

**A. INTRODUCTION**

The analyses presented in this environmental impact statement (EIS) examine the potential for significant adverse impacts as a result of the proposed project. This chapter discusses the mitigation measures proposed to minimize or avoid the significant adverse impacts that have been identified as a result of the operations of the proposed project in the areas of schools, cultural resources, shadows, traffic, transit and pedestrians, and noise. This chapter also discusses the measures to be implemented for the project's construction activities that avoid or reduce the potential for significant adverse impacts and identifies additional mitigation measures to further reduce potential significant adverse impacts. Significant adverse impacts that cannot be fully mitigated through reasonably practicable measures are also identified and discussed in Chapter 22, "Unavoidable Adverse Impacts." These include cultural resources, visual resources, shadows, traffic, noise, and construction.

**B. COMMUNITY FACILITIES****PUBLIC SCHOOLS**

The project site is located in both Community School Districts (CSDs) 13 and 15. Since the 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 ½ mile of the project; on schools within CSD 13—where most of the project site is located; on schools within CSD 15; and on all schools within CSDs 13/15 combined. As presented in Chapter 5, "Community Facilities," under either the residential mixed-use or commercial mixed-use variation, the elementary and intermediate school-aged children that would be introduced as a result of the proposed project in 2010 could be accommodated in the schools located within ½ mile of the project site. Therefore, no significant adverse impacts on school capacity are expected in 2010.

The proposed project would result in a significant adverse impact to both elementary and intermediate schools within the ½-mile study area when enrollment at these schools exceeds their program capacities, which could occur as early as 2013. While there would be projected shortfalls in elementary and intermediate school seats for schools located within ½ mile of the project site; there would remain available capacity in both the larger CSD 13 and CSD 15 (and thus CSDs 13/15 combined). Although the methodology outlined in the *CEQR Technical Manual* calls for the assessment of school capacity within the larger CSD, the elementary and intermediate school shortfalls within the ½-mile study area would be substantial enough to create a significant adverse impact to elementary and intermediate schools in the vicinity of the project site. To mitigate the projected 2016 shortfall in school seats for schools located within ½ mile of the project site, either one or a combination of the following measures would need to be undertaken:

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- Shifting the boundaries of school catchment areas within the CSDs to move students to schools with available capacity;
- Creating new satellite facilities in less crowded schools;
- Building a new school on the project site; and
- Building new school facilities off-site.

Since the issuance of the DEIS, the project sponsors have reached an agreement with the New York City Department of Education (DOE) that upon DOE's request, the project sponsors would provide adequate space for the construction and operation of an approximately 100,000-square-foot elementary and intermediate school in the base of one of the Phase II residential buildings. At this time, the lower floors of Building 5, located on the east side of 6th Avenue between Atlantic Avenue and Pacific Street, have been identified as a possible site. This school space would be made available at a time that would allow the school to be constructed and open at the beginning of the school year in which the significant adverse impact would be projected to occur, i.e., when the projected enrollment in either the elementary or intermediate schools within ½ mile of the project site would exceed their program capacities. This could occur as early as 2013.

The new school would be designed in accordance with DOE's specifications for new P.S./I.S. construction, and would include standard school facilities such as classroom, administration, and assembly space, gymnasium, cafeteria, library, and outdoor play areas. The school would have a separate entrance from the other uses within the building.

The floor area provided for the school would be in addition to the floor area assumed to be developed under either the reasonable worst-case Residential Mixed-Use Variation or Commercial Mixed-Use Variation as described in Chapter 2, "Procedural and Analytical Framework." Thus, the provision of a school as part of the proposed project would result in additional floor area to be developed at one or more Phase II development sites. If located in Building 5, the additional floor area is expected to be able to fit within the development envelopes established in the Design Guidelines and in any event would not change the overall height of any building. This additional 100,000 square feet of school space would represent approximately a 1.25 percent increase to the reduced FEIS program; this total program size, however, would still be less than the program analyzed in the DEIS.

The environmental consequences of the addition of this school use to the project program are analyzed below. Since the New York City School Construction Authority (SCA) projects involving the leasing of private property or construction of a new school are subject to environmental review pursuant to the State Environmental Quality Review Act (SEQRA), prior to the SCA's committing to acquiring the property, SCA would further examine the potential environmental effects of the school once the program has been defined and make appropriate findings at that time.

The provision of a primary and secondary school as part of the proposed project would not affect the analysis of socioeconomic conditions; cultural resources; neighborhood character; natural resources; waterfront revitalization; and public health. Therefore, this analysis focuses on the potential effect that the addition of a school may have on the following analyses: land use, zoning, and public policy; community facilities; open space; shadows; urban design and visual resources; hazardous materials, infrastructure; traffic and parking; transit and pedestrians; air quality; noise; and construction impacts.

### **LAND USE, ZONING, AND PUBLIC POLICY**

The school would be considered a compatible land use with those already established in the study area and those that would be included in the proposed project, and would not have any significant adverse effect on the land use patterns in the study area. Under the *New York City Zoning Resolution*, a school would be a permitted use in an M1 district (the principal underlying zoning for the parcels comprising the Phase II residential development) subject to a Special Permit approval by the City Planning Commission. The school use and its possible locations on the project site would satisfy the required findings of such a Special Permit. ESDC is overriding certain aspects of the *New York City Zoning Resolution*, including, but not limited to, use and bulk (including height and setback and floor area), signage, and parking requirements and allowances; and development of a school use would be allowed under the overrides authorized by the GPP. Thus, the construction and operation of a school on the project site would not result in any significant adverse impact on land use, zoning, and public policy.

### **COMMUNITY FACILITIES**

As stated above, the provision of a new P.S./I.S on the project site would partially mitigate the projected 2016 shortfall in school seats for schools located within ½ mile of the project site. While the school program and capacity would be developed at a later date, based on DOE's average classroom size and standards for new school construction, a 100,000-gsf P.S./I.S would accommodate approximately 650 students, with approximately 270 seats for elementary students, 320 seats for intermediate students, and 60 seats for District 75 students (i.e., special education).

The provision of approximately 270 elementary school seats on the project site would help to alleviate the shortfall of 1,372 elementary seats within the ½ mile study area expected in 2016 as a result of the proposed project, and would supplement the surplus of 4,585 seats expected within CSDs 13/15 combined. While the provision of a school on the project site would not fully mitigate the shortfall of elementary seats in schools located within ½ mile of the project site, available capacity would remain in CSDs 13 and 15.

The provision of approximately 320 intermediate school seats on the project site would fully mitigate the shortfall of 74 intermediate seats within the ½ mile study area expected in 2016 as a result of the proposed project. These seats would also supplement the surplus of 1,917 intermediate school seats expected within CSDs 13/15 combined.

The other potential mitigation measures identified in the DEIS—shifting the boundaries of school catchment areas within the CSDs; creating new satellite facilities in less crowded schools; and building new school facilities off-site—would be implemented at the discretion of DOE. If not implemented, the significant adverse impacts on elementary schools within the ½ mile study area would remain. Nevertheless, there would be sufficient capacity within the larger CSD 13 and CSD 15.

### **OPEN SPACE**

While the design of the new school would be completed at a later date, it is assumed that the school would include outdoor play areas including playground space for pre-kindergarten through the first grade and hard surface playground or active play yard for other grades. The school play areas could be provided within the eight acres of open space to be developed as part of the proposed project and would be adjacent to the development site containing the school.

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Should the school be located in a portion of the base of Building 5, the school play areas would likely be located to the east or south of the building. The school's at-grade play areas would be fully accessible to the public during non-school hours. Therefore, the provision of the school and play areas would not substantially affect the open space proposed as part of the project or the open space analysis.

### **SHADOWS**

The provision of an approximately 100,000-gsf school on the project site would result in a minor redistribution of floor area among the Phase II Buildings (Buildings 5 through 15). While the manner of this redistribution has not been determined, the proposed buildings would continue to be developed within the building envelopes set forth in the Design Guidelines that apply to the project site, and the height of the proposed buildings would not change.

As noted above, the addition of the 100,000 gsf school space would represent a small increase (1.25 percent) to the reduced FEIS program and this total program size would still be less than the program size analyzed in the DEIS. The distribution of this floor area among the Phase II residential buildings would likely affect the shorter buildings and would result in minimal changes, if any, to the incremental shadows cast by these new slightly bulkier buildings. It would not alter the conclusions on the proposed project's shadow impacts as disclosed in Chapter 9, "Shadows," in either the DEIS or FEIS. The significant adverse shadow impacts from the proposed project on the NYCHA Atlantic Terminal Houses and the Church of the Redeemer would remain, and no new significant adverse impacts are expected to result from the distribution of this additional space among the Phase II buildings.

### **URBAN DESIGN AND VISUAL RESOURCES**

As stated above, the provision of an approximately 100,000-gsf school on the project site would result in a slight redistribution of floor area in some of the Phase II buildings. However, the proposed Phase II buildings would continue to have bulk and form consistent with the Design Guidelines that have been established for the entire project site. Furthermore, the height of the proposed buildings would not change.

As described above, the provision of a school on the project site would include outdoor play areas including playground space and hard surface playground or active play yard. The school play areas could be provided within the eight acres of open space to be developed as part of the proposed project and would be adjacent to the development site containing the school. While the school play areas would be fenced for safety reasons, the fenced areas would constitute only a small portion of the eight acres of open space to be created by the proposed project, and these play areas would be fully accessible to the public during non-school hours. Should the school be located in a portion of the base of Building 5, the school play areas would likely be located to the east or south of the building, and a separate school entranceway would be provided. A school use on the project site would enhance the street-level activity and overall pedestrian environment on the project site. The inclusion of the school on the project site would not be expected to result in any new significant adverse impacts on urban design and visual resources.

### **HAZARDOUS MATERIALS**

To make certain that there would be no potential impacts to students or school staff from hazardous materials from construction activities on adjacent parcels, the proposed project would closely follow site remediation protocols and procedures in accordance with all applicable city,

state, and federal regulations, as outlined in Chapter 10, "Hazardous Materials." With the implementation of the remediation measures, no significant adverse hazardous materials impacts would occur as a result of the proposed project's construction.

Following construction, as discussed in the FEIS, the designs of the proposed buildings would incorporate elements that provide safeguards against potential migration of VOCs from the groundwater (or remaining soils at the site), through the subsurface, into the proposed buildings. The residential and community facility uses, including the school, would be located either above ventilated underground facilities or above the platform over the ventilated rail yard, which act as a barrier from potential VOC migration. Therefore, no significant adverse impacts would be expected.

### **INFRASTRUCTURE**

Using the estimated rates of use provided in the *CEQR Technical Manual*, the school facility would use an average of 19,500 gallons per day (gpd) based on 30 gpd per seat, and another 10,000 gpd for air conditioning during warm weather. The school's water usage would not be expected to noticeably affect municipal water supply conditions or reduce water pressure in the surrounding area. The school's sewage generation, conservatively assumed to be equal to water use, would average 19,500 gpd. The sewage flow would represent a minimal percentage of the Red Hook Water Pollution Control Plant's capacity of 60 million gallons per day and would have a negligible effect on the number of CSO events or CSO discharge volume.

Using a solid waste generation rate of 1 pound per week per student, the school would be expected to generate approximately 650 pounds of solid waste per week during the school year. To comply with the City's recycling plan, the school would be required to accommodate the source separation of recyclable materials. Disposable wastes and recyclable materials would be collected by the New York City Department of Sanitation (DSNY). The school-generated waste would be negligible compared with the 13,000 tons per day handled by DSNY, and would not have a significant effect on New York City's solid waste disposal system. It is anticipated that added electrical demand generated by the school would be minimal and would require no special appurtenances.

Thus, the proposed school on the project site would not result in any significant adverse impacts on infrastructure.

### **TRAFFIC AND PARKING**

The 650-seat PS/IS school would serve primarily new demand from the proposed project and existing demand from its adjacent neighborhoods. As such, most students are likely to travel on-foot. Based on standard DOE programming, this school would also employ approximately 60 faculty/staff members. With proximate access to a variety of transportation options in the area, including 12 subway lines, numerous bus routes, and the LIRR, it is expected that a large number of the faculty/staff would travel via transit. It is expected that new vehicle trips generated by this school would be nominal and for the most part occur outside of the typical commuter peak hours (peak travel for schools typically occurs between 7:30 and 8:30 AM and 3 to 4 PM). There would be ample parking capacity on-site for school staff. Thus, there would be no new significant adverse impacts on traffic or parking.

### **TRANSIT AND PEDESTRIANS**

Given the off-peak demand characteristics of school use, the school is not expected to result in any significant adverse impacts on transit and pedestrian conditions in the study area. The school would benefit from the improvements afforded by the proposed project.

### **AIR QUALITY**

The only stationary source of air pollutants expected to be associated with the school would be the emissions from the combustion of fossil fuels by heating, ventilation, and air conditioning (HVAC) equipment. The DEIS, which analyzed a program that is larger than the FEIS program with this 100,000 gsf school use, disclosed that there would be no significant adverse impacts from mobile or stationary sources. Thus, no significant adverse air quality impacts are expected with the addition of the school to the FEIS program.

### **NOISE**

A typical school of this size and location would not be expected to generate enough vehicle trips to significantly increase noise levels in the area. School playground and play yard areas are noise generators (estimated at 75 dBA in the *CEQR Technical Manual*). In addition, the playground noise could increase the ambient noise levels at the proposed project's open space in the vicinity of the school to a level that is above that desirable for an open space amenity; however, these levels would be comparable to noise levels found in parks containing playgrounds in the City's urban environment. This noise would qualify as a significant adverse impact to project buildings; however, the project buildings would include both double-glazed windows and central air-conditioning or alternative ventilation, which would provide appropriate attenuation to satisfy applicable interior noise criteria. Depending on the location of the school within the project site, it is possible that there could be significant adverse noise impacts on nearby residential buildings; however, the noise mitigation proposed for the project's operational impacts would also mitigate this impact.

### **CONSTRUCTION IMPACTS**

The provision of a school facility preliminarily identified for the lower floors of Building 5 is not expected to result in a construction-related impact, as construction of adjacent buildings to the east, west, and south would be complete by the time that Building 5 is expected to be complete and occupied. Building 5 is expected to be complete in December 2012. Buildings 3 and 4 to the west would be constructed during Phase I and be complete by 2010. Building 15, to the south, is expected to be complete in July 2012, and Building 6, to the east, is expected to be complete in September 2012. Should construction activities at adjacent buildings be on-going while Building 5 is occupied with the school and other uses, the construction would be limited in duration. No potential air quality impacts associated with construction of the project are expected in the vicinity of Building 5, as construction of the adjacent buildings is expected to be complete when Building 5 is operational. Similarly, no significant noise impacts are expected in the vicinity of Building 5, as construction of the adjacent buildings is expected to be complete when Building 5 is operational and, as shown in Table 17c-7 of the EIS, no significant adverse construction noise impacts were identified at receptor location 9, which is representative of noise levels at Building 5. Further, nearby construction is not expected to result in any significant adverse impacts on the school's interior space since construction of the school would incorporate double-glazed windows and central air-conditioning, which would provide appropriate

attenuation to satisfy applicable interior noise criteria. However, should such construction occur on adjacent parcels during the operation of the school, it would result in elevated noise levels that would result in a temporary significant adverse impact on the school's outdoor play areas.

## C. CULTURAL RESOURCES

### PROJECT SITE

#### *ARCHAEOLOGICAL RESOURCES*

As detailed in Chapter 7, "Cultural Resources" and Chapter 17, "Construction Impacts," it is expected that construction of the proposed project could impact the one potentially sensitive area identified on Block 1119 and the four potentially sensitive areas identified on Block 1127. To avoid significant adverse impacts on these potential archaeological resources, consultation would be undertaken with the New York City Landmarks Preservation Commission (LPC) and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). Therefore, a Stage 1B testing protocol has been prepared by a professional archaeologist and was submitted to LPC and OPRHP for review. The protocol describes the procedures by which additional research would be undertaken to determine the presence and extent of any potential archaeological resources prior to undertaking field testing on Block 1119. Additional research as recommended in the archaeology study for the project site may eliminate one or more areas from consideration on Block 1119. This research includes determining the locations and previous subsurface impacts of gasoline tanks in the sensitive area on Block 1119, and comparing these to the area of potential archaeological sensitivity. If the sensitive area has not been fully disturbed by gasoline tank installation, then additional archival records would be pursued (that were not available at the time of the preparation of the Stage 1A Documentary Study) which could provide information on the historic occupants of the potentially sensitive site. The Stage 1B testing protocol describes the proposed testing measures and research issues for the testing to be undertaken to determine whether archaeological resources may be present in all the sensitive areas. The testing would be implemented in consultation with LPC and OPRHP. The testing protocol was accepted by OPRHP in a letter dated October 30, 2006, and by LPC in comments dated November 2, 2006.

If testing confirms the presence of significant archaeological resources (i.e., resources that are eligible for the State/National Register [S/NR]), mitigation measures would be developed in consultation with OPRHP and LPC, such as data recovery, which would be undertaken prior to any project construction. A report describing the results of the testing would be provided to LPC and OPRHP for their review. Any mitigation measures would be determined based on the characteristics and significance of the resource. The consultation process respecting archaeological resources would occur in accordance with a Letter of Resolution (LOR) among the Empire State Development Corporation (ESDC), OPRHP, and the project sponsors.

#### *HISTORIC RESOURCES*

##### *LIRR Stables and the Ward Bread Bakery Complex*

Since the former LIRR Stables and former Ward Bread Bakery complex have been determined S/NR-eligible, a feasibility study was undertaken to determine (1) if the buildings could be converted to residential use, (2) if alterations to convert the buildings would impact their historic character, and (3) whether retaining the buildings would meet or constrain the goals of the proposed project's master plan. As detailed in Chapter 7, "Cultural Resources," the feasibility

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analysis determined that based on a number of constraints it would neither be prudent nor feasible to retain these two historic buildings.

Project construction by 2010 would involve the demolition of these two historic resources on the project site. Measures to partially mitigate the impact of the demolition of these historic resources, which include Historic American Buildings Survey (HABS) archival documentation of the buildings and additional measures that would document the history of the buildings have been developed in consultation with OPRHP and are stipulated in the Letter of Resolution (LOR) among ESDC, OPRHP, and the project sponsors. The LOR among the New York State ESDC, OPRHP, and the project sponsors, outlines protective and mitigation measures related to cultural resources, has been included in Appendix B of the FEIS.

To avoid adverse impacts to the Atlantic Avenue Station with respect to the proposed modifications, the project sponsors would prepare a Construction Protection Plan (CPP) for the station. The project sponsors would also consult with MTA and OPRHP regarding the proposed finishes in the station where new construction would connect to the historic tiled platform walls, and to evaluate the potential salvage and reuse potential of materials to be removed in the non-public areas as part of the proposed modifications, as described in greater detail in Chapter 7, "Cultural Resources."

### **STUDY AREA**

To avoid construction-related impacts on the 15 historic resources within 90 feet of project construction, a Construction Protection Plan (CPP) would be developed in consultation with OPRHP and would comply with the procedures set forth in TPPN #10/88 and other New York City Building Code regulations. Implementation of the CPP would protect the historic resources within 90 feet of the project construction (those most likely to be affected) and would include provisions for the proper enclosure of demolition and construction sites, pre- and post-construction documentation, vibration monitoring, stop work orders, and general requirements regarding the reduction of construction dust and noise. The CPP would be prepared and implemented prior to construction activities on the project site and project-related demolition.

In addition, the IRT Atlantic Avenue Control House would be included in the CPP if the proposed expansion of the traffic island bounded by Flatbush, Atlantic, and 4th Avenues on which the IRT Atlantic Avenue Control House is located is undertaken, as described below in E, "Traffic and Parking." Reconstruction of the traffic island would occur within 90 feet of the IRT Atlantic Avenue Control House, and, therefore, it would require protection from any inadvertent construction damage.

### **D. OPEN SPACE**

As discussed in Chapter 6, "Open Space and Recreational Facilities," based on the analysis of quantitative factors listed in the *CEQR Technical Manual*, the proposed project would result in a temporary significant adverse impact within the non-residential (¼-mile) study area at the end of Phase I. Although this impact would continue until the Phase II open space is phased in, it would be partially mitigated by improvements made to the Dean Playground during Phase I of the proposed project. The New York City Department of Parks and Recreation (DPR) currently has plans for the renovation of Dean Playground to include a little league baseball field with artificial turf and some other improvements. The project sponsors have committed to working

with DPR to build a comfort station for park patrons. A letter outlining this agreement between the project sponsors and DPR has been included in Appendix I of the FEIS.

By 2016 (full development of the proposed project), the temporary significant adverse impact experienced in 2010 would be mitigated by the proposed project's eight acres of publicly accessible open space constructed between Phase I and Phase II.

## **E. SHADOWS**

As discussed in Chapter 9, "Shadows," the buildings of the proposed project could potentially cast very long shadows due to their height and adversely affect public sun-sensitive resources in the area. Of the 15 public open spaces that fall within the proposed project's shadow sweep, the shadows cast by the proposed project's buildings would result in a significant adverse impact on the open space resource of the Atlantic Terminal Houses, a New York City Housing Authority (NYCHA) development, located at the northeast corner of Atlantic and Carlton Avenues. Of the 14 designated and eligible historic resources that fall within the proposed project's shadow sweep, the shadows cast by the proposed buildings would result in a significant adverse impact on one historic resource—the stained glass windows of Church of the Redeemer.

### **OPEN SPACES**

The open space at the Atlantic Terminal Houses, divided into two separate areas by a one-story building, contains both passive and active use areas. With full development (2016), there would be additional shadow cast on this open space. The Carlton Avenue side would receive less incremental shadow throughout the year than the Atlantic Avenue side; however, both parts of the open space would receive shadow all day in the winter. In the spring and fall, the Carlton Avenue side would receive shadow for most of the afternoon, and the Atlantic Avenue side would receive shadow for most of the analysis day. The project's incremental shadows would have a significant adverse impact on this open space when the weather is cooler and shadows are longer, in the spring, fall, and winter as they would diminish the attractiveness of this open space.

Since issuance of the DEIS, the project sponsors and NYCHA have developed measures to improve the Atlantic Terminal Houses open space, which would include a combination of some of the following: new landscaping and shade-tolerant plantings, upgrading of existing play areas and additional play equipment, and replacement of benches and other fixtures. The cost of these mitigation measures will be borne by the project sponsors. These commitments are outlined in a letter from the project sponsors to NYCHA, accepted by NYCHA on November 3, 2006 which has been included in Appendix I of the FEIS.

### **HISTORIC RESOURCES**

The proposed Phase I building on Site 5 would cast shadow to the west on the Church of the Redeemer (a S/NR-eligible historic resource) at 24-32 4th Avenue, in the morning during all seasons. In the late spring, summer, and late summer, the durations would be the longest, lasting approximately three hours. These incremental shadows would have a significant adverse impact because they would reduce light to the stained glass windows on the church's east façade in the morning when church services are typically held. Due to the post-DEIS program modification, the building on Site 5 has been reduced in height and its incremental shadows would move off the Church earlier, at 10:45 AM rather than 11:15 AM in the late spring and at 10:30 AM rather than at 11:15 AM in the summer. Morning services currently begin at 11:00 AM on Sundays.

Since issuance of the DEIS, the project sponsors and the church have developed measures to offset the potential effect of the project's shadows on the stained glass windows. These measures, which would be implemented by the project sponsors prior to the time when the proposed project would cast shadows on the stained glass windows of the church, would include: removing the existing protective coverings from all of the stained glass windows, including any patching and repair associated with the removal; cleaning the interior and exterior of the windows; and installation of new transparent protective coverings of similar or greater durability as the existing coverings. These commitments are detailed in a letter from the project sponsors to Bishop Orris Walker, Jr., and accepted by him on behalf of the Church of the Redeemer on October 31, 2006; this letter has been included in Appendix I of the FEIS.

## **F. TRAFFIC AND PARKING**

As presented in Chapter 12, "Traffic and Parking," the proposed project is expected to result in significant adverse traffic impacts in both Phase I (2010) and Phase II (2016) of development. No parking impacts were identified for either development phase. Under Phase I conditions, which includes development of the proposed arena and therefore much of the heaviest traffic demand, 58 intersections would be impacted by 2010, while when fully built-out in 2016, 68 intersections would have one or more movements that would experience significant adverse impacts in one or more of the seven peak hours analyzed. The following provides a discussion and assessment of proposed mitigation measures to address these impacts. As noted in the assessment, the proposed measures would eliminate the majority of these impacts; however, unmitigated impacts would remain in both 2010 and 2016.

### **PROPOSED TRAFFIC MITIGATION MEASURES**

Chapter 1, "Project Description," identifies the project and its overall characteristics. Several improvements to the adjacent street system—such as the widening of both Atlantic Avenue and Flatbush Avenue—have been incorporated into the project in order to facilitate traffic operations. Further, the proposed project includes a major new on-site entrance to the Atlantic Avenue/Pacific Street subway station complex, thereby further maximizing transit accessibility via this node of ten subway routes. The plan also restricts on-site arena parking supply in order to maximize use of available off-site parking spaces spread throughout the area, thereby reducing concentrations of project traffic at the site itself. These and other transportation aspects of the plan would be implemented primarily by 2010 with the completion of Phase I and the opening of the arena.

In addition to the proposed improvements described above, the following traffic mitigation measures are proposed:

#### **PHYSICAL ROADWAY IMPROVEMENTS**

- Reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection
- Operational modifications to Pacific Street
- Construction of an expanded Times Plaza at the intersection of 4th, Flatbush, and Atlantic Avenues
- Geometric and operational modifications to the Atlantic Avenue/Vanderbilt Avenue intersection

DEMAND MANAGEMENT

- Remote parking with price incentives and free shuttle service for arena patrons
- Free charter bus service from Staten Island park & ride lots for arena patrons
- On-site high-occupancy-vehicle parking requirements
- Transit price incentives for arena patrons
- Cross-marketing of area businesses to reduce peak surges
- On-site bicycle parking

TRANSIT SERVICE RECOMMENDATIONS

- Subject to review and approval by NYCT, increased weekday evening and weekend service to the Atlantic Avenue/Pacific Street subway station complex.

TRAFFIC OPERATIONAL IMPROVEMENTS

- PM parking regulation extension to 8 PM
- Other parking regulation adjustments
- Signal timing and phasing adjustments
- Signal installations and upgrades

The most severe traffic impacts are for the most part attributable to demand generated by major events at the arena (see Tables 12-30 and 12-31 in Chapter 12 for project-generated traffic demand by use and Appendix C, Tables C-4 and C-6 for 2010 and 2016 Build v/c ratios, delays, and levels of service). Therefore, the mitigation measures listed above and described in more detail in the following paragraphs are targeted to address this use. The mitigation measures would also address the traffic impacts directly attributable to the proposed project's residential and commercial uses and its reconfigured street grid.

PHYSICAL IMPROVEMENTS

It is proposed to modify the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection as shown in Figure 19-1. The modification would eliminate a northbound "triangular" constraint that severely limits the individual capacities of each of the three major arterials. Fourth Avenue northbound would terminate at Atlantic Avenue instead of at Flatbush Avenue. The southbound movement from Flatbush Avenue to 4th Avenue would be maintained. In conjunction with this measure, a new urban plaza (an expanded Times Plaza) would be constructed, and pedestrian crossings would be modified. Also in conjunction with this measure, Pacific Street would be converted to eastbound operation between 4th and Flatbush Avenues, and Atlantic Avenue would be modified from the Build condition to include an eastbound left-turn lane at Fort Greene Place. The complementary operational changes to the adjacent streets to accommodate this major restructuring of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection would include:

1. Elimination of northbound 4th Avenue between Atlantic and Flatbush Avenues;
2. Modifications to 4th Avenue lane designations between Dean Street and Atlantic Avenue;
3. Conversion of Pacific Street from two-way operation (in the Build condition) to one-way eastbound operation with two thru-lanes from 4th Avenue to Flatbush Avenue;

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4. Installation of a new traffic signal and crosswalk at the intersection of Pacific Street and Flatbush Avenue;
5. Introduction of an eastbound left-turn lane on Atlantic Avenue at Fort Greene Place;
6. Striping a westbound right-turn lane on Atlantic Avenue for 150 feet approaching 3rd Avenue;
7. Construction of expanded pedestrian spaces at Times Plaza along with crosswalk changes; and
8. Areawide signal coordination and timing changes.

Terminating northbound 4th Avenue at Atlantic Avenue would eliminate the fixed linkage of Flatbush, Atlantic, and 4th Avenues, which currently results in queuing and effectively reduces each avenue's capacity. Pedestrians would benefit from the expansion of pedestrian space at Times Plaza and from the introduction of a new 35-second all-pedestrian phase at 4th Avenue/Flatbush Avenue/Hanson Place.

Tables C-11 and C-12 in Appendix C show the expected traffic redistribution in conjunction with this mitigation measure.

As shown in Figure 19-2, geometric and operational improvements to enhance vehicle flow and pedestrian safety are also proposed as mitigation at the intersection of Atlantic and Vanderbilt Avenues. These improvements would include:

1. Elimination of the eastbound Atlantic Avenue left-turn movement to Vanderbilt Avenue. The existing median on this approach would be widened to 15 feet to provide additional pedestrian refuge space;
2. Implementation of a no standing anytime regulation for 150 feet along the south curb on eastbound Atlantic Avenue approaching Vanderbilt Avenue (in place of the existing no standing 4-7 PM regulation) and re-striping the approach to accommodate an exclusive right-turn-only lane;
3. Re-striping Vanderbilt Avenue between Atlantic Avenue and Pacific Street to provide for four northbound travel lanes and two southbound travel lanes;
4. The narrowing of the west sidewalk along Vanderbilt Avenue between Atlantic Avenue and Pacific Street from 20 feet to 12.5 feet in width to accommodate a new lay-by lane along the west curb; and
5. Signal timing changes.

