.72	23.7	C
Northbound	LTR	0.39	30.0	C	LTR	0.39	30.1	C	LTR	0.42	32.7	C
	Intersection		34.1	C	Intersection		42.1	D	Intersection		33.5	C
Marcy Avenue and Broadway												
Eastbound	TR	1.01	72.6	E	TR	1.06	87.0	F+	TR	0.98	62.3	E
Westbound	LT	0.96	64.2	E	LT	1.06	91.2	F+	LT	0.94	57.4	E
Northbound	LTR	0.61	29.8	C	LTR	0.61	29.8	C	LTR	0.35	23.7	C
	Intersection		59.9	E	Intersection		75.7	E	Intersection		52.1	D

Table 23-4 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses Primary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
WEEKDAY MIDDAY PEAK HOUR												
Metropolitan Avenue and Kent Avenue												
Eastbound	LTR	0.04	26.3	C	LTR	0.04	26.3	C	LTR	0.04	26.3	C
Westbound	LTR	0.83	64.9	E	LTR	1.08	123.7	F+	DefL	0.65	45.1	D
									TR	0.28	30.4	C
Northbound	LTR	0.62	12.3	B	LTR	0.75	16.3	B	LTR	0.75	16.3	B
Southbound	LTR	0.68	14.4	B	LTR	0.71	15.6	B	LTR	0.71	15.6	B
	Intersection		19.3	B	Intersection		30.2	C	Intersection		19.2	B
Roebling Street and S. 3rd Street												
Eastbound	LTR	0.86	40.2	D	LTR	0.95	53.7	D+	LTR	0.90	43.2	D
Northbound	TR	0.12	7.1	A	TR	0.12	7.1	A	TR	0.13	7.7	A
Southbound	LT	0.42	10.1	B	LT	0.42	10.1	B	LT	0.43	10.9	B
	Intersection		24.0	C	Intersection		31.5	C	Intersection		26.6	C
Roebling Street and S. 4th Street												
Eastbound	LR	0.15	8.8	A	LR	0.19	9.2	A	LR	0.19	10.2	B
Westbound	L	0.07	8.1	A	L	0.07	8.1	A	L	0.07	9.0	A
	TR	0.26	9.9	A	TR	0.29	10.2	B	TR	0.30	11.4	B
Southbound	TR	1.16	127.4	F	TR	1.21	146.5	F+	TR	1.12	111.6	F
	Intersection		76.2	E	Intersection		84.9	F	Intersection		66.2	E
Broadway and Havemeyer Street												
Eastbound	LT	1.07	86.3	F	LT	1.14	110.4	F+	LT	1.05	76.7	E
Westbound	TR	0.67	22.9	C	TR	0.71	24.5	C	TR	0.68	21.5	C
Northbound	LTR	0.29	28.4	C	LTR	0.29	28.4	C	LTR	0.32	30.8	C
	Intersection		48.8	D	Intersection		59.5	E	Intersection		45.2	D
WEEKDAY PM PEAK HOUR												
Metropolitan Avenue and Kent Avenue												
Eastbound	LTR	0.07	26.5	C	LTR	0.07	26.5	C	LTR	0.07	27.3	C
Westbound	LTR	1.01	97.6	F	LTR	1.35	217.7	F+	DefL	0.63	43.8	D
									TR	0.60	40.7	D
Northbound	LTR	0.81	18.3	B	LTR	1.01	46.2	D+	LTR	0.99	40.9	D
Southbound	LTR	0.91	26.1	C	LTR	0.93	29.7	C	LTR	0.92	27.0	C
	Intersection		30.3	C	Intersection		59.9	E	Intersection		35.1	D
Kent Avenue and S. 3rd Street												
Eastbound	LTR	0.05	26.2	C	LTR	0.14	27.4	C	LTR	0.18	32.0	C
Northbound	LTR	0.88	22.9	C	LTR	1.11	78.2	E+	LTR	1.02	44.6	D
Southbound	LTR	0.90	26.2	C	LTR	1.10	78.2	E+	LTR	0.96	31.0	C
	Intersection		24.5	C	Intersection		77.2	E	Intersection		38.2	D
Kent Avenue and Broadway												
Eastbound	LTR	0.01	23.6	C	LTR	0.01	23.6	C	LTR	0.01	29.0	C
Westbound	LTR	0.80	49.3	D	LTR	0.79	49.0	D	LT	0.47	37.5	D
									R	0.64	48.6	D
Northbound	LTR	0.73	16.9	B	LTR	0.76	18.3	B	LTR	0.67	11.4	B
Southbound	LTR	1.24	134.4	F	LTR	1.68	327.3	F+	LTR	1.22	120.0	F
	Intersection		83.9	F	Intersection		199.1	F	Intersection		77.2	E
Metropolitan Avenue and Bedford Avenue												
Eastbound	LT	0.61	23.3	C	LT	0.94	48.3	D+	LT	0.86	35.3	D
Westbound	TR	0.86	39.2	D	TR	0.94	51.4	D+	TR	0.89	41.6	D
Northbound	LTR	0.69	26.5	C	LTR	0.69	26.6	C	LTR	0.73	29.8	C
	Intersection		30.0	C	Intersection		43.1	D	Intersection		35.9	D
Bedford Avenue and S. 6th Street												
Westbound	TR	1.01	68.2	E	TR	1.27	163.8	F+	TR	1.03	66.9	E
Northbound	LT	0.36	14.4	B	LT	0.36	14.5	B	LT	0.44	20.3	C
	Intersection		42.4	D	Intersection		97.6	F	Intersection		46.2	D

