RIVER RING
Chapter 12: Transportation

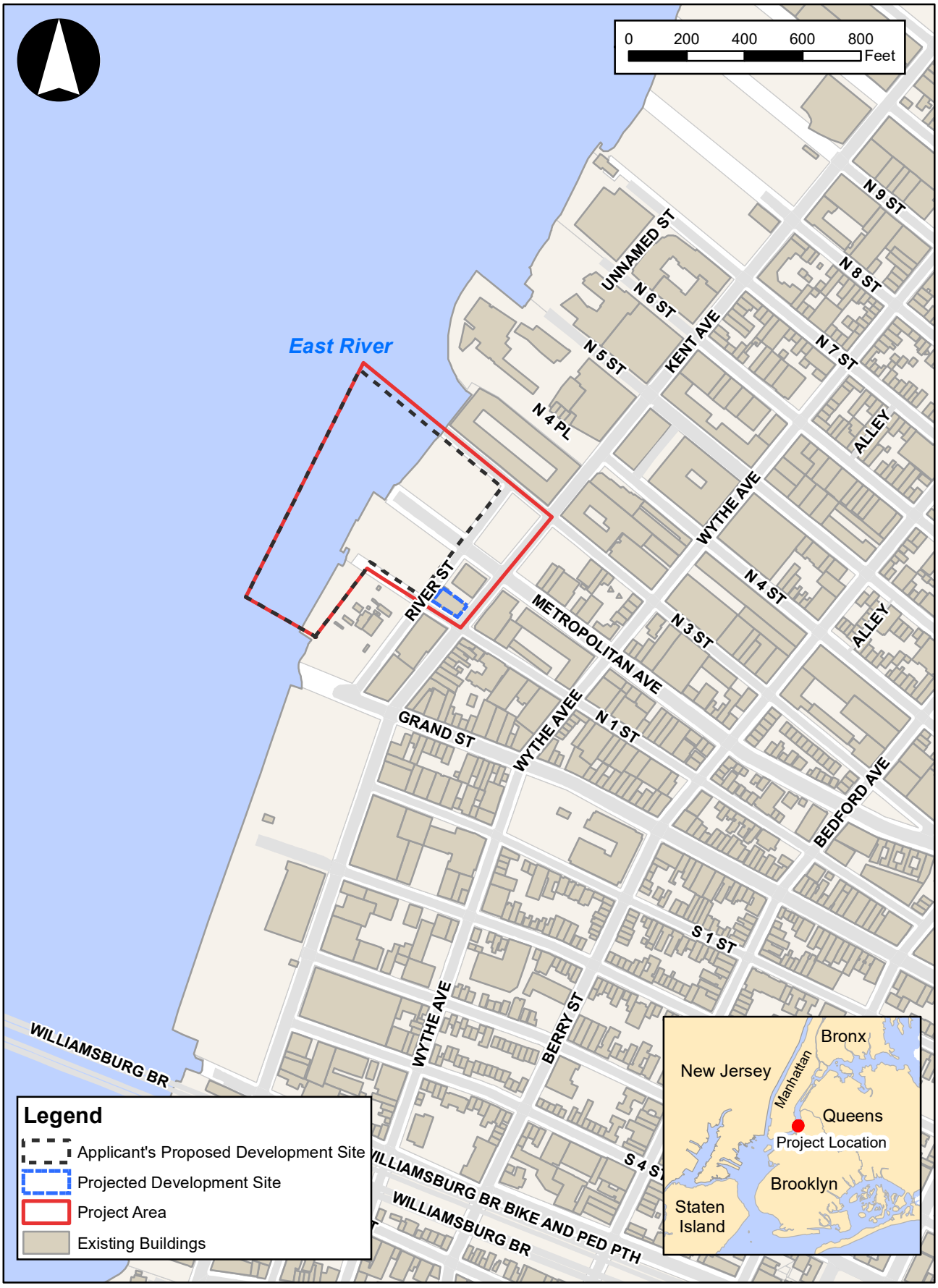
A. INTRODUCTION

This chapter describes the transportation characteristics and potential impacts associated with the Proposed Actions, which involve a zoning map amendment, a zoning text amendment, a City Map change, landfill, Large-Scale General Development special permits, a special permit to reduce parking, a zoning certification and zoning authorizations for a zoning lot comprised of Block 2355, Lots 1 and 20; Block 2361, Lots 1, 20, and 21; Block 2376, Lot 50; and portions of Metropolitan Avenue and North 1st Street (collectively known as the "Proposed Development Site") in the Williamsburg neighborhood in Brooklyn Community District (CD) 1. The Project Area also includes two upland, non-Applicant-owned blocks to the east of the Proposed Development Site (Blocks 2356 and 2362 which encompass one "Projected Development Site"). As shown in **Figure 12-1**, the Project Area is bounded to the north by North 3rd Street, to the east by Kent Avenue and property owned by the New York Power Authority (NYPA), to the south partially by North 1st Street and partially by Grand Ferry Park, and to the west by the U.S. Pierhead Line in the East River. It encompasses a total lot area of approximately 441,660 square feet (sf). This includes the upland lot portion of the Applicant's Proposed Development Site, which has a lot area of approximately 143,613 sf, the seaward lot portion of the Proposed Development Site, which has a lot area of approximately 229,677 sf and includes 28,454 sf of existing seaward structures, an approximately 23,116 sf area of Metropolitan Avenue and an approximately 3,374 sf area of North 1st Street proposed to be demapped, as well as the two non-Applicant-controlled inland blocks, which have a total lot area of 41,880 sf.

The intent of the Proposed Actions is to allow for the redevelopment of a vacant waterfront site in the Williamsburg neighborhood of Brooklyn. While the Project Area and much of the surrounding area was previously used for manufacturing purposes, there is no longer a concentration of industrial activity in the area. However, a strong demand for affordable and market-rate housing exists. The Proposed Actions would create an opportunity for development of two new mixed-use buildings with residential (including market rate and affordable units), local retail, office, and community facility uses. The Proposed Actions would allow the Applicant, River Street Development LLC, to maximize use of its property while producing new waterfront development that would provide a continuous link of waterfront areas on the East River to the north and south of the Proposed Development Site. The Proposed Actions would also eliminate the possibility of future heavy industrial uses in a neighborhood with an increasingly residential character, and provide a transition/buffer zone to the two inland blocks east of the Proposed Development Site.

In order to assess the potential effects of the Proposed Actions, a RWCDS for both "future without the Proposed Actions" (No-Action) and "future with the Proposed Actions" (With-Action) conditions is analyzed for an analysis year of 2027. As per the RWCDS, the No-Action scenario assumes that the Development Site would be developed on an as-of-right basis pursuant to the existing zoning. There would be no mapping action to de-map segments of Metropolitan Avenue and North 1st Street on the Proposed Development Site, and they would remain as mapped City streets that would be opened to traffic and would have public sidewalks.

Figure 12-1
Project Location



In the No-Action scenario, the Applicant would construct two buildings (the North and South buildings) containing a total floor area of approximately 621,500 gross square feet (gsf), including approximately 54,500 gsf of office uses, approximately 66,214 gsf of destination retail uses, approximately 23,000 gsf of local retail uses, approximately 68,000 gsf of light manufacturing/maker space, approximately 94,750 gsf of warehousing, an approximately 112,486 gsf last-mile delivery center, and approximately 579 accessory parking spaces (see **Table 12-1**).[1] A last-mile delivery center allows shipping entities, such as e-commerce companies (e.g., Amazon) or private shipping companies (e.g. FedEx), to sort large, regional shipments into smaller, area-specific shipments. This allows large trucks to deliver goods to the last-mile delivery center and smaller trucks or vans to cover the "last mile" from the delivery center to the ultimate consumer. With such a facility on the Proposed Development Site, trucks could receive goods at area airports and larger warehouses in the metropolitan region and transport those goods to the delivery center, where they would be sorted by neighborhood and loaded onto vans. From the delivery center, each van would be able to deliver goods to the nearby area, resulting in more efficient delivery routes, reduced carbon emissions, and fewer large trucks on local residential streets.

TABLE 12-1
2027 RWCDS No-Action and With-Action Land Uses

Land Use	No-Action Condition[1]		With-Action Condition		Net Increment (Total RWCDS)
	Applicant's Proposed Development	Projected Development Site	Applicant's Proposed Development	Projected Development Site	
Residential					
Residential	---	---	1,250 DU	---	1,250 DU
Commercial					
Office	54,500 gsf	---	60,000 gsf	---	5,500 gsf
Local Retail	23,000 gsf	6,741 gsf	23,000 gsf	6,741 gsf	0 gsf
Destination Retail	66,214 gsf	---	---	---	(66,214 gsf)
Total Commercial	***143,714 gsf***	***6,741 gsf***	***83,000 gsf***	***6,741 gsf***	***(60,714 gsf)***
Industrial/Warehouse/Distribution					
Last-Mile Delivery Center	112,486 gsf	---	---	---	(112,486 gsf)
Warehousing	94,750 gsf	6,741 gsf	---	6,741 gsf	(94,750 gsf)
Light Manufacturing/Maker Space	68,000 gsf	---	---	---	*(68,000 gsf)*
Total Industrial/Warehouse/Distribution	***275,236 gsf***	***6,741 gsf***	***---***	***6,741 gsf***	***(275,236 gsf)***
Community Facility					
Community Center	---	---	50,000 gsf	---	50,000 gsf
Medical Office	---	---	---	6,741 gsf	6,741 gsf
Total Community Facility	***---***	***---***	***50,000 sf***	***6,741 gsf***	***56,741 gsf***
Park					
Waterfront Park	---	---	2.9 acres[2]	---	2.9 acres
Parking					
Parking Spaces	579 spaces	20 spaces	250 spaces	---	(349 spaces)

Notes:
[1] No-Action totals reflect approximately 16,500 gsf of unassigned mechanical space in the North Building that has been apportioned to the destination retail and last-mile facility uses for travel demand forecasting purposes.
[2] Excludes 2.32 acres of accessible secondary contact in-river space and 0.86 acres of intertidal area.