In addition to improving traffic flow through the intersection, these modifications would enhance vehicular and pedestrian safety by eliminating potential conflicts associated with the eastbound left-turn movement, better aligning the northbound approach with the receiving lanes on the north side of Atlantic Avenue, and providing a wider pedestrian refuge on the Atlantic Avenue median adjacent to the west crosswalk.

### **DEMAND MANAGEMENT**

The mitigation plan also includes a comprehensive package of demand management strategies to reduce traffic congestion associated with Nets games at the proposed arena, especially at locations in close proximity to the project site. Six strategies are proposed, including transit fare incentives, bus service from park and ride lots on Staten Island, HOV requirements for on-site

arena parking, free on-site bicycle parking, the cross-marketing of area businesses to reduce peak surges, and remote parking with price incentives and free shuttle service . These strategies are discussed in more detail below.

### TRANSIT INCENTIVE

The objective of this strategy is to achieve a reduction in auto trips generated by a weekday or weekend basketball game by providing an incentive to ride transit via a free fare. It is estimated for the purposes of the mitigation analyses that providing a free transit fare to Nets ticket purchasers would result in at least a ten percent increase in previously estimated subway trips generated by a weekday or weekend basketball game. This is a conservative assumption given that it corresponds to a fare elasticity of -0.20 for discretionary travel (i.e., a 100 percent change in pay-per-ride fares, representing approximately 50 percent of all fares, would yield a ten percent change in overall ridership) for a situation where the fare is being entirely eliminated and where the project site is highly transit accessible and the proposed improvements to the Atlantic Avenue/Pacific Street station complex would bring riders directly to the front door of the arena.

Much of the research on fare elasticity has typically focused on fare increases and not decreases. The elasticity for fare increases for peak hour travel (mostly journey-to-work travel) averaged -0.18 for cities with over one million population, with the off-peak (mostly discretionary travel) having an average elasticity of -0.39.<sup>1</sup> As elasticity is a measure of the change in ridership resulting from a change in fares, a larger negative elasticity number (such as -0.39 versus -0.20) implies that a reduction in fares would have a greater effect on increasing transit ridership. In New York City, transit fare incentive programs have been implemented in the past, the most recent example of which was a weekend half-fare holiday bonus program implemented in late November and December of 2005. NYC Transit reports a -0.2 elasticity rate based on data collected during this program. Some effects of elasticity have also been noted (although not documented in formal research) in relation to the monthly MetroCard, the introduction of which has resulted in a decrease in the average per ride fare, and a commensurate increase in overall subway ridership. From 1996 (when MetroCard was initiated) to 2002, ridership on the subway and bus systems increased by approximately 36 percent, while the average non-student fare decreased by 34 percent in 1996 dollars.<sup>2</sup> This trend is shown in Figure 19-3. The elasticity rate implied from these data is almost -1.0. The rate reflects the elimination of two-zone fares (an effective decrease in transit fares), but does not reflect the growth in population and/or growth in jobs (not additive variables) in the period.

On a weekday, a 10 percent increase in the number of arena-generated subway trips would increase the subway mode share from 48.2 percent to 53.0 percent,<sup>3</sup> while correspondingly decreasing the auto mode share from 35.4 percent to about 30.6 percent.<sup>3</sup> This would be equivalent to a roughly 14 percent reduction in arena auto trips. To achieve this, it is proposed to

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<sup>1</sup>*"Fare Elasticity and Its Application to Forecasting Transit Demand," American Public Transit Association, 1991.*

<sup>2</sup>*"2002 Subway and Bus Ridership Report", Office of Management and Budget, MTA New York city Transit, May 2003.*

<sup>3</sup>*Average of inbound and outbound mode shares.*

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offer a free round-trip subway fare (presently a \$4 value) to Nets fans when they purchase tickets. This program would be targeted to fans likely to travel by auto from areas accessible by transit to maximize its effectiveness. The mechanism for providing this free fare would be designed in coordination with NYC Transit.

It is anticipated that this transit fare incentive would be effective at reducing auto trips with origins not only in the four boroughs directly served by the subway (Manhattan, Brooklyn, Queens and the Bronx), but also auto trips with origins in Staten Island and outlying suburbs. Providing a free round-trip subway fare would reduce the total transit mode cost for trips from Staten Island and outlying suburbs accessible by subway in combination with another transit mode such as commuter rail, bus and ferry. A \$4 (present value) savings per person on a round-trip subway ride would make trips from New Jersey via NJ Transit trains (Penn Station) and buses (Port Authority Bus Terminal), the PATH system or ferries more attractive on a cost basis. Trips from Westchester or Connecticut via Metro-North and a subway ride from Grand Central Terminal would similarly benefit. Staten Islanders using NYC Transit buses to reach the subway in Fort Hamilton, Brooklyn would have a fare-free trip, as would those using the combination of the (free) Staten Island Ferry and the subway from Lower Manhattan.

The final design of this innovative fare-incentive program would be developed with NYCT in order to ensure that it is targeted to the auto-oriented user in areas accessible by transit to maximize its effectiveness, and the entire program would be subject to review and approval by NYCT.

### STATEN ISLAND PARK AND RIDE BUS SERVICE

Staten Island and New Jersey-based auto trips would account for approximately 26 percent of all auto trips generated by a Nets game at the arena. A dedicated bus service from two of the park and ride facilities on Staten Island is proposed to intercept many of the trips from this high-auto market en route to the arena from Staten Island and neighboring areas of New Jersey. For this measure, the project sponsors would contract for a free charter bus service that would operate directly to the arena from two existing park-and-ride facilities on Staten Island. As shown in Figure 19-4, the first would likely be the Outerbridge Park and Ride located at the southern end of Staten Island at the intersection of the West Shore Expressway and Korean War Veterans Parkway. In addition to attracting Staten Island residents, it is anticipated that buses operating from this facility would intercept some trips from New Jersey traveling via the Outerbridge Crossing connecting Staten Island to Perth Amboy. The second facility would likely be the Father Capodanno Park and Ride located on Father Capodanno Boulevard in the South Beach section of the island, south of the Verrazano Narrows Bridge. Buses serving this facility would attract trips from the northern end of Staten Island as well as intercept some New Jersey-based trips using the Staten Island Expressway via the Goethals and Bayonne Bridges. (It should be noted that the park and ride facilities selected for this service may be adjusted after implementation to maximize the effectiveness of this proposed measure.)

It is anticipated that when ordering arena tickets (typically on-line), fans would be provided with the opportunity to reserve space on buses operating from either of these two facilities. (Fans arriving without a reservation would likely be accommodated on a space-available basis.) The buses would be operated to meet the anticipated demand, with approximately six 44-seat buses operating for each game providing for a capacity of approximately 264 persons. This capacity would be equivalent to approximately five percent of total arena auto trips. For a Nets game with a 7:30 PM start time, multiple departures from the Outerbridge Park & Ride (the furthest of the

two facilities) would typically be scheduled during the 5:30 to 6:00 PM period to provide sufficient time to arrive at the arena and participate in any pre-game activities that are planned. Some or all of these buses may make intermediate stops at the Father Capodanno Park and Ride, while one or more buses may originate at that latter location if demand warrants. Return trips would begin departing at the conclusion of each game, with buses leaving as they are filled.

#### HIGH OCCUPANCY VEHICLE (HOV) PARKING

To encourage higher occupancy in auto travel to and from the arena and to discourage single and two-person auto trips, approximately 600 of the 1,100 parking spaces available on-site for use by fans at a Nets basketball game would have a three or more person requirement after 5 PM on game days. This would be advertised for fans purchasing tickets on-line. The objective is to encourage increased vehicle occupancy by using a location incentive. The remaining 500 spaces would be dedicated to suites and premium seating and would not be subject to the HOV parking requirements.

#### BICYCLE PARKING

Any ticket-holding fan arriving at a Nets game at the arena on a bicycle would be provided with free indoor bicycle storage at a facility controlled by the project sponsors. As discussed in Chapter 12, the proposed Atlantic Yards bicycle station would be a secured, manned facility providing storage for 400 bicycles. It is anticipated that this facility would be located on the arena block in ground-floor space along the 6th Avenue corridor. At this location it would be conveniently situated next to the arena and easily accessible from the bicycle lanes on Dean and Bergen Streets. As currently contemplated, in addition to dedicated bicycle storage space, the facility would include amenities such as lockers, restrooms and a security desk. As with other demand management programs, this incentive would be advertised to Nets fans purchasing tickets on-line.

#### CROSS-MARKETING

As part of the on-line (and other) sales programs, the project sponsor would institute a cross-marketing program to identify area attractions and businesses. The objective would be to encourage arena attendees to spread out arrival and departure surges by dining, shopping or undertaking other activities (some sponsored by the Nets) before and/or after each Nets game.

#### REMOTE PARKING

This measure is intended to intercept project-generated auto trips en route to the arena on the periphery of Downtown Brooklyn. For this measure, the project sponsors would set up a remote parking supply equivalent to up to 20 percent of the expected demand for each basketball game at the arena (approximately 500 spaces). When ordering arena tickets (usually on-line), fans who drive would also be offered different parking options, including discounted parking spaces. Parking passes for either location could be purchased along with Nets tickets, and the best routes to each location would be identified. These spaces would be sold at a 50 percent discount to the parking space cost at or near the arena. Free shuttle buses operating on a 10-minute headway and provided by the project sponsors would transport fans between the arena and the remote garages.

The remote parking strategy, while programmed to offer a substantial discount for up to 500 spaces, is conservatively assumed to be only 50 percent effective, both on weekdays and on weekends. The analysis considers 200 intercepted spaces at MetroTech (at a garage on Flatbush

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Avenue Extension just north of Myrtle Avenue) and 50 spaces at a garage at Long Island College Hospital at the western end of Atlantic Avenue (near the Brooklyn-Queens Expressway). Accordingly, these remotely-parked vehicles have been removed from portions of the internal network in the analyses of mitigated conditions and replaced with shuttle buses (six per hour, per direction).

### **TRANSIT SERVICE RECOMMENDATIONS**

Improved subway and bus service would also enhance transit ridership. As a matter of course, NYCT adjusts frequency levels to meet demand requirements and established service standards. For subway service, in conjunction with the proposed project, it is being recommended to NYCT to increase weekday evening and weekend service to the Atlantic Avenue/Pacific Street subway station complex. This would help to accommodate weeknight and weekend demand from events at the proposed arena, the increase in residential demand from development of the up to 6,430 new dwelling units at the project site, and overall increases in evening and weekend subway ridership to/from Brooklyn. Providing additional service would also help to address potential crowding on the platforms at the Atlantic Avenue/Pacific Street subway station complex following a basketball game or other major event at the arena. This entire program would also be subject to review and approval by NYCT. To be conservative, no credit is taken for its effectiveness.

### **TRAFFIC OPERATIONAL IMPROVEMENTS**

In addition to the traffic mitigation measures outlined above, a range of operational changes to the surrounding street network are also proposed as components of the mitigation plan. These measures typically include signal phasing and timing modifications, parking regulation modifications, and changes to lane striping and pavement markings. For example, one commonly applied measure is the extension of weekday 4-7 PM parking restrictions until 8 PM on streets in the immediate vicinity of the project site to facilitate traffic flow en route to an evening event at the arena. Changes to signal phasing and timing are also incorporated into the traffic mitigation plan to reflect differing traffic patterns associated with diverted traffic due to street closures as well as the effects of project-generated demand. Tables 19-1 and 19-2 summarize the measures developed to mitigate the proposed project's significant adverse traffic impacts for each analyzed intersection in 2010 and 2016, respectively. The effects of the parking regulation modifications proposed under the mitigation plan are discussed later in this chapter.

It should be noted that, while similar types of operational improvement measures are proposed to mitigate the project's significant adverse impacts in both 2010 and 2016, the mitigation plans for the two Build scenarios differ at some locations. This is due to the need to account for not only the additional peak hour traffic volumes that would occur with development of Phase II of the proposed project, but also changes to the study area street network between 2010 and 2016 associated with other development projects. For example, at the intersection of Flatbush Avenue Extension and Willoughby Street, the 2010 mitigation plan recommends adding green time to the exclusive northbound Flatbush Avenue left-turn phase in the PM peak hour. However, by 2016 with implementation of the Downtown Brooklyn Development project (see Chapter 12, "Traffic and Parking"), the northbound left-turn movement at this intersection will be eliminated, with left-turning traffic channeled to westbound Willoughby Street via Fleet Place. This change in the 2016 No Build street network and corresponding changes to the intersection's signalization plan (elimination of the exclusive northbound left-turn phase) is reflected in the 2016 traffic mitigation plan which recommends adding green time to northbound and southbound Flatbush Avenue.

**Table 19-1**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Flatbush Avenue (NB/SB) @ Tillary Street (EB/WB)	NB/SB	41 (all times)	41/41/43/41/41/41/41	Transfer 1 sec from NB only phase to EB/WB in PM
	NB	17 (all times)	17/17/14/17/17/17/17	Transfer 2 sec from NB only phase to NB/SB in PM
	EB/WB	38 (all times)	38/38/39/38/38/40/38	Transfer 2 sec from EB/WB exclusive left turn to EB/WB in Sat 1-2 PM
	EB-LT/WB-LT	24 (all times)	24/24/24/24/24/22/24	
Flatbush Avenue (NB/SB) @ Myrtle Avenue (EB/WB)	NB/SB	66 (all times)	66/67/66/66/69/66/66	Transfer 1 sec from SB exclusive left turn phase to NB/SB in MD
	EB/WB	38 (all times)	38/38/38/38/35/38/38	Transfer 3 sec from EB/WB to NB/SB in 10-11 PM
	SB-LT	16 (all times)	16/15/16/16/16/16/16	
Flatbush Avenue (NB/SB) @ Willoughby Street (EB/WB)	NB/SB	70/66/70/70/66/66/66	70/66/68/70/66/66/66	Transfer 2 sec from NB/SB to NB only phase in PM
	EB/WB	35/37/35/35/37/37/37	35/37/35/35/37/37/37	Volumes reduced through transit incentive mitigation measures
	NB-LT/EB-RT	15/17/15/15/17/17/17	15/17/17/15/17/17/17	
Flatbush Avenue (NB/SB) @ DeKalb Avenue (WB)	NB/SB	70 (all times)	n/c	Volumes reduced through transit incentive mitigation measures
	WB	40 (all times)	n/c	
	Ped	10 (all times)	n/c	
Flatbush Avenue (NB/SB) @ Fulton Street (EB/WB)	NB/SB	54/48/50/48/48/48/48	54/48/50/47/48/47/50	Transfer 2 sec from EB/WB and 1 sec from NB/SB to SB only in 7-8 PM
	Ped.	7 / 7 / 7 / 7 / 7 / 7 / 7	n/c	Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
	EB/WB	35/36/34/36/36/36/36	35/36/34/34/35/35/36	Transfer 1 sec from EB/WB to SB/WB exclusive turn phase in 10-11 PM
	SB-LT/WB-RT	24/29/29/29/29/29/29	24/29/29/32/30/31/27	Transfer 2 sec from SB/WB exclusive turn phase to NB/SB in Sat 4-5 PM Transfer 1 sec each NB/SB and EB/WB to SB/WB turn phase in Sat 1-2 PM
Flatbush Avenue (NB/SB) @ Schermerhorn Street/ Lafayette Avenue (EB/WB)	NB/SB	53 (all times)	56/53/54/56/56/53/56	Transfer 2 sec from EB/WB to NB/SB and 1 sec from EB to NB/SB in AM
	SB	15 (all times)	15/15/18/1/15/19/18	Transfer 3 sec from EB only to SB in PM, 7-8 PM, Sat 4-5 PM
	EB/WB	24 (all times)	22/24/24/24/24/22/24	Transfer 1 sec from EB only to NB/SB in PM, Transfer 3 sec from EB only to NB/SB in 10-11PM
	EB	28 (all times)	27/28/24/25/25/26/25	Transfer 2 sec each from EB only and EB/WB to SB in Sat 1-2 PM
Flatbush Avenue (NB/SB) @ 4th Avenue/Hanson Pl. (EB)	NB/SB	72/62/72/72/62/62/62	85/85/85/85/85/85/85	Eliminate EB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan.
	EB	40/50/40/40/50/50/50	-----	
	Ped.	8 (all times)	35/35/35/35/35/35/35	

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>Flatbush Avenue (NB/SB) @ Atlantic Avenue (EB/WB)</b>	NB/SB EB/WB Ped.	72/62/72/72/62/62/62 40/50/40/40/50/50/50 8 (all times)	69/62/69/69/62/62/59 43/50/43/43/50/50/53	Transfer 3 sec from NB/SB to EB/WB in AM, PM, 7-8 PM, & Sat 4-5 PM Re-stripe WB approach from three T and one R lane to two T, one T+R and one R lane
<b>Flatbush Avenue (NB/SB) @ Pacific Street (EB/WB)</b>	NB/SB EB/WB		75 (all times) 45 (all times)	Installation of New Traffic Signal
<b>Flatbush Avenue (NB/SB) @ 5th Avenue (EB/WB)</b>	NB/SB EB/WB	75 (all times) 45 (all times)	n/c n/c	Re-stripe EB approach from two L+R lanes to one L+R lane
<b>Flatbush Avenue (NB/SB) @ Dean Street (EB)</b>	NB/SB EB	75 (all times) 45 (all times)	75/75/72/72/75/72/72 45/45/48/48/45/48/48	Re-stripe EB approach from LT+R to LT+TR. Eliminate SB left turns during all periods. Transfer 3 sec from NB/SB to EB/WB in PM, 7-8 PM, Sat 1-2, Sat 4-5 PM
<b>Flatbush Avenue (NB/SB) @ Bergen Street (WB)</b>	NB/SB WB	80/75/75/75/75/75/75 40/45/45/45/45/45/45	77/75/75/75/75/75/75 43/45/45/45/45/45/45	Eliminate NB left turns during all periods. Transfer 3 sec from NB/SB to EB/WB in AM
<b>Flatbush Avenue (NB/SB) @ 6th Avenue (EB/WB)</b>	NB/SB EB/WB	75 (all times) 45 (all times)	71/75/75/75/75/75/72 49/45/45/45/45/45/48	Transfer 4 sec from NB/SB to EB/WB in AM Transfer 3 sec from NB/SB to EB/WB in Sat 4-5 PM
<b>Flatbush Avenue (NB/SB) @ St. Mark's Place (EB)</b>	NB/SB EB	75 (all times) 45 (all times)	75/75/75/75/75/75/75 45/45/45/45/45/45/45	Implement no standing, 7-10AM regulation for 100' along south curb of EB approach.
<b>Flatbush Avenue (NB/SB) @ Sterling Place (WB)</b>	NB/SB WB	75 (all times) 45 (all times)	75/75/75/75/75/79/79 45/45/45/45/45/41/41	Transfer 4 sec from EB/WB to NB/SB in Sat 1-2PM and Sat 4-5 PM.
<b>Atlantic Avenue (EB/WB) @ Hicks Street (NB)</b>	NB EB/WB	65/45/42/42/45/42/42 55/45/78/78/45/78/78	62/45/42/42/45/42/42 58/45/78/78/45/78/78	Transfer 3 sec from NB to EB/WB in AM.
<b>Atlantic Avenue (EB/WB) @ Henry Street (SB)</b>	SB EB/WB	48/40/46/46/40/42/42 72/50/74/74/50/78/78	n/c n/c	Volumes reduced through transit incentive mitigation measures
<b>Atlantic Avenue (EB/WB) @ Court Street (SB)</b>	SB EB/WB WB	42/32/42/42/32/32/32 65/48/65/65/48/78/78 13/10/13/13/10/10/10	n/c n/c n/c	Re-stripe WB approach from L+T to 2 LT lanes.

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>Atlantic Avenue (EB/WB) @ Boerum Place (SB)</b>	SB EB/WB EB+WB-RT	52/45/60/60/45/60/60 42/32/42/42/32/42/42 26/13/18/18/13/18/18	52/42/60/60/45/57/60 42/35/42/42/32/45/42 n/c	Transfer 3 sec from SB to EB/WB in MD, Sat 1-2 PM
<b>Atlantic Avenue (EB/WB) @ Smith Street (NB)</b>	NB EB/WB	48/40/45/45/40/45/45 72/50/75/75/50/75/75	44/37/49/45/40/41/41 76/53/71/75/50/79/79	Transfer 4 sec during AM, Sat 1-2 PM, Sat 4-5 PM and 3 sec during MD from NB to EB/WB Transfer 4 sec during PM from EB/WB to NB Implement no standing Sat-Sun 12PM to 7PM for 100' along NB approach Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Hoyt Street (SB)</b>	SB EB/WB	48/30/45/45/30/45/45 72/60/75/75/60/75/75	48/30/42/45/30/45/42 72/60/78/75/60/75/78	Transfer 3 sec from SB to EB/WB in PM, Sat 4-5PM Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Bond Street (NB)</b>	NB EB/WB	48/30/45/45/30/45/45 72/60/75/75/60/75/75	45/30/45/45/30/45/45 75/60/75/75/60/75/75	Transfer 3 sec from NB to EB/WB in AM. Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Nevins Street (SB)</b>	SB EB/WB	48/30/42/42/30/42/42 72/60/78/78/60/78/78	45/30/39/42/30/42/42 75/60/81/78/60/78/78	Transfer 3 sec from SB to EB/WB in AM, PM Extend duration of parking regulations from 4PM-7PM to 4PM-8PM. Implement no standing 4PM-7PM for 150' along SB approach
<b>Atlantic Avenue (EB/WB) @ 3rd Avenue (NB/SB)</b>	NB/SB Ped. EB/WB	49/39/49/49/39/39/39 7 (all times) 64/74/64/64/74/74/74	46/39/49/49/39/39/39 n/c 67/74/64/64/74/74/74	Implement no standing anytime for 150' along WB approach and re-stripe to include an exclusive right-turn lane. Transfer 3 sec from NB/SB to EB/WB in AM. Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ 4th Avenue (NB/SB)</b>	NB/SB NB SB+NB-RT Ped. EB/WB WB	39/48/53/53/48/48/48 ----- ----- 6 (all times) 57/38/40/40/38/38/38 18/26/21/21/26/26/26	----- 39/39/33/33/33/33/38 32/31/37/37/37/37/33 ----- 49/50/50/50/50/50/48 -----	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Re-stripe NB approach to L+L+R+R. Implement new signal timing plan.
<b>Atlantic Avenue (EB/WB) @ 5th Ave/Ft. Greene Place (NB/SB)</b>	NB/SB SB EB EB/WB	60/48/60/60/48/48/48 ----- ----- 60/72/60/60/72/72/72	----- 45/48/45/45/45/42/44 15/15/15/15/15/16/9 60/57/60/60/60/62/67	Re-stripe EB approach to include an exclusive left-turn lane and three through lanes. Implement new leading EB phase.

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Atlantic Avenue (EB/WB) @ 6th Ave/S. Portland Ave (NB/SB)	SB	42/36/42/42/36/42/42	-----	Implement no standing anytime for 100' along SB approach and re-stripe to include two LTR lanes Implement new leading WB phase
	NB/SB		45/33/52/42/42/42/42	
	WB	-----	14/0/17/17/17/10/0	
	EB/WB	78/54/78/78/54/78/78	61/57/51/61/61/68/78	
Atlantic Avenue (EB/WB) @ Carlton Avenue (NB)	NB	42/36/42/42/36/42/42	42/36/42/42/36/42/42	Implement new WB only phase during PM & 7-8 PM
	WB		0 / 0 / 10 / 10 / 0 / 0 / 0	
	EB/WB	78/54/78/78/54/78/78	78/54/68/68/54/78/78	
Atlantic Avenue (EB/WB) @ Clermont Avenue (SB)	SB	42/36/42/42/36/42/42	40/36/42/42/36/42/42	Transfer 2 sec from SB to EB/WB in AM.
	EB/WB	78/54/78/78/54/78/78	80/54/78/78/54/78/78	
Atlantic Avenue (EB/WB) @ Vanderbilt Avenue (NB/SB)	NB	13/10/13/13/10/13/13	13/10/13/13/10/13/13	Elimination of EB left turn. Transfer 8 sec in 7-8PM & Sat 1-2 PM from EB/WB to WB only phase Transfer 2 sec from NB/SB 1sec to WB only & 1 sec to EB/WB in Sat 4-5 PM. Implement new striping along Northbound approach to increase current capacity from 3L to 4L. New NB striping would include L+LT+T+R. Implement no standing for 150' on south curb of EB approach for exclusive right turn lane
	NB/SB	40/30/35/35/30/40/40	40/30/35/35/30/40/38	
	WB	13/10/13/13/10/13/13	13/10/13/21/10/21/14	
	EB/WB	54/40/59/59/40/54/54	54/40/59/51/40/46/55	
Atlantic Avenue (EB/WB) @ Clinton Avenue (SB)	SB	48/36/42/42/36/42/42	n/c	Volumes reduced through transit incentive mitigation measures
	EB/WB	72/54/78/78/54/78/78	n/c	
Atlantic Avenue (EB/WB) @ Washington Avenue (NB/SB)	NB/SB	43/29/32/32/29/32/32	43/32/32/33/29/35/35	Transfer 3 sec from EB/WB to NB/SB in MD, Sat 1-2 PM, Sat 4-5 PM Transfer 1 sec from WB only phase to NB/SB in 7-8 PM
	WB	16/12/16/16/12/16/16	16/12/16/15/12/16/16	
	EB/WB	61/49/72/72/49/72/72	61/46/72/72/49/69/69	
Atlantic Avenue (EB/WB) @ Grand Avenue (SB)	SB	42/36/42/42/36/42/42	n/c	No Practicable Mitigation
	EB/WB	78/54/78/78/54/78/78	n/c	
3rd Avenue (NB/SB) @ Dean Street (EB)	NB/SB	82/61/85/85/61/80/80	82/61/82/81/61/76/76	Transfer 3 sec from NB/SB to EB in PM. Transfer 4 sec from NB/SB to EB in Sat 1-2PM & 4-5, 7-8PM Implement new no standing anytime for 100' from along south curb of EB approach for new RT lane
	EB	38/29/35/35/29/40/40	38/29/38/39/29/44/44	
4th Avenue (NB/SB) @ Pacific Street (WB)	NB/SB	40/61/74/74/35/84/84	60/61/84/84/50/84/84	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Re-stripe NB approach to L+T+TR+R. Convert Pacific Street to one-way EB operation btwn 4th and Flatbush Aves. Implement new signal timing plan.
	Ped.	-----	50/59/36/36/40/36/36	
	WB	80/59/36/36/55/36/36	-----	

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(c) - clearance phase.

ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>4th Avenue (NB/SB) @</b> Dean Street (EB)	NB/SB EB	44/65/84/84/41/84/84 76/55/36/36/49/36/36	60/65/84/81/41/81/84 60/55/36/39/49/39/36	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan in AM. Transfer 3 sec from NB/SB to EB in 7-8 PM, Sat 1-2PM
<b>4th Avenue (NB/SB) @</b> Bergen Street (WB)	NB/SB WB	48/70/84/84/51/84/84 72/50/36/36/39/36/36	68/70/81/81/51/80/80 53/50/39/39/39/40/40	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Transfer 3 sec from NB/SB to WB in 7-8PM Implement new signal timing in AM, Transfer 4 sec from NB/SB to WB in SAT 1-2PM & Sat 4-5PM
<b>4th Avenue (NB/SB) @</b> St. Mark's Place (EB)	NB/SB EB	52/74/84/84/61/84/84 68/46/36/36/29/36/36	65/74/84/84/61/84/84 55/46/36/36/29/36/36	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan.
<b>4th Avenue (NB/SB) @</b> Union Street (EB/WB)	NB/SB EB/WB	80/54/84/84/47/84/84 40/66/36/36/43/36/36	80/54/84/84/47/84/84 40/66/36/36/43/36/36	No Practicable Mitigation
<b>5th Avenue (NB/SB) @</b> Dean Street (EB)	SB NB/SB EB	48 (all times) 38 (all times) 34 (all times)	45/48/45/45/45/45/43 38/38/38/38/38/41 37/34/37/37/37/37/36	Transfer 3 sec from SB to EB in AM, PM, 7-8 PM, 10-11 PM, Sat 1-2PM Transfer 3 sec from SB to NB/SB and 2 sec from SB to EB in Sat 4-5 PM Re-stripe SB approach to include an exclusive left-turn lane and one through lane.
<b>5th Avenue (NB/SB) @</b> Bergen Street (WB)	NB/SB WB	83 (all times) 37 (all times)	80/79/83/80/83/80/83 40/41/37/40/37/40/37	Implement no standing anytime for 100' along south curb of WB approach and re-stripe to include an exclusive left-turn lane. Transfer 3 sec from NB/SB to WB in AM, 7-8PM, Sat1-2PM & 4 sec in MD.
<b>6th Avenue (NB/SB) @</b> Dean Street (EB)	NB/SB EB	30 (all times) 30 (all times)	30/30/30/27/27/26/27 30/30/30/33/33/34/33	Transfer 3 sec from NB/SB to EB in 7-8 PM, 10-11 PM, Sat 4-5 PM Transfer 4 Sec from NB/SB to EB in Sat 1-2PM
<b>6th Avenue (NB/SB) @</b> Bergen Street (EB)	NB/SB WB	30 (all times) 30 (all times)	30/30/30/30/30/33/30 30/30/30/30/30/27/30	Transfer 3 sec from WB to NB/SB in Sat 1-2 PM Implement no standing Sat-Sun from 12PM-7PM along east curb of NB approach
<b>Carlton Avenue (NB) @</b> Park Avenue (EB/WB)	NB EB/WB	42 (all times) 78 (all times)	42/42/42/42/45/42/42 78/78/78/78/75/78/78	Transfer 3 sec from EB/WB to NB in 10-11 PM
<b>Carlton Avenue (NB) @</b> Myrtle Avenue (EB/WB)	NB EB/WB	24/24/24/24/24/50/24 66/66/66/66/66/70/66	n/c n/c	Volumes reduced through transit incentive mitigation measures

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Carlton Avenue (NB) @ Fulton Street (EB/WB)	NB EB/WB	37 (all times) 53/53/83/83/53/83/83	37/37/40/37/37/40/37 53/53/80/83/53/80/83	Transfer 3 sec from EB/WB to NB in PM, Sat 1-2 PM
Carlton Avenue (NB) @ Pacific Street (WB)	NB/SB EB	36 (all times) 24 (all times)	36/36/36/36/36/36/40 24/24/24/24/24/24/20	Transfer 4 sec from EB to NB Sat 4-5 PM
Carlton Avenue (NB) @ Dean Street (EB)	NB EB	36 (all times) 24 (all times)	36/36/32/36/36/32/33 24/24/28/24/24/28/27	Implement no standing anytime for 100' along EB approach & re-stripe to include L+T Transfer 4 sec from NB to EB in PM, Sat 1-2PM. Transfer 3 sec from NB to EB in Sat 4-5PM
Carlton Avenue (NB) @ Bergen Street (WB)	NB WB	36 (all times) 24 (all times)	33/36/36/36/36/36/33 27/24/24/24/24/24/27	Transfer 3 sec from NB to WB in AM. Transfer 3 sec from NB to WB in Sat 4-5 PM
Vanderbilt Avenue (NB/SB) @ Park Avenue (EB/WB)	NB/SB EB/WB	42 (all times) 78 (all times)	42/42/42/42/42/42/45 78/78/78/78/78/78/75	Transfer 3 sec from WB to NB in Sat 4-5 PM
Vanderbilt Avenue (NB/SB) @ Myrtle Avenue (EB/WB)	NB/SB EB/WB	24/24/24/24/24/50/24 66/66/66/66/66/70/66	27/27/27/28/27/53/27 63/63/63/62/63/67/63	Transfer 4 sec from EB/WB to NB/SB in 7-8 PM. Transfer 3 sec from EB/WB to NB/SB in All Other Periods.
Vanderbilt Avenue (NB/SB) @ DeKalb Avenue (EB/WB)	NB/SB WB	24 (all times) 36 (all times)	27/24/27/27/24/24/24 33/36/33/33/36/36/36	Transfer 3 sec from EB/WB to NB/SB in AM, PM, 7-8 PM
Vanderbilt Avenue (NB/SB) @ Fulton Street (EB/WB)	NB/SB EB/WB	37 (all times) 53/53/83/83/53/83/83	37/37/37/41/37/41/40 53/53/83/79/53/79/80	Transfer 3 sec from EB/WB to NB/SB in, Sat 4-5 PM Transfer 4 sec from EB/WB to NB/SB in 7-8PM, Sat 1-2PM
Vanderbilt Avenue (NB/SB) @ Dean Street (EB)	NB/SB EB	63 (all times) 27 (all times)	63/63/63/63/60/63/63 27/27/27/27/30/27/27	Implement no standing anytime for 100' along south curb of EB approach and re-stripe to include an exclusive right-turn lane. Transfer 3 sec from NB/SB to EB in 10-11 PM
Vanderbilt Avenue (NB/SB) @ Bergen Street (WB)	NB/SB WB	63 (all times) 27 (all times)	61/63/63/60/63/63/63 29/27/27/30/27/27/27	Implement no standing anytime along length of SB approach. Transfer 2 sec from NB/SB to WB in AM. Transfer 3 sec from NB/SB to WB in PM (pre-game)
Vanderbilt Avenue (NB/SB) @ St. Marks Place (EB)	NB/SB EB	32 (all times) 58 (all times)	n/c n/c	Implement no standing 4-7PM along SB approach and 7AM-10AM along NB approach
Washington Avenue (NB/SB) @ Dean Street (EB)	NB/SB EB	90 (all times) 30 (all times)	90/90/90/90/87/90/87 30/30/30/30/33/30/33	Transfer 3 sec from NB/SB to EB in 10-11 PM, Sat 4-5 PM Implement no standing anytime for 100' along south curb of EB approach & re-stripe to include L+R
Washington Avenue (NB/SB) @ Eastern Parkway (EB/WB)	SB NB/SB EB/WB	15/17/15/15/17/17/17 30/33/30/30/33/33/33 75/50/75/75/50/50/50	15/17/15/18/17/17/21 30/33/30/30/33/33/33 75/50/75/72/50/50/46	Transfer 4 sec from EB/WB to SB in Sat 4-5 PM. Transfer 3 sec from EB/WB to SB in 7-8 PM.

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(c) - clearance phase. ped. - pedestrian phase.

**Table 19-1 continued**  
**Proposed Traffic Mitigation Measures - 2010**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Adams Street (NB/SB) @ Tillary Street (EB/WB)	NB	17 (all times)	16/17/17/17/17/14/17	Transfer 1 sec from NB to SB/WB-RT in AM.
	NB/SB	36 (all times)	36/36/38/36/36/36/36	Transfer 3 sec from EB to SB/WB-RT in , 7-8 PM
	SB/WB-RT	23 (all times)	24/23/23/26/24/26/23	Transfer 2 sec from EB only to NB/SB PM
	EB	19 (all times)	19/19/17/16/18/19/19	Transfer 1 sec from EB to SB/WB-RT in 10-11PM
	EB/WB	25 (all times)	n/c	Transfer 3 sec from NB to Sb/WB-RT in Sat1-2PM
Boerum Place (NB/SB) @ Livingston Street (EB/WB)	SB	18 (all times)	18/18/18/21/15/18/15	Transfer 3 sec from NB/SB to SB in 7-8 PM
	NB/SB	60 (all times)	60/60/60/57/60/60/60	Transfer 3 Sec from SB to EB/WB in 10-11PM, Sat 4-5PM
	EB/WB	42 (all times)	42/42/42/42/45/42/45	
Smith Street (NB) @ Dean Street (EB)	NB	36 (all times)	36/36/36/36/36/36/33	Transfer 3 sec from NB to EB in Sat 4-5 PM
	EB	24 (all times)	24/24/24/24/24/24/21	

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Flatbush Avenue (NB/SB) @ Tillary Street (EB/WB)	NB/SB	41/41/41/41/41/41/41	41/41/44/44/41/40/41	Transfer 1 sec from EB/WB exclusive left turn to EB/WB in PM, 7-8PM, Sat 4-5PM
	NB	17/17/16/17/17/17/17	17/17/16/15/17/20/17	Transfer 3 sec from EB/WB exclusive left turn to NB/SB in PM
	EB/WB	38/38/39/38/38/38/38	38/38/40/41/38/39/39	Transfer 1 sec from NB/SB to EB/WB in Sat 1-2PM, , Transfer 2 sec from NB to EB/WB in 7-8PM
	EB-LT/WB-LT	24/24/24/24/24/24/24	24/24/20/20/24/21/23	Transfer 3 sec from EB/WB exclusive left turn to NB only in 7-8PM, Sat 1-2PM
Flatbush Avenue (NB/SB) @ Myrtle Avenue (EB/WB)	NB/SB	66 (all times)	66/66/67/66/66/66/66	Exclusive NB/SB left turn converted to SB only in MD, 7-8PM, 10-11PM, Sat 1-2PM, Sat 4-5PM
	EB/WB	38 (all times)	38/38/37/38/38/35/37	Transfer 1 sec from EB/WB to NB/SB in PM
	SB-LT/NB-LT	16 (all times)	16 / 0 / 16 / 0 / 0 / 0 / 0	Transfer 1 sec from EB/WB to SB only phase in , Sat 4-5PM
	SB-LT		0 /16/ 0 /16/16/19/17	Transfer 3 sec from EB/WB to SB only phase in, 7-8PM, Sat 1-2PM
Flatbush Avenue (NB/SB) @ Willoughby Street (EB/WB)	NB/SB	67/71/73/73/73/71/71	68/71/73/73/73/71/71	Transfer 1 sec from EB/WB to NB/SB phase in AM
	EB/WB	53/49/47/47/47/71/49	52/49/47/47/47/71/49	Reduced volumes through transit incentives mitigates 7-8PM
Flatbush Avenue (NB/SB) @ DeKalb Avenue (WB)	NB/SB	72/70/72/72/70/70/70	72/70/72/74/70/70/74	
	WB	38/40/38/38/40/40/40	38/40/38/36/40/40/36	Transfer 2 sec from WB to NB/SB phase in 7-8PM
	Ped	10/10/10/10/10/10/10	10/10/10/10/10/10/10	Transfer 4 sec from WB to NB/SB phase in Sat 4-5PM
Flatbush Avenue (NB/SB) @ Fulton Street (EB/WB)	NB/SB	54/48/50/48/48/48/48	54/50/50/48/49/48/48	Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
	Ped.	7 / 7 / 7 / 7 / 7 / 7 / 7	7 / 7 / 7 / 7 / 7 / 7 / 7	Transfer 1 sec from EB/WB to SB/WB exclusive turn phase in MD
	EB/WB	35/36/34/36/36/36/36	35/33/34/36/34/36/36	Transfer 2 sec from EB/WB to NB/SB in 10-11PM
	SB-LT/WB-RT	24/29/29/29/29/29/29	24/30/29/29/30/29/29	
Flatbush Avenue (NB/SB) @ SchermerhornStreet/ Lafayette Avenue (EB/WB)	NB/SB	53 (all times)	56/55/53/53/55/57/53	Transfer 3 sec from EB/WB to NB/SB in AM
	SB	15 (all times)	16/16/15/19/17/15/15	Transfer 1 sec from EB only to SB only in AM and MD
	EB/WB	24 (all times)	21/24/24/24/24/24/24	Transfer 4 sec from EB only to SB only 7-8PM
	EB	28 (all times)	27/25/28/24/24/24/28	Transfer 4 sec from EB only to SB in 10-11PM Transfer 2 sec from EB only to NB/SB in PM, MD Transfer 4 sec from EB only to NB/SB in Sat 1-2MD
Flatbush Avenue (NB/SB) @ 4th Avenue/Hanson Pl. (EB)	NB/SB	72/62/72/72/62/62/62	85/85/85/85/85/85/85	Eliminate EB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan.
	EB	40/50/40/40/50/50/50	-----	
	Ped.	8 (all times)	35/35/35/35/35/35/35	

**Notes:**

- (1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.
- n/c - no change.
- (cl) - clearance phase.
- ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Flatbush Avenue (NB/SB) @ Atlantic Avenue (EB/WB)	NB/SB EB/WB Ped.	72/67/69/69/62/62/62 40/45/43/43/50/50/50 8 (all times)	69/63/66/66/60/59/58 43/49/46/46/52/53/54 n/c	Re-stripe WB approach from three T and one R lane to two T, one T+R and one R lane Transfer 2 sec from NB/SB to EB/WB in 10-11PM Transfer 3 sec from NB/SB to EB/WB in AM, MD, PM, 7-8PM & Sat 1-2PM Transfer 4 sec from NB/SB to EB/WB in MD, Sat 4-5PM
Flatbush Avenue (NB/SB) @ Pacific Street (EB/WB)	NB/SB EB/WB		75/75/72/75/75/75/75 45/45/48/45/45/45/45	Install new traffic signal
Flatbush Avenue (NB/SB) @ 5th Avenue (EB/WB)	NB/SB EB/WB	75 (all times) 45 (all times)	75/75/77/75/75/75/79 45/45/43/45/45/45/41	Re-stripe EB approach from two L+R lanes to one L+R lane Transfer 2 sec from EB to NB/SB in PM, Transfer 4 sec from EB to NB/SB in Sat 4-5PM
Flatbush Avenue (NB/SB) @ Dean Street (EB)	NB/SB EB	75 (all times) 45 (all times)	75/75/72/72/75/71/71 45/45/48/48/45/49/49	Re-stripe EB approach from LT+R to LT+TR. Eliminate SB left turns during all times Transfer 3 sec from NB/SB to EB in PM, 7-8PM. Transfer 4 sec from NB/SB to EB in Sat1-2PM, Sat4-5PM
Flatbush Avenue (NB/SB) @ Bergen Street (WB)	NB/SB WB	80/75/75/75/75/75/75 40/45/45/45/45/45/45	77/75/75/75/75/74/74 43/45/45/45/45/46/46	Eliminate NB left turns during all periods. Transfer 3 sec from NB/SB to EB/WB in AM, Transfer 1 sec from NB/SB to WB in Sat 1-2PM, Sat 4-5PM
Flatbush Avenue (NB/SB) @ 6th Avenue (EB/WB)	NB/SB EB/WB	75 (all times) 45 (all times)	72/75/75/75/75/76/72 48/45/45/45/45/44/48	Transfer 3 sec from NB/SB to EB/WB in AM, Sat PM (post-game) Transfer 1 sec from EB/WB to NB/SB in Sat MD (pre-game)
Flatbush Avenue (NB/SB) @ St. Mark's Place (EB)	NB/SB EB	75 (all times) 45 (all times)	75/74/74/75/75/72/75 45/46/46/45/45/48/45	Implement no standing, 7-10AM regulation for 100' along south curb of EB approach. Transfer 1 sec from NB/SB to EB/WB in MD, PM & transfer 3 sec from NB/SB to EB/WB in Sat 1-2PM
Flatbush Avenue (NB/SB) @ 7th Avenue (EB)	NB/SB EB	75 (all times) 45 (all times)	n/c n/c	Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
Flatbush Avenue (NB/SB) @ Sterling Place (WB)	NB/SB WB	75 (all times) 45 (all times)	75/75/75/75/75/78/75 45/45/45/45/45/42/45	Transfer 3 sec from WB to NB/SB in Sat 1-2PM
Atlantic Avenue (EB/WB) @ Hicks Street (NB)	NB EB/WB	65/42/42/42/45/42/42 55/48/78/78/45/78/78	62/40/42/42/45/42/42 58/50/78/78/45/75/78	Transfer 3 sec from NB to EB/WB in AM Transfer 2 sec from NB to EB/WB in MD

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>Atlantic Avenue (EB/WB) @ Henry Street (SB)</b>	SB WB EB/WB	42/40/43/43/36/43/42 11/14/25/25/14/11/11 67/36/52/52/40/66/67	42/38/43/43/36/43/42 11/14/25/22/14/11/11 67/38/42/55/40/66/67	Transfer 2 sec from SB to EB/WB in MD Transfer 3 sec from WB to EB/WB in 7-8PM Implement no standing Sat-Sun 12PM to 7PM for 100' along east curb of NB approach
<b>Atlantic Avenue (EB/WB) @ Clinton Street (NB)</b>	NB Ped. EB/WB	55/34/52/52/36/42/42 8 (all times) 57/48/60/60/46/70/70	52/34/50/52/36/42/42 8 (all times) 60/48/62/60/46/70/70	Reduced volumes through transit incentives mitigates 7-8PM Transfer 3 sec from NB to EB/WB in AM. Transfer 2 sec from NB to EB/WB in PM. Transfer 2 sec from NB to EB/WB in PM.
<b>Atlantic Avenue (EB/WB) @ Boerum Place (SB)</b>	SB EB/WB EB+WB-RT	50/40/57/60/45/60/60 43/37/44/42/32/42/42 27/13/19/18/13/18/18	49/37/57/60/42/57/57 45/40/45/42/35/45/45 26/13/18/18/13/18/18	Transfer 1 sec from SB to EB/WB in AM, PM. Transfer 1 sec from EB+WB-RT to EB/WB in AM. Transfer 3 sec from SB to EB/WB in MD, Sat 1-2PM & Sat 4-5PM Transfer 3 sec from SB to EB/WB in 10-11PM
<b>Atlantic Avenue (EB/WB) @ Smith Street (NB)</b>	NB EB/WB	48/40/45/45/40/45/45 72/50/75/75/50/75/75	44/37/48/45/40/41/41 76/53/72/75/50/79/79	Transfer 4 sec during AM, Sat MD, Sat PM and 3 sec during MD from NB to EB/WB Transfer 3 sec during PM from EB/WB to NB Implement no standing Sat-Sun 12PM to 7PM for 100' along west curb of NB approach Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Hoyt Street (SB)</b>	SB EB/WB	46/30/45/45/30/45/45 74/60/75/75/60/75/75	44/30/42/45/30/45/45 76/60/78/75/60/75/75	Transfer 2 sec from SB to EB/WB in AM. Transfer 3 sec from SB to EB/WB in PM. Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Bond Street (NB)</b>	NB EB/WB	45/27/45/45/30/45/45 75/63/75/75/60/75/75	42/28/45/45/30/45/45 78/62/75/75/60/75/75	Transfer 3 sec from NB to EB/WB in AM. Transfer 1 sec from EB/WB to NB in MD. Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
<b>Atlantic Avenue (EB/WB) @ Nevins Street (SB)</b>	SB EB/WB	48/30/42/42/30/42/42 72/60/78/78/60/78/78	45/27/39/42/30/39/42 75/63/81/78/60/81/78	Transfer 3 sec from SB to EB/WB in AM, MD, PM, Sat 1-2PM Extend duration of parking regulations from 4PM-7PM to 4PM-8PM, Implement no standing anytime for 150' along SB approach and re-stripe to include an exclusive left-turn lane.

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Atlantic Avenue (EB/WB) @ 3rd Avenue (NB/SB)	NB/SB	49/39/49/49/39/39/39	45/39/49/49/39/39/39	Implement no standing anytime for 150' along WB approach and re-stripe to include an exclusive right-turn lane. Transfer 4 sec from NB/SB to EB/WB in AM. Extend duration of parking regulations from 4PM-7PM to 4PM-8PM
	Ped.	7 (all times)	n/c	
	EB/WB	64/74/64/64/74/74/74	68/74/64/64/74/74/74	
Atlantic Avenue (EB/WB) @ 4th Avenue (NB/SB)	NB/SB	39/48/53/53/48/48/48	-----	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Re-stripe NB approach to L+L+R+R. Implement new signal timing plan.
	NB	-----	36/38/30/33/33/33/39	
	SB+NB-RT	-----	31/32/40/37/37/36/28	
	Ped.	6 (all times)	-----	
	EB/WB	57/38/40/40/38/38/38	53/50/50/50/50/51/53	
	WB	18/26/21/21/26/26/26	-----	
Atlantic Avenue (EB/WB) @ 5th Ave/Ft. Greene Place (NB/SB)	NB/SB	60/48/60/60/48/48/48	-----	Re-stripe EB approach to include an exclusive left-turn lane and three through lanes. Implement new leading EB phase. Transfer 3 sec from SB to EB/WB in AM & MD
	SB	-----	42/42/45/45/45/36/40	
	EB	-----	15/15/15/15/15/15/10	
	EB/WB	60/72/60/60/72/72/72	63/63/60/60/60/69/70	
Atlantic Avenue (EB/WB) @ 6th Ave/S. Portland Ave (NB/SB)	NB/SB	42/36/42/42/36/42/42	42/33/48/44/36/42/42	Implement no standing anytime for 100' along SB approach and re-stripe to include two LTR lanes Implement new leading WB phase Transfer 3 sec from NB/SB - 1 sec to EB/WB & 2 sec to WB in AM Transfer 3 sec from EB/WB - 1 sec to WB & 2 sec to NB/SB in PM
	SB	42/36/42/42/36/42/42	-----	
	WB	-----	16/0/17/18/0/17/0	
	EB/WB	78/54/78/78/54/78/78	62/57/55/58/54/61/78	
Atlantic Avenue (EB/WB) @ Cumberland Street (SB)	SB	42/36/42/42/36/42/42	41/36/42/42/36/42/42	Transfer 1 sec from SB to EB/WB in AM
	EB/WB	78/54/78/78/54/78/78	79/54/78/78/54/78/78	
Atlantic Avenue (EB/WB) @ Carlton Avenue (NB)	NB	42/36/42/42/36/42/42	44/36/41/41/36/39/41	Implement new WB only phase during PM, 7-8PM, Sat 4-5PM Transfer 2 sec from EB/WB to NB AM
	WB	-----	0/0/10/10/0/0/10	
	EB/WB	78/54/68/68/54/78/78	76/54/69/69/54/81/69	
Atlantic Avenue (EB/WB) @ Clermont Avenue (SB)	SB	42/36/42/42/36/42/42	41/36/42/42/36/42/40	Transfer 1 sec from SB to EB/WB in AM Transfer 2 sec from SB to EB/WB in Sat 4-5PM
	EB/WB	78/54/78/78/54/78/78	79/54/78/78/54/78/80	

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(c) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
Atlantic Avenue (EB/WB) @ Vanderbilt Avenue (NB/SB)	NB	13/10/13/13/10/13/13	13/10/13/13/10/13/13	Elimination of EB left turn, Transfer 3 sec from EB/WB to WB only phase in AM Transfer 1 sec in MD, 6 sec in 7-8PM, 7 sec in Sat 1-2 PM from EB/WB to WB only phase Implement new striping along Northbound approach to increase current capacity from 3L to 4L. Transfer 3 sec in Sat 1-2 PM from NB/SB to WB only phase. New NB striping would include L+LT+T+R
	NB/SB	40/30/35/35/30/40/40	40/30/35/35/30/37/40	
	WB	13/10/13/13/10/13/13	16/11/13/19/10/23/13	
	EB/WB	54/40/59/59/40/54/54	51/39/59/53/40/47/54	
Atlantic Avenue (EB/WB) @ Clinton Avenue (SB)	SB	48/36/42/42/36/42/42	45/36/42/42/36/42/42	Transfer 3 sec from SB to EB/WB in AM Reduced volumes through transit incentives mitigation
	EB/WB	72/54/78/78/54/78/78	75/54/78/78/54/78/78	
Atlantic Avenue (EB/WB) @ Washington Avenue (NB/SB)	NB/SB	43/29/32/32/29/32/32	44/32/32/35/29/35/36	Transfer 1 sec from WB to NB/SB in AM, Transfer 3 sec from EB/WB to NB/SB in MD Implement new no standing for 100' from 7AM-10AM M-F along SB approach Transfer 3 sec from WB to NB/SB in Sat 1-2PM Transfer 1 sec from EB/WB & 3 sec from WB all to NB/SB in Sat 4-5PM Transfer 4 sec from EB/WB, 1sec to WB & 3 sec NB/SB in 7-8PM
	WB	16/12/16/16/12/16/16	15/12/16/17/12/13/13	
	EB/WB	61/49/72/72/49/72/72	61/46/72/68/49/72/71	
Atlantic Avenue (EB/WB) @ Grand Avenue (SB)	SB	42/36/42/42/36/42/42	42/36/43/42/36/42/42	No practicable mitigation
	EB/WB	78/54/78/78/54/78/78	78/54/77/78/54/78/78	
3rd Avenue (NB/SB) @ Dean Street (EB)	NB/SB	65/61/85/85/61/80/80	65/59/81/81/61/76/76	Implement new no standing anytime for 100' from along south curb of EB approach for new RT lane Transfer 2 sec from NB/SB to EB in MD Transfer 4 sec from NB/SB to EB in PM, 7-8PM, Sat 1-2PM, Sat 4-5PM
	EB	55/29/35/35/29/40/40	55/31/39/39/29/44/44	
4th Avenue (NB/SB) @ Pacific Street (WB)	NB/SB	40/61/74/74/35/84/84	60/61/84/84/50/84/84	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Re-stripe NB approach to L+T+TR+R. Convert Pacific Street to one-way EB operation btwn 4th and Flatbush Aves. Implement new signal timing plan.
	Ped.	-----	50/59/36/36/40/36/36	
	WB	80/59/36/36/55/36/36	-----	
4th Avenue (NB/SB) @ Dean Street (EB)	NB/SB	44/65/84/84/41/84/84	60/65/84/81/41/81/84	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan in AM of 60 sec NB/SB and 60 EB. Transfer 3 sec from NB/SB to EB in 7-8PM, Sat 1-2PM
	EB	76/55/36/36/49/36/36	60/55/36/39/49/39/36	
4th Avenue (NB/SB) @ Bergen Street (WB)	NB/SB	48/70/84/84/51/84/84	62/70/80/81/51/80/80	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan in AM, AM 62 sec NB/SB and 58sec WB. Transfer 4 sec from NB/SB to WB in PM, Sat 1-2PM & Sat 4-5PM Transfer 3 Sec from NB/SB to WB 7-8PM
	WB	72/50/36/36/39/36/36	58/50/40/39/39/40/40	
4th Avenue (NB/SB) @ St. Mark's Place (EB)	NB/SB	52/74/84/84/61/84/84	65/74/84/84/61/84/84	Eliminate NB traffic on 4th Ave btwn Atlantic and Flatbush Aves. Implement new signal timing plan in AM. Implement new no standing for 100' from 4PM-7PM Sat-Sun along EB approach.
	EB	68/46/36/36/29/36/36	55/46/36/36/29/36/36	

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>4th Avenue (NB/SB) @ Union Street (EB/WB)</b>	NB/SB EB/WB	80/54/84/84/47/84/84 40/66/36/36/43/36/36	80/54/84/84/47/84/84 40/66/36/36/43/36/36	No practicable mitigation
<b>5th Avenue (NB/SB) @ Dean Street (EB)</b>	SB NB/SB EB	48 (all times) 38 (all times) 34 (all times)	45/44/44/44/44/44/44 38/38/38/38/38/38/38 37/38/38/38/38/38/38	Transfer 3 sec from SB to EB in AM, Transfer 3 sec from SB to NB/SB Sat 4-5 PM. Transfer 4 sec from SB to EB in All other periods Re-stripe SB approach to include an exclusive left-turn lane and one through lane.
<b>5th Avenue (NB/SB) @ Bergen Street (WB)</b>	NB/SB WB	83 (all times) 37 (all times)	79/79/79/79/79/79/79 41/41/41/41/41/41/41	Implement no standing anytime for 100' along south curb of WB approach and re-stripe to include an exclusive left-turn lane. Transfer 4 sec from NB/SB to WB in All Periods.
<b>5th Avenue (NB/SB) @ Union Street (EB/WB)</b>	NB/SB EB/WB	45 (all times) 45 (all times)	45/45/45/45/45/46/45 45/45/45/45/45/44/45	Transfer 1 sec from EB/WB to NB/SB in Sat 1-2PM
<b>6th Avenue (NB/SB) @ Dean Street (EB)</b>	NB/SB EB	30 (all times) 30 (all times)	30/30/27/26/27/27/27 30/30/33/34/33/33/33	Transfer 3 sec from NB/SB to EB in PM, 10-11PM, Sat 1-2PM, Sat 4-5PM Transfer 4 sec from NB/SB to EB in 7-8PM
<b>6th Avenue (NB/SB) @ Bergen Street (EB)</b>	NB/SB WB	30 (all times) 30 (all times)	30/31/30/30/30/33/30 30/29/30/30/30/27/30	Transfer 3 sec from WB to NB/SB in Sat 1-2PM, Transfer 1 sec from WB to NB/SB in MD Implement no standing 4PM-8PM weekdays, Sat-Sun from 12PM-5PM along east curb of NB approach
<b>S. Portland Street (NB/SB) @ Fulton Street (EB/WB)</b>	NB/SB EB/WB	36 (all times) 54 (all times)	33/36/36/36/36/39/39 57/54/54/54/54/51/51	Transfer 3 sec from EB/WB to NB/SB in Sat 1-2PM & Sat 4-5PM, and 3 sec from NB/SB to EB/WB in AM Implement no standing 7AM-10AM for 100' along east curb of NB approach
<b>Carlton Avenue (NB) @ Park Avenue (EB/WB)</b>	NB EB/WB	42 (all times) 78 (all times)	42/42/42/42/42/42/42 78/78/78/78/78/78/78	Reduced volumes through transit incentives mitigates 10-11PM
<b>Carlton Avenue (NB) @ Myrtle Avenue (EB/WB)</b>	NB EB/WB	24/24/24/24/24/50/24 66/66/66/66/66/70/66	24/24/24/24/26/50/24 66/66/66/66/64/70/66	Transfer 2 sec from EB/WB to NB in 10-11PM
<b>Carlton Avenue (NB) @ Fulton Street (EB/WB)</b>	NB EB/WB	37 (all times) 53/53/83/83/53/83/83	37/37/40/40/37/40/40 53/53/80/80/53/80/80	Transfer 3 sec from EB/WB to NB in PM, 7-8PM, Sat 1-2PM & Sat 4-5PM Implement no standing Weekday from 8-9 am for 100' along west curb of NB approach
<b>Carlton Avenue (NB) @ Pacific Street (WB)</b>	NB/SB EB	36 (all times) 24 (all times)	36/36/36/36/36/36/36 24/24/24/24/24/24/24	Implement no standing Sat-Sun from 12PM-5PM along east curb of NB approach