Table 23-4 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses Primary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
WEEKDAY PM PEAK HOUR (continued)												
Metropolitan Avenue and Driggs Avenue												
Eastbound	TR	0.59	22.7	C	TR	0.77	29.6	C	TR	0.70	23.5	C
Westbound	LT	0.93	51.1	D	LT	1.12	105.6	F+	LT	0.94	48.2	D
Southbound	LTR	0.51	20.7	C	LTR	0.53	21.3	C	LTR	0.60	25.7	C
	Intersection		33.1	C	Intersection		55.0	D	Intersection		33.0	C
Driggs Avenue and Broadway												
Eastbound	TR	0.45	19.7	B	TR	0.53	21.5	C	TR	0.47	17.0	B
Westbound	LT	1.24	143.9	F	LT	1.39	208.6	F+	LT	1.23	138.2	F
Southbound	LT	0.37	18.4	B	LT	0.41	19.0	B	LT	0.47	23.6	C
	R	0.08	14.7	B	R	0.08	14.7	B	R	0.10	17.8	B
	Intersection		92.4	F	Intersection		130.1	F	Intersection		88.9	F
Roebling Street and S. 3rd Street												
Eastbound	LTR	0.84	37.3	D	LTR	0.99	63.7	E+	LTR	0.89	40.8	D
Northbound	TR	0.12	7.1	A	TR	0.12	7.1	A	TR	0.13	8.2	A
Southbound	LT	0.48	10.7	B	LT	0.47	10.6	B	LT	0.51	12.3	B
	Intersection		21.5	C	Intersection		34.9	C	Intersection		25.1	C
Roebling Street and S. 4th Street												
Eastbound	LR	0.15	8.8	A	LR	0.17	8.9	A	LR	0.17	9.9	A
Westbound	L	0.08	8.2	A	L	0.08	8.2	A	L	0.08	9.1	A
	TR	0.27	10.0-	A	TR	0.31	10.5	B	TR	0.33	11.6	B
Southbound	TR	1.20	141.3	F	TR	1.29	179.2	F+	TR	1.20	139.7	F
	Intersection		86.0	F	Intersection		107.6	F	Intersection		85.2	F
WEEKDAY PM PEAK HOUR												
Metropolitan Avenue and Havemeyer Street												
Eastbound	T	0.58	16.8	B	T	0.74	21.7	C	T	0.74	21.7	C
Westbound	T	0.96	44.2	D	T	1.01	56.0	E+	T	0.86	28.5	C
Northbound	LR	0.79	42.3	D	LR	0.79	42.3	D	LR	0.79	42.3	D
	Intersection		34.9	C	Intersection		40.7	D	Intersection		28.6	C
Broadway and Havemeyer Street												
Eastbound	LT	1.15	113.9	F	LT	1.25	153.3	F+	LT	1.15	110.3	F
Westbound	TR	0.88	38.3	D	TR	0.95	50.4	D+	TR	0.91	40.4	D
Northbound	LTR	0.32	28.8	C	LTR	0.32	28.9	C	LTR	0.35	31.3	C
	Intersection		68.6	E	Intersection		91.7	F	Intersection		69.5	E
Metropolitan Avenue and Marcy Avenue												
Eastbound	TR	0.37	11.5	B	TR	0.44	12.3	B	TR	0.50	18.4	B
Westbound	L	1.31	158.3	F	L	1.39	198.4	F+	L	1.30	155.7	F
	T	0.43	0.9	A	T	0.45	1.0	A	T	0.45	1.0	A
	Intersection		82.0	F	Intersection		96.9	F	Intersection		78.6	E
Marcy Avenue and Broadway												
Eastbound	TR	1.06	85.4	F	TR	1.15	116.6	F+	TR	1.05	78.5	E
Westbound	LT	1.08	96.7	F	LT	1.17	130.2	F+	LT	1.04	81.1	F
Southbound	LTR	1.03	76.0	E	LTR	1.03	76.0	E	LTR	0.58	27.9	C
	Intersection		85.6	F	Intersection		107.0	F	Intersection		62.2	E
SATURDAY MIDDAY PEAK HOUR (1)												
Metropolitan Avenue and Kent Avenue												
Eastbound	LTR	0.01	25.8	C	LTR	0.01	25.8	C	LTR	0.01	25.8	C
Westbound	LTR	0.50	35.8	D	LTR	0.76	50.4	D+	DefL	0.41	32.8	C
									TR	0.29	30.3	C
Northbound	LTR	0.42	8.9	A	LTR	0.55	10.7	B	LTR	0.55	10.7	B
Southbound	LTR	0.47	9.7	A	LTR	0.49	10.1	B	LTR	0.49	10.1	B
	Intersection		12.6	B	Intersection		16.6	B	Intersection		13.7	B

Table 23-4 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses Primary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
SATURDAY MIDDAY PEAK HOUR (continued) (1)												
Roebling Street and S. 4th Street												
Eastbound	LR	0.21	9.3	A	LR	0.23	9.5	A	LR	0.23	10.0+	B
Westbound	L	0.06	8.0	A	L	0.06	8.0	A	L	0.06	8.5	A
	TR	0.21	9.3	A	TR	0.25	9.8	A	TR	0.25	10.3	B
Southbound	TR	0.89	52.2	D	TR	0.92	57.3	E+	TR	0.89	51.3	D
	Intersection		32.1	C	Intersection		34.3	C	Intersection		31.4	C

Notes:
(1) The Saturday HCS analysis is new for the DEIS.
L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service. + implies a significant adverse impact