[1] These totals reflect approximately 16,500 gsf of unassigned mechanical space in the North Building that has been apportioned to the destination retail and last-mile facility uses for travel demand forecasting purposes.

In addition to the commercial uses on the Proposed Development Site, the No-Action scenario also assumes development of a mix of commercial and light industrial uses on the Projected Development Site. As shown in **Table 12-1**, these would include 6,741 gsf local retail space and 6,741 gsf of warehouse space.

Under the With-Action scenario, the Applicant would construct two mixed-use towers with residential, commercial, and community facility uses, (the "Proposed Development"). In total, the Proposed Development would contain approximately 1.336 million gsf, including approximately 1,250 dwelling units (DUs), 60,000 gsf of office space, 23,000 gsf of local retail space and 50,000 gsf of community facility space. Approximately 250 on-site accessory parking spaces would also be provided below-grade. Although plans are still preliminary, it is anticipated that the community facility space would be occupied by a YMCA facility or a similar community center.

Additionally, approximately 126,308 sf (2.9 acres) of new public open space (plus 2.32 acres of accessible secondary contact in-river space and 0.86 acres of intertidal area) would be created, establishing a continuous public waterfront experience spanning from Bushwick Inlet Park to the north to Grand Ferry Park and Domino Park to the south. The waterfront public space would be fully accessible to the public and would offer water-based recreation (e.g., a kayak launch), educational programming and a variety of other opportunities for enjoyment of the waterfront by the community at large.

Lastly, as shown in **Table 12-1**, the With-Action scenario assumes that an additional 6,741 gsf of community facility space would be developed on the Projected Development Site due to the Proposed Actions. For transportation analysis purposes, it is conservatively assumed that this space would be occupied by medical office uses.

As shown in **Table 12-1**, compared to the No-Action condition, the Proposed Actions would result in a net incremental increase of 1,250 DUs, 5,500 gsf of office space, 50,000 of community center space, 6,741 gsf of medical office space and 2.9 acres of waterfront park space. There would also be a net incremental decrease of 66,214 gsf of destination retail space, 112,486 gsf of last-mile delivery center space, 94,750 gsf of warehousing space and 68,000 gsf of light manufacturing/maker space. On-site accessory parking within the Project Area would decrease by approximately 349 spaces to a total of approximately 250.

This chapter describes in detail the existing transportation conditions in proximity to the Development Site. Future conditions in the year 2027 without the Proposed Actions (the No-Action condition) are then determined, including additional transportation-system demand and any changes expected by the year 2027. The net change in travel demand resulting from the Proposed Actions is then projected and added to the No-Action condition to develop the 2027 future with the Proposed Actions (the With-Action condition). Significant adverse impacts from action-generated trips are then identified and described in detail. Chapter 19, "Mitigation" discusses practicable measures to address any such impacts.

B. PRINCIPAL CONCLUSIONS

Pursuant to *CEQR Technical Manual* guidance, the Proposed Actions are not expected to result in significant adverse impacts to traffic and parking, and bus transit services, and detailed analyses of these modes are not warranted for the Proposed Actions. Detailed analyses of potential impacts on subway transit services and pedestrian conditions were conducted, and determined that the Proposed Actions have the potential to result in significant adverse impacts related to pedestrian conditions and with respect to street user safety. Potential measures to mitigate these impacts are discussed in Chapter 19, "Mitigation," and will be further explored and finalized in coordination with the New York City Department of Transportation between the Draft and Final EIS

Traffic

Based on *CEQR Technical Manual* guidelines, a quantified traffic analysis is typically required if a proposed action would result in 50 or more additional vehicle trip ends in a peak hour at one or more intersections. Under the Proposed Actions there would be net increases of 33 and three trips in the weekday AM and Saturday peak hours, respectively, and net decreases of 29 and eight vehicle trips in the weekday midday and PM peak hours, respectively. Therefore, significant adverse traffic impacts are not expected to occur under the Proposed Actions, and a detailed traffic analysis is not warranted based on *CEQR Technical Manual* guidance.

Transit

Subway

SUBWAY STATIONS

The Proposed Actions would generate a net increment of approximately 567 and 531 new subway trips during the weekday AM and PM commuter peak hours, respectively. The analysis of subway station conditions focuses on New York City Transit's Bedford Avenue (L) station as incremental demand from the Proposed Actions would exceed the 200-trips/hour *CEQR Technical Manual* analysis threshold at this station in both peak hours. Trips en route to and from the Proposed Development would utilize the station's West Mezzanine where New York City Transit (NYCT) has recently implemented capacity improvements including additional street and platform stairs and an expanded fare array. Based on *CEQR Technical Manual* impact criteria, no stair or fare array at the Bedford Avenue (L) station would be significantly adversely impacted as a result of the Proposed Actions.

SUBWAY LINE HAUL

The analysis of subway line haul conditions focuses on L train service on the Canarsie Line where incremental demand generated by the Proposed Actions is expected to exceed the 200 trips/hour *CEQR Technical Manual* analysis threshold in both the AM and PM commuter peak hours. As incremental demand on the J, M and Z trains operating on the Broadway and Myrtle Avenue lines would total fewer than 200 peak hour trips, these services are not expected to be impacted by the Proposed Actions and no further analysis is warranted. The peak direction of travel on the Canarsie Line is typically Manhattan-bound (northbound) in the AM and Brooklyn-bound (southbound) in the PM. In the future with the Proposed Actions, peak direction L trains are expected to be operating over capacity in the AM peak hour with a volume-to-capacity (v/c) ratio of 1.04 (compared to a No-Action v/c ratio of 1.02). In the PM peak

hour they would be operating at capacity with a v/c ratio of 1.00 (compared to a No-Action v/c ratio of 0.98).

CEQR Technical Manual criteria specify that any increases in subway line haul load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads exceeding guideline capacity. Under the Proposed Actions, peak direction L trains would experience an average of no more than 2.82 additional passengers per car at their maximum load point in either period. Therefore, L train service would not be considered significantly adversely impacted by the Proposed Actions under *CEQR Technical Manual* impact criteria.

Bus

The Proposed Actions are expected to result in a net increase of three trips by transit bus in the weekday AM peak hour and a net decrease of 17 trips in the PM peak hour when compared to the No-Action condition. Therefore, significant adverse impacts to transit bus service are not expected to occur under the Proposed Actions, and a detailed analysis of bus conditions is not warranted based on *CEQR Technical Manual* guidance.

Pedestrians

The Proposed Actions would generate an incremental demand of approximately 817, 296, 737 and 630 total pedestrian trips (including walk-only trips and pedestrians walking to and from the subway, bus and ferry stops, and off-site parking) in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. These trips are expected to be most concentrated along pedestrian elements (sidewalks, corner areas and crosswalks) in the immediate proximity of the Project Area, along the Metropolitan Avenue corridor, and along Bedford Avenue in proximity to the Bedford Avenue subway station entrances at North 7th Street. Twenty-six pedestrian elements (eight sidewalks, 13 corner areas and five crosswalks) at these locations where incremental trips would potentially exceed the 200 trips/hour *CEQR Technical Manual* analysis threshold in one or more peak periods were selected for analysis. The pedestrian analysis focuses on the weekday AM and PM peak hours, and Saturday peak hour, which are the periods when the greatest amount of incremental pedestrian demand would be generated by the Proposed Actions' RWCDS. In the Future with the Proposed Actions, all analyzed sidewalks and corner areas would continue to operate at acceptable levels of service in all analyzed peak hours; however, five analyzed crosswalks would be considered significantly adversely impacted in one or more peak hours as a result of the Proposed Actions. Potential measures to mitigate these crosswalk impacts are discussed in Chapter 19, "Mitigation."

Street User Safety

The *Vision Zero Brooklyn Pedestrian Safety Action Plan* was released on February 19, 2015 and updated in 2019. The plan identifies Bedford Avenue as a Priority Corridor (added in 2019). No Priority Intersections or Priority Areas were identified in proximity to the Project Area and the neighborhood of the Project Area is not included within a designated Senior Pedestrian Focus Area.