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>Carlton Avenue (NB) @ Dean Street (EB)</b>	NB EB	36 (all times) 24 (all times)	36/36/32/36/33/33 24/24/28/24/27/27	Implement no standing anytime for 100' along EB approach & re-stripe to include L+T Transfer 4 sec from NB to EB in PM Transfer 3 sec from NB to EB in Sat 1-2PM & Sat 4-5PM
<b>Carlton Avenue (NB) @ Bergen Street (WB)</b>	NB WB	36 (all times) 24 (all times)	32/36/36/36/36/33 28/24/24/24/24/27	Transfer 4 sec from NB to WB in AM. Transfer 3 sec from NB to WB in Sat 4-5PM
<b>Vanderbilt Avenue (NB/SB) @ Park Avenue (EB/WB)</b>	NB/SB EB/WB	42 (all times) 78 (all times)	42/42/42/42/42/45 78/78/78/78/78/75	Transfer 3 sec from EB/WB to NB/SB in Sat 4-5PM
<b>Vanderbilt Avenue (NB/SB) @ Myrtle Avenue (EB/WB)</b>	NB/SB EB/WB	24/24/24/24/24/50/24 66/66/66/66/66/70/66	27/27/27/28/27/50/28 63/63/63/62/63/70/62	Transfer 3 sec from EB/WB to NB/SB in AM, MD, PM, 10-11PM Transfer 4 sec from EB/WB to NB/SB in 7-8PM & Sat 4-5PM Reduced volumes through transit incentives mitigates Sat 1-2PM Implement no standing Sat-Sun from 12PM-5PM for 100' along east curb of NB approach Implement no standing Sat-Sun from 12PM-5PM for 100' along west curb of SB approach
<b>Vanderbilt Avenue (NB/SB) @ DeKalb Avenue (EB/WB)</b>	NB/SB WB	24 (all times) 36 (all times)	27/24/27/24/24/24/24 33/36/33/36/36/36/36	Transfer 3 sec from WB to NB/SB in AM, PM Reduced volumes through transit incentives mitigates 7-8PM
<b>Vanderbilt Avenue (NB/SB) @ Fulton Street (EB/WB)</b>	NB/SB EB/WB	37 (all times) 53/53/83/83/53/83/83	39/37/37/41/37/40/40 51/53/53/79/53/80/80	Transfer 2 sec from EB/WB to NB/SB in AM Transfer 3 sec from EB/WB to NB/SB in Sat 1-2PM & Sat 4-5PM Transfer 4 sec from EB/WB to NB/SB in 7-8PM
<b>Vanderbilt Avenue (NB/SB) @ Pacific Street (EB/WB)</b>	NB/SB EB/WB	63 (all times) 27 (all times)	62/63/63/63/63/63/63 28/27/27/27/27/27/27	Transfer 1 sec from NB/SB to WB in AM.
<b>Vanderbilt Avenue (NB/SB) @ Dean Street (EB)</b>	NB/SB EB	63 (all times) 27 (all times)	60/60/63/59/63/60/59 30/30/27/31/27/30/31	Implement no standing anytime for 100' along south curb of EB approach and re-stripe to include an exclusive right-turn lane. Transfer 4 sec from NB/SB to EB in 7-8PM and Sat 4-5PM Transfer 3 sec from NB/SB to EB in AM, MD, PM, Sat 1-2PM
<b>Vanderbilt Avenue (NB/SB) @ Bergen Street (WB)</b>	NB/SB WB	63 (all times) 27 (all times)	61/63/61/60/63/60/63 29/27/29/30/27/30/27	Implement no standing anytime along length of SB approach Transfer 2 sec from NB/SB to WB in AM and PM Transfer 3 sec from NB/SB to WB in 7-8PM, Sat 1-2PM

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

**Table 19-2 continued**  
**Proposed Traffic Mitigation Measures - 2016**

Intersection	Approach	No Build Signal Timing (Seconds) (1)	Proposed Mitigation	
			Mitigation Signal Timing (Seconds) (1)	Description of Mitigation
<b>UnderHill Avenue (NB/SB) @ Dean Street (EB)</b>	NB/SB EB	36 (all times) 24 (all times)	36/36/35/36/36/36/32 24/24/25/24/24/24/28	Transfer 1 sec from NB/SB to WB in PM, Transfer 4 sec from NB/SB to WB in Sat 4-5PM Implement no standing anytime for 100' along south curb of EB approach & re-stripe to include LT+R
<b>Washington Avenue (NB/SB) @ Dean Street (EB)</b>	NB/SB EB	90 (all times) 30 (all times)	90/90/90/90/88/90/90 30/30/30/30/32/30/30	Transfer 2 sec from NB/SB to EB in 10-11PM Implement no standing anytime for 100' along south curb of EB approach & re-stripe to include LT+R
<b>Washington Avenue (NB/SB) @ Eastern Parkway (EB/WB)</b>	SB NB/SB EB/WB	15/17/15/15/17/17/17 30/33/30/30/33/33/33 75/50/75/75/50/50/50	17/17/15/17/17/19/21 30/33/30/30/33/33/33 73/50/75/73/50/48/46	Transfer 2 sec from EB/WB to SB in AM, 7-8PM and Sat 1-2PM Transfer 4 sec from EB/WB to SB in Sat 4-5PM.
<b>Adams Street (NB/SB) @ Tillary Street (EB/WB)</b>	NB NB/SB SB/WB-RT EB EB/WB	17/17/17/17/17/17/17 36/36/36/36/36/36/36 23/23/23/23/23/23/23 19/19/19/19/19/19/19 25/25/25/25/25/25/25	16/14/18/15/15/17/17 36/36/36/36/36/36/37 24/25/25/26/25/23/26 19/19/16/17/19/19/15 25/26/25/26/25/25/25	Transfer 1 sec from NB to SB/WB-RT in AM Transfer 2 sec from NB to SB/WB-RT in MD and 10-11PM, 7-8PM Transfer 2 sec from EB only to SB/WB-RT & transfer 1 sec from EB only to NB only in PM Transfer 3 sec from EB only to SB/WB-RT & transfer 1 sec from EB only to NB/SB in Sat 4-5PM Transfer 1 sec from EB to EB/WB & 1 sec from EB to SB/WB-RT in 7-8PM
<b>Boerum Place (NB/SB) @ Livingston Street (EB/WB)</b>	SB NB/SB EB/WB	18 (all times) 60 (all times) 42 (all times)	18/18/18/21/18/18/18 60/60/60/57/60/64/60 42/42/42/39/42/38/42	Transfer 3 sec from EB/WB to SB in 7-8PM Transfer 4 sec from EB/WB to NB/SB in Sat 1-2PM Reduced volumes through transit incentives mitigates Sat 4-5PM
<b>Boerum Place (NB/SB) @ Schermerhorn Street (EB/WB)</b>	NB/SB WB	78 (all times) 42 (all times)	78/78/81/78/78/78/78 42/42/39/42/42/42/42	Transfer 3 sec from WB to NB/SB in PM
<b>Smith Street (NB) @ Dean Street (EB)</b>	NB EB	36 (all times) 24 (all times)	36/36/36/36/36/36/32 24/24/24/24/24/24/28	Transfer 4 sec from NB to EB in Sat 4-5PM

**Notes:**

(1) Signal timings shown indicate green plus yellow (including all-red) for each phase. AM/MD/PM/7-8PM/10-11PM/Sat 1-2PM/Sat 4-5PM.

n/c - no change.

(cl) - clearance phase.

ped. - pedestrian phase.

## Atlantic Yards Arena and Redevelopment Project EIS

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In addition, as noted in Chapter 12, “Traffic and Parking,” the 2010 and 2016 No Build analyses incorporate DOT’s reconfiguration of Vanderbilt Avenue from Dean Street to Sterling Place to include new flush center medians with left-turn bays. This reconfiguration (implemented in early 2006), reduced the number of lanes for through-traffic from two to one in each direction between Bergen Street and Park Place. As demonstrated in Tables 12-6 and 12-23 in Chapter 12, with this reconfiguration (intended to bring capacity more in line with existing demand and reduce vehicle speeds), Vanderbilt Avenue will become newly congested (primarily in the northbound direction in the weekday AM and southbound in the PM) at Park Place, Prospect Place, St. Mark’s Place and Bergen Street in both No Build conditions. This 2010 and 2016 No Build congestion would remain, and in some cases worsen, with implementation of the proposed project. In addition to the mitigation measures recommended to address project-related significant adverse impacts shown in Tables 19-1 and 19-2, improvement measures were also evaluated to address non-project-related congestion along this corridor. It was found that eliminating curbside parking along northbound Vanderbilt Avenue from Park Place to Bergen Street in the weekday AM peak period, and along southbound Vanderbilt Avenue in the PM peak period would be effective at addressing the long-term congestion forecast for this corridor in the 2010 and 2016 No Build.

### FLATBUSH AVENUE/ATLANTIC AVENUE/4TH AVENUE INTERSECTION

As shown in Table 19-1 and discussed previously, mitigation measures to be implemented by 2010 at the complex Flatbush Avenue/Atlantic Avenue/4th Avenue intersection include the elimination of northbound traffic on 4th Avenue between Atlantic and Flatbush Avenues; implementation of a new signal timing plan including a new 35-second all pedestrian phase at Flatbush Avenue/4th Avenue/Hanson Place; minor signal timing adjustments at the intersection of Atlantic and Flatbush Avenues; restriping the northbound 4th Avenue approach to Atlantic Avenue to two left-turn-only and two right turn-only lanes and elimination of the west crosswalk on Atlantic Avenue to avoid conflicts between pedestrians and the heavy northbound left-turn movement; and the implementation of a new signal timing plan at Atlantic and 4th Avenues. As shown in Table 19-2, additional minor signal timing adjustment would be made at this intersection in 2016.

### ATLANTIC AVENUE

Measures recommended for other impacted intersections along the Atlantic Avenue corridor in 2010 include minor signal timing adjustments (typically four seconds or less); extension of existing 4-7 PM parking restrictions until 8 PM; implementation of new curbside parking restrictions at Smith Street and 3rd and 6th Avenues; and changes to lane striping at Court Street, 3rd Avenue (where a new exclusive westbound right-turn only lane would be provided), and 6th Avenue. At Ft. Greene Place, the eastbound Atlantic Avenue approach would be restriped to include a new exclusive left-turn lane, and the signal phasing adjusted to incorporate a new leading eastbound phase. At Carlton Avenue, a new 10-second westbound-only phase would be needed in the weekday PM and 7-8 PM pre-game periods. In 2016, along with additional minor signal timing adjustments at a number of intersections, an additional curbside parking restriction would be implemented at Nevins Street, and the leading westbound-only phase at Carlton Avenue would be extended to the Saturday 4-5 PM post-game peak hour.

### FLATBUSH AVENUE

Measures recommended for impacted intersections along the Flatbush Avenue corridor to the north and south of Atlantic/4th Avenues in 2010 include minor signal timing adjustments

(typically four seconds or less); extension of existing 4-7 PM parking restrictions until 8 PM; implementation of a new curbside parking restriction at St. Mark's Place; and changes to lane striping at 5th Avenue and at Dean Street. A new traffic signal and crosswalk would be installed at Pacific Street (in conjunction with the conversion of Pacific street to one-way eastbound operation); and the southbound left-turn movement at Dean Street would be prohibited at all times (it is currently prohibited on weekdays from 7AM to 7PM) as would the northbound left-turn at Bergen Street. Northbound traffic now turning left onto Bergen Street would instead turn right onto 6th Avenue and then left onto Bergen Street. Southbound traffic turning left onto Dean Street would instead turn right onto southbound 5th Avenue and then left onto Dean Street as is current practice on weekdays from 7AM to 7PM. (A new left-turn lane would be provided on southbound 5th Avenue at Dean Street to accommodate the additional vehicles making this movement.)

#### 4TH AVENUE

With the elimination of the outlet from northbound 4th Avenue to Flatbush Avenue, traffic flows upstream along the 4th Avenue corridor would be substantially altered. Consequently, as shown in Table 19-1, the traffic mitigation plan recommends new AM peak hour signal timing plans for the intersections of 4th Avenue with Pacific, Dean and Bergen Streets, and St. Mark's Place in 2010. Concurrent with the conversion of Pacific Street to one-way eastbound operation between 4th and Flatbush Avenues, the northbound 4th Avenue approach at Pacific Street would be restriped to accommodate increased volumes on the northbound right-turn movement. A new curbside parking restriction would be implemented along the eastbound St. Mark's Place approach in 2016.

#### 5TH AVENUE

Mitigation measures recommended to address significant adverse traffic impacts at intersections along 5th Avenue in 2010 include minor signal timing adjustments (four seconds or less), restriping the southbound approach at Dean Street to include an exclusive left-turn lane and one through-lane, and a new curbside parking restriction and restriping of the westbound Bergen Street approach to provide for an exclusive left-turn lane. Similar measures are recommended for implementation in the 2016 Build With Mitigation condition.

#### 6TH AVENUE

Along the 6th Avenue corridor, minor signal timing adjustments (three seconds or less) are recommended to address the proposed project's significant adverse impacts at Bergen and Dean Streets in 2010. A new weekend curbside parking restriction is also recommended for the northbound 6th Avenue approach at Bergen Street. In 2016, an additional curbside parking restriction is proposed for this approach during the weekday PM period.

#### CARLTON AVENUE

Minor signal timing adjustments (four seconds or less) are recommended to address the proposed project's significant adverse impacts along Carlton Avenue in 2010. In addition, a new curbside parking restriction would be implemented on the eastbound Dean Street approach, and the approach would be restriped to include an exclusive left-turn lane. In 2016, an additional curbside parking restriction would be implemented along the northbound approach at Pacific Street.

VANDERBILT AVENUE

Measures recommended for impacted intersections along the Vanderbilt Avenue corridor in 2010 include minor signal timing adjustments (typically three seconds or less) to increase the green time allocated to the northbound and southbound approaches; implementation of new curbside parking restrictions the eastbound Dean Street approach and the westbound Bergen Street approach, and restriping the eastbound Dean Street approach to include an exclusive right-turn-only lane. Further mitigation measures recommended for the corridor for 2016 include additional minor signal timing adjustments (typically four seconds or less), and new curbside parking restrictions on the northbound and southbound Vanderbilt Avenue approaches at Myrtle Avenue, on the northbound approach at DeKalb Avenue, and along the length of the southbound approach at Bergen Street.

WASHINGTON AVENUE

Minor signal timing adjustments (four seconds or less) are recommended to address the proposed project's significant adverse impacts along Washington Avenue in both 2010 and 2016. In addition, a new curbside parking restriction would be implemented on the eastbound Dean Street approach, and this approach would be restriped to include an exclusive left-turn lane and an exclusive right-turn lane. In 2016, an additional curbside parking restriction would be implemented along the northbound approach at Pacific Street.

OTHER CORRIDORS

Minor signal timing adjustments (four seconds or less) are recommended to address the proposed project's significant adverse impacts at Fulton and S. Portland Streets in 2016, along with a new curbside parking restriction on the northbound S. Portland Street approach.

As shown in Tables 19-1 and 19-2, along other corridors in the study area, minor signal timing adjustments are typically recommended as mitigation for significant adverse impacts in both 2010 and 2016.

In addition to the traffic mitigation measures outlined above, it is anticipated that on days when a basketball game or other major event is scheduled at the arena, police and traffic control officers would be deployed at key intersections in the vicinity of the arena during the pre-game and post-game periods as is currently done at other major event venues in the City. The purpose of deploying these officers would be to minimize vehicular delays and congestion, manage queuing and spill-back, and minimize conflicts between vehicle and pedestrian flows to the extent possible. The project sponsor is committed to working with NYCDOT and NYPD to ensure that needed resources are available for these purposes.

**EFFECTIVENESS OF MITIGATION MEASURES ON TRAFFIC**

The physical improvements, demand management strategies, transit service recommendations, and traffic operations measures combined, represent a traffic mitigation plan that would be largely implemented as the proposed project's arena component becomes operational by 2010, with additional refinements as Phase II demand develops through 2016. The key objective is the improvement in traffic conditions and reduction in congestion in the study area. In conjunction with the modification of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection, detailed traffic simulation was undertaken using the Synchro/SimTraffic 6.0 software program and reviewed with DOT as a planning tool to consider the effect of the change within the local street

network and along major corridors. The improvement plan, which also includes changes to some immediately adjacent roadways, substantially reduces queuing and congestion at this critical location. The level of service analyses provided later in this chapter demonstrate the long-term effectiveness of this plan.

It is estimated that the proposed transit fare incentive program would increase transit ridership equivalent to a roughly 14 percent reduction in arena auto trips, and that additional measures (park and ride bus services, on-site HOV parking requirements, secure indoor on-site bicycle parking and cross-marketing of area businesses) would, in the aggregate, achieve a further six percent reduction in peak hour arena auto trips. Overall, these measures are expected to achieve a 20 percent reduction in peak hour auto trips generated by a weekday or weekend basketball game, equivalent to reducing the forecasted auto mode share for arena trips from an average of 35.4 percent to 28.3 percent on weekdays, and from 40 percent to 32 percent on Saturdays. The remote parking program is expected to further reduce auto trips in the vicinity of the arena by intercepting approximately 250 autos at remote parking facilities on the periphery of the study area. In combination these demand management and remote parking strategies are expected to reduce the overall number of pre-game peak hour auto trips in the vicinity of the project site by approximately 584 on a weekday and 577 on a Saturday. The demand management and remote parking strategies would also be expected to reduce the overall number of post-game peak hour auto trips in the vicinity of the project site.

The project sponsors would monitor the demand management plan to determine the effectiveness of the proposed measures at achieving lower auto mode shares, origin/destination and mode choice surveys of arena patrons would be conducted midway through the first basketball season. The data from these surveys would be used to judge the effectiveness of both individual strategies and the overall demand management plan. If some strategies are found to be ineffective, it is anticipated that funding for these strategies would be reallocated to those measures found more effective at achieving the targeted 28.3 percent auto mode share on weekdays, and 32 percent auto mode share on Saturdays. As noted above, these percentages of auto mode shares do not include reductions in auto trips in the immediate vicinity of the arena as a result of the remote parking. Based on currently available information, the foregoing mix of demand management strategies and remote parking would be effective in reducing overall traffic impacts from a Nets game at the arena; however, after the arena opens and additional information is available as to the effectiveness of each strategy, the mix of demand management strategies and remote parking could be adjusted to further improve the efficacy of the mitigation, with ESDC approval, which would be made in consultation with DOT.

Traffic diversions associated with the modifications to the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection and other mitigation measures are provided in Tables C-11 and C-12 in Appendix C. Tables C-9 and C-10 show the change in delays and levels of service that would result in 2010 and 2016 from implementation of the measures developed to mitigate the proposed project's significant adverse traffic impacts in one or more peak hours at 58 intersections in 2010 and 68 intersections in 2016. The following provides a discussion of the effectiveness of this mitigation plan.

#### 2010 BUILD WITH MITIGATION TRAFFIC CONDITIONS

Under CEQR Technical Manual criteria, a significant traffic impact is considered mitigated if measures implemented return projected future conditions to what they would be if a proposed action were not in place, or to acceptable levels. For a Future No Build level of service (LOS) D,

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E or F, mitigating back to the No Build condition is required; for No Build A, B or C, mitigating to mid-LOS D is required (45 seconds of delay for signalized intersections, and 30 seconds of delay for unsignalized intersections).

Based on these criteria, the reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection and companion operational modifications to Pacific Street, combined with the recommended demand management strategies and site-specific operational improvements, would fully address all significant adverse impacts from the proposed project at a total of 33 out of 58 impacted intersections in 2010, and reduce the number of impacts at a further 24 intersections. As the data shown in Table 19-3 and Figures 19-5 through 19-11 indicate, a total of 25 intersections would continue to have unmitigated significant adverse traffic impacts in one or more peak hours in the 2010 Build With Mitigation condition. Overall, there would be a total of four intersections with unmitigated significant adverse impacts in the weekday AM peak hour, none in the midday, six in the PM, five in the 7-8 PM pre-game, and one in the 10-11 PM post-game peak hours. On Saturdays, the number of intersections with unmitigated impacts would total 10 during the 1-2 PM pre-game peak hour and 13 during the 4-5 PM post-game peak hour.

Intersections with one or more movements operating over capacity (i.e., a v/c ratio of 1.0 or greater) would total 11 in the weekday AM peak hour (compared to 33 in the 2010 Build), three in the midday (15 Build), 17 in the PM (37 Build), 5 in the 7-8 PM pre-game (30 Build) and two in the 10-11 PM post-game peak hour (four Build). On Saturdays, intersections operating over capacity would total 14 and 22 during the 1-2 PM pre-game and 4-5 PM post-game periods, respectively, compared to 29 and 40 during these periods, respectively, in the 2010 Build condition.

Although the Saturday pre-game and post-game peak hours would have the highest number of unmitigated impacts in 2010 (10 and 13, respectively), it is important to note that these conditions are projected to occur fewer than four times per year when a Saturday afternoon Nets basketball game would be scheduled. (Other events that would occur at the proposed arena on a Saturday afternoon—a concert for example—would typically generate substantially fewer peak hour vehicle trips than would a Nets basketball game.) The impacts are attributable in some part to existing Saturday parking regulations; however, eliminating parking and other permanent measures along busy retail corridors such as Atlantic and Flatbush Avenues on Saturday afternoons could be disruptive to adjacent retail land uses, and were not considered warranted for conditions that would occur fewer than four Saturdays per year. This is reflected in the relatively high number of unmitigated significant adverse impacts during the two Saturday peak hours.

It is anticipated that on Saturdays when a Nets game is scheduled at the arena, a game-day specific plan would go into effect in coordination with NYPD and DOT. This plan would likely concentrate on improvements to the arterial system, such as implementing temporary (i.e., game day only) parking prohibitions at selected locations along Atlantic and Flatbush Avenues. (These prohibitions would likely be similar to the permanent extension to 8 PM of the weekday parking prohibition along eastbound Atlantic Avenue and southbound Flatbush Avenue recommended as mitigation for weekday pre-game peak hour impacts.) Game day traffic signal preemption/override and similar traffic management strategies would also be employed, and police and traffic control officers would be deployed at key intersections in the vicinity of the arena during the pre-game and post-game periods as is currently done at other major event venues in the City. The reported unmitigated impacts on peak Saturday game days in Tables 19-3 and 19-4, do not take into account the traffic benefits of such game day measures.

**Table 19-3  
Summary of Intersections With Unmitigated Impacts - 2010**

Signalized Intersection		Analyzed Peak Hour					
		Weekday				Saturday	
		8-9 AM	12-1 PM	5-6 PM	7-8 PM	10-11 PM	1-2 PM
Flatbush Ave at	Tillary Street				①		
	Myrtle Ave				②	①	③ ①
	Willoughby Street	All Impacts Mitigated					
	DeKalb Ave	All Impacts Mitigated					
	Fulton Street			①			
	Lafayette Street	All Impacts Mitigated					
	4th Ave	All Impacts Mitigated					
	Atlantic Ave	①			①		
	5th Avenue	All Impacts Mitigated					
	Dean Street	All Impacts Mitigated					
	6th Ave	①					
	St. Mark's Place	All Impacts Mitigated					
	Sterling Place	All Impacts Mitigated					
	Atlantic Ave at	Hicks Street	All Impacts Mitigated				
Clinton Street		All Impacts Mitigated					
Court Street		All Impacts Mitigated					
Boerum Place							①
Smith Street		All Impacts Mitigated					
Hoyt Street						①	①
Bond Street						①	②
Nevins Street						①	①
3rd Ave		All Impacts Mitigated					
4th Ave		All Impacts Mitigated					
S. Portland Ave						①	②①
Carlton Ave						①	
Clermont Ave		All Impacts Mitigated					
Vanderbilt Ave		①		①			①
Washington/Underhill Aves				①			
Grand Ave							①
Third Ave at		Dean Street	All Impacts Mitigated				
4th Ave at	Pacific Street	All Impacts Mitigated					
	Dean Street	All Impacts Mitigated					
	Bergen Street						①
	St. Mark's Place	All Impacts Mitigated					
5th Ave at	Union Street			①			
	Dean Street				①①		①①
	Bergen Street	①				①	①
6th Ave at	Union Street	All Impacts Mitigated					
	Dean Street						②
Carlton Ave at X	Myrtle Ave	All Impacts Mitigated					
	Fulton Street	All Impacts Mitigated					
	Pacific Street	All Impacts Mitigated					
	Dean Street					①	
	Bergen Street	All Impacts Mitigated					
Vanderbilt Ave at	Park Ave	All Impacts Mitigated					
	Myrtle Ave				①		
	DeKalb Ave	All Impacts Mitigated					
	Fulton Street	All Impacts Mitigated					
	Dean Street			①			

Table 19-3 (cont'd)

Summary of Intersections With Unmitigated Impacts - 2010

Signalized Intersection		Analyzed Peak Hour					
		Weekday				Saturday	
		8-9 AM	12-1 PM	5-6 PM	7-8 PM	10-11 PM	1-2 PM
	Bergen Street	All Impacts Mitigated					
	St. Mark's Place	All Impacts Mitigated					
	Prospect Place	All Impacts Mitigated					
Underhill Ave at	Dean Street	All Impacts Mitigated					
Washington Ave at	Dean Street	All Impacts Mitigated					
	Eastern Parkway			①			
Adams Street at	Tillary Street					①	②
Smith Street at	Dean Street	All Impacts Mitigated					
Boerum Place at	Livingston Street						①
② number of movements on the major street approaches with unmitigated significant adverse impacts in the peak hour.		① number of movements on the minor street approaches with unmitigated significant adverse impacts in the peak hour.					

The following provides a discussion of unmitigated significant adverse traffic impacts in 2010 by corridor. The potential for queuing and spill-back along the principal arterials serving the project site (Flatbush, Atlantic, and 4th Avenues) as well as along Vanderbilt Avenue and at the intersection of Adams and Tillary Streets in the 2010 Build With Mitigation condition is also discussed.

Flatbush Avenue

As shown in Table 19-3, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts at nine of the 13 intersections impacted by the proposed project in 2010 along the Flatbush Avenue corridor. The number of significant adverse impacts at each of the remaining four intersections would be reduced. At Tillary Street, the proposed mitigation plan would fully mitigate the project's two significant adverse impacts in the weekday PM peak hour, and one of the two impacts in the weekday pre-game peak hour. The impact to the southbound Flatbush Avenue approach in this period would remain unmitigated, however, delay would be reduced compared to the 2010 Build condition.

At Myrtle Avenue, the proposed mitigation plan would fully mitigate two significant adverse impacts in the weekday midday and one of two impacts in the weekday post-game peak hour. Delay on the northbound and/or southbound Flatbush Avenue approach would be reduced in the weekday pre- and post-game, and both Saturday peak hours, however, one or both of these approaches would continue to have unmitigated impacts in these periods. At Fulton Street, all significant adverse impacts during the weekday pre- and post-game and both Saturday peak hours would be fully mitigated. One impact (to the southbound left-turn movement) in the PM would remain unmitigated. At Lafayette Avenue, all significant adverse impacts would be fully mitigated. Lastly, at 6th Avenue, the proposed traffic mitigation plan would fully mitigate two Saturday post-game impacts (to the eastbound left-turn and westbound movements). In the AM peak hour, delay for the eastbound left-turn movement would be reduced, but the significant adverse impact to this movement would remain unmitigated in the 2010 Build With Mitigation condition.

All significant adverse impacts at the intersections of Flatbush Avenue with Willoughby, Dean and Bergen Streets, DeKalb, 4th, Atlantic and 5th Avenues, St. Mark's Place and Sterling Place would be fully mitigated in all peak hours in 2010 with the proposed traffic mitigation plan.

As discussed in Chapter 12, “Traffic and Parking,” future queuing can occur when an approach operates substantially over capacity (with a v/c ratio greater than 1.2, for example), and such queuing may potentially affect both upstream and downstream intersections along a corridor. In the 2010 Build condition, Flatbush Avenue may experience queuing and spill-back on one or both approaches at three intersections in one or more peak hours. With implementation of the proposed project’s traffic mitigation plan in 2010, the Flatbush Avenue approaches at only one intersection – Myrtle Avenue – are projected to operate substantially over capacity (southbound in the Saturday pre-game and northbound in the Saturday post-game).

#### Atlantic Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at seven of the 16 intersections impacted by the proposed project in 2010 along the Atlantic Avenue corridor, and would reduce the number of impacts at all but one of the remaining nine intersections. As shown in Table 19-3, at Boerum Place the proposed mitigation plan would eliminate impacts in the Saturday pre-game peak hour. Delay on the westbound Atlantic Avenue approach in the Saturday post-game peak hour would be reduced compared to the 2010 Build condition, however, the significant adverse impact to this approach would remain unmitigated. At Hoyt, Bond and Nevins Streets, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday peak hours. However, the impacts to the eastbound and/or westbound Atlantic Avenue approaches at each of these intersections in the Saturday pre-game and post-game periods would remain unmitigated, although with reduced delay compared to the 2010 Build in most cases. Delays are projected to be substantial for the eastbound approach at Bond Street in the Saturday pre-game period.

At the intersection of Atlantic Avenue with S. Portland Avenue/6th Avenue, the proposed traffic mitigation plan would fully mitigate all impacts in the weekday AM, midday PM and pre-game peak hours. On Saturdays, the mitigation plan would reduce the number of impacts from three to one in the pre-game peak hour and from four to three in the post-game peak hour. The impact to the westbound left-turn movement in both Saturday periods would remain unmitigated, as would the impacts to the northbound and eastbound left-turn movements in the Saturday post-game peak period, although delays would be reduced compared to the 2010 Build in all cases.

At Carlton Avenue, the proposed traffic mitigation plan would eliminate the proposed project’s significant adverse impacts to Atlantic Avenue in the weekday PM and pre-game peak hours. The Saturday post-game peak hour impact to the eastbound left-turn movement on Atlantic Avenue would remain unmitigated at this intersection.

As shown in Table 12-16 in Chapter 12, the proposed project would result in significant adverse impacts at the intersection of Atlantic and Vanderbilt Avenues in all but the weekday 10-11 PM peak hour. Impacts on Atlantic Avenue would be primarily to the left-turn movements, while impacted movements on Vanderbilt Avenue would include the northbound left-turn movement in the AM, PM and both Saturday peak hours, and the southbound approach in the PM and Saturday midday. Delays are projected to be substantial for the northbound left-turn movement in the AM peak hour and the westbound left-turn movement in the Saturday pre-game peak hour. As shown in Table 19-3, with the proposed geometric and operational improvements at this intersection, all of the proposed project’s significant impacts at the intersection of Atlantic and Vanderbilt Avenues would be fully mitigated with the exception of the impact to the northbound left-turn in the AM peak hour, the impact to the westbound left-turn in the PM peak hour, and the impact to the eastbound approach in the Saturday post-game peak hour.

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Lastly, at the intersection of Atlantic and Grand Avenues, the proposed project would result in a significant adverse impact to the westbound left-turn in the Saturday post-game peak hour. Signal timing adjustments to return this movement to its No Build levels of service would be impractical as they would result in new or worsened impacts on other approaches. Increasing capacity through changes to curbside regulations or modifications to lane striping were also found to be ineffective. As no practicable mitigation was identified to address the proposed project's significant adverse impact to the westbound left-turn movement at this intersection in the Saturday post-game period, this impact would remain unmitigated.