Table 23-5
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses
Primary Study Area Intersections
Unsignalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
WEEKDAY AM PEAK HOUR	**UNSIGNALIZED**											
Kent Avenue and Grand Street									Signalized			
Eastbound	LTR	0.33	75.3	F	LTR	0.74	247.7	F	LTR	0.05	24.8	C
Westbound	LTR	1.61	398.1	F	LTR	12	5478.0	F +	LTR	0.77	53.2	D
Northbound	LTR	0.01	9.8	A	LTR	0.01	10.9	B	LTR	0.89	26.6	C
Southbound	LTR	0.05	10.8	B	LTR	0.07	12.8	B	LTR	0.96	39.2	D
									Intersection		34.6	C
Kent Avenue and S. 4th Street									Signalized			
Eastbound					LR	**	**	F	LR	0.43	34.7	C
Westbound	LR	0.36	41.9	E	LTR	7.68	3254.0	F +	LT	0.40	32.5	C
									R	0.39	32.0	C
Northbound					LT	0.05	10.0-	A	LT	0.92	28.1	C
Southbound									TR	0.79	18.6	B
									Intersection		25.6	C
Kent Avenue and S. 6th Street									Signalized			
Eastbound	LR	0.22	43.1	E	LR	**	**	F	LR	0.09	26.1	C
Westbound	LTR	0.28	35.3	E	LTR	2.56	907.6	F+	LT	0.04	25.4	C
									R	0.52	38.8	D
Northbound	LT	0.00	9.5	A	LT	0.00	9.9	A	LT	0.79	17.6	B
Southbound									TR	0.76	17.2	B
									Intersection		18.8	B
Wythe Avenue and S. 3rd Street												
Eastbound	TR	0.16	15.9	C	TR	0.69	36.5	E+	TR	-	10.3	B
Southbound	LT	0.06	7.8	A	LT	0.06	7.8	A	LT	-	14.7	B
									Intersection		13.2	B
Broadway and Roebling Street - SBR									Signalized			
Eastbound									T	0.50	25.2	C
Westbound									T	0.23	20.0+	C
Southbound	R	0.42	13.8	B	R	2.18	598.4	F+	R	0.47	24.6	C
									Intersection		23.3	C

Table 23-5 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses
Primary Study Area Intersections
Unsignalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
WEEKDAY MIDDAY PEAK HOUR	**UNSIGNALIZED**											
Kent Avenue and Grand Street									Signalized			
Eastbound	LTR	0.25	35.9	E	LTR	0.79	203.2	F	LTR	0.12	25.7	C
Westbound	LTR	1.14	196.9	F	LTR	16.5	7880.0	F+	LTR	0.64	43.1	D
Northbound	LTR	0.02	9.4	A	LTR	0.02	10.7	B	LTR	0.86	24.2	C
Southbound	LTR	0.05	10.1	B	LTR	0.07	12.5	B	LTR	0.70	15.8	B
									Intersection		22.4	C
Kent Avenue and S. 4th Street									Signalized			
Eastbound					LR	2.17	756.8	F	LR	0.40	33.7	C
Westbound	LR	0.33	29.8	D	LTR	3.54	1290.0	F+	LT	0.32	30.9	C
									R	0.40	32.5	C
Northbound					LT	0.06	9.1	A	LT	0.78	17.3	B
Southbound									TR	0.56	11.2	B
									Intersection		18.0	B
WEEKDAY MIDDAY PEAK HOUR	**UNSIGNALIZED**											
Kent Avenue and S. 6th Street									Signalized			
Eastbound	LR	0.06	23.2	C	LR	**	**	F	LR	0.04	25.4	C
Westbound	LTR	0.25	18.9	C	LTR	1.16	199.5	F+	LT	0.01	25.1	C
									R	0.61	41.2	D
Northbound	LT	0.01	9.4	A	LT	0.01	9.8	A	LT	0.59	12.1	B
Southbound									TR	0.60	12.3	B
									Intersection		15.2	B
Broadway and Roebling Street - SBR									Signalized			
Eastbound									T	0.52	20.6	C
Westbound									T	0.19	15.4	B
Southbound	R	0.41	13.7	B	R	0.97	79.3	F+	R	0.44	19.3	B
									Intersection		18.6	B
Kent Avenue and Grand Street									Signalized			
Eastbound	LTR	0.29	63.2	F	LTR	**	**	F	LTR	0.11	29.7	C
Westbound	LTR	2.73	961.5	F	LTR	68.50	33908.0	F+	LTR	0.87	78.5	E
Northbound	LTR	0.01	10.5	B	LTR	0.01	12.3	B	LTR	1.01	43.0	D
Southbound	LTR	0.03	10.8	B	LTR	0.05	14.1	B	LTR	0.80	16.1	B
									Intersection		33.4	C
Kent Avenue and South 4th Street									Signalized			
Eastbound					LR	**	**	F	LR	1.17	173.2	F
Westbound	LR	0.90	149.2	F	LTR	51.00	23937.0	F+	LT	0.70	55.8	E
									R	0.69	51.6	D
Northbound					LT	0.11	11.1	B	LT	1.00	41.1	D
Southbound									TR	0.79	14.4	B
									Intersection		39.7	D
Kent Avenue and South 5th Street									Signalized			
Eastbound	LTR	0.30	129.7	F	LTR	12.00	11136.0	F	LTR	0.05	35.4	D
Northbound	LTR	0.01	12.3	B	LTR	0.02	32.3	D+	LTR	0.79	11.0	B
Southbound	LTR	0.03	10.8	B	LTR	0.12	17.6	C	LTR	1.02	40.4	D
									Intersection		27.8	C
Kent Avenue and South 6th Street									Signalized			
Eastbound	LR	0.17	71.3	F	LR	**	**	F	LR	0.03	20.3	C
Westbound	LTR	0.79	65.4	F	LTR	9.23	3949.0	F+	LT	0.02	20.2	C
									R	1.14	130.4	F
Northbound	LT	0.00	10.5	B	LT	0.00	11.4	B	LT	0.90	30.1	C
Southbound									TR	0.99	44.4	D
									Intersection		49.1	D