Crash data for intersections in the pedestrian study area were obtained from the New York City Department of Transportation for the three-year reporting period between January 1, 2016, and December 31, 2018 (the most recent period for which data were available for all locations). The data

quantify the total number of crashes as well as the total number of crashes involving injuries to pedestrians or bicyclists. During the three-year reporting period, 26 crashes including eight pedestrian/bicyclist-related injury crashes occurred at these intersections. None of these crashes involved fatalities.

According to the 2020 *CEQR Technical Manual*, a high crash location is one where there were 48 or more reportable and non-reportable crashes or five or more pedestrian/bicyclist-related crashes in any consecutive 12 months within the most recent three-year period for which data are available. Based on these criteria, no intersections in the pedestrian study area are classified as high crash locations.

Currently, the only crosswalk on River Street in proximity to the Project Area is located at North 3rd Street. It is therefore likely that some pedestrians en route to and from the Proposed Development Site would choose to cross River Street at a more proximate location where a crosswalk is not present, such as at Metropolitan Avenue or North 1st Street. This would result in a significant pedestrian safety impact. As discussed in Chapter 19, "Mitigation," this potential impact is expected to be fully mitigated by the installation of a new pedestrian crossing at one or both of these locations.

Parking

Parking demand generated by the Proposed Actions' RWCDS would total approximately 270 spaces in the weekday midday, would peak at 389 spaces during the 8 PM to 9 PM period, and would total approximately 388 spaces overnight. The RWCDS includes 250 of on-site accessory parking spaces in a below-grade parking facility. This on-site capacity would be sufficient to accommodate approximately 64 percent of the parking demand during the peak 8 PM to 9 PM period as well as the peak overnight period for residential parking demand. The remaining demand (approximately 139 autos) would need to be accommodated in nearby off-street public parking facilities or on-street. Based on *CEQR Technical Manual* guidance, this projected shortfall of approximately 139 spaces of on-site parking capacity under the Proposed Actions would not constitute a significant adverse parking impact.

C. PRELIMINARY ANALYSIS METHODOLOGY

The *City Environmental Quality Review* (CEQR) *Technical Manual* describes a two-level screening procedure for the preparation of a "preliminary analysis" to determine if quantified operational analyses of transportation conditions are warranted. As discussed in the following sections, the preliminary analysis begins with a trip generation (Level 1) analysis to estimate the numbers of person and vehicle trips attributable to the proposed action. According to the *CEQR Technical Manual*, if the proposed action is expected to result in fewer than 50 vehicle trips in each peak hour, and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (a Level 2 analysis) are to be performed to estimate the incremental trips that would be incurred at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed action would generate 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a sidewalk, corner area or crosswalk, then further quantified operational analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrians, vehicular and pedestrian safety, and parking.

D. LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of incremental person and vehicle trips by mode that would be generated by the Proposed Actions during the weekday AM, midday, and PM, and Saturday peak hours. These estimates were then compared to the *CEQR Technical Manual* analysis thresholds to determine if a Level 2 screening and/or quantified operational analyses may be warranted. The travel demand assumptions used for the assessment are described in the following sections along with a detailed forecast of the travel demand that would be generated by the Proposed Actions.

Background

As shown in **Table 12-1**, compared to the No-Action condition, the Proposed Actions would result in a net incremental increase of 1,250 DUs, 5,500 gsf of office space, 50,000 of community center space, 6,741 gsf of medical office space and 2.9 acres of waterfront park space. There would also be a net incremental decrease of 66,214 gsf of destination retail space, 112,486 gsf of last-mile delivery center space, 94,750 gsf of warehousing space and 68,000 gsf of light manufacturing/maker space. On-site accessory parking within the Project Area would decrease by approximately 349 spaces to a total of approximately 250.

Transportation Planning Factors

The trip generation rates, temporal and directional distributions, modal splits, vehicle occupancies and truck trip factors used to forecast travel demand for the RWCDS's residential, office, local and destination retail, last-mile facility, warehousing, light industrial/maker space, community center, medical office and waterfront park uses are summarized in **Table 12-2**. They were based on factors cited in the 2020 *City Environmental Quality Review (CEQR) Technical Manual*; 2015-2019 American Community Survey (ACS) journey-to-work data for Brooklyn census tracts in proximity to the Development Site (tracts 551, 553, 555 and 557); 2012-2016 American Association of State Highway Transportation Officials (AASHTO) Census Transportation Planning Products (CTPP) reverse journey-to-work data; data from surveys of the travel demand characteristics at existing office and retail uses; data provided by the New York City Department of Transportation (DOT); and factors developed for recent environmental reviews. Factors are shown for the weekday AM and PM peak hours (typical peak periods for commuter travel demand) and the weekday midday and Saturday peak hours (typical peak periods for retail demand). To reflect the mixed-use nature of the projected development, it was assumed for the purposes of the travel demand forecast that 20 percent of all local retail trips on weekdays would be linked to the proposed office and light industrial uses on the site, consistent with *CEQR Technical Manual* guidance. A more detailed discussion of the transportation planning factors and assumptions used for the Proposed Development's travel demand forecast is provided in the *Transportation Planning Factors/Travel Demand Forecast (TPF/TDF) Technical Memorandum* appended to the Final Scope of Work.

Travel Demand Forecast

The net incremental change in person and vehicle trips expected to result from the Proposed Actions by the 2027 analysis year was derived based on the net change in land uses shown in **Table 12-1** and the transportation planning factors shown in **Table 12-2. Tables 12-3 and 12-4** show estimates of the net incremental change in peak hour person trips and vehicle trips, respectively, that would occur in 2027 under the Proposed Actions. These data are further summarized in **Table 12-5**. As shown in **Table 12-3**,

compared to the No-Action condition, the Proposed Actions would generate a net increase of approximately 797 person trips (in + out combined) in the weekday AM peak hour, 179 trips in the weekday midday peak hour, 609 trips in the weekday PM peak hour and 446 trips in the Saturday peak hour. As shown in **Table 12-5**, peak hour vehicle trips (including auto, taxi, and truck trips) would increase by a net total of approximately 33 and 3 during the weekday AM and Saturday peak hours, respectively, and decrease by approxiamtely 29 and 8 trips in the weekday midday and PM peak hours, respectively. The net decreases in the weekday midday and PM reflects, in part, the lower amount of vehicular travel demand that would be generated by the Proposed Actions' residential, office, community center and medical office uses compared to the destination retail, light industrial and warehousing uses in the No-Action condition. Peak hour subway trips would increase by a net total of approximately 567, 207, 531 and 512 trips during the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. Bus demand would increase by approximately three trips in the weekday AM peak hour, and decrease by approxiamtely 18, 17 and 40 trips in the weekday midday and PM peak hours and the Saturday peak hour, respectively. There would also be an increase of approximately 85, 42, 93 and 80 incremental trips by ferry during these same periods, respectively. Lastly, trips made entirely on foot (walk-only trips) or by other non-motorized modes would increase by 121, 45, 86 and 40 during the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively.

TRAFFIC

Based on *CEQR Technical Manual* guidelines, a quantified traffic analysis is typically required if a proposed action would result in 50 or more vehicle trip ends in a peak hour at one or more intersections. As shown in **Table 12-5**, under the Proposed Actions there would be net increases of only 33 and three vehicle trips in the weekday AM and Saturday peak hours, respectively, and net decreases of 29 and eight vehicle trips in the weekday midday and PM peak hours, respectively. Therefore, significant adverse traffic impacts are not expected to occur under the Proposed Actions, and a detailed traffic analysis is not warranted based on *CEQR Technical Manual* guidance.

TRANSIT

According to the general thresholds used by the Metropolitan Transportation Authority (MTA) and specified in the *CEQR Technical Manual*, detailed transit analyses are generally not required if a proposed action is projected to result in fewer than 200 peak hour rail or bus transit riders. If a proposed action would result in 50 or more bus passengers being assigned to a single bus route in one direction, or if it would result in an increase of 200 or more passengers at a single subway station or on a single subway line, a detailed bus and/or subway analysis would be warranted. Transit analyses typically focus on the weekday AM and PM commuter peak hours, as it is during these periods that overall demand on the subway and bus systems is usually highest.

As shown in **Table 12-5**, the Proposed Actions are expected to generate a net total of approximately 567 and 531 incremental subway trips in the weekday AM and PM peak hours, respectively. As these numbers of trips would exceed the 200-trip *CEQR Technical Manual* analysis threshold, a Level 2 screening analysis is warranted to determine which, if any, subway stations and routes would require quantified analysis. As also shown in **Table 12-5** there is expected to be net increase of approximately three trips by transit bus in the weekday AM peak hour and a net reduction of approximately 17 trips in the weekday PM peak hour. Therefore, significant adverse impacts to transit bus service are not expected to occur under the Proposed Actions, and a detailed analysis of bus conditions is not warranted based on *CEQR Technical Manual* guidance.