All significant adverse impacts at the intersections of Atlantic Avenue with Hicks, Clinton, Court, and Smith Streets, and 3rd, 4th, Flatbush and Clermont Avenues would be fully mitigated in all peak hours in 2010 with the proposed traffic mitigation plan.

In the 2010 Build, over-capacity conditions that may potentially result in future queuing and spill back along Atlantic Avenue were identified on one or both Atlantic Avenue approaches at seven intersections in one or more peak hours, primarily during the weekday pre-game and Saturday pre- and post-game peak hours. With the proposed traffic mitigation plan, such conditions would occur primarily in the two Saturday periods in 2010 on one or both Atlantic Avenue approaches at four intersections—Boerum Place, Hoyt Street, Bond Street, and Nevins Street.

### 3rd Avenue

At the intersection of Third Avenue and Dean Street, the proposed traffic mitigation plan would fully mitigate the proposed project's significant adverse impacts to the eastbound Dean Street approach in all peak hours.

### 4th Avenue

As shown in Table 19-3, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts at five of the seven intersections impacted by the proposed project in 2010 along the 4th Avenue corridor. In addition, the number of impacts at each of the remaining two intersections would be reduced. At Bergen Street, the proposed traffic mitigation plan would fully mitigate all impacts in the weekday AM, midday, PM and weekday and Saturday pre-game peak hours. However, a significant adverse impact to the westbound Bergen Street approach in the Saturday 4-5 PM post-game peak hour would remain unmitigated, although delays would be reduced compared to the 2010 Build. At Union Street, the proposed traffic mitigation plane would fully mitigate the project's significant adverse impact to the westbound Union Street approach in the Saturday post-game peak hour. The proposed project's PM peak hour impact to the northbound left-turn movement would remain unmitigated.

All significant adverse impacts at the intersections of 4th Avenue with Flatbush and Atlantic Avenues, and at Pacific and Dean Streets and St. Mark's Place would be fully mitigated in all peak hours in 2010 with the proposed traffic mitigation plan.

In the 2010 Build, over-capacity conditions that may potentially result in future queuing and spill-back along 4th Avenue would occur during the weekday AM peak hour when the northbound approaches at Pacific and Dean Streets would both be operating substantially over capacity. These conditions would not occur in 2010 with implementation of the proposed traffic mitigation plan.

### 5th Avenue

At the intersection of 5th Avenue and Dean Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday AM, midday, PM and Saturday post-game

hours. However, significant adverse impacts to the northbound 5th Avenue and eastbound Dean Street approaches would remain unmitigated in the weekday pre-game peak hour as would impacts to the northbound and eastbound approaches in the Saturday pre-game peak hour. Delays on the eastbound approach would be reduced compared to the 2010 Build in the weekday and Saturday pre-game peak hours. At Bergen Street, the proposed mitigation plan would fully mitigate all significant adverse impacts in the weekday peak hours. The proposed project's impacts to the westbound Bergen Street approach in both Saturday peak hours would remain unmitigated, although delays would be reduced compared to the 2010 Build. Lastly, the intersection of 5th Avenue and Union Street would no longer be impacted with implementation of the proposed traffic mitigation plan.

#### 6th Avenue/S. Portland Avenue

The proposed project would result in significant adverse impacts at three intersections along 6th Avenue/S. Portland Avenue, and all three would continue to have unmitigated impacts with the proposed traffic mitigation plan. As previously discussed, significant adverse impacts would remain at Flatbush Avenue in the AM peak hour and at Atlantic Avenue in the two Saturday peak hours. In addition, at Dean Street, the proposed project's Saturday post-game impacts to the eastbound approach would remain unmitigated.

#### Carlton Avenue

As shown in Table 19-3, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts at four of the six intersections impacted by the proposed project in 2010 along the Carlton Avenue corridor. In addition, the number of impacts at each of the remaining two intersections would be reduced. As previously discussed, the mitigation plan would fully mitigate significant adverse impacts in two of three impacted peak hours at the intersection of Atlantic and Carlton Avenues. At Dean Street, significant adverse impacts in the weekday PM and pre-game and Saturday post-game periods would be fully mitigated. An impact to the eastbound approach in the Saturday pre-game period would remain unmitigated. Delay on the eastbound approach would be substantial, although reduced compared to the 2010 Build.

All significant adverse impacts at the intersections of Carlton Avenue with Park and Myrtle Avenues, and with Fulton, Pacific and Bergen Streets would be fully mitigated in all peak hours in 2010 with the proposed traffic mitigation plan.

#### Vanderbilt Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at six of the nine intersections impacted by the proposed project in 2010 along the Vanderbilt Avenue corridor, and would reduce the number of impacts at all three of the remaining impacted intersections. As previously discussed, the proposed project would result in significant adverse impacts at the intersection of Atlantic and Vanderbilt Avenues in all but the weekday post-game peak hour. One impact each in the AM, PM and Saturday post-game peak hour would remain with proposed geometric and operational improvements to the intersection.

At the intersection of Vanderbilt and Myrtle Avenues, the proposed mitigation plan would fully mitigate the proposed project's significant adverse impacts in the weekday AM, midday, PM, post-game and Saturday post-game peak hours. A significant adverse impact to the southbound approach in the weekday pre-game peak hour would remain unmitigated. At Dean Street, the proposed mitigation plan would fully mitigate all significant adverse impacts in the weekday AM, midday and pre-game and both Saturday peak hours. An impact to the eastbound Dean

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Street approach in the PM would remain unmitigated, although delay would be reduced compared to the 2010 Build.

All significant adverse impacts along the Vanderbilt Avenue corridor at Park and DeKalb Avenues, Fulton and Bergen Streets, St. Mark's Place and Prospect Place would be fully mitigated in all peak hours in 2010 with the proposed traffic mitigation plan.

In the 2010 Build, over-capacity conditions that may potentially result in future queuing and spill-back would occur along northbound Vanderbilt Avenue from Park Place to Bergen Street (a total of four intersections) in the weekday AM peak hour, and along southbound Vanderbilt Avenue from Bergen Street to Park Place in the weekday PM peak hour. These conditions would not occur in 2010 with implementation of the proposed traffic mitigation plan.

### Washington Avenue/Underhill Avenue

The proposed project would result in significant adverse impacts at three intersections along Washington Avenue and one along Underhill Avenue in 2010, and two of the four would continue to have unmitigated impacts with the proposed traffic mitigation plan. As previously discussed, significant adverse impacts would remain at the intersection with Atlantic Avenue in the PM peak hour. At the intersection of Washington Avenue and Eastern Parkway, the proposed mitigation plan would fully mitigate all significant adverse impacts in the weekday pre-game and Saturday post-game peak hours, and two of three impacts in the PM peak hour. An impact to the southbound approach in the PM peak hour would remain unmitigated. At the intersection of Underhill Avenue and Dean Street, the significant adverse impact to eastbound Dean Street in the Saturday post-game peak hour would be fully mitigated, eliminating all impacts at this intersection. All significant adverse impacts at the intersection of Washington Avenue and Dean Street would be fully mitigated by the proposed traffic mitigation plan.

### Other Corridors

The proposed traffic mitigation plan would fully address the significant adverse impacts at the intersection of Adams and Tillary Streets in the weekday PM, pre-game and post-game periods, and two of three impacts in the Saturday 1-2 PM peak hour. A significant adverse impact to the southbound Adams Street approach would remain unmitigated in the Saturday pre-game peak hour, as would impacts to the northbound through and southbound left-turn movements in the Saturday 4-5 PM peak hour. The delay for the Saturday pre-game impact would be reduced compared to the 2010 Build.

At the intersection of Boerum Place and Livingston Street, the proposed traffic mitigation plan would address all significant adverse impacts from the proposed project in the weekday pre-game and post-game and Saturday pre-game peak hours. An impact to the westbound Livingston Street approach in the Saturday post-game peak hour would remain unmitigated. Lastly, the proposed traffic mitigation plan would fully address the proposed project's significant adverse impact to eastbound Dean Street at Smith Street in the Saturday 4-5 PM post-game peak hour.

A further discussion on the relationship between the arterial and local street systems and the proposed project's potential overall effects on each is provided later in this chapter.

### 2016 BUILD WITH MITIGATION TRAFFIC CONDITIONS

Based on CEQR Technical Manual criteria, the reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection and companion operational modifications to Pacific Street, combined with the recommended demand management strategies and site-specific operational

improvements, would fully mitigate all significant adverse traffic impacts from the proposed project at a total of 33 intersections out of 68 with significant adverse impacts in 2016, and reduce the number of impacts at a further 32 intersections. As the data shown in Table 19-4 and Figures 19-5 through 19-11 indicate, a total of 35 intersections would continue to have unmitigated significant adverse traffic impacts in one or more peak hours in the 2016 Build With Mitigation condition. Overall, there would be a total of 11 intersections with unmitigated significant adverse impacts in the weekday AM peak hour, none in the midday, 15 in the PM, six in the 7-8 PM pre-game, and none in the 10-11 PM post-game peak hours. On Saturdays, the number of intersections with unmitigated impacts would total 15 during the 1-2 PM pre-game peak hour and 28 during the 4-5 PM post-game peak hour.

Intersections with one or more movements operating over capacity (i.e., a v/c ratio of 1.0 or greater) would total 27 in the weekday AM peak hour (compared to 50 in the 2016 Build), 10 in the midday (26 Build), 29 in the PM (42 Build), 17 in the 7-8 PM pre-game (37 Build) and three in the 10-11 PM post-game peak hour (six Build). On Saturdays, intersections operating over capacity would total 20 and 30 during the 1-2 PM pre-game and 4-5 PM post-game periods, respectively, compared to 36 and 47 during these periods, respectively, in the 2016 Build condition.

Although the Saturday pre-game and post-game peak hours would have the highest number of unmitigated impacts in 2016 (15 and 28, respectively), as discussed previously, eliminating parking and other permanent measures along busy retail corridors such as Atlantic and Flatbush Avenues on Saturday afternoons would be disruptive to adjacent retail land uses. Such measures were therefore not considered warranted for conditions that would occur during the fewer than four Nets basketball games each year scheduled for a Saturday afternoon. This is reflected in the relatively high number of unmitigated significant adverse impacts during the two Saturday peak hours. However, as also previously discussed, it is anticipated that on Saturdays when a Nets game is scheduled at the arena, a game-day specific plan would go into effect in coordination with NYPD and DOT. This plan would likely concentrate on improvements to the arterial system, such as implementing temporary (i.e., game day only) parking prohibitions at selected locations along Atlantic and Flatbush Avenues. Game day traffic signal preemption/override and similar traffic management strategies would also be employed, and police and traffic control officers would be deployed at key intersections in the vicinity of the arena during the pre-game and post-game periods as is currently done at other major event venues in the City.

The following provides a discussion of unmitigated significant adverse traffic impacts in 2016 by corridor. The potential for queuing and spill-back along the principal arterials serving the project site (Flatbush, Atlantic, and 4th Avenues) as well as along Vanderbilt Avenue and at the intersection of Adams and Tillary Streets in the 2016 Build With Mitigation condition is also discussed.

#### *Flatbush Avenue*

As shown in Table 19-4, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts at nine of the 15 intersections impacted by the proposed project in 2016 along the Flatbush Avenue corridor. The number of impacts at each of the remaining six intersections would be reduced. At Tillary Street, the proposed mitigation plan would eliminate the project's significant adverse impacts in the weekday midday and PM peak hours, one of the two impacts in the weekday pre-game peak hour, two of the three impacts in the Saturday pre-game peak hour, and one of the three impacts in the Saturday post-game peak hour. The impacts to the southbound Flatbush Avenue approach in the weekday pre-game and both Saturday peak periods would remain unmitigated, as would the Saturday post-game impact to the eastbound right-turn movement. Delay for all of these movements would be reduced compared to the 2016 Build condition.

**Table 19-4**  
**Summary of Intersections With Unmitigated Impacts - 2016**

Signalized Intersection		Analyzed Peak Hour						
		Weekday				Saturday		
		8-9 AM	12-1 PM	5-6 PM	7-8 PM	10-11 PM	1-2 PM	4-5 PM
Flatbush Ave at	Tillary Street				①		①	①①
	Myrtle Ave	②		①				
	Willoughby Street	All Impacts Mitigated						
	DeKalb Ave	All Impacts Mitigated						
	Fulton Street	②		①	②①		③	③
	Lafayette Street			②			①	②
	4th Ave	All Impacts Mitigated						
	Atlantic Ave	②		①	②			
	5th Ave	All Impacts Mitigated						
	Dean Street	All Impacts Mitigated						
	Bergen Street	All Impacts Mitigated						
	6th Ave	①						
	7th Ave	All Impacts Mitigated						
	St. Mark's Place	All Impacts Mitigated						
	Sterling Place	All Impacts Mitigated						
Atlantic Ave at	Hicks Street	All Impacts Mitigated						
	Henry Street							①
	Clinton Street							②
	Boerum Place							②
	Smith Street						①	②
	Hoyt Street			①			①	②
	Bond Street	②					②	②
	Nevins Street	①		①			①	①
	3rd Ave							①
	4th Ave							①
	Ft. Greene Place	①						①
	S. Portland Ave			①			②	②①
	Cumberland Street	All Impacts Mitigated						
	Carlton Ave	①①					①	①
	Clermont Ave	①		①				①
	Clinton Ave	All Impacts Mitigated						
	Vanderbilt Ave	①		②①	①			②
	Washington/Underhill Aves			①①				①
	Grand Ave							①
	3rd Ave at	Dean Street	All Impacts Mitigated					
4th Ave at	Pacific Street	All Impacts Mitigated						
	Dean Street	All Impacts Mitigated						
	Bergen Street						①	①
	St. Mark's Place							①
5th Ave at	Union Street			①				
	Dean Street				①①		①①	①
	Bergen Street	①					①	①
6th Ave at	Union Street	All Impacts Mitigated						
	Dean Street						②	②
S. Portland Ave at	Fulton Street	All Impacts Mitigated						

**Table 19-4 (cont'd)  
Summary of Intersections With Unmitigated Impacts - 2016**

Signalized Intersection		Analyzed Peak Hour						
		Weekday				Saturday		
		8-9 AM	12-1 PM	5-6 PM	7-8 PM	10-11 PM	1-2 PM	4-5 PM
Carlton Ave at	Park Ave	All Impacts Mitigated						
	Myrtle Ave	All Impacts Mitigated						
	Fulton Street						①	
	Pacific Street	All Impacts Mitigated						
	Dean Street						①	①
	Bergen Street	All Impacts Mitigated						
Vanderbilt Ave at	Park Ave	All Impacts Mitigated						
	Myrtle Ave				①			
	DeKalb Ave	All Impacts Mitigated						
	Fulton Street	All Impacts Mitigated						
	Pacific Street	All Impacts Mitigated						
	Dean Street			①				
	Bergen Street	All Impacts Mitigated						
	St. Mark's Place	All Impacts Mitigated						
	Prospect Place	All Impacts Mitigated						
	Park Place	All Impacts Mitigated						
Underhill Ave at	Dean Street	All Impacts Mitigated						
Washington Ave at	Dean Street	All Impacts Mitigated						
	Eastern Parkway			①			①	
Adams Street at	Tillary Street			①			②①	
Boerum Place at	Livingston Street			①				
	Schermerhorn Street	All Impacts Mitigated						
Smith Street at	Dean Street	All Impacts Mitigated						
② number of movements on the major street approaches with unmitigated significant adverse impacts in the peak hour.		① number of movements on the minor street approaches with unmitigated significant adverse impacts in the peak hour.						

At Myrtle Avenue, the proposed mitigation plan would fully mitigate significant adverse impacts in the weekday midday, pre-game, post-game and Saturday pre-game peak hours. Significant adverse impacts to the northbound approach and southbound left-turn movement would remain unmitigated in the AM peak hour, as would an impact to the southbound approach in the PM. Southbound delay in the PM would be reduced compared to the 2016 Build. At Fulton Street, all significant adverse impacts during the weekday midday and 10-11 PM peak hours would be fully mitigated. Unmitigated impacts would remain on the northbound approach (in the AM and both Saturday peak hours), the southbound approach (weekday pre-game and both Saturday peak hours), the southbound left-turn movement (AM and PM) and the eastbound approach (weekday pre-game). Delays would be reduced compared to the 2016 Build on the southbound approach in the weekday and Saturday pre-game periods, and on the northbound approach in both Saturday periods.

At Willoughby Street, the proposed traffic mitigation plan would fully mitigate the significant adverse impacts to southbound Flatbush Avenue in the weekday 5-6 PM and 7-8 PM pre-game peak hours.

At Lafayette Avenue, all significant adverse impacts during the weekday AM, midday, pre-game and post-game peak hours would be fully mitigated, as would one of two significant adverse impacts in the Saturday pre-game period. Weekday PM and Saturday post-game impacts to the northbound Flatbush Avenue approach and the southbound left-turn movement would remain unmitigated, along with an impact to the southbound left-turn movement in the Saturday pre-

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game period. Delays for all but the southbound left-turn movement in the Saturday post-game peak hour would be reduced compared to the 2016 Build condition.

At Atlantic Avenue, the proposed traffic mitigation plan would fully mitigate the proposed project's significant adverse impacts in the weekday midday and post-game and both Saturday peak hours. One of three impacts in the AM peak hour would also be fully mitigated, as would two of three impacts in the PM, and one of three in the weekday pre-game. Significant adverse impacts to the westbound right-turn movement in the AM (where substantial delays are projected to occur), the eastbound approach in the PM and weekday pre-game, and the westbound approach in the PM would remain unmitigated, although delays would be reduced compared to the 2016 Build in all cases. Lastly, at 6th Avenue, the proposed traffic mitigation plan would eliminate two Saturday post-game impacts (to the eastbound left-turn and westbound movements). An AM peak hour impact to the eastbound left-turn movement would remain unmitigated, but with lower delay than in the 2016 Build.

All significant adverse impacts at the intersections of Flatbush Avenue with Willoughby, Dean and Bergen Streets, DeKalb, 4th, 5th and 7th Avenues, St. Mark's Place and Sterling Place would be fully mitigated in all peak hours in 2016 with the proposed traffic mitigation plan.

As discussed in Chapter 12, "Traffic and Parking," future queuing can occur when an approach operates substantially over capacity, and such queuing may potentially affect both upstream and downstream intersections along a corridor. In the 2016 Build condition, Flatbush Avenue may experience future queuing and spill back on one or both approaches at six intersections in one or more peak hours. With implementation of the proposed project's traffic mitigation plan, only the southbound Flatbush Avenue approaches at Myrtle Avenue and at Fulton Street are projected to operate substantially over capacity (in the weekday pre-game peak hour).

### Atlantic Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at three of the 20 intersections impacted by the proposed project in 2016 along the Atlantic Avenue corridor, and would reduce the number of significant adverse impacts at all but one of the remaining 18 intersections. At Henry, Clinton, and Smith Streets, and Boerum Place, the proposed mitigation plan would eliminate significant adverse impacts in all weekday peak hours. Significant adverse impacts to eastbound Atlantic Avenue would remain unmitigated in the two Saturday peak hours at Clinton and Smith Streets, while the impacts to the westbound approach would remain unmitigated in the Saturday post-game peak hour at Henry, Clinton and Smith Streets and Boerum Place. Significant adverse impacts to the eastbound left-turn movement would also remain unmitigated in the Saturday post-game at and Boerum Place. Delays would be reduced compared to the 2016 Build for all of these locations with the exception of the unmitigated impact to the eastbound left-turn movement at Boerum Place.

At Hoyt Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday AM and pre-game periods, and one of two impacts in the Saturday pre-game period. Unmitigated significant adverse impacts would remain on westbound Atlantic Avenue in the weekday PM and both Saturday peak hours, and on the eastbound approach in the Saturday post-game. Westbound delays would be reduced compared to the 2016 Build. At Bond Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday midday and pre-game periods. Unmitigated significant adverse impacts would remain to both eastbound and westbound Atlantic Avenue in the weekday AM and both Saturday peak hours, although with generally lower delays than in the 2016 Build. Delays are

projected to be substantial for the eastbound approach in both the AM and Saturday pre-game peak hours. At Nevins Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday midday and one of two impacts in each of the weekday PM and Saturday post-game peak hours. Impacts to the westbound approach would remain unmitigated in the AM, PM and both Saturday peak hours, although with lower delays than compared to the 2016 Build.

With the proposed traffic mitigation plan, all impacts at the intersection of Atlantic and 3rd Avenues would be fully mitigated, as would all weekday peak hour impacts at the intersection of Atlantic Avenue with 4th Avenue. In the Saturday post-game peak hour, unmitigated significant adverse impacts would remain on the southbound 4th Avenue approach. As previously discussed, at the intersection with Flatbush Avenue, significant adverse impacts to the westbound through-right movement in the AM, the eastbound approach in the PM and weekday pre-game, and the westbound approach in the PM would remain unmitigated, although delays would be reduced compared to the 2016 Build in all cases.

At Ft. Greene Place, significant adverse impacts in the weekday PM and pre-game periods would be fully mitigated. Impacts to westbound Atlantic Avenue would remain unmitigated in the weekday AM and Saturday post-game peak hours. Westbound delay in the AM would be less than in the 2016 Build. At S. Portland Avenue/6th Avenue, all significant adverse impacts in the weekday AM, midday and pre-game periods would be fully mitigated, as would one of two impacts in the PM and two of four impacts in the Saturday pre-game. Significant adverse impacts would remain on the eastbound and/or westbound left-turn movements in the weekday PM and both Saturday peak hours, as well as on the northbound left-turn movement in the Saturday post-game. Delays would be reduced compared to the 2016 Build for all of these movements with the exception of the eastbound left-turn in the Saturday pre-game period. Delays are projected to remain substantial for the westbound left-turn movement in the Saturday post-game period.

At Carlton Avenue, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday PM and pre-game peak hours. Significant adverse impacts to the eastbound left-turn movement on Atlantic Avenue would remain unmitigated in the AM and Saturday pre-game peak hours, as would an impact to northbound Carlton Avenue in the AM. An impact to the westbound left-turn movement would also remain in the Saturday post-game peak hour. Northbound delay would be reduced in the AM compared to the 2016 Build. At Clermont Avenue, the proposed traffic mitigation plan would fully mitigate the significant adverse impact to the eastbound left-turn in the Saturday post-game, and reduce westbound delay in the AM compared to the 2016 Build. The significant adverse impacts to the westbound approach in the AM and the eastbound left-turn in the PM and Saturday post-game periods would, however, remain unmitigated.

As shown in Table 12-16 in Chapter 12, the proposed project would result in significant adverse impacts at the intersection of Atlantic and Vanderbilt Avenues in all but the weekday 10-11 PM peak hour in 2016. Eastbound and westbound Atlantic Avenue would experience significant adverse impacts in each of these periods; the northbound approach would experience impacts in the weekday AM, PM and both Saturday peak hours; and the southbound approach would be impacted in the weekday PM peak hour. Many of these significant adverse impacts would affect left-turn movements, with the westbound left-turn impacted in six periods, the northbound left-turn in four periods, and the eastbound left-turn in four. Delays are projected to be substantial for the northbound left-turn in the AM peak hour and for the westbound left-turn in the weekday

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and Saturday pre-game peak hours. As shown in Table 19-4, with the proposed geometric and operational improvements at this intersection, unmitigated significant impacts would remain on the westbound approach in the AM peak hour, the eastbound approach in the PM and Saturday post-game peak hours, the southbound approach in the PM and the westbound left-turn movement in the weekday PM, pre-game and Saturday post-game peak hours. All other significant impacts would be fully mitigated.

At the intersection of Atlantic Avenue with Washington and Underhill Avenues, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday AM, midday, pre-game and Saturday pre-game peak hours, along with one of two impacts in the Saturday 4-5 PM post-game peak hour. Significant adverse impacts to the eastbound approach and northbound left-turn in the PM and the eastbound approach in the Saturday post-game period would remain unmitigated. Eastbound delay in the Saturday post-game period would be reduced compared to the 2016 Build.

Lastly, at the intersection of Atlantic and Grand Avenues, the proposed project would result in a significant adverse impact to the westbound left-turn movement in the Saturday post-game peak hour. Signal timing adjustments to return this movement to its No Build levels of service would be impractical as they would result in new or worsened impacts on other approaches. Increasing capacity through changes to curbside regulations or modifications to lane striping were also found to be ineffective. As no practicable mitigation was identified to address the proposed project's Saturday post-game impact to the westbound left-turn movement at this intersection, this significant adverse impact would remain unmitigated.

All significant adverse impacts at the intersections of Atlantic Avenue with Hicks, Cumberland and Clinton Streets would be fully mitigated in all peak hours in 2016 with the proposed traffic mitigation plan.

In the 2016 Build, over-capacity conditions that may potentially result in future queuing and spill back along Atlantic Avenue were identified on one or both Atlantic Avenue approaches at six intersections in one or more peak hours. All periods were affected except the weekday 10-11 PM post-game peak hour. With the proposed traffic mitigation plan, such conditions would occur primarily in the weekday AM, midday, PM and two Saturday periods on one or both Atlantic Avenue approaches at nine intersections, including Boerum Place, Smith, Hoyt, Bond and Nevins Streets, and Flatbush and 6th Avenues. These conditions are not expected to occur along Atlantic Avenue in the weekday pre- and post-game peak hours in 2016 with the proposed traffic mitigation plan.

### 3rd Avenue

At the intersection of Third Avenue and Dean Street, the proposed traffic mitigation plan would fully mitigate all of the proposed project's significant adverse impacts to eastbound Dean Street.

### 4th Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at three of the seven intersections impacted by the proposed project in 2016 along the 4th Avenue corridor, and would reduce the number of impacts at three of the remaining four intersections. All significant adverse impacts at the intersections of 4th Avenue with Atlantic Avenue and with St. Mark's Place in the weekday periods and Saturday pre-game would be fully mitigated, however significant adverse impacts to southbound 4th Avenue in the Saturday post-game peak hour at each of these locations would remain unmitigated. At Bergen Street, the proposed traffic mitigation plan would fully address

all significant adverse impacts in the weekday AM, midday and pre-game peak hours. However, impacts to the westbound Bergen Street approach in both Saturday peak hours would remain unmitigated, although delays would be reduced compared to the 2016 Build.

At the intersection of 4th Avenue and Union Street, the proposed project would result in a significant adverse impact to the northbound left-turn movement in the weekday PM peak hour. Signal timing adjustments to return this movement to its No Build levels of service would be impractical as they would result in new or worsened impacts on other approaches. Increasing capacity through changes to curbside regulations or modifications to lane striping were also found to be ineffective. As no practicable mitigation was identified to address the proposed project's significant adverse impact in the PM to the northbound left-turn movement at this intersection, this impact would remain unmitigated.

All significant adverse impacts at the intersections of 4th Avenue with Flatbush Avenue, and at Pacific and Dean Streets would be fully mitigated in all peak hours in 2016 with the proposed traffic mitigation plan.

In the 2016 Build, over-capacity conditions that may potentially result in future queuing and spill back along 4th Avenue would occur during the weekday AM peak hour when the northbound approaches at Pacific and Dean Streets would both be operating substantially over capacity. These conditions are not expected to occur in 2016 with implementation of the proposed traffic mitigation plan.

#### 5th Avenue

At the intersection of 5th Avenue and Dean Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday AM, midday and PM peak hours. However, significant adverse impacts to the eastbound Dean Street and northbound 5th Avenue approaches would remain unmitigated in the weekday pre-game peak hour and both Saturday peak hours. Delays on these approaches would be reduced compared to the 2016 Build, however, delay for eastbound Dean Street in the Saturday pre-game period is projected to remain substantial. At Bergen Street, the proposed mitigation plan would address all impacts in the weekday midday, PM and pre- and post-game peak hours. The significant adverse impacts to the westbound Bergen Street approach in the AM and both Saturday peak hours would remain unmitigated, although delays would be reduced compared to the 2016 Build. Lastly, all significant adverse impacts at the intersection of 5th Avenue and Union Street would be fully mitigated with implementation of the proposed traffic mitigation plan.

#### 6th Avenue/S. Portland Avenue

The proposed project would result in significant adverse impacts at four intersections along 6th Avenue/S. Portland Avenue, and three would continue to have unmitigated impacts with the proposed traffic mitigation plan. As previously discussed, significant adverse impacts would remain at Flatbush Avenue in the AM peak hour and at Atlantic Avenue in the weekday PM and both Saturday peak hours. At Dean Street, significant adverse impacts in the weekday pre-game and post-game periods would be fully mitigated, while impacts to the eastbound left-turn and through movements in both Saturday periods would remain unmitigated, although with less delay compared to the 2016 Build condition. All significant adverse impacts at the intersection of S. Portland Avenue and Fulton Street would be fully mitigated with the proposed traffic mitigation plan.

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### Carlton Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at four of the seven intersections impacted by the proposed project in 2016 along the Carlton Avenue corridor, and would reduce the number of impacts at all of the remaining intersections. As previously discussed, the traffic mitigation plan would fully mitigate significant adverse impacts in two of five impacted peak hours at the intersection of Atlantic and Carlton Avenues. At the intersections with Fulton Street and Dean Street, all weekday peak hour impacts would be fully mitigated, as would a Saturday pre-game peak hour impact at Fulton Street. A significant adverse impact to the northbound approach at Fulton Street in the Saturday post-game would remain unmitigated, as would impacts to eastbound Dean Street in both Saturday peak periods. Delays would be reduced in all three cases compared to the 2010 Build, however, delay for eastbound Dean Street in the Saturday pre-game period is projected to remain substantial.

All significant adverse impacts at the intersections of Carlton Avenue with Park and Myrtle Avenues, and with Pacific and Bergen Streets would be fully mitigated in all peak hours in 2016 with the proposed traffic mitigation plan.