Table 23-5 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses
Primary Study Area Intersections
Unsignalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
WEEKDAY MIDDAY PEAK HOUR	**UNSIGNALIZED**											
Wythe Avenue and South 2nd Street												
Westbound	LT	0.28	17.5	C	LT	0.47	31.8	D+	LT	-	9.3	A
Southbound									TR	-	12.3	B
									Intersection		11.7	B
Wythe Avenue and South 3rd Street												
Eastbound	TR	0.52	24.9	C	TR	0.95	80.8	F+	TR	-	11.5	B
Southbound	LT	0.06	7.7	A	LT	0.06	7.7	A	LT	-	17.7	C
									Intersection		15.5	C
WEEKDAY MIDDAY PEAK HOUR	**UNSIGNALIZED**											
Wythe Avenue and South 6th Street												
Westbound	LT	0.67	31.0	D	LT	1.10	108.6	F+	LT	-	16.9	C
Southbound									TR	-	16.4	C
									Intersection		16.7	C
Broadway and Roebling Street - SBR									Signalized			
Eastbound									T	0.50	25.1	C
Westbound									T	0.17	19.4	B
Southbound	R	0.71	20.5	C	R	5.24	1982.0	F+	R	0.76	33.9	C
									Intersection		28.0	C
SATURDAY MIDDAY PEAK HOUR [(1)]	**UNSIGNALIZED**											
Kent Avenue and Grand Street									Signalized			
Eastbound	LTR	0.11	27.1	D	LTR	0.29	75.8	F	LTR	0.07	25.1	C
Westbound	LTR	0.16	18.0	C	LTR	0.94	201.9	F+	LTR	0.23	27.8	C
Northbound	LTR	0.00	8.5	A	LTR	0.00	9.4	A	LTR	0.54	11.5	B
Southbound	LTR	0.01	8.7	A	LTR	0.01	10.3	B	LTR	0.39	9.5	A
									Intersection		11.8	B
Kent Avenue and South 4th Street									Signalized			
Eastbound					LR	1.48	451.0	F	LR	0.26	28.4	C
Westbound	LR	0.56	30.8	D	LTR	3.81	1348.0	F+	LT	0.50	33.5	C
									R	0.70	41.0	D
Northbound					LT	0.05	8.6	A	LT	0.50	10.9	B
Southbound									TR	0.36	9.2	A
									Intersection		18.8	B
Kent Avenue and South 6th Street									Signalized			
Eastbound	LR	0.02	45.4	E	LR	**	**	F	LR	0.02	25.2	C
Westbound	LTR	0.53	24.0	C	LTR	2.02	524.0	F+	LT	0.03	25.3	C
									R	0.64	42.4	D
Northbound	LT	0.00	8.5	A	LT	0.00	8.9	A	LT	0.42	9.3	A
Southbound									TR	0.39	8.9	A
									Intersection		13.7	B
Broadway and Roebling Street - SBR									Signalized			
Eastbound									T	0.34	17.6	B
Westbound									T	0.09	14.6	B
Southbound	R	0.75	27.3	D	R	1.47	263.9	F+	R	0.55	21.3	C
									Intersection		18.9	B

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service.
(1) The Saturday HCS analysis is new for the DEIS.
+ implies a significant adverse impact
** Delay values not reported by the HCS model.

Table 23-6
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation
Level of Service Analyses
Secondary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
WEEKDAY AM PEAK HOUR												
Kent Avenue and Division Avenue												
Eastbound	LTR	0.04	26.2	C	LTR	0.04	26.2	C	LTR	0.06	30.4	C
Westbound	LTR	0.45	33.2	C	LTR	0.45	33.2	C	LTR	0.58	42.8	D
Northbound	LTR	0.70	14.7	B	LTR	0.83	20.5	C	LTR	0.76	14.0	B
Southbound	LTR	0.98	40.3	D	LTR	1.08	71.1	E+	LTR	1.00	41.7	D
	Intersection		29.5	C	Intersection		46.9	D	Intersection		30.2	C
Kent Avenue and Clymer Street												
Eastbound	LR	0.69	43.2	D	LR	0.69	43.2	D	LR	0.69	43.2	D
Westbound	LTR	0.28	28.6	C	LTR	0.28	28.6	C	LTR	0.28	28.6	C
Northbound	L	0.87	42.0	D	L	0.97	65.0	E+	L	0.88	43.8	D
	T	0.72	15.5	B	T	0.87	24.4	C	T	0.87	24.4	C
Southbound	TR	0.82	19.0	B	TR	0.90	25.4	C	TR	0.90	25.4	C
	Intersection		23.8	C	Intersection		30.9	C	Intersection		28.8	C
Kent Avenue and Classon Avenue - NB Service Road												
Eastbound	L	0.17	21.0	C	L	0.18	21.1	C	L	0.20	24.0	C
	T	0.34	22.1	C	T	0.36	22.5	C	T	0.39	25.4	C
Westbound	TR	0.36	22.5	C	TR	0.38	22.7	C	TR	0.41	25.6	C
Northbound	L	0.92	51.4	D	L	0.99	65.9	E+	L	0.92	47.9	D
	LTR	0.97	53.2	D	LTR	1.04	69.9	E+	LTR	0.96	47.8	D
	Intersection		41.9	D	Intersection		52.5	D	Intersection		40.0	D
Flushing Avenue and Williamsburg Street-SB Service Road												
Eastbound	TR	0.31	20.6	C	TR	0.33	20.9	C	TR	0.40	27.3	C
Westbound	L	1.02	84.2	F	L	1.06	96.2	F+	L	0.82	48.7	D
	T	0.47	23.9	C	T	0.47	23.9	C	T	0.56	31.9	C
Southbound	LTR	0.71	29.0	C	LTR	0.74	30.2	C	LT	0.79	35.7	D
									R	0.54	22.1	C
	Intersection		35.1	D	Intersection		37.1	D	Intersection		33.6	C
Flushing Avenue and Classon Avenue-NB Service Road												
Eastbound	L	1.00	87.2	F	L	1.11	120.9	F+	L	1.01	84.2	F
	T	0.22	19.6	B	T	0.22	19.6	B	T	0.20	17.2	B
Westbound	TR	0.47	23.1	C	TR	0.47	23.1	C	TR	0.44	20.2	C
Northbound	LTR	0.80	32.0	C	LTR	0.84	33.7	C	LTR	0.90	40.9	D
	Intersection		34.9	C	Intersection		40.1	D	Intersection		39.4	D
WEEKDAY MIDDAY PEAK HOUR												
Flushing Avenue and Williamsburg Street-SB Service Road												
Eastbound	TR	0.39	17.1	B	TR	0.40	17.2	B	TR	0.51	24.7	C
Westbound	L	1.14	117.9	F	L	1.15	123.6	F+	L	0.80	39.7	D
	T	0.39	17.8	B	T	0.39	17.8	B	T	0.50	25.8	C
Southbound	LTR	0.61	21.2	C	LTR	0.62	21.5	C	LT	0.76	28.8	C
									R	0.32	13.1	B
	Intersection		35.1	D	Intersection		35.9	D	Intersection		27.6	C
Flushing Avenue and Classon Avenue-NB Service Road												
Eastbound	L	0.96	65.7	E	L	0.98	70.3	E+	L	0.95	61.9	E
	T	0.20	15.3	B	T	0.20	15.3	B	T	0.19	14.6	B
Westbound	TR	0.40	17.3	B	TR	0.40	17.3	B	TR	0.39	16.6	B
Northbound	LTR	0.73	23.9	C	LTR	0.74	24.0	C	LTR	0.76	25.2	C
	Intersection		27.4	C	Intersection		28.2	C	Intersection		27.5	C