TABLE 12-2
Transportation Planning Factors

Land Use:	Residential	Local Retail	Destination Retail	Last-Mile Facility	Open Space	Office	Community Center	Warehouse	Light Industrial/ Maker Space	Medical Office
Trip Generation:	(1)	(1)	(1)	(6)	(1)	(1)	(1)	(6)	(9)	(12)
Weekday	8.075	205	78.2	5.85	139	18	44.7	2.36	14.7	76
Saturday	9.6	240	92.5	1.30	196	3.9	26.1	0.20	2.2	39
	per DU	per 1,000 gsf	per 1,000 gsf	per 1,000 gsf	per acre	per 1,000 gsf	per 1,000 gsf	per 1,000 gsf	per 1,000 gsf	per 1,000 gsf
Temporal Distribution:	(1)	(1)	(1)	(6)	(1)	(1)	(1)	(6)	(2)	(12)
AM	10%	3.0%	3.0%	11.0%	3%	12%	4%	10.0%	13.2%	11.0%
Midday	5%	19.0%	9.0%	5.0%	5%	15%	9%	9.0%	11.0%	13.0%
PM	11.0%	10.0%	9.0%	10.0%	6%	14%	5%	11.0%	14.2%	9.0%
Saturday	8.0%	10.0%	11.0%	12.0%	6%	17%	9%	33.0%	10.7%	17.0%
Modal Splits:	(7)	(6)	(10)	(8)	(3)	(5)(14)	(9)	(8)	(3)(8)	(12)
	All Periods	All Periods	AM/MD/PM / SAT	All Periods	All Periods	AM/PM/SAT / MD	All Periods	All Periods	AM/PM/SAT / MD	All Periods
Auto	11.2%	11.0%	37.4% / 40.4%	29.7%	5.0%	12.1% / 2.0%	5.0%	29.7%	29.7% / 2.0%	24%
Taxi	1.0%	0.0%	0.0% / 0.6%	0.9%	5.0%	5.9% / 1.0%	1.0%	0.9%	0.9% / 1.0%	6%
Subway	66.1%	3.0%	32.0% / 21.3%	40.6%	5.0%	45.7% / 7.0%	3.0%	40.6%	40.6% / 7.0%	59%
Transit Bus	1.7%	2.0%	7.5% / 9.6%	6.3%	5.0%	6.2% / 7.0%	6.0%	6.3%	6.3% / 7.0%	9%
Ferry	8.4%	0.0%	0.0% / 0.0%	0.0%	0.0%	2.7% / 0.0%	0.0%	0.0%	0.0% / 0.0%	0%
Walk/Other	11.6%	84.0%	23.1% / 28.1%	22.5%	80.0%	27.4% / 83.0%	85.0%	22.5%	22.5% / 83.0%	2%
	100.0%	100.0%	100.0% / 100.0%	100.0%	100.0%	100.0% / 100.0%	100.0%	100.0%	100.0% / 100.0%	100%
In/Out Splits:	(3)	(2)	(2)	(6)	(3)	(3)	(9)	(6)	(9)	(12)
	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out
AM	15% / 85%	50% / 50%	61% / 39%	46% / 54%	50% / 50%	94% / 6%	61% / 39%	77% / 23%	88.0% / 12.0%	62% / 38%
Midday	50% / 50%	50% / 50%	55% / 45%	53% / 47%	50% / 50%	39% / 61%	55% / 45%	53% / 47%	50.0% / 50.0%	47% / 53%
PM	70% / 30%	50% / 50%	47% / 53%	61% / 39%	50% / 50%	5% / 95%	29% / 71%	27% / 73%	12.0% / 88.0%	35% / 65%
Saturday	50% / 50%	50% / 50%	55% / 45%	43% / 57%	50% / 50%	60% / 40%	49% / 51%	64% / 36%	47.0% / 53.0%	49% / 51%
Vehicle Occupancy:	(3)(7)	(6)	(10)(13)	(8)(9)	(3)	(5)	(9)	(8)(9)	(8)(9)	(12)
	AM/PM / MD/SAT	AM/MD/PM / SAT	AM/MD/PM / SAT	All Periods	All Periods	All Periods	All Periods	All Periods	All Periods	All Periods
Auto	1.11 / 1.11	1.20 / 1.20	1.98 / 2.35	1.22	2.00	1.15	1.65	1.22	1.22	1.5
Taxi	1.50 / 1.50	1.20 / 1.20	2.10 / 2.10	1.30	2.00	1.85	1.30	1.30	1.30	1.5
Truck Trip Generation:	(1)	(1)	(2)	(6)	(11)	(1)	(9)	(6)	(9)	(9)
Weekday	0.06	0.35	0.70	12.17	0.01	0.32	0.29	0.91	0.67	0.29
Saturday	0.02	0.04	0.04	2.61	0.01	0.01	0.29	0.08	0.67	0.29
	per DU	per 1,000 gsf	per 1,000 gsf	per loading dock	per 1,000 sf	per 1,000 sf	per 1,000 sf	per 1,000 gsf	per 1,000 sf	per 1,000 sf
Truck Temporal Distribution:	(1)	(1)	(2)	(6)	(11)	(1)	(9)	(6)	(9)	(9)
AM	12%	8.0%	8.0%	10.0%	6%	10.0%	9.6%	9.9%	14.0%	3.0%
MD	9%	11.0%	11.0%	3.0%	6%	11.0%	11.0%	8.0%	9.0%	11.0%
PM	2%	2.0%	1.0%	11.0%	1%	2.0%	1.0%	7.0%	1.0%	1.0%
Saturday	9%	11.0%	11.0%	5.0%	0%	11.0%	0.0%	28.0%	0.0%	0.0%
Truck Directional Distribution:	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out	In / Out
AM	50% / 50%	50% / 50%	50% / 50%	1% / 99%	50% / 50%	50% / 50%	50% / 50%	67% / 33%	50% / 50%	50% / 50%
MD	50% / 50%	50% / 50%	50% / 50%	8% / 92%	50% / 50%	50% / 50%	50% / 50%	57% / 43%	50% / 50%	50% / 50%
PM	50% / 50%	50% / 50%	50% / 50%	87% / 13%	50% / 50%	50% / 50%	50% / 50%	60% / 40%	50% / 50%	50% / 50%
Saturday	50% / 50%	50% / 50%	50% / 50%	93% / 7%	50% / 50%	50% / 50%	50% / 50%	42% / 58%	50% / 50%	50% / 50%

Notes :

(1) *2020 City Environmental Quality Review (CEQR) Technical Manual.*
(2) Based on data from the *Industry City FEIS*, 2019.
(3) Based on data from the *Domino Sugar Rezoning FEIS*, 2010.
(4) Based on data from the *Technical Memorandum (TM003) for the Domino Sugar Rezoning FEIS, 2013.*
(5) Based on 2019 PHA mode choice survey data for an office use in Williamsburg, Brooklyn.
(6) Based on data provided by NYCDOT.
(7) 2015-2019 ACS journey-to-work data for Brooklyn Census Tracts 551, 553, 555, and 557.
(8) 2012-2016 AASHTO CTTP reverse journey-to-work data for Brooklyn Census Tracts 551, 553, 555, and 557.
(9) Based on data from the *East New York Rezoning FEIS*, 2016.
(10) Based on a 2010 PHA survey conducted at Rego Park Center 2.
(11) Based on data from the *Brooklyn Bridge Park FEIS*, 2005.
(12) Based on NYCDOT medical office trip generation and mode choice data.
(13) Based on data from the 2005 *Rego Park Mall FEIS*.
(14) Based on data from the *Acme Fish Expansion DEIS,* 2020.