### Vanderbilt Avenue

The proposed traffic mitigation plan would fully mitigate all significant adverse impacts at eight of the eleven intersections impacted by the proposed project in 2016 along the Vanderbilt Avenue corridor, and would reduce the number of impacts at the remaining three intersections. As previously discussed, the proposed project would result in significant adverse impacts at the intersection of Atlantic and Vanderbilt Avenues in all but the weekday post-game peak hour. With the proposed geometric and operational improvements at this intersection, unmitigated significant impacts would remain on the westbound approach in the AM peak hour, the eastbound approach in the PM and Saturday post-game peak hours, the southbound approach in the PM and the westbound left-turn movement in the weekday PM, pre-game and Saturday post-game peak hours. All other significant impacts would be fully mitigated.

At the intersection of Vanderbilt and Myrtle Avenues, the proposed mitigation plan would fully mitigate the significant adverse impacts in the weekday midday, PM, post-game and Saturday post-game peak hours, and one of two impacts in the weekday pre-game. An impact to the southbound approach in the weekday pre-game peak hour would remain unmitigated, although with reduced delay compared to the 2016 Build. At Dean Street, the proposed mitigation plan would fully mitigate all significant adverse impacts in all peak hours with the exception of the impact to the eastbound Dean Street approach in the weekday 5-6 PM peak hour. Although not fully mitigated, delay on this approach would be reduced compared to the 2016 Build.

All significant adverse impacts along the Vanderbilt Avenue corridor at Park and DeKalb Avenues, Fulton, Pacific and Bergen Streets, St. Mark's Place, Prospect Place and Park Place would be fully mitigated in all peak hours in 2016 with the proposed traffic mitigation plan.

In the 2016 Build, over-capacity conditions that may potentially result in future queuing and spill back along Vanderbilt Avenue may occur on one or both approaches at a total of eight intersections in one or more peak hours. With implementation of the proposed traffic mitigation plan, such conditions are only anticipated on the southbound Vanderbilt Avenue approach to Atlantic Avenue in the weekday PM.

### Washington Avenue/Underhill Avenue

The proposed project would result in significant adverse impacts at three intersections along Washington Avenue and one along Underhill Avenue in 2016, and two of the four would continue

to have unmitigated impacts with the proposed traffic mitigation plan. As previously discussed, significant adverse impacts would remain at the intersection with Atlantic Avenue in the PM and Saturday post-game peak hours. At the intersection of Washington Avenue and Eastern Parkway, the proposed mitigation plan would fully mitigate all significant adverse impacts in the weekday AM, pre-game and Saturday pre-game peak hours. Significant adverse impacts to the southbound approach in the PM and Saturday post-game peak hours would remain unmitigated. At Underhill Avenue and Dean Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts. Lastly, all significant adverse impacts at the intersection of Washington Avenue and Dean Street would be fully mitigated by the proposed traffic mitigation plan.

#### Other Corridors

The proposed traffic mitigation plan would fully address the significant adverse impacts at the intersection of Adams and Tillary Streets in the weekday AM, midday, pre-game and post-game periods, one of two impacts in the weekday PM, and two of three impacts in the Saturday post-game peak hour. A PM peak hour impact to the northbound left-turn movement would remain unmitigated, as would impacts to the westbound right-turn, and southbound approach in the Saturday pre-game, and the northbound through movement in the Saturday post-game peak hour. The delay for the PM and Saturday post-game impacts would be reduced compared to the 2016 Build.

At the intersection of Boerum Place and Livingston Street, the proposed traffic mitigation plan would fully mitigate all significant adverse impacts in the weekday pre-game and both Saturday peak hours. A significant adverse impact to the southbound left-turn movement in the weekday PM peak hour would remain unmitigated.

All significant adverse impacts at the intersection of Boerum Place and Schermerhorn Street would be fully mitigated under the proposed traffic mitigation plan. The proposed traffic mitigation plan would also fully mitigate the significant adverse impact to eastbound Dean Street at Smith Street in the Saturday post-game peak hour.

In the 2016 Build, over-capacity conditions that may potentially result in future queuing and spill back would occur along the southbound Adams Street approach at Tillary Street in the Saturday pre-game peak hour, and along the northbound approach in the Saturday post-game peak hour. With implementation of the proposed traffic mitigation plan, only the southbound Adams Street approach in the Saturday pre-game is expected to experience such conditions in 2016.

#### Effects on Arterial and Local Street Systems

Under existing peak hour conditions, through traffic flows on both the major arterials such as Atlantic and Flatbush Avenues, and on the local streets (Dean Street for example). In the peak direction, the present traffic flows represent an “equilibrium” condition between the arterials and the (mainly parallel) local streets. These equilibrium conditions result from congestion on the arterials including queues and spill-back causing delays that, in turn, cause some traffic to seek a quicker, though longer, route through the local street system. Improvements to the arterial system would typically draw some traffic back from the local system (and vice versa). Under future 2016 No Build peak hour conditions, it is reasonable to expect that another equilibrium condition would be established in the future network and, given the peak hour capacity conditions on the key arterials (especially the constraint at the Flatbush Avenue/Atlantic Avenue/4th Avenue intersection), more new future No Build traffic will likely utilize the local system and less so on the arterial system. This was considered in the traffic assignments used to prepare the DEIS and FEIS No Build traffic analyses.

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The traffic analyses for the proposed project therefore assign new project traffic to both the arterial system and to the local system in the study area. As noted in Table 12-32, of the 68 intersections impacted in one or more peak hours in 2016, approximately 60 percent were on the arterial system and 40 percent on the local system. In terms of the proposed project affecting the No Build “equilibrium” condition, it is expected that there would be peak period congestion on both systems, with little if any alteration of the balance between these systems. Thus, the use of local streets by project-related traffic was considered in the DEIS and FEIS traffic analyses.

However, both the proposed project, and its traffic mitigation plan outlined earlier in this chapter, include major physical and operational improvements to the arterial system, along with travel demand management strategies associated with game-day trip making. Of particular note is the substantial physical improvement to the Flatbush Avenue/Atlantic Avenue/4th Avenue intersection, the extension of weekday peak hour parking regulations on Atlantic Avenue to 8 PM, and the addition of a fourth lane to Flatbush Avenue northbound between Dean Street and Atlantic Avenue. These physical improvements would enhance arterial capacity on all days, both game days and non-game days.<sup>1</sup> On game days, the results of the mitigation analysis shown in Table 19-4 indicate that unmitigated<sup>2</sup> impacts would remain at a limited number of intersections during the weekday (11 in the AM, none in the midday, 14 in the PM, six in the pre-game peak hour and none in the post-game period). As such, under these weekday game day conditions, No Build equilibrium or near-equilibrium conditions would remain between overall traffic flows on the arterial system versus the local system. On non-game days, however, the improvements to the arterial system in conjunction with the project’s traffic mitigation plan would likely result in some limited shifting of peak hour/peak direction traffic from the local system back to the arterial system.

Without or with the proposed project, future traffic flows would likely result in weekday queues at key intersections in and around the project site and Downtown Brooklyn, both on the arterial system and the local system. These queues would often extend to nearby intersections. The project traffic assignment, the resulting impact analyses, and the mitigation plan all recognize and consider that both the arterial and local systems would be heavily utilized, and therefore the resultant after-mitigation effects of the project, as documented in this chapter, represent the worst case weekday game-day conditions to be expected in 2016.

On Saturday afternoon game days, Table 19-4 shows that there would be numerous unmitigated impacts both to the arterial system and the local system. As this Saturday game day condition would occur fewer than four times per year, it is anticipated that a more game-day specific plan would go into effect in coordination with NYPD and NYCDOT as discussed previously in this chapter. This plan would concentrate on improvements to the arterial system, such as pre-game period parking prohibitions at selected locations on Atlantic and Flatbush Avenues, game day signal preemption/override and similar traffic management strategies. Like weekday conditions, the concentration of traffic improvements along the arterials would help focus project traffic away from the local system and to the arterial system in the study area.

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<sup>1</sup>It should be noted that, typically there would be basketball games on fewer than 15 percent of all days of the year.

<sup>2</sup>“Unmitigated” implies that traffic conditions would be worse than the No Build condition.

### CONCLUSIONS

In summary, all significant impacts in 2010 would be fully mitigated at 33 out of 58 intersections; the number of significant impacts would be reduced at a further 24 intersections, and no significant impacts would be mitigated at a total of one intersection. There would be four unmitigated significant adverse impacts in the weekday 8-9 AM peak hour in 2010, none in the midday, six in the 5-6 PM, five in the 7-8 PM pre-game and one in the 10-11 PM post-game peak hours. On Saturdays, the number of unmitigated significant adverse impacts would total 10 during the 1-2 PM pre-game peak hour and 13 during the 4-5 PM post-game peak hour.

In 2016, all significant impacts would be fully mitigated at 33 out of 68 intersections; the number of significant impacts would be reduced at a further 33 intersections, and no significant impacts would be mitigated at a total of two intersections. There would be 11 intersections with unmitigated significant adverse impacts in the weekday 8-9 AM peak hour, none in the midday, 15 in the 5-6 PM, six in the 7-8 PM pre-game, and none in the 10-11 PM post-game peak hours. On Saturdays, the number of intersections with unmitigated impacts would total 15 during the 1-2 PM pre-game peak hour and 28 during the 4-5 PM post-game peak hour.

### ACCIDENTS

As discussed in Chapter 12, "Traffic and Parking," the proposed project would add new vehicle and pedestrian trips through intersections in the vicinity of the project site, some of which have experienced relatively high numbers of accidents. Notable among these is the intersection of Atlantic and Flatbush Avenues which experienced 41 reportable accidents from 2002 through 2004. This intersection essentially functions as part of a complex triangular system formed by the intersection of Atlantic, Flatbush and 4th Avenues. The proposed project would generate appreciable numbers of vehicle and pedestrian trips through this location in both 2010 and 2016 (with the highest numbers in the pre- and post-game periods), but would also incorporate a number of design features that would enhance safety, including reconfiguring Atlantic Avenue to eliminate awkward vehicular movements and conflicts with stopped buses, and a major new on-site subway entrance that would eliminate the need for subway riders to negotiate the intersection.

As discussed above, the proposed project's traffic mitigation plan would include a major restructuring of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection designed to improve traffic flow and reduce the potential for vehicle and pedestrian conflicts. As shown in Figure 19-1, 4th Avenue northbound would terminate at Atlantic Avenue instead of at Flatbush Avenue; the southbound movement from Flatbush Avenue to 4th Avenue would be maintained; a new pedestrian plaza (an expanded Times Plaza) would be constructed; and pedestrian crossings would be modified. The sidewalk at the northeast corner of Atlantic Avenue and Flatbush Avenue would be extended to shorten the crossing distance for pedestrians on the north crosswalk, reducing the number of traffic lanes to be traversed from seven to six. The number of vehicular movements conflicting with pedestrians at Flatbush Avenue/4th Avenue would be reduced with the elimination of the 4th Avenue approach, and an all-pedestrian phase would be introduced. The west crosswalk on Atlantic Avenue at 4th Avenue would be eliminated to avoid conflicts between pedestrians and the heavy northbound left-turn movement from 4th Avenue. Decorative fencing would be installed curbside at the northwest and southwest corners to discourage pedestrians from crossing where there is no crosswalk. The crossing distance for pedestrians on the north leg of the intersection would be essentially halved with the westward expansion of Times Plaza.

In addition, as part of the overall mitigation plan, Pacific Street would be converted to one-way eastbound operation from 4th to Flatbush Avenues, and the intersection at Flatbush Avenue would

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be signalized. A new crosswalk on Flatbush Avenue at this intersection (see Figure 19-1) would likely attract pedestrian demand from the crossing at Atlantic Avenue, one block to the north.

Along with these physical and operational measures, it is anticipated that on days when a basketball game or other major event is scheduled at the arena, police or traffic control officers would be deployed to this and other locations during the pre-game and post-game periods to minimize conflicts between vehicle and pedestrian flows to the extent possible. As noted previously, the project sponsor is committed to working with DOT and NYPD to ensure that needed resources are available for this purpose.

Another notable location with respect to accidents is the intersection of Atlantic and Vanderbilt Avenues which experienced a total of 39 reportable accidents from 2002 through 2004. As discussed in Chapter 12, "Traffic and Parking," a likely factor contributing to the relatively high number of accidents is the poor geometry of the intersection. In addition to being offset, the northbound and southbound approaches are not aligned with each other, leading to awkward vehicular movements and long pedestrian crossings on Atlantic Avenue. It should also be noted that an automotive service station is presently located at the southwest corner of the intersection, and field observations suggest that conflicts with vehicles entering and exiting this facility may also be a contributing factor to the location's relatively high accident rate.

By 2016, the proposed project would increase traffic through the intersection of Atlantic and Vanderbilt Avenues by five to 16 percent in each peak hour, and would add upwards of 460 new peak hour pedestrian trips. As discussed above, geometric and operational improvements to enhance vehicle flow and pedestrian safety are proposed as mitigation at the intersection of Atlantic and Vanderbilt Avenues. Included in these improvements would be the elimination of the eastbound left-turn movement from Atlantic Avenue to Vanderbilt Avenue resulting in a reduction in the potential for vehicle/vehicle and vehicle/pedestrian conflicts, widening the Atlantic Avenue median adjacent to the west crosswalk to provide additional pedestrian refuge space, and re-striping of the northbound Vanderbilt Avenue approach to accommodate four northbound lanes and better align northbound traffic with the receiving lanes on the north side of Atlantic Avenue. (A lay-by lane along the west curb of Vanderbilt Avenue south of Atlantic Avenue and changes to signal timings and curbside regulations are also proposed.) To further enhance pedestrian safety, it is anticipated that the proposed project would include the installation of new high visibility crosswalks and better lighting at this intersection. In addition, the proposed development on Block 1121 would displace the existing service station at the southwest corner of the intersection, and eliminate the curb cuts in proximity to the intersection. The introduction of a leading pedestrian interval as part of the intersection's signal plan was also considered, but found to be infeasible as it would generally necessitate reducing green time for traffic movements that are already projected to be congested or subject to queuing in one or more peak hours.

The intersection of Flatbush Avenue and Dean Street at the southwest corner of the project site experienced a total of 21 reportable accidents from 2002 through 2004. By 2016, the proposed project would increase traffic through this intersection by six to 19 percent in each peak hour and add upwards of 440 new peak hour pedestrian trips. Under the proposed project's traffic mitigation plan, the existing prohibition on southbound left-turns from Flatbush Avenue to Dean Street would be extended to all periods. Eliminating this movement at all times would reduce the potential for conflicts between turning vehicles and northbound traffic, as well as between turning vehicles and pedestrians on the west crosswalk. In addition, as shown in Figure 19-1,

with project implementation, new high visibility crosswalks would be installed at this intersection, further enhancing pedestrian safety.

It should also be noted that, as at Atlantic Avenue and Vanderbilt Avenue, an automotive service station is presently located at the northeast corner of Flatbush Avenue and Dean Street. Field observations suggest that conflicts with vehicles entering and exiting this facility, which has curb cuts located in close proximity to the intersection, may be a contributing factor to the location's accident rate. With development of the proposed project, this service station would be displaced, and the curb cuts in close proximity to the intersection would be eliminated.

### **PARKING**

As discussed above, the proposed traffic mitigation plan incorporates a number of modifications to curbside parking regulations. Additional parking restrictions would be implemented at approximately 14 locations in 2010 and 19 locations in 2016. In 2010, these new restrictions would result in the loss of approximately 60 parking spaces during peak periods, of which approximately 50 would be within ¼ mile of the project site. In 2016, mitigation-related parking restrictions would result in the displacement of 90 curbside parking spaces during weekday peak periods of which approximately 50 would be located within ¼ mile of the project site. On Saturdays in 2016, mitigation-related parking restrictions would result in the displacement of up to 70 curbside parking spaces (60 within ¼ mile of the project site). Accounting for the reduction in on-street parking capacity as a result of project-related changes to the street network and the proposed traffic mitigation plan, the number of on-street parking spaces available to accommodate project demand within ¼ mile of the project site in 2010 would total approximately 1,622 in the weekday 5-6 PM peak hour, 2,949 in the weekday 7-8 PM peak hour, and 1,889 in the Saturday 1-2 PM peak hour. The number of on-street parking spaces available to accommodate project demand within ¼ mile of the project site in 2016 would total approximately 1,509 in the weekday 5-6 PM peak hour, 2,861 in the weekday 7-8 PM peak hour, and 1,817 in the Saturday 1-2 PM peak hour.

As discussed in Chapter 12, "Traffic and Parking," the proposed project would include sufficient new off-street parking capacity to fully accommodate all project-generated parking demand during the weekday AM and midday peak periods, and there would be sufficient parking capacity available both on-site and in public off-street facilities within ½ mile of the proposed arena to fully accommodate all project demand during a weekday evening and a weekend afternoon Nets basketball game. However, it is expected that some drivers en route to the project site, especially those en route to an event at the arena, would choose to park on-street if spaces were available. It is therefore likely that during an event at the arena, much of the on-street parking capacity available in the immediate vicinity of the arena would be utilized by project-generated demand.

### **AIR QUALITY**

Chapter 14, "Air Quality," showed the maximum predicted carbon monoxide (CO) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) concentrations related to traffic generated by 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 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<sub>2.5</sub> interim guidance criteria. Appendix D presents the tables summarizing these results.

## **G. TRANSIT AND PEDESTRIANS**

### **SUBWAY SERVICE**

The transit incentive mitigation measures outlined previously would increase subway transit usage for arena-related travel. The incentive would also be available for buses; however, the longer-trip subway market is likely to be the mode with almost all of the increased transit trips. As such, the analysis of study area subway stations has been revised to address the anticipated increase in arena-generated subway demand, most of which would occur at the Atlantic Avenue/Pacific Street subway station complex immediately adjacent to the proposed arena. Tables 19-5 through 19-8 show the anticipated levels of service under Build with Mitigation conditions during the weekday 7-8 PM pre-game period at analyzed stairways, escalators, ramps, and fare arrays at this complex for both 2010 and 2016. As shown in Tables 19-5 through 19-8, all analyzed stairways, escalators, ramps, and fare arrays would operate at LOS C or better in all analyzed peak hours in both 2010 and 2016 with the exception of the two new Urban Room escalators (E1 and E2), the new stair U5/U7 connecting the subpassage to the platform for Brooklyn-bound Nos. 2 and 3 trains, ramps R2 and R3 providing access to and within the subpassage, and the new Urban Room fare array. As shown in Tables 19-5 and 19-7, escalators E1 and E2 would operate at capacity in the pre-game peak hour with LOS E conditions (a v/c ratio of 0.89) in 2010 and LOS F conditions in 2016 (a v/c ratio of 1.03) due primarily to demand exiting the subway en route to a basketball game at the arena. (It is assumed that both escalators would operate in the up direction in the pre-game period.) However, as discussed in Chapter 13, both escalator E1 and escalator E2 would be paired with an immediately adjacent 9-foot-wide stair (O1 and O2, respectively) with which it would operate as a combined system. The LOS E and F conditions at the escalators reflect the fact that most pedestrians would elect to use the escalators for convenience, and that this would typically result in capacity conditions on the escalators during periods of peak demand, even with uncongested conditions on the adjacent stairs. As shown in Tables 19-5 and 19-7, both stair O1 and stair O2 would operate at uncongested LOS A or B in the pre-game peak period under Build With Mitigation conditions, with from 46 to 59 percent of their capacity available. It is therefore expected that, as queuing at the escalators increased, pedestrian demand would increasingly utilize the available capacity at stairs O1 and O2. As the escalators would operate as a combined system with the adjacent stairs, and as these stairs would have substantial available capacity in the pre-game peak hour, the projected capacity conditions at new escalators E1 and E2 are not considered an unacceptable condition for the peak hour prior to a basketball game. These escalators would therefore not be considered significantly adversely impacted by the increase in demand resulting from the proposed transit incentive mitigation measures.

As also shown in Tables 19-5 and 19-7, in the pre-game peak hour, stair U5/U7 would be operating at 11.77 PFM in 2016, (over its practical capacity of 10 PFM), with LOS D conditions and a v/c ratio of 1.18, primarily as a result of surged demand en route to the arena. As discussed in Chapter 13, this reconstructed 10-foot-6-inch stair would connect the subpassage to the Brooklyn-bound 2,3 platform, and would replace an existing 6-foot-7-inch switchback stair. Although this stair would be operating above its practical capacity of 10 PFM in the pre-game peak hour under Build With Mitigation conditions in 2016, it would still be operating below its absolute capacity of 15 PFM

**Table 19-5**  
**Build With Mitigation Stairway and Escalator Conditions**  
**at the Atlantic Avenue/Pacific Street Station Complex - 2010**

No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2010 No Build			2010 Build			Width Increment Threshold in Inches (5)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
O1	New Urban Room Stairway @ Atlantic Avenue	7-8 PM	6.00	900	n/a	367	367	n/a	n/a	n/a	4.08	0.41	A	---
O2	New Urban Room Stairway @ Flatbush Avenue	7-8 PM	6.00	900	n/a	367	367	n/a	n/a	n/a	4.08	0.41	A	---
E1	New Urban Room Escalator @ Atlantic Avenue (4)	7-8 PM	4.00	1,050	n/a	933	933	n/a	n/a	n/a	n/a	0.89	E	---
E2	New Urban Room Escalator @ Flatbush Avenue (4)	7-8 PM	4.00	1,050	n/a	933	933	n/a	n/a	n/a	n/a	0.89	E	---
S2	Stairway @ NE Corner @ Fourth Ave/Pacific Street	7-8 PM	5.20	780	85	210	295	1.09	0.11	A	3.78	0.38	A	---
O3	New Urban Room Stairway to BMT Mezzanine (east)	7-8 PM	2.40	360	n/a	123	123	n/a	n/a	n/a	3.42	0.34	A	---
O4	New Urban Room Stairway to BMT Mezzanine (west)	7-8 PM	2.40	360	n/a	123	123	n/a	n/a	n/a	3.42	0.34	A	---
O5	New BMT Platform Stairway (south)	7-8 PM	4.00	600	n/a	279	279	n/a	n/a	n/a	4.65	0.47	A	---
O6	New BMT Platform Stairway (north)	7-8 PM	4.00	600	n/a	434	434	n/a	n/a	n/a	7.23	0.72	C	---
E3	New Urban Room Escalator from BMT Mezzanine	7-8 PM	4.00	1,050	n/a	467	467	n/a	n/a	n/a	n/a	0.44	C	---
U5/U7	Reconstructed Subpassage Stairway to Brooklyn-bound IRT 2,3 Platform	7-8 PM	7.20	1,080	n/a	1,076	1,076	n/a	n/a	n/a	9.96	1.00	C	---
U9/U11	Rehabilitated Subpassage Stairway to IRT 4,5 Platform	7-8 PM	7.84	1,176	n/a	916	916	n/a	n/a	n/a	7.79	0.78	C	---

**Notes:**

- (1) Effective width measured as stairwell width less one foot to account for side handrails and 1.5 feet for both center and side handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
  - (2) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 persons per foot-width per minute (PFM). Escalator capacity based on 70 persons per minute for a four-foot-wide escalator.
  - (3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Demand at new processors includes No Build volumes diverted from existing processors.
  - (4) Escalators E1 and E3 assumed to operate in the up direction at all times. Escalator E2 assumed to operate in the up direction in the 7-8 PM period only.
  - (5) Width increment threshold needed to restore processor to No Build conditions.
- \* Denotes a significant adverse impact based on CEQR criteria.

This table has been revised from the DEIS.

**Table 19-6**  
**Build With Mitigation Walkway and Fare Array Conditions**  
**at the Atlantic Avenue/Pacific Street Station Complex - 2010**

<b>WALKWAYS</b>														
No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2010 No Build			2010 Build			Width Increment Threshold in Inches (4)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
R1	New Urban Room Ramp to Manhattan-bound IRT 2,3 Platform	7-8 PM	4.80	1,080	n/a	212	212	n/a	n/a	n/a	2.94	0.20	A	----
R2	New Urban Room Ramp to IRT Subpassage	7-8 PM	9.60	2,160	n/a	1,917	1,917	n/a	n/a	n/a	13.31	0.89	C	----
R3	New Ramp Within IRT Subpassage	7-8 PM	8.80	1,980	n/a	1,917	1,917	n/a	n/a	n/a	14.52	0.97	C	----
<b>FARE ARRAYS AND EXIT GATES</b>														
No.	Station Element/Location	Peak Period	Maximum 15 Minute Capacity (5)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2010 No Build		2010 Build					
							V/C	LOS	V/C	LOS				
----	New Urban Room Fare Array @ Atlantic Ave/Flatbush Ave 8 entry/exit turnstiles 1 high entry/exit turnstile	7-8 PM	4,140	n/a	2,600	2,600	n/a	n/a	0.63	D				
C-9	Pacific St Station Fare Array @ 4th Ave/Pacific Street 8 entry/exit turnstiles	7-8 PM	3,840	238	210	448	0.06	A	0.12	A				
<b>Notes:</b>														
(1) Effective width measured as walkway width less two feet to account for wall avoidance. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.														
(2) Walkway capacity in persons per 15 minutes based on NYC Transit guidelines of 15 persons per foot-width per minute (PFM).														
(3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Demand at new processors includes No Build volumes diverted from existing processors.														
(4) Width increment threshold needed to restore walkway to No Build conditions.														
(5) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.														
* Denotes a significant adverse impact based on CEQR criteria.														

This table has been revised from the DEIS.

**Table 19-7**

**Build With Mitigation Stairway and Escalator Conditions  
at the Atlantic Avenue/Pacific Street Station Complex - 2016**

No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build			2016 Build			Width Increment Threshold in Inches (5)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
O1	New Urban Room Stairway @ Atlantic Avenue	7-8 PM	6.00	900	n/a	490	490	n/a	n/a	n/a	5.44	0.54	B	---
O2	New Urban Room Stairway @ Flatbush Avenue	7-8 PM	6.00	900	n/a	490	490	n/a	n/a	n/a	5.44	0.54	B	---
E1	New Urban Room Escalator @ Atlantic Avenue (4)	7-8 PM	4.00	1,050	n/a	1,084	1,084	n/a	n/a	n/a	n/a	1.03	F	---
E2	New Urban Room Escalator @ Flatbush Avenue (4)	7-8 PM	4.00	1,050	n/a	1,084	1,084	n/a	n/a	n/a	n/a	1.03	F	---
S2	Stairway @ NE Corner @ Fourth Ave/Pacific Street	7-8 PM	5.20	780	88	249	337	1.13	0.11	A	4.32	0.43	A	---
O3	New Urban Room Stairway to BMT Mezzanine (east)	7-8 PM	2.40	360	n/a	154	154	n/a	n/a	n/a	4.28	0.43	A	---
O4	New Urban Room Stairway to BMT Mezzanine (west)	7-8 PM	2.40	360	n/a	154	154	n/a	n/a	n/a	4.28	0.43	A	---
O5	New BMT Platform Stairway (south)	7-8 PM	4.00	600	n/a	339	339	n/a	n/a	n/a	5.65	0.57	B	---
O6	New BMT Platform Stairway (north)	7-8 PM	4.00	600	n/a	511	511	n/a	n/a	n/a	8.52	0.85	C	---
E3	New Urban Room Escalator from BMT Mezzanine	7-8 PM	4.00	1,050	n/a	542	542	n/a	n/a	n/a	n/a	0.52	C	---
U5/U7	Reconstructed Subpassage Stairway to Brooklyn-bound IRT 2,3 Platform	7-8 PM	7.20	1,080	n/a	1,271	1,271	n/a	n/a	n/a	11.77	1.18	D	---
U9/U11	Rehabilitated Subpassage Stairway to IRT 4,5 Platform	7-8 PM	7.84	1,176	n/a	1,071	1,071	n/a	n/a	n/a	9.11	0.91	C	---

**Notes:**

- (1) Effective width measured as stairwell width less one foot to account for side handrails and 1.5 feet for both center and side handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
  - (2) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 persons per foot-width per minute (PFM). Escalator capacity based on 70 persons per minute for a four-foot-wide escalator.
  - (3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Demand at new processors includes No Build volumes diverted from existing processors.
  - (4) Escalators E1 and E3 assumed to operate in the up direction at all times. Escalator E2 assumed to operate in the up direction in the 7-8 PM period only.
  - (5) Width increment threshold needed to restore processor to No Build conditions.
- \* Denotes a significant adverse impact based on CEQR criteria.

This table has been revised from the DEIS.

**Table 19-8**  
**Build With Mitigation Walkway and Fare Array Conditions at the**  
**Atlantic Avenue/Pacific Street Station Complex - 2016**

<b>WALKWAYS</b>														
No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build			2016 Build			Width Increment Threshold in Inches (4)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
R1	New Urban Room Ramp to Manhattan-bound IRT 2,3 Platform	7-8 PM	4.80	1,080	n/a	277	277	n/a	n/a	n/a	3.85	0.26	A	----
R2	New Urban Room Ramp to IRT Subpassage	7-8 PM	9.60	2,160	n/a	2,266	2,266	n/a	n/a	n/a	15.74	1.05	D	----
R3	New Ramp Within IRT Subpassage	7-8 PM	8.80	1,980	n/a	2,266	2,266	n/a	n/a	n/a	17.17	1.14	D	----
<b>FARE ARRAYS AND EXIT GATES</b>														
No.	Station Element/Location	Peak Period	Maximum 15 Minute Capacity (5)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build		2016 Build					
							V/C	LOS	V/C	LOS				
----	New Urban Room Fare Array @ Atlantic Ave/Flatbush Ave 8 entry/exit turnstiles 1 high entry/exit turnstile	7-8 PM	4,140	n/a	3,149	3,149	n/a	n/a	0.76	D				
C-9	Pacific St Station Fare Array @ 4th Ave/Pacific Street 8 entry/exit turnstiles	7-8 PM	3,840	245	249	494	0.06	A	0.13	A				
<b>Notes:</b>														
(1) Effective width measured as walkway width less two feet to account for wall avoidance. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.														
(2) Walkway capacity in persons per 15 minutes based on NYC Transit guidelines of 15 persons per foot-width per minute (PFM).														
(3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Demand at new processors includes No Build volumes diverted from existing processors.														
(4) Width increment threshold needed to restore walkway to No Build conditions.														
(5) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.														
* Denotes a significant adverse impact based on CEQR criteria.														