Table 23-6 (cont'd)
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation
Level of Service Analyses
Secondary Study Area Intersections
Signalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
	SIGNALIZED											
WEEKDAY PM PEAK HOUR												
Flushing Avenue and Williamsburg Street-SB Service Road												
Eastbound	TR	0.44	22.4	C	TR	0.44	22.5	C	TR	0.62	36.3	D
Westbound	L	1.10	116.2	F	L	1.11	120.8	F+	L	0.90	73.8	E
	T	0.35	21.7	C	T	0.35	21.7	C	T	0.49	35.0-	C
Southbound	LTR	1.10	87.9	F	LTR	1.16	109.2	F+	LT	1.10	85.9	F
									R	0.72	23.3	C
	Intersection		72.4	E	Intersection		87.1	F	Intersection		61.1	E
Flushing Avenue and Classon Avenue-NB Service Road												
Eastbound	L	2.64	797.9	F	L	2.69	819.7	F+	L	2.55	755.8	F
	T	0.44	37.2	D	T	0.44	37.2	D	T	0.43	36.2	D
Westbound	TR	0.63	40.4	D	TR	0.63	40.4	D	TR	0.61	39.2	D
Northbound	LTR	0.50	13.0	B	LTR	0.51	13.0	B	LTR	0.51	13.6	B
	Intersection		153.1	F	Intersection		158.4	F	Intersection		147.5	F

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service.
+ implies a significant adverse impact

Table 23-7
2020 No Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation Level of Service Analyses
Secondary Study Area Intersections
Unsignalized Intersections

Intersection	2020 No Action				2020 Future with the Proposed Project				2020 Future with the Proposed Project with Mitigation			
	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS	Lane Group	v/c Ratio	Delay (seconds)	LOS
WEEKDAY AM PEAK HOUR	UNSIGNALIZED											
Kent Avenue and Williamsburg Street East									Signalized			
Eastbound	L	0.69	36.2	E	L	0.78	48.6	E+	L	0.48	33.9	C
									T	0.17	0.1	A
Westbound									TR	0.93	34.8	C
									R	0.83	31.3	C
									Intersection		28.2	C

Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service.
+ implies a significant adverse impact

To improve traffic operating conditions at the above intersections, mitigation measures identified for the 2020 Build conditions would have to be advanced to 2013. It should be noted that the mitigation measures proposed for the 2020 Build conditions were developed incorporating the traffic activities generated by the full build-out of the proposed project together with the 11 percent background growth as well as the completion of the 32 anticipated future background developments and the Greenpoint-Williamsburg Rezoning projected sites within the 1-½ mile study area. Therefore, there is a possibility that implementing these mitigation measures in 2013 could "over-mitigate" the traffic conditions at some of the impacted locations.

KENT AVENUE RECONFIGURATION

Recently, Kent Avenue has been reconfigured in terms of traffic flow direction and geometric configuration in the study area. Specifically, since late September/early October 2009 the traffic flow direction on Kent Avenue has been changed from two-way north-south operation to one-way northbound operation between Clymer and North 14th Streets. In addition to the traffic flow direction change, new northbound-southbound bicycle lanes were installed on the west side of Kent Avenue in October 2009.

As discussed in Chapter 17, "Traffic and Parking," the traffic patterns resulting from the reconfiguration of Kent Avenue have not yet stabilized. Further, DOT is planning to assess the efficacy of the new Kent Avenue configuration and to determine whether additional network modifications are needed. Given the not yet stabilized network, the DEIS traffic analysis has assumed two-way volumes on Kent Avenue. It should be noted that once the travel patterns have stabilized, a detailed analyses of project-generated traffic conditions incorporating the changes resulting from the Kent Avenue reconfiguration will be undertaken between the DEIS and FEIS.

To gauge changes in traffic patterns resulting from the reconfiguration of Kent Avenue, ATR counts were conducted at limited locations in October 2009 in the study area. A comparison of peak hour ATR volumes collected in October 2009 and the ATR volumes collected in February 2009 was conducted to determine the changes in traffic levels. Based on this comparison, notable increases in traffic levels were observed on both northbound Kent Avenue and southbound Wythe Avenue during the weekday AM, midday, and PM, and Saturday midday peak hours.