TABLE 12-3
Travel Demand Forecast – Incremental Person Trips

Land Use:	Destination Retail		Last-Mile Facility		Residential		Open Space		Office		Community Center		Warehouse		Light Industrial/ Maker Space		Medical Office		
Size/Units:	-66,214 gsf		-112,486 gsf		1,250 DUs		2.90 acres		5,500 gsf		50,000 gsf		6,741 gsf		-68,000 gsf		6,741 gsf		
Peak Hour Trips:																			**Total Trips**
AM	-156		-74		1,010		14		12		89		-22		-132		56		797
Midday	-468		-34		506		22		15		201		-21		-110		68		179
PM	-468		-66		1,110		26		15		112		-24		-142		46		609
Saturday	-674		-18		960		34		4		117		-7		-16		46		446
Person Trips:																			
AM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	-36	-23	-10	-12	17	96	0	0	2	0	3	2	-4	-2	-34	-5	8	5	-54	61
Taxi	0	0	0	0	2	9	0	0	0	0	1	0	0	0	-1	0	2	1	4	10
Subway	-30	-19	-14	-16	100	565	0	0	6	1	2	1	-7	-2	-48	-6	21	13	30	537
Public Bus	-7	-5	-2	-3	3	15	0	0	1	0	3	2	-1	0	-7	-1	3	2	-7	10
Ferry	0	0	0	0	13	72	0	0	0	0	0	0	0	0	0	0	0	0	13	72
Walk/Other	-22	-14	-8	-9	18	100	7	7	2	0	45	30	-4	-2	-26	-4	1	0	13	108
Total	-95	-61	-34	-40	153	857	7	7	11	1	54	35	-16	-6	-116	-16	35	21	-1	798
Midday	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	-97	-79	-5	-5	28	28	1	1	0	0	6	5	-3	-3	-1	-1	8	8	-63	-46
Taxi	0	0	0	0	3	3	1	1	0	0	1	1	0	0	-1	-1	2	2	6	6
Subway	-82	-67	-7	-6	168	168	1	1	0	1	3	3	-4	-4	-4	-4	19	21	94	113
Public Bus	-19	-16	-1	-1	4	4	1	1	0	1	7	5	-1	-1	-4	-4	3	3	-10	-8
Ferry	0	0	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	0	21	21
Walk/Other	-59	-49	-4	-5	29	29	7	7	4	9	93	77	-3	-2	-45	-45	1	1	23	22
Total	-257	-211	-17	-17	253	253	11	11	4	11	110	91	-11	-10	-55	-55	33	35	71	108
PM	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	-82	-94	-12	-8	87	37	1	1	0	1	2	4	-2	-5	-5	-37	4	7	-7	-94
Taxi	0	0	0	0	8	3	1	1	0	1	0	1	0	0	0	-1	1	2	10	7
Subway	-70	-79	-16	-10	514	220	1	1	0	8	1	2	-3	-7	-7	-51	9	18	429	102
Public Bus	-16	-19	-3	-2	13	6	1	1	0	1	2	5	0	-1	-1	-8	1	3	-3	-14
Ferry	0	0	0	0	65	28	0	0	0	0	0	0	0	0	0	0	0	0	65	28
Walk/Other	-51	-57	-9	-6	90	39	9	9	0	4	27	68	-2	-4	-4	-28	0	1	60	26
Total	-219	-249	-40	-26	777	333	13	13	0	15	32	80	-7	-17	-17	-125	15	31	554	55
Saturday	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Auto	-149	-123	-2	-4	54	54	1	1	0	0	3	3	-1	-1	-2	-3	5	6	-91	-67
Taxi	-2	-2	0	0	5	5	1	1	0	0	1	1	0	0	0	0	1	1	6	6
Subway	-79	-65	-3	-4	317	317	1	1	3	0	2	2	-2	-1	-3	-3	14	15	250	262
Public Bus	-36	-29	0	-1	8	8	0	0	0	0	3	4	0	0	0	-1	2	2	-23	-17
Ferry	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	40	40
Walk/Other	-104	-85	-2	-2	56	56	14	14	1	0	48	50	-1	-1	-2	-2	0	0	10	30
Total	-370	-304	-7	-11	480	480	17	17	4	0	57	60	-4	-3	-7	-9	22	24	192	254

TABLE 12-4

Travel Demand Forecast – Incremental Vehicle Trips

Vehicle Trips :		Destination Retail		Last-Mile Facility		Residential		Open Space		Office		Community Center		Warehouse		Light Industrial/ Maker Space		Medical Office		Total Trips	
AM		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	-18	-12	-8	-10	15	86	0	0	2	0	2	1	-3	-2	-28	-4	5	3	-33	62
	Taxi	0	0	0	0	1	6	0	0	0	0	1	0	0	0	-1	0	1	1	2	7
	Taxi (Balanced)	0	0	0	0	7	7	0	0	0	0	1	1	0	0	-1	-1	2	2	9	9
	Truck	-2	-2	0	-7	5	5	0	0	0	0	1	1	-6	-3	-3	-3	0	0	-5	-9
	Total	-20	-14	-8	-17	27	98	0	0	2	0	4	3	-9	-5	-32	-8	7	5	-29	62
Midday		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	-49	-40	-4	-4	25	25	1	1	0	0	4	3	-2	-2	-1	-1	5	5	-21	-13
	Taxi	0	0	0	0	2	2	1	1	0	0	1	1	0	0	-1	-1	1	1	4	4
	Taxi (Balanced)	0	0	0	0	4	4	2	2	0	0	2	2	0	0	-2	-2	2	2	8	8
	Truck	-3	-3	0	-2	3	3	0	0	0	0	1	1	-5	-2	-2	-2	0	0	-6	-5
	Total	-52	-43	-4	-6	32	32	3	3	0	0	7	6	-7	-4	-5	-5	7	7	-19	-10
PM		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	-41	-47	-10	-7	78	33	1	1	0	1	1	2	-2	-4	-4	-30	3	5	26	-46
	Taxi	0	0	0	0	5	2	1	1	0	1	0	1	0	0	0	-1	1	1	7	5
	Taxi (Balanced)	0	0	0	0	7	7	2	2	1	1	1	1	0	0	-1	-1	2	2	12	12
	Truck	0	0	-7	-1	1	1	0	0	0	0	0	0	-4	-2	0	0	0	0	-10	-2
	Total	-41	-47	-17	-8	86	41	3	3	1	2	2	3	-6	-6	-5	-31	5	7	28	-36
Saturday		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	-63	-52	-2	-3	49	49	1	1	0	0	2	2	-1	-1	-2	-2	3	4	-13	-2
	Taxi	-1	-1	0	0	3	3	1	1	0	0	1	1	0	0	0	0	1	1	5	5
	Taxi (Balanced)	-2	-2	0	0	6	6	2	2	0	0	2	2	0	0	0	0	2	2	10	10
	Truck	0	0	-1	0	1	1	0	0	0	0	0	0	-2	-1	0	0	0	0	-2	0
	Total	-65	-54	-3	-3	56	56	3	3	0	0	4	4	-3	-2	-2	-2	5	6	-5	8

TABLE 12-5
Travel Demand Forecast Summary

Peak Hour	Vehicle Trips[1]			Person Trips																	
				Subway			Bus			Ferry			Walk/Other			Walk to/From Off-Site Parking[2]			Total Pedestrian Trips[3]		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
AM	-29	62	33	30	537	567	-7	10	3	13	72	85	13	108	121	6	35	41	55	762	817
Midday	-19	-10	-29	94	113	207	-10	-8	-18	21	21	42	23	22	45	10	10	20	138	158	296
PM	28	-36	-8	429	102	531	-3	-14	-17	65	28	93	60	26	86	31	13	44	582	155	737
Saturday	-5	8	3	250	262	512	-23	-17	-40	40	40	80	10	30	40	19	19	38	296	334	630

Notes:

[1]Includes auto, taxi and truck trips.

[2]Assumes an estimated 36 percent of residential parking demand would be accommodated off-site.

[3]Includes walk-only trips and pedestrians walking to/from subway stations, bus and ferry stops, and off-site parking.

PEDESTRIANS

According to *CEQR Technical Manual* guidance, a quantified analysis of pedestrian conditions is typically required if a proposed action would result in 200 or more peak hour pedestrian trips at any pedestrian element (sidewalk, corner area or crosswalk). As shown in **Table 12-5**, the Proposed Actions would generate a net incremental increase of approximately 817, 296, 737 and 630 total pedestrian trips in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. These would include walk-only trips, pedestrians walking to and from the subway and bus and ferry stops, and a portion of residential person trips by auto that are expected to utilize off-site parking. As the numbers of trips would exceed the 200-trip threshold in all periods, a Level 2 screening analysis is warranted for these periods to determine which, if any pedestrian elements require quantified analysis.

E. LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the assignment of project-generated trips to the study area street network, pedestrian elements, and transit facilities, and the identification of specific locations where the incremental increase in demand may potentially exceed *CEQR Technical Manual* analysis thresholds and therefore require a quantitative analysis.

Transit

Subway Stations

As shown in **Table 12-6**, the Proposed Actions are expected to generate a net total of approximately 567 and 531 incremental subway trips in the weekday AM and PM peak hours, respectively. These trips are expected to use the two subway stations located closest to the Development Site—the Bedford Avenue station served by L trains operating on the Canarsie Line between Canarsie, Brooklyn and the 14th Street corridor in Manhattan, and the Marcy Avenue station. The Marcy Avenue station is served by J and Z trains operating on the Jamaica Line between Jamaica, Queens and Lower Manhattan, and M trains operating from Middle Village, Queens to Forrest Hills, Queens via the Myrtle Avenue Line in Brooklyn, the Sixth Avenue Line in Manhattan, and the Queens Boulevard Line in Queens. As shown in **Figure 12-2**, the Bedford Avenue (L) station is an approximately 0.5-mile walk from the Development Site while the Marcy Avenue (J, M, Z) station is an approximately one-mile walk.