This table has been revised from the DEIS.

(LOS E/F), and each surge of alighting passengers will create some queuing at this stair. The proposed design of stair U5/U7 was developed in consultation with NYCT, and they have indicated that LOS D would be an acceptable level of service for this stair during a special event condition such as a basketball game or other large event at the proposed Atlantic Yards Arena. This new stair would therefore not be considered significantly adversely impacted by the increase in demand resulting from the proposed transit incentive mitigation measures.

As shown in Tables 19-6 and 19-8, in the pre-game peak hour, ramp R2 would be operating at 13.31 PFM (LOS C) in 2010, but at 15.74 PFM in 2016, over its practical capacity of 15 PFM, with LOS D conditions and a v/c ratio of 1.05. Ramp R3 would be operating at 14.52 PFM in 2010 and at 17.17 PFM (over its practical capacity) in 2016. These conditions would primarily result from surged demand en route to the arena. As discussed in Chapter 13, ramp R2 would connect the subpassage to the Urban Room fare array, while ramp R3 would replace a short stair that would have functioned as a constraint within the east end of the subpassage. Although these ramps would be operating above their practical capacity of 15 PFM in the pre-game peak hour under Build With Mitigation conditions in 2016, they would still be operating below their absolute capacity of 22 PFM (LOS E/F), and each surge of alighting passengers would create some queuing at this stair.. As was the case for stair U5/U7, NYCT has indicated that LOS D would be an acceptable level of service for these ramps during a special event condition such as a Nets basketball game or other large event at the proposed Atlantic Yards Arena. These new ramps would therefore not be considered significantly adversely impacted by the increase in demand resulting from the proposed transit incentive mitigation measures.

As shown in Tables 19-6 and 19-8, during the pre-game peak hour, the fare array controlling access from the proposed Urban Room would operate at LOS D under Build with Mitigation conditions in both 2010 and 2016. This fare array would, however, continue to operate with available capacity in both Build years, with v/c ratios of 0.63 and 0.76, respectively, and would therefore not be significantly adversely impacted by the increase in demand resulting from the proposed transit incentive mitigation measures.

The relatively small numbers of additional trips that would occur with the proposed transit incentive mitigation at the Bergen Street IRT, Fulton Street IND and Lafayette Avenue IND subway stations during the 7-8 pre-game peak hour would not result in a deterioration in the level of service at any analyzed processor. All analyzed stairs and fare arrays at these subway stations would continue to operate at LOS A during the pre-game peak hour in both 2010 and 2016 under Build with Mitigation conditions. Therefore, the additional subway ridership that would result from the proposed transit incentive mitigation would be accommodated at all of the analyzed stations serving the project site without resulting in any significant adverse impacts.

As noted in Chapter 13, "Transit and Pedestrians," platform crowding within the Atlantic Avenue/Pacific Street subway station complex is not expected to be problematic during the weekday AM and PM commuter periods and the pre-game periods on weekdays and Saturdays. However, surges from demand following a basketball game or other large event at the arena would enter the station during the weekday 10-11 PM and Saturday 4-5 PM post-game periods, when train frequency is typically lower than during the weekday daytime and evening periods. The potential may therefore exist for crowding on the platforms under certain post-game or major event situations. Such crowding, if it were to occur, would constitute a significant adverse impact, which would be addressed by providing additional subway service (i.e., more trains) during post-game periods or after major arena events. Thus, there would be no significant adverse subway impacts from the proposed project and its mitigation plan.

## **Atlantic Yards Arena and Redevelopment Project EIS**

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Several aspects of the design of the proposed Urban Room entrance and internal circulation improvements at the Atlantic Avenue/Pacific Street subway station complex have been refined as a result of ongoing discussions with MTA NYCT. As shown in Figures 19-12 and 19-13, these refinements, which would generally improve pedestrian flow, include:

1. Expanding the proposed Urban Room fare array to include 11 entry/exit turnstiles, two high entry/exit turnstiles and one high revolving exit gate;
2. Replacing the two proposed 4-foot-wide stairs (O3 and O4) and the escalator (E3) connecting the Urban Room fare array to the Atlantic Avenue BMT mezzanine level with a single 13-foot-10-inch-wide stair; and
3. Reducing the width of the southern-most of the two proposed BMT platform stairs (O5) from 6 feet to 5 feet to improve pedestrian circulation within the mezzanine level.

Tables 19-9 and 19-10 show AM, PM and 7-8 PM pre-game peak hour conditions at the Atlantic Avenue/Pacific Street subway station complex with these refinements. The analyses in Tables 19-9 and 19-10 reflect the numbers of subway trips projected to occur in 2016 with full build-out of the proposed project and implementation of the transit incentive mitigation measures associated with its traffic mitigation plan.

As shown in Tables 19-9 and 19-10, with the expanded configuration of 11 entry/exit turnstiles, two HEETs and one high revolving exit gate, the Urban Room fare array would operate at an acceptable LOS C or better in the weekday AM, PM and 7-8 PM pre-game peak hours in 2016. This fare array was projected to operate at LOS D in the pre-game peak hour with the configuration analyzed in Chapter 13, "Transit and Pedestrians." Stair O3 connecting the Urban Room fare array to the BMT mezzanine would operate at an acceptable LOS A or B in these periods, and stairs O5 and O6 would operate at an acceptable LOS C or better. As demonstrated by the analyses shown in Tables 19-9 and 19-10, the proposed refinements to the Urban Room fare array and BMT stairways would generally improve future conditions at these facilities, and would not result in significant adverse impacts at the Atlantic Avenue/Pacific Street subway station complex with full build-out of the proposed project and implementation of its traffic mitigation plan in 2016.

### **BUS SERVICE**

As also discussed in Chapter 13, "Transit and Pedestrians," westbound B38 buses would be significantly adversely impacted by project-generated demand in the AM peak hour in 2016 under current NYCT guidelines. As shown in Table 13-49, in the AM peak hour, the westbound B38 route would be operating with a capacity shortfall of 14 spaces in the AM peak hour. This compares to a surplus of 22 spaces in the westbound direction in the AM in the 2016 No Build. According to current NYCT guidelines, increases in bus load levels to above their maximum capacity at any load point is considered a significant impact as it would necessitate the addition of more bus service along that route. As standard practice, NYCT routinely conducts ridership counts and adjusts bus service frequency to meet its service criteria, within fiscal and operating constraints. Therefore, no mitigation is proposed for the potential impact to westbound B38 service.

**Table 19-9**  
**Build w/Mitigation Conditions With Revised Stairway and Escalator Configuration**  
**at the Atlantic Avenue/Pacific Street Subway Station Complex - 2016**

No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build			2016 Build			Width Increment Threshold in Inches (5)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
O1	New Urban Room Stairway @ Atlantic Avenue	8-9 AM	6.00	900	n/a	384	384	n/a	n/a	n/a	4.27	0.43	A	---
		5-6 PM	6.00	900	n/a	532	532	n/a	n/a	n/a	5.91	0.59	B	---
		7-8 PM	6.00	900	n/a	490	490	n/a	n/a	n/a	5.44	0.54	B	---
O2	New Urban Room Stairway @ Flatbush Avenue	8-9 AM	6.00	900	n/a	435	435	n/a	n/a	n/a	4.83	0.48	A	---
		5-6 PM	6.00	900	n/a	569	569	n/a	n/a	n/a	6.32	0.63	B	---
		7-8 PM	6.00	900	n/a	490	490	n/a	n/a	n/a	5.44	0.54	B	---
E1	New Urban Room Escalator @ Atlantic Avenue (4)	8-9 AM	4.00	1,050	n/a	268	268	n/a	n/a	n/a	n/a	0.26	B	---
		5-6 PM	4.00	1,050	n/a	340	340	n/a	n/a	n/a	n/a	0.32	B	---
		7-8 PM	4.00	1,050	n/a	1,084	1,084	n/a	n/a	n/a	n/a	1.03	F	---
E2	New Urban Room Escalator @ Flatbush Avenue (4)	8-9 AM	4.00	1,050	n/a	217	217	n/a	n/a	n/a	n/a	0.21	B	---
		5-6 PM	4.00	1,050	n/a	304	304	n/a	n/a	n/a	n/a	0.29	B	---
		7-8 PM	4.00	1,050	n/a	1,084	1,084	n/a	n/a	n/a	n/a	1.03	F	---
S2	Stairway @ NE Corner @ Fourth Ave/Pacific Street	8-9 AM	5.20	780	162	241	403	2.08	0.21	A	5.17	0.52	B	---
		5-6 PM	5.20	780	152	320	472	1.95	0.19	A	6.05	0.61	B	---
		7-8 PM	5.20	780	88	249	337	1.13	0.11	A	4.32	0.43	A	---
O3	New Urban Room Stairway to BMT Mezzanine	8-9 AM	9.84	1,476	n/a	486	486	n/a	n/a	n/a	3.29	0.33	A	---
		5-6 PM	9.84	1,476	n/a	578	578	n/a	n/a	n/a	3.92	0.39	A	---
		7-8 PM	9.84	1,476	n/a	850	850	n/a	n/a	n/a	5.76	0.58	B	---
O5	New BMT Platform Stairway (south)	8-9 AM	3.20	480	n/a	239	239	n/a	n/a	n/a	4.98	0.50	A	---
		5-6 PM	3.20	480	n/a	293	293	n/a	n/a	n/a	6.10	0.61	B	---
		7-8 PM	3.20	480	n/a	339	339	n/a	n/a	n/a	7.06	0.71	C	---
O6	New BMT Platform Stairway (north)	8-9 AM	4.00	600	n/a	247	247	n/a	n/a	n/a	4.12	0.41	A	---
		5-6 PM	4.00	600	n/a	285	285	n/a	n/a	n/a	4.75	0.48	A	---
		7-8 PM	4.00	600	n/a	511	511	n/a	n/a	n/a	8.52	0.85	C	---
U5/U7	Reconstructed Subpassage Stairway to Brooklyn-bound IRT 2,3 Platform	8-9 AM	7.20	1,080	n/a	455	455	n/a	n/a	n/a	4.21	0.42	A	---
		5-6 PM	7.20	1,080	n/a	742	742	n/a	n/a	n/a	6.87	0.69	B	---
		7-8 PM	7.20	1,080	n/a	1,271	1,271	n/a	n/a	n/a	11.77	1.18	D	---
U9/U11	Rehabilitated Subpassage Stairway to IRT 4,5 Platform	8-9 AM	7.84	1,176	n/a	469	469	n/a	n/a	n/a	3.99	0.40	A	---
		5-6 PM	7.84	1,176	n/a	594	594	n/a	n/a	n/a	5.05	0.51	B	---
		7-8 PM	7.84	1,176	n/a	1,071	1,071	n/a	n/a	n/a	9.11	0.91	C	---

**Notes:**

- (1) Effective width measured as stairwell width less one foot to account for side handrails and 1.5 feet for both center and side handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
  - (2) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 persons per foot-width per minute (PFM). Escalator capacity based on 70 persons per minute for a four-foot-wide escalator.
  - (3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Build w/mitigation subway volumes assumed for 7-8 PM pre-game period. Demand at new processors includes No Build volumes diverted from existing processors.
  - (4) Escalators E1 and E3 assumed to operate in the up direction at all times. Escalator E2 assumed to operate in the up direction in the 7-8 PM period only.
  - (5) Width increment threshold needed to restore processor to No Build conditions.
- \* Denotes a significant adverse impact based on CEQR criteria.

This table is new to the FEIS.

**Table 19-10**  
**Build w/Mitigation Conditions with Revised Fare Array Configuration**  
**at the Atlantic Avenue/Pacific Street Subway Station Complex - 2016**

<b>WALKWAYS</b>														
No.	Station Element/Location	Peak Period	Effective Width in Feet (1)	Maximum 15 Minute Capacity (2)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build			2016 Build			Width Increment Threshold in Inches (4)
								PFM (2)	V/C	LOS	PFM (2)	V/C	LOS	
R1	New Urban Room Ramp to Manhattan-bound IRT 2,3 Platform	8-9 AM	4.80	1,080	n/a	336	336	n/a	n/a	n/a	4.67	0.31	A	----
		5-6 PM	4.80	1,080	n/a	298	298	n/a	n/a	n/a	4.14	0.28	A	----
		7-8 PM	4.80	1,080	n/a	227	227	n/a	n/a	n/a	3.15	0.21	A	----
R2	New Urban Room Ramp to IRT Subpassage	8-9 AM	9.60	2,160	n/a	893	893	n/a	n/a	n/a	6.20	0.41	A	----
		5-6 PM	9.60	2,160	n/a	1,224	1,224	n/a	n/a	n/a	8.50	0.57	B	----
		7-8 PM	9.60	2,160	n/a	2,266	2,266	n/a	n/a	n/a	15.74	1.05	D	----
R3	New Ramp Within IRT Subpassage	8-9 AM	8.80	1,980	n/a	893	893	n/a	n/a	n/a	6.77	0.45	A	----
		5-6 PM	8.80	1,980	n/a	1,224	1,224	n/a	n/a	n/a	9.27	0.62	B	----
		7-8 PM	8.80	1,980	n/a	2,266	2,266	n/a	n/a	n/a	17.17	1.14	D	----
<b>FARE ARRAYS AND EXIT GATES</b>														
No.	Station Element/Location	Peak Period	Maximum 15 Minute Capacity (5)	No Build Pk 15 Min Volume	Pk 15 Min Project Increment (3)	Build Pk 15 Min Volume (3)	2016 No Build		2016 Build					
							V/C	LOS	V/C	LOS				
----	New Urban Room Fare Array @ Atlantic Ave/Flatbush Ave	8-9 AM	6,330	n/a	1,303	1,303	n/a	n/a	0.21	B				
		5-6 PM	6,330	n/a	1,743	1,743	n/a	n/a	0.28	B				
		7-8 PM	6,330	n/a	3,149	3,149	n/a	n/a	0.50	C				
C-9	Pacific St Station Fare Array @ 4th Ave/Pacific Street	8-9 AM	3,840	531	241	772	0.14	A	0.20	B				
		5-6 PM	3,840	439	320	759	0.11	A	0.20	B				
		7-8 PM	3,840	245	249	494	0.06	A	0.13	A				
<b>Notes:</b>														
(1) Effective width measured as walkway width less two feet to account for wall avoidance. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.														
(2) Walkway capacity in persons per 15 minutes based on NYC Transit guidelines of 15 persons per foot-width per minute (PFM).														
(3) Includes new demand from the commercial mixed-use variation, the reasonable worst case scenario for the weekday peak periods. Build w/mitigation subway volumes assumed for 7-8 PM pre-game period. Demand at new processors includes No Build volumes diverted from existing processors.														
(4) Width increment threshold needed to restore walkway to No Build conditions.														
(5) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.														
* Denotes a significant adverse impact based on CEQR criteria.														

This table is new to the FEIS.

The previously discussed transit incentive mitigation measures targeted towards arena patrons would also be available for users of bus services. However, the longer-trip subway market is likely to be the mode with almost all of the increased transit trips, and appreciable increases in local bus ridership resulting from the implementation of transit incentive mitigation measures are not anticipated during the analyzed 8-9 AM and 5-6 PM peak hours.

### **PEDESTRIANS**

The results of the analyses of pedestrian conditions show that demand from the proposed project would significantly adversely impact a total of two crosswalks with completion of the proposed project in 2016. (No crosswalks would be significantly adversely impacted in 2010.) As shown in Table 13-52, new demand would significantly adversely impact the north crosswalk on Carlton Avenue at Dean Street in the weekday 7-8 PM pre-game and Saturday 1-2 PM pre-game peak periods, and the north crosswalk on 6th Avenue at Dean Street in the Saturday 1-2 PM pre-game peak hour.

A significant adverse pedestrian impact is considered mitigated if measures implemented return projected future conditions to what they would be if a proposed project were not in place, or to acceptable levels. For a No Build LOS D, E or F, mitigation back to the No Build condition is required; for No Build LOS A, B or C, mitigation to the LOS D/E threshold is required (15 square feet per pedestrian for corners and crosswalks, and 15 pedestrians per foot per minute for sidewalks and midblock locations).

The following paragraphs discuss potential mitigation measures for the pedestrian impacts identified in Chapter 13, "Transit and Pedestrians." Table 19-9 shows the effectiveness of the proposed measures on impacted crosswalks during the weekday 7-8 PM and Saturday 1-2 PM pre-game peak periods.

#### **NORTH CROSSWALK ON CARLTON AVENUE AT DEAN STREET**

Pedestrian demand generated by the proposed project would significantly adversely impact the north crosswalk on Carlton Avenue at Dean Street in the weekday 7-8 PM pre-game and Saturday 1-2 PM pre-game peak periods in 2016. Much of this new pedestrian demand would be en route between the arena and parking that would be provided on Block 1129. In 2016, the level of service would deteriorate to LOS E in both the weekday pre-game and Saturday pre-game periods compared to LOS A during both periods in the 2016 No Build. To address these impacts, it is proposed to widen the crosswalk to 20 feet in width from 16 feet in width in the 2016 Build condition. As shown in Table 19-11, with this widening, the north crosswalk would operate at LOS D in the weekday and Saturday pre-game peak periods, with an average of 17.3 and 15.4 square feet per pedestrian during these periods, respectively. The potential significant adverse impacts to this crosswalk resulting from the proposed project in 2016 would therefore be fully mitigated.

#### **NORTH CROSSWALK ON 6TH AVENUE AT DEAN STREET**

Pedestrian demand generated by the proposed project would significantly adversely impact the north crosswalk on 6th Avenue at Dean Street in the Saturday 1-2 PM pre-game peak period in 2016. Much of this new pedestrian demand would be en route between the arena and parking that would be provided on Block 1129. In 2016, the level of service would deteriorate to LOS E

**Table 19-11**  
**Build With Mitigation Crosswalk Conditions - 2016**

Facility No.	Location	Street Width (feet)	Crosswalk Width (feet)	Peak 15-Min Volumes				Avg. Conditions (w/Conflicting Vehicles)							
								AM		PM		EVE		SAT	
				AM	PM	EVE	SAT	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
<b>2016 Build Conditions</b>															
X16	Atlantic Av @ Vanderbilt Av - west	115.0	12.0	31	47	23	42	203.6	A	99.6	A	207.2	A	146.0	A
X17	Atlantic Av @ Vanderbilt Av - south	60.0	12.0	45	87	50	112	266.0	A	119.8	A	253.5	A	94.2	A
X21	Dean St @ Carlton Av - north	38.0	16.0	221	333	606	669	43.2	C	27.9	D	13.1	E	11.6	E
X24	Dean St @ 6th Av - north	40.0	16.0	290	448	724	762	45.9	C	27.9	D	15.5	D	14.5	E
<b>2016 Build With Mitigation Conditions</b>															
X16	Atlantic Av @ Vanderbilt Av - west	115.0	12.0	31	47	23	42	203.6	A	99.6	A	207.2	A	146.0	A
X17	Atlantic Av @ Vanderbilt Av - south	60.0	12.0	45	87	50	112	266.0	A	119.8	A	253.5	A	94.2	A
X21	Dean St @ Carlton Av - north	38.0	20.0	221	333	606	669	55.3	B	35.0	C	17.3	D	15.4	D
X24	Dean St @ 6th Av - north	40.0	17.0	290	448	724	762	49.1	B	29.9	C	16.7	D	15.7	D

**This table has been revised since the DEIS.**

**Notes:**

AM - weekday 7-8 AM

PM - weekday 5-6 PM

EVE - weekday 7-8 PM

SAT - Saturday 1-2 PM

PFM - persons per foot of effective width per minute.

LOS - level of service.

 Shading denotes a significant adverse impact based on CEQR criteria.

in the Saturday pre-game peak period, compared to LOS A in the 2016 No Build. To address this impact, it is proposed to widen the crosswalk to 17 feet in width from 16 feet in width in the 2016 Build condition. As shown in Table 19-11, with this widening, the crosswalk would operate at LOS D in the Saturday pre-game peak hour in 2016, with an average 15.7 square feet per pedestrian. The potential significant adverse impact to this crosswalk resulting from the proposed project in 2016 would therefore be fully mitigated.

With the proposed transit incentive mitigation measures previously discussed, some project-generated pedestrian trips en route to the arena from parking facilities would instead enter the arena directly from the proposed Urban Room subway entrance. However, the analysis of Build with Mitigation pedestrian conditions conservatively assumes no reduction in the numbers of project-generated pedestrian trips that would occur on analyzed sidewalks, corner areas, and crosswalks in the vicinity of the project site as a result of transit incentive mitigation.

In addition to the proposed pedestrian mitigation measures discussed above, changes to the street network related to traffic mitigation measures would also result in changes to pedestrian facilities in the vicinity of the project site. As shown in Figure 19-1, a new sidewalk extension at the northeast corner of Atlantic Avenue at Fort Greene Place would shorten the crossing distance for pedestrians on the east crosswalk on Atlantic Avenue by 10 feet. A new crosswalk would be provided on the south leg of the intersection of Flatbush Avenue and Pacific Street where a new traffic signal is proposed. This new crosswalk is expected to attract some of the pedestrian demand now found on the heavily used south crosswalk at Atlantic Avenue as well as the two crosswalks on Flatbush Avenue at Fifth Avenue. Decorative fencing would be installed on the northwest corner of the Flatbush Avenue/Pacific Street intersection to discourage pedestrians from crossing on the north side of the intersection where no crosswalk would be provided (to avoid potential conflicts with the anticipated heavy eastbound left-turn movement from Pacific Street). An extension of the sidewalk at the northeast corner of Atlantic and Flatbush Avenues would shorten the crossing distance for pedestrians on the north crosswalk on Flatbush Avenue by approximately 10 feet. Lastly, the proposed reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection would include the elimination of the west crosswalk on Atlantic Avenue at 4th Avenue to avoid potential conflicts with the heavy vehicular turning movements from the double northbound left-turn lanes on 4th Avenue. Pedestrians now using this crosswalk would divert to alternate paths including the north and east crosswalks via the newly expanded pedestrian areas at Times Plaza. Decorative fencing would be installed at the northwest and southwest corners of the intersection to discourage pedestrians from continuing to cross on the west side of Atlantic Avenue.

As shown in Figure 19-2 and discussed previously, geometric improvements to enhance vehicle flow and pedestrian safety are proposed as mitigation at the intersection of Atlantic and Vanderbilt Avenues. These improvements would include elimination of the eastbound left-turn movement from Atlantic Avenue to Vanderbilt Avenue (the eastbound left-turn lane would be replaced by a wider median that would serve as a pedestrian refuge), signal timing adjustments, and re-striping of the northbound Vanderbilt Avenue approach to accommodate four northbound lanes. The west sidewalk along Vanderbilt Avenue between Atlantic Avenue and Pacific Street would be reduced in width from 20 feet to 12.5 feet to accommodate this re-striping and the introduction of a new lay-by lane. With the proposed narrowing, this sidewalk would operate at an acceptable LOS A in each analyzed peak hour in both 2010 and 2016. In addition, as shown in Table 19-11, with the proposed lane configuration and signal timing changes, the west crosswalk on Atlantic Avenue and the south crosswalk on Vanderbilt Avenue would also continue to operate at LOS A in all analyzed peak hours in 2016. (LOS A conditions are also

expected with the lower pedestrian volumes projected in the 2010 Build condition.) No additional pedestrian impacts are therefore anticipated at the intersection of Atlantic and Vanderbilt Avenues as a result of proposed traffic mitigation measures at this location.

## **NOISE**

This section considers the effects on noise levels of the proposed project with implementation of the traffic mitigation measures for the 2010 and 2016 analysis years discussed above in Section F, “Traffic and Parking.” Construction-related mitigation measures are discussed below and in Section I, “Construction.”

### **TRAFFIC-RELATED MITIGATION EFFECTS ON NOISE FOR 2010**

Future noise levels with the proposed project with the proposed traffic mitigation measures were calculated for the 12 receptor sites analyzed in Chapter 15, “Noise,” for the 2010 analysis year. No Build values presented in Chapter 15 were used to assess impacts. Build values for 2010 with the proposed traffic mitigation measures in place are shown in Table 19-12. Values that exceed CEQR Technical Manual’s impact criteria are shown in bold.

In 2010, when construction of Phase I of the proposed project would be completed,  $L_{eq(1)}$  noise levels due to project-generated traffic with the proposed traffic mitigation plan would exceed the *CEQR Technical Manual’s* impact criteria and result in significant adverse noise impacts during one or more time periods at four analysis receptors: receptor 3 (on Dean Street), receptor 5 (on Dean Street), Receptor 10 (on 6th Avenue), and receptor 12 (on Carlton Avenue). While in some cases the magnitude of the impacts may be slightly different, with one exception, significant adverse noise impacts are predicted to occur at the same locations both with and without the proposed traffic mitigation. The one exception is that the traffic mitigation analysis results do not show any significant adverse noise impacts at receptor 2 (at Flatbush Avenue at Dean Street).

Impacts at the site-specific locations are indicative of impacts at adjacent locations. Based upon these site specific results, it can be concluded that in 2010 project-generated traffic would exceed the *CEQR Technical Manual’s* impact criteria and result in significant adverse noise impacts during one or more time periods on the following street segments—Dean Street from approximately Flatbush to Vanderbilt Avenues (including the Dean Playground), 6th and Carlton Avenues from Dean Street to Atlantic Avenue. On Dean Street, Existing and No Build noise levels are relatively low and project-generated traffic would cause significant noise level increases on this street, but would still result in noise levels that fall in the *CEQR Technical Manual* “Marginally Unacceptable” range, which is not unusual for New York City residential areas. The impacts would be localized and would occur on street segments immediately adjacent to the project site. These locations would be the principal feeder streets to and from the proposed parking facilities associated with the Phase I project elements.

The maximum predicted increase with traffic mitigation measures would be 6.9 dBA, which would occur at Receptor 3, located on Dean Street between Flatbush and 6th Avenues, during the Saturday MD time period, and at Receptor 10, located on 6th Avenue between Pacific and Dean Streets, during the weekday LN time period. At Receptor 4 (on Pacific Street) there would be a decrease in noise levels due to the closure of the street and the resulting decrease in traffic volumes. At most locations there would be increases in noise levels due to project-generated traffic; however, these increases would be below the *CEQR Technical Manual* impact threshold and would not result in significant adverse noise impacts.