In addition to the baseline conditions, the reconfiguration of Kent Avenue would also affect the travel patterns of traffic generated by the future No Action projects in the study area, specifically those located along the Kent Avenue corridor between Clymer and North 14th Streets (for example, the Kedem Winery Redevelopment, Domsey Rezoning, Rose Plaza, Northside Piers, and Brooklyn Navy Yard Redevelopment, etc.). In addition, traffic generated by approximately 75 percent of the total proposed residential and retail developments identified under the *Greenpoint-Williamsburg Rezoning FEIS* would experience changes in travel patterns resulting from the Kent Avenue reconfiguration.

With the reconfiguration of Kent Avenue, there is the potential that incremental traffic from the proposed project could result in additional significant adverse traffic impacts when compared to the 2020 future with the proposed project condition analyzed in this DEIS due to the projected increase in baseline traffic volumes, as well as the reassignment of some of the southbound project-generated trips from Kent Avenue to Wythe Avenue. In general, the reassignment of project-generated trips from Kent Avenue to Wythe Avenue is expected to result in up to approximately 300 and 175 additional peak hour vehicles on Wythe Avenue between South 3rd and South 4th Streets during the weekday and Saturday conditions, respectively. Other segments

of Wythe Avenue between South 3rd and Grand Streets are expected to experience approximately 65 to 200 additional peak hour vehicles during the weekday and Saturday conditions, respectively.

The majority of the traffic impacts resulting from the reconfiguration of Kent Avenue would likely be mitigated through the implementation of standard traffic engineering improvement measures such as those identified for the proposed project in the preceding section. However, there is a possibility that additional mitigation measures would be required at some of the impacted locations along Wythe Avenue to improve the traffic conditions. Specifically, additional mitigation involving installation of new traffic signals could be required at the intersections of Wythe Avenue at South 2nd, South 3rd and South 6th Streets. It should be noted that under the proposed project, these intersections would only require the change in intersection control from a Two-Way Stop to an All-Way Stop. However, in order to process the increased traffic volumes—resulting from the Kent Avenue reconfiguration and potential reassignment of project-generated trips—installation of traffic signals may be required at these locations. Furthermore, with the Kent Avenue reconfiguration, mitigation measures identified for the intersections of Kent Avenue at Clymer Street, Division Avenue, Broadway, South 5th Street, and South 3rd Street either may not be required or may be of lesser magnitude as compared to the measures identified under the two-way Kent Avenue configuration. This is due to the fact that under the reconfigured Kent Avenue, the southbound traffic volumes would be eliminated, resulting in fewer vehicular conflicts and increased green-time for northbound traffic volumes travelling through these intersections.

A detailed analysis of the effects of the Kent Avenue reconfiguration on study area traffic conditions—including the need for additional mitigation measures at impacted locations and the reassignment of truck trips—will be undertaken between the DEIS and FEIS once the travel patterns in the study area have stabilized.

F. TRANSIT AND PEDESTRIANS

OVERVIEW

As discussed in Chapter 18, "Transit and Pedestrians," the proposed project would result in significant adverse pedestrian impacts at the south crosswalk of the Bedford Avenue and North 7th Street intersection. In terms of transit impacts, the proposed project would result in significant adverse impacts to the Marcy Avenue station's Manhattan-bound control area during the AM peak period and Queens-bound control area during the PM peak period. The proposed project would also result in significant adverse bus line haul impacts on the B39, B61, and Q59 bus routes during either one or both the AM and PM peak periods. Potential measures to mitigate these impacts are described below.

SUBWAY STATION OPERATIONS

The proposed project would result in a projected decline in service levels at the Manhattan-bound control area during the AM peak period and at the Queens-bound control area during the PM peak period at the Marcy Avenue J/M/Z subway station. As discussed in Chapter 18, "Transit and Pedestrians," projected conditions at the Manhattan-bound control area (located at the north side of Broadway/Havemeyer Street) would decline from LOS E with a 1.00 v/c ratio under the No Action condition to LOS F with a 1.31 v/c ratio under the future with the proposed project condition during the AM analysis peak period. The Queens-bound control area, on the south side of Broadway/Havemeyer Street, would decline from LOS E with a 0.93 v/c ratio

under the No Action condition to LOS F with a 1.22 v/c ratio under the future with the proposed project condition during the PM analysis peak period.

Due to the proposed project, the Marcy Avenue station's Manhattan-bound secondary control areas (in the vicinity of Havemeyer Street) for the J/M/Z subway line would exceed optimum capacity under the future with the proposed project condition during the AM peak period, while the Queens-bound secondary control area would exceed optimum capacity during the PM peak period, resulting in significant adverse impacts. Typically, mitigation to address control area impacts focuses on increasing the capacity of the control area by adding turnstiles and/or high entry/exit gates. However, due to space constraints at this location, installation of additional turnstiles and/or gates at the Manhattan-bound and Queens-bound control areas is not possible.

However, other alternative strategies to mitigate the significant adverse impact identified for the aforementioned subway station control areas could be undertaken including:

- The "Control Area Operational Change Option", which would require consideration of operational changes within the control area, such as changing the High Entrance-Exit Turnstiles (HEETs) to exit-only turnstiles. This operational change would encourage subway riders to use the main control area located at the Marcy Avenue and Broadway intersection approximately 100 yards east of the secondary control areas, and would mitigate the control area impacts.
- The "Shuttle Bus Service Option", which would require implementation of shuttle bus service to subway riders traveling to/from the proposed project site. This strategy could include provision of a shuttle bus route to provide a direct connection between the project site and the Marcy Avenue (J/M/Z subway lines) station. The shuttle bus route would shift project-generated transit trips from the Marcy Avenue station's secondary control areas (in the vicinity of Havemeyer Street) to the main control area, thereby potentially mitigating the impact by reducing the number of project generated transit trips using the secondary control areas during the AM and PM peak periods.
- Other Transit Management Options: As part of the transit management strategies, a multitude of alternative commuting options may also be provided which could divert potential subway and/or bus riders to other modes of transportation, such as express bus service to Manhattan or other measures as identified through the consultation process with the Metropolitan Transportation Authority-New York City Transit (NYCT).