Transit Services

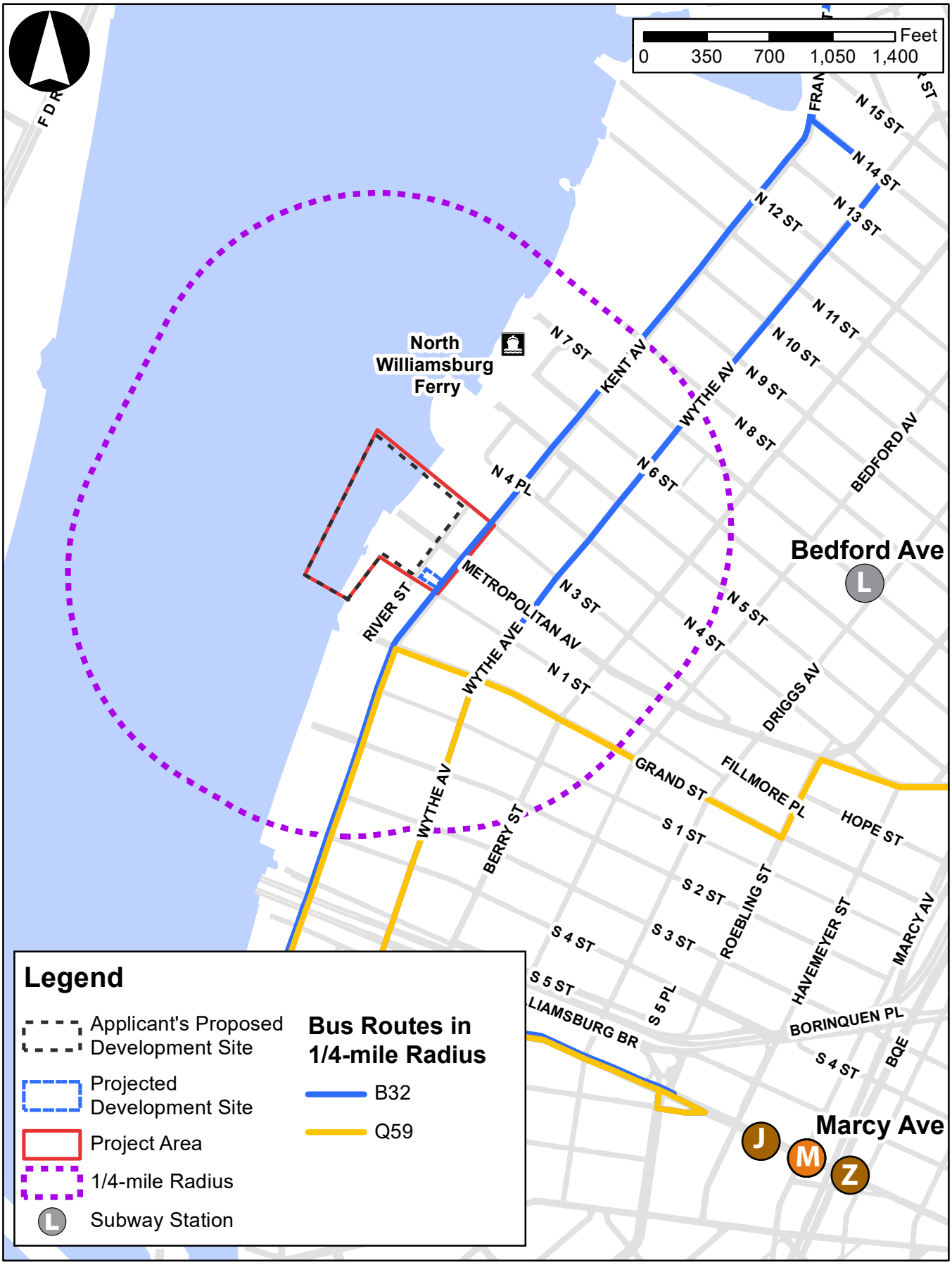


TABLE 12-6
Net Incremental Peak Hour Subway Trips by Station

	AM Peak Hour Trips			PM Peak Hour Trips		
	Into Project	Out of Project	Total	Into Project	Out of Project	Total
Project Summary						
Total Incremental Person Trips:	-1	798	797	554	55	609
Incremental Subway Trips:	30	537	567	429	102	531
Subway Station						
Bedford Avenue (L)	26	471	**497**	377	89	**466**
Marcy Avenue (J, M, Z)	4	66	70	52	13	65
Total	30	537	567	429	102	531
Bold – denotes 200 or more incremental peak hour trips at a station.						

New subway trips generated by the Proposed Actions' residential component were assigned to either the Bedford Avenue station or the Marcy Avenue station based on AASHTO CTPP journey-to-work five-year data for Brooklyn census tracts in proximity to the Development Site (tracts 551, 553, 555 and 557). Trips from other uses were assigned based on AASHTO CTPP reverse journey-to-work five-year data. As shown in **Table 12-6**, based on these assignments, it is estimated that new subway demand from the Proposed Actions would likely exceed the 200-trip *CEQR Technical Manual* analysis threshold in the AM and PM peak hours at the Bedford Avenue station, and this station was therefore selected for detailed analysis. As the Proposed Actions would result in a net increase of no more than 70 peak hour trips compared to the No-Action condition at the Marcy Avenue station, this station would not be adversely impacted by the Proposed Actions and is not analyzed.

Subway riders en route between the Project Area and the Bedford Avenue station are expected to use the street stair to the station's west mezzanine that is located on Bedford Avenue adjacent to the southeast corner at North 7th Street as it is the closest entrance to the Project Area. Key circulation elements at the west mezzanine (i.e., the fare array and street and platform stairs) expected to be used by concentrations of new demand from the Proposed Development are analyzed. As trips generated by the Proposed Actions are not expected to use the more distant east mezzanine at Driggs Avenue, circulation elements at this mezzanine are not included for analysis. As discussed in more detail later in this chapter, the analysis of the Bedford Avenue station reflects recent access improvements implemented by NYCT at this station.

SUBWAY LINE HAUL

As the Proposed Actions would likely generate a net increase of more than 200 new peak hour subway trips in one direction on L trains, line haul conditions on these trains are analyzed. The analysis uses existing subway service and ridership data provided by NYCT to assess existing, future No-Action, and future With-Action conditions in the peak direction at the maximum load points during the weekday AM and PM peak hours. As the Proposed Actions would not generate 200 or more incremental peak hour trips on the J, M and Z trains operating on the Broadway and Myrtle Avenue Lines, these services are not expected to be impacted and no further analysis is warranted.

Pedestrians

Based on *CEQR Technical Manual* guidance, detailed pedestrian analyses are generally warranted if a proposed action is projected to result in 200 or more new peak hour pedestrians at any sidewalk, corner area, or crosswalk. As shown in **Table 12-5**, the Proposed Actions are expected to generate a net increase of 121, 45, 86 and 40 walk-only trips in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively. There would also be 85, 42, 93 and 80 additional pedestrians walking to/from the ferry in each of these periods, respectively, while the net number of pedestrians walking to/from nearby bus stops would increase by three in the weekday AM peak hour and decrease by 18, 17 and 40 in the weekday midday and PM peak hours and Saturday peak hour, respectively. There would also be a net increase of 567, 207, 531 and 512 pedestrians walking to and from the subway during the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively, compared to the No-Action condition. Lastly, as shown in **Table 12-5**, it is estimated that there would be 41, 20, 44 and 38 pedestrians en route to and from off-site parking in the weekday AM, midday and PM peak hours, and Saturday peak hour, respectively.