**Table 19-12**  
**2010 Build Noise Levels With Traffic Mitigation Measures—**  
**Project-Generated Traffic Only**

<b>Site</b>	<b>Location</b>	<b>Day</b>	<b>Time Period</b>	<b>No Build L<sub>eq</sub>(1)</b>	<b>Build L<sub>eq</sub>(1)</b>	<b>Build Mitigation L<sub>eq</sub>(1)</b>	<b>Mitigation —No Build Increase</b>
1	Pacific Street between Flatbush and 4th Avenues	Weekday	AM	62.6	63.1	63.2	0.6
			MD	61.2	62.4	61.0	-0.2
			PM	62.9	63.2	63.3	0.4
			EV	61.5	62.3	61.6	0.1
			LN	61.2	61.9	61.3	0.1
		Saturday	MD	63.9	64.5	64.0	0.1
			PM	63.9	63.7	64.3	0.4
2	Flatbush Avenue at Dean Street	Weekday	AM	73.9	74.8	75.2	1.3
			MD	74.0	74.9	74.5	0.5
			PM	71.5	75.3	72.9	1.4
			EV	71.0	73.3	72.3	1.3
			LN	70.7	70.6	71.6	0.9
		Saturday	MD	71.6	73.9	72.7	1.1
			PM	72.4	72.3	73.2	0.8
3	Dean Street between Flatbush and 6th Avenues	Weekday	AM	66.0	68.6	68.4	2.4
			MD	66.5	68.8	68.5	2.0
			PM	66.5	69.9	69.6	3.1
			EV	63.9	70.6	69.0	5.1
			LN	61.9	65.7	65.2	3.3
		Saturday	MD	64.8	72.0	71.7	6.9
			PM	66.7	72.8	68.5	1.8
4	Pacific Street between Carlton and 6th Avenues	Weekday	AM	65.5	64.6	64.1	-1.4
			MD	65.5	64.2	64.6	-0.9
			PM	66.8	65.9	65.5	-1.3
			EV	64.6	63.9	63.6	-1.0
			LN	62.4	62.9	63.1	0.7
		Saturday	MD	61.2	60.2	59.7	-1.5
			PM	61.0	59.3	59.0	-2.0
5	Dean Street between Vanderbilt and Carlton Avenues	Weekday	AM	69.2	70.4	70.3	1.1
			MD	70.4	71.0	70.9	0.5
			PM	68.0	71.8	70.3	2.3
			EV	65.7	67.2	66.9	1.2
			LN	64.3	67.8	66.7	2.4
		Saturday	MD	63.6	65.8	65.4	1.8
			PM	63.0	66.2	66.5	3.5
6	Vanderbilt Avenue between Pacific and Dean Streets	Weekday	AM	71.4	72.7	72.7	1.3
			MD	71.3	71.7	71.8	0.5
			PM	70.8	71.4	71.3	0.5
			EV	69.5	70.4	70.2	0.7
			LN	67.1	68.9	68.9	1.8
		Saturday	MD	67.3	67.9	67.9	0.6
			PM	67.2	69.0	69.0	1.8

**Table 19-12 (cont'd)**  
**2010 Build Noise Levels With Traffic Mitigation Measures—**  
**Project-Generated Traffic Only**

<u>Site</u>	<u>Location</u>	<u>Day</u>	<u>Time Period</u>	<u>No Build</u> <u>L<sub>eq(1)</sub></u>	<u>Build</u> L <sub>eq(1)</sub>	<u>Build</u> <u>Mitigation</u> <u>L<sub>eq(1)</sub></u>	<u>Mitigation</u> <u>—No Build</u> <u>Increase</u>
<u>7</u>	<u>Atlantic Avenue between Clermont and Carlton Avenues</u>	<u>Weekday</u>	<u>AM</u>	<u>74.3</u>	<u>74.9</u>	<u>74.8</u>	<u>0.5</u>
			<u>MD</u>	<u>75.2</u>	<u>75.4</u>	<u>75.3</u>	<u>0.1</u>
			<u>PM</u>	<u>74.2</u>	<u>74.6</u>	<u>74.6</u>	<u>0.4</u>
			<u>EV</u>	<u>73.0</u>	<u>73.3</u>	<u>73.2</u>	<u>0.2</u>
			<u>LN</u>	<u>72.4</u>	<u>73.5</u>	<u>73.5</u>	<u>1.1</u>
		<u>Saturday</u>	<u>MD</u>	<u>74.3</u>	<u>74.2</u>	<u>74.2</u>	<u>-0.1</u>
			<u>PM</u>	<u>73.1</u>	<u>73.3</u>	<u>73.3</u>	<u>0.2</u>
<u>8</u>	<u>4<sup>th</sup> Avenue between Atlantic Avenue and Pacific Street</u>	<u>Weekday</u>	<u>AM</u>	<u>73.0</u>	<u>74.1</u>	<u>73.5</u>	<u>0.5</u>
			<u>MD</u>	<u>72.6</u>	<u>72.8</u>	<u>72.5</u>	<u>-0.1</u>
			<u>PM</u>	<u>70.9</u>	<u>70.9</u>	<u>70.6</u>	<u>-0.3</u>
			<u>EV</u>	<u>70.8</u>	<u>71.3</u>	<u>72.4</u>	<u>1.6</u>
			<u>LN</u>	<u>64.6</u>	<u>65.0</u>	<u>65.1</u>	<u>0.5</u>
		<u>Saturday</u>	<u>MD</u>	<u>68.4</u>	<u>69.0</u>	<u>68.8</u>	<u>0.4</u>
			<u>PM</u>	<u>66.5</u>	<u>66.8</u>	<u>66.9</u>	<u>0.4</u>
<u>9</u>	<u>Dean Street between 4<sup>th</sup> and 5<sup>th</sup> Avenues</u>	<u>Weekday</u>	<u>AM</u>	<u>64.1</u>	<u>63.7</u>	<u>63.9</u>	<u>-0.2</u>
			<u>MD</u>	<u>62.3</u>	<u>62.3</u>	<u>62.3</u>	<u>0.0</u>
			<u>PM</u>	<u>62.7</u>	<u>63.1</u>	<u>63.0</u>	<u>0.3</u>
			<u>EV</u>	<u>61.1</u>	<u>62.5</u>	<u>61.6</u>	<u>0.5</u>
			<u>LN</u>	<u>61.9</u>	<u>61.4</u>	<u>62.2</u>	<u>0.3</u>
		<u>Saturday</u>	<u>MD</u>	<u>61.3</u>	<u>63.4</u>	<u>62.4</u>	<u>1.1</u>
			<u>PM</u>	<u>61.6</u>	<u>61.8</u>	<u>62.0</u>	<u>0.4</u>
<u>10</u>	<u>6<sup>th</sup> Avenue between Pacific and Dean Streets</u>	<u>Weekday</u>	<u>AM</u>	<u>67.4</u>	<u>73.0</u>	<u>72.6</u>	<u>5.2</u>
			<u>MD</u>	<u>61.7</u>	<u>66.6</u>	<u>66.5</u>	<u>4.8</u>
			<u>PM</u>	<u>62.3</u>	<u>66.4</u>	<u>65.8</u>	<u>3.5</u>
			<u>EV</u>	<u>59.6</u>	<u>65.2</u>	<u>64.9</u>	<u>5.3</u>
			<u>LN</u>	<u>57.6</u>	<u>64.4</u>	<u>64.5</u>	<u>6.9</u>
		<u>Saturday</u>	<u>MD</u>	<u>60.0</u>	<u>64.9</u>	<u>64.4</u>	<u>4.4</u>
			<u>PM</u>	<u>58.7</u>	<u>63.7</u>	<u>63.3</u>	<u>4.6</u>
<u>11</u>	<u>Bergen Street between Carlton and 6<sup>th</sup> Avenues</u>	<u>Weekday</u>	<u>AM</u>	<u>63.5</u>	<u>63.8</u>	<u>63.8</u>	<u>0.3</u>
			<u>MD</u>	<u>62.8</u>	<u>62.9</u>	<u>63.0</u>	<u>0.2</u>
			<u>PM</u>	<u>64.5</u>	<u>64.9</u>	<u>64.7</u>	<u>0.2</u>
			<u>EV</u>	<u>63.3</u>	<u>63.9</u>	<u>63.8</u>	<u>0.5</u>
			<u>LN</u>	<u>60.0</u>	<u>62.1</u>	<u>61.9</u>	<u>1.9</u>
		<u>Saturday</u>	<u>MD</u>	<u>61.9</u>	<u>62.5</u>	<u>62.3</u>	<u>0.4</u>
			<u>PM</u>	<u>59.7</u>	<u>60.8</u>	<u>60.4</u>	<u>0.7</u>
<u>12</u>	<u>Carlton Avenue between Pacific and Dean Streets</u>	<u>Weekday</u>	<u>AM</u>	<u>63.9</u>	<u>65.0</u>	<u>65.9</u>	<u>2.0</u>
			<u>MD</u>	<u>63.9</u>	<u>65.4</u>	<u>65.4</u>	<u>1.5</u>
			<u>PM</u>	<u>64.3</u>	<u>65.8</u>	<u>66.0</u>	<u>1.7</u>
			<u>EV</u>	<u>62.2</u>	<u>63.8</u>	<u>63.7</u>	<u>1.5</u>
			<u>LN</u>	<u>60.0</u>	<u>63.6</u>	<u>63.6</u>	<u>3.6</u>
		<u>Saturday</u>	<u>MD</u>	<u>65.0</u>	<u>66.1</u>	<u>66.2</u>	<u>1.2</u>
			<u>PM</u>	<u>59.4</u>	<u>67.7</u>	<u>65.3</u>	<u>5.9</u>

**Note:** Bolded values indicate a significant adverse impact.

At most locations in the area where significant adverse impacts are predicted to occur, most residences already have either double-glazed windows or storm windows, and many have some form of alternative ventilation (air conditioning). At all of the locations where project impacts are predicted to occur the project sponsors would make noise mitigation measures (i.e., storm windows and alternative ventilation) available, at no cost for purchase and installation to owners of residences to the extent such measures are already not in place. At locations where owners elect not to take advantage of these mitigation measures, the proposed project would have unmitigated significant adverse impacts. At the Temple of Restoration, the project sponsors will make available storm windows for windows on the second level of the building (above the Temple of Restoration sign), which face Dean Street, and do not currently either have double-glazed windows or storm windows. With this measure, maximum interior noise levels within the Temple of Restoration building would be in the range of 40-50 dBA 110, which would satisfy CEQR Technical Manual recommended interior noise level requirements for this church use. At all locations measures proposed to mitigate construction-related noise impacts would also address the significant impacts that are predicted to occur with the operations of the proposed project with and without the proposed traffic mitigation measures; similar noise mitigation is proposed for the project's construction-related noise impacts as described below under Section I, "Construction."

In terms of *CEQR Technical Manual* noise exposure guidelines, future 2010 noise levels with the proposed project (excluding the effects of Phase II construction) would remain in the "Marginally Unacceptable" category for receptors 2, 5, 6, 7, and 8, and future 2010 noise levels with the proposed project would remain in the "Marginally Acceptable" category for receptors 1, 9, 11, and 12. Future 2010 noise levels with the proposed project would now be in the "Marginally Unacceptable" category for receptors 3, and 10; and be in the "Marginally Acceptable" category for receptor 4. These values are based on the calculated  $L_{10}$  values (see Appendix E, "Noise").

#### **TRAFFIC-RELATED MITIGATION EFFECTS ON NOISE FOR 2016**

In 2016, when construction of the proposed project would be completed,  $L_{eq(1)}$  noise levels from project-generated traffic with the proposed traffic mitigation would continue to exceed the *CEQR Technical Manual* impact criteria and result in significant adverse noise impacts during one or more time periods at receptor 3 (on Dean Street), receptor 10 (on 6th Avenue), and receptor 12 (on Carlton Avenue). In 2016, without mitigation, significant adverse noise impacts are predicted to occur at receptor 2 (on Flatbush Avenue), receptors 3 and 5 (on Dean Street), receptor 10 (on 6th Avenue), and receptor 12 (on Carlton Avenue).

The maximum increase assuming the implementation of the traffic mitigation measures would be 7.0 dBA during the weekday LN time period at Receptor 10, located on 6th Avenue between Pacific and Dean Streets. Based upon these 2016 site specific results, the projected noise increase would exceed the *CEQR Technical Manual* impact criteria and result in significant adverse noise impacts during one or more time periods on Dean Street from approximately Flatbush to Carlton Avenues (including the Dean Playground and The Temple of Restoration), and 6th and Carlton Avenues from approximately Dean Street to Atlantic Avenue. The impacts would be localized and would occur on street segments immediately adjacent to the project site (Dean Street and 6th Avenue).

At most locations in the area where significant noise impacts are predicted to occur, most residences already have either double-glazed windows or storm windows, and many have some form of

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alternative ventilation (air conditioning). At all of the impacted locations the project sponsors would make these types of noise mitigation measures available at no cost for purchase and installation to owners of residences (i.e., storm windows and alternative ventilation) to the extent that such measures are not already in place. At locations where owners elect not to take advantage of these mitigation measures, the proposed project would have unmitigated significant adverse impacts. At the Temple of Restoration, the project sponsors will make available storm windows for windows on the second level of the building (above The Temple of Restoration sign), which face Dean Street, and do not currently either have double-glazed windows or storm windows. With this measure, maximum interior noise levels within The Temple of Restoration building would be in the range of 40-50 dBA 110, which would satisfy CEQR Technical Manual recommended interior noise level requirements for this church use.

Noise levels within the new open space areas created on-site as part of the proposed project would be above the 55 dBA  $L_{10(1)}$ . This exceeds the noise level for outdoor areas requiring serenity and quiet contained in the *CEQR Technical Manual* noise exposure guidelines (see Table 15-5). One-hour  $L_{10}$  noise levels at open space locations adjacent to Atlantic Avenue would be in the low- to mid-70 dBA range. These high predicted noise levels would result principally from the noise generated by traffic on Atlantic Avenue. Open space areas adjacent to Pacific Street and on the interior of the block bounded by Carlton and Vanderbilt Avenues would be in the mid-60 dBA range.  $L_{10(1)}$  noise levels at open space areas located on the rooftop of the proposed Arena, adjacent to Atlantic and Flatbush Avenues, would be in the high-50 to low-60 dBA range. Based on *CEQR Technical Manual* criteria, the noise levels at these new open space areas would result in potentially significant adverse noise impacts on their users. There are no practical and feasible mitigation measures that could be implemented to reduce noise levels to below the 55 dBA  $L_{10(1)}$  guideline within the open space areas. Although noise levels in these new areas would be above the 55 dBA  $L_{10(1)}$  guideline noise level, they would be comparable to noise levels in a number of open space areas that are also located in urban areas, including Hudson River Park, Riverside Park, Bryant Park, Fort Greene Park, and other urban open space areas. As noted above, the project sponsors have committed to work with the New York City Department of Parks and Recreation (DPR) to contribute to DPR's planned improvements to the Dean Playground. This commitment would partially mitigate a temporary noise impact on the playground due to construction activities and an operational noise impact from increased traffic on Dean Street in 2016.

In terms of *CEQR Technical Manual* noise exposure guidelines, future 2016 noise levels with the proposed project would remain in the "Marginally Unacceptable" category for receptors 2, 5, 6, 7, and 8; and future 2016 noise levels with the proposed project would remain in the "Marginally Acceptable" category for receptors 1, 9, 11, and 12 (see Table 19-13). Future 2016 noise levels with the proposed project would now be in the "Marginally Unacceptable" category for receptors 3, and 10; and future 2016 noise levels with the proposed project would now be in the "Marginally Acceptable" category for receptor 4. These values are based on the calculated  $L_{10}$  values (see Appendix E, "Noise").

**Table 19-13**  
**2016 Build Noise Levels With Traffic Mitigation Measures**

<b>Site</b>	<b>Location</b>	<b>Day</b>	<b>Time</b>	<b>No Build L<sub>eq(1)</sub></b>	<b>Build L<sub>eq(1)</sub></b>	<b>Build Mitigation L<sub>eq(1)</sub></b>	<b>Increase (No Build to Mitigation)</b>
1	Pacific Street between Flatbush and 4th Avenues	Weekday	AM	63.2	64.1	64.1	0.9
			MD	61.6	61.8	61.6	0.0
			PM	63.5	64.1	64.3	0.8
			EV	62.2	63.2	63.0	0.8
		Saturday	LN	62.0	61.7	62.8	0.8
			MD	64.4	65.4	64.6	0.2
2	Flatbush Avenue at Dean Street	Weekday	AM	74.4	76.1	75.0	0.6
			MD	74.7	78.1	75.5	0.8
			PM	72.6	76.1	73.4	0.8
			EV	71.5	74.8	74.1	2.6
		Saturday	LN	71.3	71.3	71.6	0.3
			MD	72.1	75.2	74.7	2.6
3	Dean Street between Flatbush and 6th Avenues	Weekday	AM	65.7	70.0	69.6	3.9
			MD	66.6	69.8	69.8	3.2
			PM	67.1	71.2	71.5	4.4
			EV	63.9	72.5	68.5	4.6
		Saturday	LN	62.0	67.5	66.7	4.7
			MD	65.1	73.6	68.2	3.1
4	Pacific Street between Carlton and 6th Avenues	Weekday	AM	65.7	58.9	58.4	-7.3
			MD	65.6	58.7	58.5	-7.1
			PM	67.3	58.8	59.4	-7.9
			EV	64.9	55.3	55.5	-9.4
		Saturday	LN	62.4	56.3	56.2	-6.2
			MD	61.6	53.3	53.8	-7.8
5	Dean Street between Vanderbilt and Carlton Avenues	Weekday	AM	69.4	69.8	70.2	0.8
			MD	70.5	70.6	70.4	-0.1
			PM	68.1	71.9	69.5	1.4
			EV	65.8	67.2	67.1	1.3
		Saturday	LN	64.4	66.4	66.4	2.0
			MD	63.9	64.2	64.1	0.2
			PM	63.1	64.1	63.9	0.8

**Table 19-13 (cont'd)**  
**2016 Build Noise Levels With Traffic Mitigation Measures**

<u>Site</u>	<u>Location</u>	<u>Day</u>	<u>Time</u>	<u>No Build</u> <u>L<sub>eq(1)</sub></u>	<u>Build</u> <u>L<sub>eq(1)</sub></u>	<u>Build</u> <u>Mitigation L<sub>eq(1)</sub></u>	<u>Increase (No</u> <u>Build to</u> <u>Mitigation)</u>
6	<u>Vanderbilt</u> <u>Avenue</u> <u>between</u> <u>Pacific and</u> <u>Dean</u> <u>Streets</u>	Weekday	AM	71.6	72.6	72.7	1.1
			MD	71.6	71.8	72.0	0.4
			PM	71.0	71.4	71.6	0.6
			EV	69.6	70.0	70.4	0.8
		Saturday	LN	67.1	68.6	69.1	2.0
			MD	67.5	67.7	68.1	0.6
7	<u>Atlantic</u> <u>Avenue</u> <u>between</u> <u>Clermont</u> <u>and Carlton</u> <u>Avenues</u>	Weekday	AM	75.0	76.0	76.1	1.1
			MD	75.6	76.0	75.9	0.3
			PM	75.0	75.7	75.3	0.3
			EV	73.4	73.5	73.6	0.2
		Saturday	LN	73.2	73.8	73.8	0.6
			MD	74.1	74.5	74.5	0.4
8	<u>4th Avenue</u> <u>between</u> <u>Atlantic</u> <u>Avenue</u> <u>and Pacific</u> <u>Street</u>	Weekday	AM	73.9	74.8	74.6	0.7
			MD	73.6	74.2	73.2	-0.4
			PM	71.2	72.2	72.1	0.9
			EV	70.8	72.6	72.8	2.0
		Saturday	LN	64.8	65.2	65.2	0.4
			MD	69.2	69.7	69.3	0.1
9	<u>Dean</u> <u>Street</u> <u>between</u> <u>4th and 5th</u> <u>Avenues</u>	Weekday	AM	64.5	64.7	64.3	-0.2
			MD	62.7	64.1	62.6	-0.1
			PM	63.6	63.9	62.9	-0.7
			EV	61.7	63.8	62.7	1.0
		Saturday	LN	62.3	61.6	62.3	0.0
			MD	62.0	64.2	63.8	1.8
10	<u>6th Avenue</u> <u>between</u> <u>Pacific and</u> <u>Dean</u> <u>Streets</u>	Weekday	AM	67.5	73.4	73.0	5.5
			MD	62.0	67.5	67.1	5.1
			PM	63.0	67.5	67.1	4.1
			EV	60.1	65.4	65.1	5.0
		Saturday	LN	57.8	64.6	64.8	7.0
			MD	60.2	65.2	64.8	4.6
11	Bergen Street between Carlton and 6th Avenues	Weekday	AM	63.7	63.6	63.6	-0.1
			MD	63.4	63.2	63.2	-0.2
			PM	64.8	64.5	64.5	-0.3
			EV	63.5	63.3	63.4	-0.1
		Saturday	LN	60.2	61.8	61.5	1.3
			MD	62.2	62.2	62.2	0.0
			PM	60.2	60.6	60.2	0.0

**Table 19-13 (cont'd)**  
**2016 Build Noise Levels With Traffic Mitigation Measures**

Site	Location	Day	Time	No Build $L_{eq(1)}$	Build $L_{eq(1)}$	Build Mitigation $L_{eq(1)}$	Increase (No Build to Mitigation)
12	Carlton Avenue between Pacific and Dean Streets	Weekday	AM	64.1	64.9	64.9	0.8
			MD	64.0	65.6	65.7	1.7
			PM	64.6	66.0	66.4	1.8
			EV	62.4	64.0	64.1	1.7
			LN	59.2	63.2	63.3	<b>4.1</b>
		Saturday	MD	65.2	67.1	67.6	2.4
			PM	59.7	67.8	63.4	<b>3.7</b>
<b>Note:</b> Bolded values indicate a significant adverse impact.							

## BUILDING ATTENUATION FOR PROJECT BUILDINGS

The *CEQR Technical Manual* has set noise attenuation values for buildings based on exterior noise levels. Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower, and are determined based on exterior  $L_{10(1)}$  noise levels. The Phase I building attenuation includes the effects of both project-generated traffic and construction of the Phase II components. The proposed project buildings would include both double-glazed windows and central air-conditioning (e.g., alternative ventilation). These measures would provide a minimum of 35 dBA attenuation. With these measures, interior levels would be below 45 dBA  $L_{10}$ . However, there may be some limited periods of time when construction operations may produce noise levels which exceed 80 dBA  $L_{10}$ . These events would be of limited duration. During these time periods, interior noise levels would temporarily exceed the 45 dBA  $L_{10}$  limit, and be above recommended and desirable interior levels

## H. CONSTRUCTION

Chapter 17, "Construction Impacts" described the anticipated construction plan for the proposed project and identified the potential for significant adverse impacts that could result from the demolition of existing structures, construction of the arena and other proposed development buildings, and upgrading and reconfiguring of the existing LIRR Vanderbilt Yard, utilities and bridges, and a subway connection to the Atlantic Terminal station. The project sponsors have committed to the implementation of certain measures as part of the construction of the project to avoid or reduce the potential for significant adverse impacts during the construction period; these have been incorporated in the impact assessment and are described below:

### PROPOSED CONSTRUCTION IMPLEMENTATION MEASURES

#### *PARKING*

A detailed modal split analysis was conducted to estimate the number of vehicle trips associated with the worker projections, which were used to estimate the potential traffic and parking impacts from construction workers. While some construction workers are expected to find nearby on-street parking, the overall projected demand exceeds what would be available on-street. To avoid overtaxing nearby on-street and off-street facilities, the project sponsors would provide on-site (southern half of Block 1129) parking for construction workers at a fee that is comparable to other parking lots/garages in the area. This designated area can accommodate up

to 800 vehicles, which would be adequate in accommodating the majority of the peak construction parking demand. Combined with the available supply on-street, all construction worker vehicles could be sufficiently accommodated during all phases of construction. In the event that additional parking is needed, the nominal overflow could be satisfied by the available supply at the nearby off-street parking facilities.

By charging a fee to construction workers and also limiting its parking capacity to accommodate only the anticipated demand, the on-site construction parking facility would help in minimizing the number of construction worker vehicles circulating for on-street parking in the area, while at the same time not encouraging the use of private automobiles as the means of construction worker travel to the project site.

### *AIR QUALITY*

Construction activity in general, and large-scale projects in particular, have the potential to adversely affect air quality as a result of diesel emissions. The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine particulate matter. To ensure that the construction of the proposed project results in the lowest feasible diesel particulate matter (DPM) emissions, the project sponsors have committed to implementing a state-of-the-art emissions reduction program, consisting of the following components:

1. *Diesel Equipment Reduction.* The construction of the proposed project would minimize the use of diesel engines, and use electric engines operating on grid power in lieu of diesel engines, to the extent practicable. To that end, the project sponsors have met with Con Edison to ensure the early connection of grid power to the site by commissioning permanent service for Buildings 2 and 3 for use during construction. This would ensure that grid power would be available on site by the third quarter of 2007, prior to the peak construction period. Construction contracts would specify the use of electric engines where practicable, and ensure the distribution of power connections throughout the site as needed. Equipment that would use grid power in lieu of diesel engines would include, but may not be limited to, welders, rebar benders, scissor lifts, and hydraulic articulating boom lifts. This would also eliminate generators that would normally be needed for construction equipment.
2. *Clean Fuel.* Ultra-low sulfur diesel (ULSD) fuel would be used exclusively for all diesel engines throughout the site. This would enable the use of tailpipe reduction technologies (see below), and would directly reduce DPM emissions. The exclusive use of this fuel for all diesel engines would also reduce the emission of sulfur oxides to a negligible level.
3. *Best available tailpipe reduction technologies.* Non-road diesel engines with a power rating of 50 horsepower (hp) or greater, and controlled truck fleets (i.e., truck fleets under long-term contract with the proposed project, such as concrete trucks), would utilize the best available tailpipe technology for reducing DPM emissions. The project sponsors have identified diesel particle filters (DPFs) as being the tailpipe technology currently available that is verified to have the highest reduction capability. Construction contracts would specify that all diesel non-road engines rated at 50 hp or greater would utilize DPFs or other tailpipe reduction technology, either original equipment manufacturer (OEM) or retrofit technology with add-on controls verified to reduce DPM emissions by at least 85 percent. Controls may include active DPFs, if necessary. Exceptions would be made only in cases where DPFs cannot be used for safety reasons, or where it is proven that a certain engine is necessary for the task where a DPF would not function properly; in those cases, the use of diesel oxidation

catalyst (DOC) or other tailpipe reduction technology verified to reduce DPM by at least 25 percent would be required.

This program to reduce air pollutant emissions from construction exceeds that of any large scale private construction project in New York City to date. In addition to adopting the measures delineated in New York City Local Law 77 of 2003, the program institutes the use of electric engines in lieu of diesel engines where practicable, eliminating the associated local emissions entirely, and introduces the use of active DPFs in cases where passive DPFs would not function.

### *NOISE*

To reduce noise levels at the source or during most sensitive time periods (“source controls”), six types of measures were examined and would be implemented:

1. The project sponsors have committed to utilizing equipment that meets the sound level standards for equipment (specified in Subchapter 5 of the new New York City Noise Control Code) from the start of construction activities and using a wide range of equipment, including construction trucks, that produces lower noise levels than typical construction equipment;
2. Where feasible, the project sponsors would use quiet construction procedures, and equipment (such as generators, hydraulic lift vehicles, trucks, and tractor trailers) quieter than that required by the New York City Noise Control Code;
3. Generally, the project sponsors would schedule and perform the most noisy work during weekday daytime hours (and not during weekday nighttime or weekend hours);
4. Generally, the project sponsors would schedule equipment and material deliveries during weekday daytime hours, and not during weekday nighttime or weekend hours;
5. As early in the construction period as practicable, diesel-powered equipment would be replaced with electrical-powered equipment, such as electric scissor lifts and electric articulating boom lifts (i.e., early electrification); and
6. The project sponsors would require all contractors and subcontractors to properly maintain their equipment and have quality mufflers installed.

Three types of measures related to the placement of equipment and implementation of barriers between equipment and sensitive receptors were examined and would be implemented to the extent feasible:

1. Noisy equipment, such as generators, cranes, tractor trailers, concrete pumps, concrete trucks and dump trucks, would be located at locations which are away from sensitive receptor locations and are shielded from sensitive receptor locations (For example, during the early construction phase of work delivery trucks and dump trucks would be located approximately 20 feet below grade to take advantage of shielding benefits.) Once building foundations are completed, delivery trucks would be located adjacent to noisy streets—Atlantic Avenue, Flatbush Avenue, 6th Avenue, etc.—rather than at quieter streets—such as Dean Street and Pacific Street—where there are residences. In addition, delivery trucks would operate behind noise barriers;
2. Noise barriers would be utilized to provide shielding (i.e., the construction sites would have a minimum 8-foot barrier, with a 16-foot barrier adjacent to sensitive locations—on locations along Pacific Street, Dean Street, and Flatbush Avenue opposite residences and the

Brooklyn Bear's Pacific Street Community Garden —and truck deliveries would take place behind these barriers once building foundations are completed);

3. Noise curtains and equipment enclosures would be utilized to provide shielding to sensitive receptor locations.

### **PROPOSED CONSTRUCTION MITIGATION MEASURES**

Even with the incorporation of the impact minimization measures discussed above, because of the extent, magnitude, and duration, there would be significant adverse impacts from the proposed project's construction activities on local traffic and noise. The following mitigation measures would be implemented to further reduce these significant adverse impacts:

#### *TRAFFIC*

Several types of improvement strategies, including physical roadway improvements, demand management, transit service recommendations, and traffic operational improvements, were evaluated to address significant adverse traffic impacts. Physical roadway improvements and traffic operational improvements would be more applicable to mitigate traffic impacts during construction. Recommended strategies to address significant adverse impacts on traffic during construction would include early implementation of proposed traffic mitigation for the operation of the proposed project.

As discussed in Chapter 17, "Construction Impacts," and Appendix F, Exhibit F17a-35, advancing the implementation of certain traffic mitigation strategies for the intersections listed below would be necessary to address significant adverse traffic impacts identified during construction. These strategies involve primarily operational improvements that could be readily implemented. Physical roadway improvements encompassing the reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection and operational modifications to Pacific Street would not be considered for implementation before the bulk of construction work at Site 5 is completed in order to maintain the necessary truck access. The newly conceived physical reconfiguration of Vanderbilt Avenue between Dean Street and Atlantic Avenue was also not considered due to construction logistics required during the latter stages of construction at Blocks 1121 and 1129. Although the modified building program would result in a reduction in development density, the required mitigation measures during construction, as updated in this FEIS, are practically identical to those determined in the DEIS.

During Phase I construction, advancing the 2010 operational mitigation measures at the following intersections would be necessary:

- Atlantic Avenue and Flatbush Avenue
- Dean Street and Flatbush Avenue
- Atlantic Avenue and Boerum Place
- Atlantic Avenue and S. Portland Avenue
- Dean Street and 5th Avenue
- Dean Street and 6th Avenue
- Dean Street and Carlton Avenue
- Dean Street and Vanderbilt Avenue

- Bergen Street and Vanderbilt Avenue
- Atlantic Avenue and Nevins Street
- Atlantic Avenue and Hoyt Street

During Phase II construction, advancing the 2016 operational mitigation measures at the following intersections would be necessary:

- Atlantic Avenue and Flatbush Avenue
- Dean Street and Flatbush Avenue
- Atlantic Avenue and Boerum Place
- Atlantic Avenue and 4th Avenue
- Atlantic Avenue and S. Portland Avenue
- Atlantic Avenue and Carlton Avenue
- Dean Street and 5th Avenue
- Dean Street and 6th Avenue
- Dean Street and Carlton Avenue
- Dean Street and Vanderbilt Avenue
- Bergen Street and Vanderbilt Avenue
- Atlantic Avenue and 3rd Avenue
- Atlantic Avenue and Nevins Street
- Atlantic Avenue and Bond Street
- Atlantic Avenue and Hoyt Street
- Atlantic Avenue and Smith Street
- Atlantic Avenue and Clinton Street
- Atlantic Avenue and Henry Street

#### *NOISE*

The Pacific Branch of the Brooklyn Public Library would experience a significant adverse noise impact over a three year period. To address this impact, the project sponsors would make available to the library, and install, interior-fitted storm windows on the facades facing Pacific Street. In the event the library elects to not accept the offer, there would be an unmitigated significant noise impact for this three year period.

There would be significant adverse noise impacts at the Dean Playground from construction activities. The project sponsors have committed to working with DPR to work with DPR's planned improvements to the Dean Playground. This commitment would partially mitigate a temporary noise impact on the playground due to construction activities. At the Temple of Restoration, the project sponsors will make available storm windows for windows on the second level of the building (above the Temple of Restoration sign), which face Dean Street, and do not currently either have double-glazed windows or storm windows. With this measure, maximum

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interior noise levels within the Temple of Restoration building would be in the range of 40-50 dBA 110, which would satisfy CEQR Technical Manual recommended interior noise level requirements for this church use.

Where project implemented measures are not sufficient to prevent significant adverse noise impacts from occurring, and where the residences do not contain both double-glazed or storm-windows and alternative ventilation (air conditioning), the project sponsors would make these mitigation measures available, by purchasing and installing at no cost to the owners of residences. At non-residential locations, such as open spaces, receptor controls such as sound barriers may not be feasible because of safety and aesthetic concerns. \*