The feasibility of the measures listed above will be explored further between the Draft and Final EIS in consultation with the NYCT. The provision of a water taxi service will also be considered. A water taxi service would require additional discretionary approvals for permitting of dock designs and operations, as well as, other site plan and open space plan approvals to accommodate the passenger dock.

The FEIS will identify any feasible mitigation. Absent such mitigation measures, the proposed project would result in an unmitigated significant adverse transit impact.

BUS LINE HAUL

The proposed project would result in significant adverse bus line haul impacts as the projected passenger volumes in the future with the proposed project condition would exceed the NYCT guideline capacity of 54 passengers per bus. Specifically, the proposed project would result in significant adverse impacts to the following bus routes:

- Eastbound B39 bus route during the PM peak period and the westbound B39 bus route during the AM peak period;
- Northbound and southbound B61 bus route during both the AM and PM peak periods; and
- Eastbound and westbound Q59 bus route during both the AM and PM peak periods.

More specifically, the B39 bus route would experience the following increases in passengers per bus between No Action and future with the proposed project conditions:

- Eastbound line-haul increasing from 60 to 75 average passengers per bus in the PM peak period; and
- Westbound line-haul increasing from 59 to 72 average passengers per bus in the AM peak period.

The westbound and eastbound B39 bus route would operate over capacity under both the No Action and future with the proposed project conditions during the AM and PM peak periods, respectively. One additional westbound and one additional eastbound bus (for a total of five westbound and five eastbound buses during the AM and PM peak periods) would be required to mitigate the projected impacts to No Action operating conditions. To mitigate these significant adverse impacts back to acceptable levels, two additional (or six total) westbound and eastbound buses would be required during the AM and PM peak periods, respectively.

The B61 bus route would experience the following increases in passengers per bus between No Action and future with the proposed project conditions:

- Northbound line-haul increasing from 94 to 153 average passengers per bus in the AM peak period and from 77 to 120 average passengers per bus in the PM peak period.
- Southbound line-haul increasing from 71 to 97 average passengers per bus in the AM peak period and from 97 to 170 average passengers per bus in the PM peak period.

The northbound and southbound B61 bus routes would operate over capacity under both the No Action and future with the proposed project conditions during both the AM and PM peak periods. Seven additional (or 14 total) northbound and three additional (or 10 total) southbound buses would be required to mitigate the projected impacts to No Action operating conditions during the AM peak period. To mitigate these significant adverse impacts back to acceptable levels, 13 additional (or 20 total) northbound buses and six additional (or 13 total) southbound buses would be required during the AM peak period.

Six additional (or 13 total) northbound buses and eight additional (or 14 total) southbound buses would be required to mitigate the projected impacts to No Action operating conditions during the PM peak period. To mitigate these significant adverse impacts back to acceptable levels, nine additional (or 16 total) northbound buses and 13 additional (or 19 total) southbound buses would be required during the PM peak period.

The Q59 bus route would experience the following increases in passengers per bus between No Action and future with the proposed project conditions:

- Eastbound line-haul increasing from 77 to 151 average passengers per bus in the AM peak period and from 70 to 142 average passengers per bus in the PM peak period.
- Westbound line-haul increasing from 73 to 101 average passengers per bus in the AM peak period and from 77 to 168 average passengers per bus in the PM peak period.

Both the eastbound and westbound Q59 bus route would operate over capacity under both the No Action and future with the proposed project conditions during both the AM and PM peak periods.

Eight additional eastbound and three additional westbound buses (for a total of 14 eastbound and nine westbound buses) would be required to mitigate the projected impacts to No Action operating conditions during the AM peak period. To mitigate these significant adverse impacts back to acceptable levels, eleven additional (or 17 total) eastbound buses and six (or 12 total) westbound buses would be required during the AM peak period.

Five additional eastbound and eight additional westbound buses (for a total of nine eastbound and 13 westbound buses) would be required to mitigate the projected impacts to No Action operating conditions during the PM peak period. To mitigate these significant adverse impacts back to acceptable levels, seven additional (or eleven total) eastbound buses and eleven additional (or 16 total) westbound buses would be required during the PM peak period.

Table 23-8 provides a comparison of existing service and the numbers of buses required to fully mitigate the identified significant adverse line haul impacts along the B39, B61, and Q59 bus routes. While NYCT routinely monitors changes in bus ridership and would make the necessary service adjustments where warranted, these service adjustments are subject to the agencies' fiscal and operational constraints and, if implemented, are expected to take place over time.

Table 23-8
2020 Mitigated Future With The Proposed Project Condition (Capacity Improvement): Bus Line Haul Levels

Route	Peak Period	Northbound/Eastbound Buses per Hour		Southbound/Westbound Buses per Hour	
		Existing	Mitigation	Existing	Mitigation
B39	AM	3	--	4	6
	PM	4	6	4	--
B61	AM	7	20	7	13
	PM	7	16	6	19
Q59	AM	6	17	6	12
	PM	4	11	5	16

Note: The B39, B61, and Q59 bus routes operate standard buses with a guideline capacity of 54 passengers per bus.