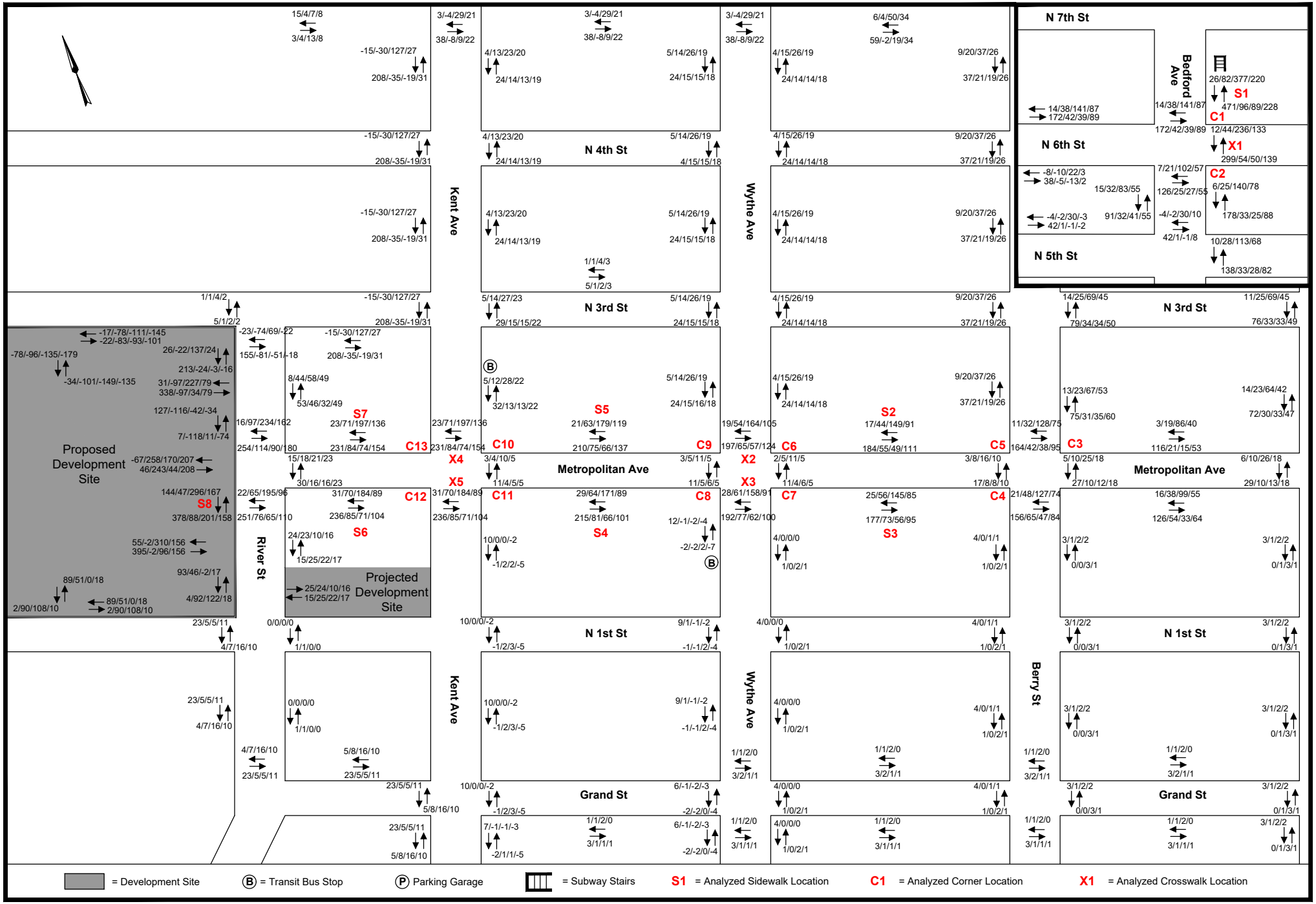
An assignment of net incremental pedestrian trips is shown in **Figure 12-3**. Subway, bus, ferry and walk-only trips each have different assignment patterns. Subway trips were assigned to the most direct paths between the Project Area and the nearest entrances at the Bedford Avenue and Marcy Avenue subway stations. Persons walking to and from the Bedford Avenue subway station were assigned to the newly expanded entrance stair on Bedford Avenue south of North 7th Street, as it is the closest station entrance to the Project Area. As the Proposed Actions would generate a net increase of no more than 70 pedestrians at the Marcy Avenue subway station in any peak hour, detailed assignments of pedestrian trips in the vicinity of this station were found to be unwarranted. Bus trips were assigned to stops for the B32 and Q59 routes along Kent Avenue and Wythe Avenue, and ferry trips were assigned to the North Williamsburg ferry landing near North 5th Street. Walk-only trips were distributed throughout the local street network, and pedestrian trips associated with off-site parking were assigned to nearby public parking garages.

It should be noted that at present, the only crosswalk on River Street in proximity to the Development Site is located at North 3rd Street. However, for pedestrian trip assignment purposes it was conservatively assumed that in the future, a new pedestrian crossing would be installed at the intersection of River Street and Metropolitan Avenue to accommodate pedestrian demand generated by the Proposed Actions, including the demand generated by the proposed waterfront public open space.

Overall, as shown in **Figure 12-3**, the greatest incremental increases in pedestrian demand under the Proposed Actions are expected to occur on pedestrian elements (sidewalks, corner areas and crosswalks) in the immediate proximity of the Project Area, along the Metropolitan Avenue corridor, and in proximity to the Bedford Avenue subway station entrance on Bedford Avenue south of North 7th Street. Based on the assignments shown in **Figure 12-3**, 26 pedestrian elements (eight sidewalks, 13 corner areas and five crosswalks) at these locations where incremental trips would potentially exceed the 200 trips/hour *CEQR Technical Manual* analysis threshold in one or more peak periods were selected for analysis. They include the following:

Sidewalks

- (S1) East sidewalk on Bedford Avenue between North 6th and North 7th streets;
- (S2) North sidewalk on Metropolitan Avenue between Wythe and Berry avenues;
- (S3) South sidewalk on Metropolitan Avenue between Wythe and Berry avenues;



River Ring

Figure 12-3
Incremental Peak Hour Pedestrian Volumes

- (S4) South sidewalk on Metropolitan Avenue between Kent and Wythe avenues;
- (S5) North sidewalk on Metropolitan Avenue between Kent and Wythe avenues;
- (S6) South sidewalk on Metropolitan Avenue between River Street and Kent Avenue;
- (S7) North sidewalk on Metropolitan Avenue between River Street and Kent Avenue;
- (S8) West sidewalk on River Street between North 1st Street and Metropolitan Avenue.

Corner Areas

- (C1) Northeast corner at Bedford Avenue/North 6th Street;
- (C2) Southeast corner at Bedford Avenue/North 6th Street;
- (C3) Northeast corner at Berry Avenue/Metropolitan Avenue;
- (C4) Southwest corner at Berry Avenue/Metropolitan Avenue;
- (C5) Northwest corner at Berry Avenue/Metropolitan Avenue;
- (C6) Northeast corner at Wythe Avenue/Metropolitan Avenue;
- (C7) Southeast corner at Wythe Avenue/Metropolitan Avenue;
- (C8) Southwest corner at Wythe Avenue/Metropolitan Avenue;
- (C9) Northwest corner at Wythe Avenue/Metropolitan Avenue;
- (C10) Northeast corner at Kent Avenue/Metropolitan Avenue;
- (C11) Southeast corner at Kent Avenue/Metropolitan Avenue;
- (C12) Southwest corner at Kent Avenue/Metropolitan Avenue;
- (C13) Northwest corner at Kent Avenue/Metropolitan Avenue.

Crosswalks

- (X1) East crosswalk on North 6th Street at Bedford Avenue;
- (X2) North crosswalk on Wythe Avenue at Metropolitan Avenue;
- (X3) South crosswalk on Wythe Avenue at Metropolitan Avenue;
- (X4) North crosswalk on Kent Avenue at Metropolitan Avenue;
- (X5) South crosswalk on Kent Avenue at Metropolitan Avenue.

The pedestrian analysis focuses on the weekday AM and PM peak hours, and Saturday peak hour, which are the periods when the greatest amount of incremental pedestrian demand would be generated by the Proposed Actions. The midday peak hour is not included for analysis as none of the 26 analyzed elements would experience 200 or more incremental pedestrian trips in this period.

Parking

Parking demand from local retail, office, medical office and community center uses typically peaks in the midday period and declines during the afternoon and evening, while parking demand from residential uses peaks in the overnight period. Parking demand from the Proposed Actions' open space use is expected to peak in the weekday evening period and on Saturday. A parking demand forecast is provided to document the ability of the approximately 250 spaces of on-site accessory parking to accommodate all

of the projected demand from the With-Action RWCDS, and assess the potential for a significant parking shortfall.

F. TRANSPORTATION ANALYSES METHODOLOGIES

Transit

Analysis Methodology

SUBWAY STATIONS

The analysis of existing conditions at analyzed subway station elements is based on subway ridership data collected at the Bedford Avenue (L) subway station in April 2021. Given the ongoing effects of the Covid-19 pandemic on subway ridership, data collected at the Bedford Avenue station in May 2018 were also used to adjust the 2021 data to reflect pre-pandemic conditions. The methodology for assessing subway station pedestrian circulation elements (stairs, escalators, and passageways) and fare control elements (low turnstiles, high entry/exit turnstiles [HEETs], and high exit turnstiles [HXTs]) compares existing and projected pedestrian volumes with the element's design capacity to yield a v/c ratio. All analyses reflect pedestrian flow volumes over a 15-minute interval during each peak hour. Based on existing pedestrian volumes at the Bedford Avenue (L) station, the peak hours selected for the analysis of subway station conditions are 8:00-9:00 AM and 5:30-6:30 PM. As noted previously, transit analyses typically focus on the weekday AM and PM commuter peak hours, as it is during these periods that overall demand on the subway and bus systems is usually highest.

Under *CEQR Technical Manual* guidance, the capacity of a stairway or passageway is determined based on four factors: the NYCT guideline capacity, the effective width, and surging and counter-flow factors, if applicable. NYCT guideline capacity is ten passengers per foot-width per minute (pfm) for stairs and 15 pfm for passageways. The effective width of a stair or passageway is the actual width adjusted to reflect pedestrian avoidance of sidewalls and for center handrails, if present. A surging factor is applied to existing pedestrian volumes to reflect conditions where pedestrian flows tend to be concentrated (or surged) during shorter periods within the 15-minute analysis interval. This factor, which is based on the size of the station and the proximity of the pedestrian element to the station platforms, can reduce the calculated capacity by up to 25 percent. Lastly, a friction (or counter-flow) factor reducing calculated capacity by ten percent is applied where opposing pedestrian flows use the same stair or passageway. (No friction factor is applied if the flow is all or predominantly in one direction.)

By contrast with stairways and passageways, under *CEQR Technical Manual* guidance the capacity of an escalator or turnstile is determined based on only two factors: the NYCT guideline capacity for a 15-minute interval and a surging factor of up to 25 percent. **Table 12-7** shows the *CEQR Technical Manual* level of service (LOS) criteria for all subway station elements. As shown in **Table 12-7**, six levels of service are defined with letters A through F. LOS A is representative of free flow conditions without pedestrian conflicts, and LOS F depicts severe congestion and queuing.