As discussed in detail in Chapter 2, "Analytical Framework," there are several development projects in and near the study area that are projected to be completed prior to, or concurrent with, the planned completion of the proposed project. All of these development projects, along with the trips generated by the projected development from the *Greenpoint-Williamsburg Rezoning FEIS*, were included in the future No Action analysis. It is expected that NYCT would monitor the changes in the bus ridership levels and would make necessary service adjustments to accommodate the increased demand generated by the future development projects as well as by the projected developments identified as part of *Greenpoint-Williamsburg Rezoning.* It should be noted that some of these future projects ultimately may not be constructed, thereby resulting in lower 2020 No Action pedestrian and transit volume networks (as compared to the ones against which the impacts from the proposed project were evaluated). In such a case, the significant adverse transit and pedestrian impacts projected to occur with the proposed project would be of lesser magnitude (thereby requiring lesser mitigation).

STREET LEVEL PEDESTRIAN OPERATIONS

A significant adverse pedestrian impact was identified for the south crosswalk at the Bedford Avenue and North 7th Street intersection during the weekday AM peak period, as detailed below.

BEDFORD AVENUE AND NORTH 7TH STREET

- *Weekday AM peak period:* The south crosswalk would deteriorate from LOS D to LOS E (15.7 SFP to 13.9 SFP).

Restriping the crosswalk from 12.0 feet wide to 12.3 feet wide would mitigate the significant adverse impact to the south crosswalk at the Bedford Avenue and North 7th Street intersection.

Because the proposed project parcels would be developed sequentially, the potential significant adverse impacts on transit and pedestrian conditions in the study area would first occur when the proposed project constructs approximately 327 residential units, 6,000 sf of local retail space, 30,000 sf of supermarket space and 374 accessory parking spaces. This development would take place upon completion of Site E on the upland parcel together with the completion of the 32 anticipated future background developments and the Greenpoint-Williamsburg Rezoning projected sites within the 1-½ mile study area.

Specifically, with the completion of Site E, there could be significant adverse impacts on the bus line-hauls for the B39, B61 and Q59 bus routes as well as at the Marcy Avenue station's Manhattan-bound and Queens-bound secondary control areas for the J/M/Z subway line. In addition, the pedestrian trips generated by Site E could also result in significant adverse pedestrian impact at the Bedford Avenue and North 7th Street intersection.

In order to mitigate these pedestrian and transit impacts, mitigation measures proposed for the 2020 Build conditions would have to be advanced to 2013. It should be noted that the mitigation measures proposed for the 2020 Build conditions were developed incorporating the transit and pedestrian activities generated by the full build-out of the proposed project together with the 11 percent background growth as well as the completion of the 32 anticipated future background developments and the Greenpoint-Williamsburg Rezoning projected sites within the 1-½ mile study area. Therefore, there is a possibility that enforcing these mitigation measures in 2013 could "over-mitigate" the conditions for some of the impacted pedestrian and transit facilities.

G. AIR QUALITY

EFFECTS OF PROPOSED TRAFFIC MITIGATION MEASURES

Chapter 19, "Air Quality," predicts the maximum predicted carbon monoxide (CO) and particulate matter (PM_{10} and $PM_{2.5}$) concentrations related to traffic generated from the proposed project, and concludes that the proposed project would not result in any significant adverse air quality impacts. Therefore, no air quality mitigation is required. This section considers the effects on air quality of the proposed project with implementation of the traffic mitigation measures discussed above. The results (presented in Appendix E) show that with the proposed traffic mitigation measures, future concentrations of pollutants with the proposed project would be below the National Ambient Air Quality Standards (NAAQS) and would not result in any significant adverse air quality impacts using the *de minimis* thresholds for CO impacts and the $PM_{2.5}$ interim guidance criteria. Appendix E presents the summary of these results.

H. NOISE

Significant adverse noise impacts are predicted to occur at noise receptor Site 4 (located on South 3rd Street between Kent and Wythe Avenues) and Site 5 (located on South 4th Street between Kent and Wythe Avenues). At these sites, all of the adjacent residential buildings have double-glazed windows and many have some form of alternative ventilation (i.e., window or through-wall air conditioning units). To mitigate the significant adverse noise impacts at these sites, window air conditioning units would be made available by the applicant to residences that do not have an alternate means of ventilation. This could include apartments at 37 South 3rd Street and 28-38 South 4th Street. Consequently, even during warm weather conditions, interior noise levels would be approximately 30-35 dBA less than exterior noise levels. The double-glazed windows and alternative ventilation at these residential structures would provide a substantial amount of sound attenuation, and would result in interior noise levels during much of the time that are below 45 dBA $L_{10,}$ which would meet CEQR interior noise level criteria. Therefore, the provision of window air conditioning units by the applicant would fully mitigate the significant adverse noise impacts.

I. CONSTRUCTION

TRAFFIC

Since the projected construction activities would yield less total traffic than that projected for the proposed project, traffic operating conditions resulting from construction activities in the traffic study area are expected to be better than the 2020 future with the proposed project condition presented in Chapter 17, "Traffic and Parking." Nonetheless, because existing and No Action traffic conditions at some of the study area intersections through which construction-related traffic would also travel were determined to operate at unacceptable levels during commuter peak hours, it is possible that significant adverse traffic impacts could occur at some or many of these locations during construction. In order to alleviate construction traffic impacts, measures recommended to mitigate impacts associated with the proposed project could be implemented during construction before completion of the proposed project.

NOISE

Construction of the proposed project would implement measures to reduce noise levels during construction. Even with these measures, a screening analysis determined that the noise levels due to construction activities would result in significant adverse noise impacts at sensitive receptors (i.e., residential buildings) around the project site. Many of these receptors have double glazed windows and some form of air conditioning (window units, through-wall, or Packaged Terminal Air Conditioners), which would provide substantial attenuation of the incident construction noise and result in acceptable interior noise levels according to CEQR criteria during most times of day. Between the draft and final EIS, a more detailed construction noise analysis will be performed in order to quantify the magnitude of the noise level increases at the nearby sensitive receptors and determine the practicability and feasibility of additional control measures to reduce or eliminate the significant adverse noise impacts. ✷