SUBWAY LINE HAUL

Line haul capacity is based on the guideline capacity per subway car multiplied by the number of subway cars crossing the maximum load point in the peak hour. (Maximum guideline capacities established by NYCT for each car class are 110 passengers/car for a 51-foot subway car, 145 passengers/car for a 60-foot

car, and 175 passengers/car for a 75-foot car.) The v/c ratio is determined by dividing the number of peak hour passengers traveling through the maximum load point by the line haul capacity. (Maximum load point subway service and ridership data were provided by NYCT.) The subway line haul analysis focuses on peak direction demand during the weekday AM and PM commuter peak hours as it is during these periods that overall demand on the subway system is usually highest.

TABLE 12-7
Level of Service Criteria for Subway Station Elements

LOS	Description	V/C Ratio
A	Free Flow	0.00 to 0.45
B	Fluid Flow	0.45 to 0.70
C	Fluid, somewhat restricted	0.70 to 1.00
D	Crowded, walking speed restricted	1.00 to 1.33
E	Congested, some shuffling and queuing	1.33 to 1.67
F	Severely congested, queued	> 1.67

Source: 2020 *CEQR Technical Manual*

Significant Impact Criteria

SUBWAY STATIONS

The *CEQR Technical Manual* identifies a significant impact for stairways and passageways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either their No-Action v/c ratio or to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Stairways that are substantially degraded in LOS or that experience the formation of extensive queues are classified as significantly impacted. Significant adverse stairway or passageway impacts are typically considered to have occurred once the thresholds shown in **Table 12-8** are reached or exceeded.

TABLE 12-8
Significant Impact Thresholds for Stairways and Passageways

With-Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00-1.09	8	13
1.10-1.19	7	11.5
1.20-1.29	6	10
1.30-1.39	5	8.5
1.40-1.49	4	6
1.50-1.59	3	4.5
$\geq$1.6	2	3

Source: 2020 *CEQR Technical Manual.*

For turnstiles, escalators, and high-wheel exit gates, the *CEQR Technical Manual* defines a significant impact as an increase from a No-Action v/c ratio of below 1.00 to a v/c ratio of 1.00 or greater. Where a facility is already at a v/c ratio of 1.00 or greater, a 0.01 change in v/c ratio is also considered significant.

SUBWAY LINE HAUL

For subway line haul conditions*, CEQR Technical Manual* criteria specify that any increases in load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads exceeding guideline capacity. This is based on the general assumption that when subways are at or above practical capacity, the addition of even five or more riders per car is perceptible.

Pedestrians

Analysis Methodology

Data on peak period pedestrian flow volumes were collected along analyzed sidewalks, corner areas, and crosswalks in the vicinity of the Development Site in November 2020 and April 2021. Peak hours were determined by comparing rolling hourly averages, and the highest 15-minute volumes within the selected peak hours were used for analysis. Based on pedestrian count data, the weekday 8:00 to 9:00 AM and 4:30 to 5:30 PM and Saturday 1:45 to 2:45 PM peak hours have been selected for analysis.

Peak 15-minute pedestrian flow conditions are analyzed using the *Highway Capacity Manual 2010* methodology and procedures outlined in the *CEQR Technical Manual*. Using this methodology, the congestion level of pedestrian facilities is determined by considering pedestrian volume, measuring the sidewalk or crosswalk width, determining the available pedestrian capacity, and developing a ratio of volume flows to capacity conditions. The resulting ratio is then compared with LOS standards for pedestrian flow, which define a qualitative relationship at a certain pedestrian traffic concentration level. The evaluation of street crosswalks and corners is more complicated as these spaces cannot be treated as corridors due to the time incurred waiting for traffic lights. To evaluate these facilities effectively, a "time-space" analysis methodology is employed which takes into consideration the traffic light cycle at intersections.

LOS standards are based on the average area available per pedestrian during the analysis period, typically expressed as a 15-minute peak period. LOS grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F depicting significant capacity limitations and inconvenience. **Table 12-9** defines the LOS criteria for pedestrian crosswalk/corner area and sidewalk conditions, as based on the *Highway Capacity Manual* methodology.

The analysis of sidewalk conditions includes a "platoon" factor in the calculation of pedestrian flow to estimate the dynamics of walking more accurately. "Platooning" is the tendency of pedestrians to move in bunched groups or "platoons" once they cross a street where cross traffic required them to wait. Platooning generally results in an LOS one level poorer than that determined for average flow rates.

Significant Impact Criteria

SIDEWALKS

The *CEQR Technical Manual* impact criteria for a non-central business district (non-CBD) location are used to identify significant adverse impacts due to the Proposed Actions. These criteria define a significant adverse sidewalk impact to have occurred under platoon conditions if the average pedestrian space under the No-Action condition is greater than 44.3 square feet/pedestrian (sf/ped), and the average pedestrian space under the With-Action condition is 40.0 sf/ped or less (LOS D or worse). If the average pedestrian space under the With-Action condition is greater than 40.0 sf/ped (LOS C or better), the impact should not be considered significant. If the No-Action pedestrian space is between 6.4 and 44.3 sf/ped, a reduction in pedestrian space under the With-Action condition should be considered significant based on **Table 12-10**, which shows a sliding-scale that identifies what decrease in pedestrian space is considered a significant impact for a given pedestrian space value in the No-Action condition. If the reduction in pedestrian space is less than the value in **Table 12-10**, the impact is not considered significant. If the average pedestrian space under the No-Action condition is less than 6.4 sf/ped, then a reduction in pedestrian space greater than or equal to 0.3 sf/ped, under the With-Action condition, should be considered significant.

TABLE 12-9
Pedestrian Crosswalk/Corner Area and Sidewalk Levels of Service Descriptions

LOS	Crosswalk/Corner	Crosswalk/Corner Area Criteria (sf/ped)	Non-Platoon Sidewalk Criteria (sf/ped)	Platoon Sidewalk Criteria (sf/ped)
A	(Unrestricted)	> 60	> 60	> 530
B	(Slightly Restricted)	> 40 to 60	> 40 to 60	> 90 to 530
C	(Restricted but fluid)	> 24 to 40	> 24 to 40	> 40 to 90
D	(Restricted, necessary to continuously alter walking stride and direction)	> 15 to 24	> 15 to 24	> 23 to 40
E	(Severely restricted)	> 8 to 15	> 8 to 15	> 11 to 23
F	(Forward progress only by shuffling; no reverse movement possible)	≤ 8	≤ 8	≤ 11

Notes:
Based on average conditions for 15 minutes.
Sf/ped – square feet of area per pedestrian.
Source: 2020 *CEQR Technical Manual.*

CORNER AREAS AND CROSSWALKS

For non-CBD areas, *CEQR Technical Manual* criteria define a significant adverse corner area or crosswalk impact to have occurred if the average pedestrian space under the No-Action condition is greater than 26.6 sf/ped and, under the With-Action condition, the average pedestrian space decreases to 24 sf/ped or less (LOS D or worse). If the pedestrian space under the With-Action condition is greater than 24 sf/ped (LOS C or better), the impact should not be considered significant. If the average pedestrian space under the No-Action condition is between 5.1 and 26.6 sf/ped, a decrease in pedestrian space under the With-Action condition should be considered significant based on **Table 12-11**. This table shows a sliding scale that identifies what decrease in pedestrian space is considered a significant impact for a given amount of pedestrian space in the No-Action condition. If the decrease in pedestrian space is less than the value in **Table 12-11**, the impact is not considered significant. If the average pedestrian space under the No-Action condition is less than 5.1 sf/ped, then a decrease in pedestrian space greater than or equal to 0.2 sf/ped should be considered significant.

TABLE 12-10
Significant Impact Criteria for Sidewalks with Platooned Flow in a Non-CBD Location

No-Action Condition Pedestrian Flow (sf/ped)	With-Action Condition Pedestrian Flow Increment to be Considered a Significant Impact (sf/ped)
>44.3	With-Action Condition < 40.0
43.5 to 44.3	Reduction ≥ 4.3
42.5 to 43.4	Reduction ≥ 4.2
41.6 to 42.4	Reduction ≥ 4.1
40.6 to 41.5	Reduction ≥ 4.0
39.7 to 40.5	Reduction ≥ 3.9
38.7 to 39.6	Reduction ≥ 3.8
37.8 to 38.6	Reduction ≥ 3.7
36.8 to 37.7	Reduction ≥ 3.6
35.9 to 36.7	Reduction ≥ 3.5
34.9 to 35.8	Reduction ≥ 3.4
34.0 to 34.8	Reduction ≥ 3.3
33.0 to 33.9	Reduction ≥ 3.2
32.1 to 32.9	Reduction ≥ 3.1
31.1 to 32.0	Reduction ≥ 3.0
30.2 to 31.0	Reduction ≥ 2.9
29.2 to 30.1	Reduction ≥ 2.8
28.3 to 29.1	Reduction ≥ 2.7
27.3 to 28.2	Reduction ≥ 2.6
26.4 to 27.2	Reduction ≥ 2.5
25.4 to 26.3	Reduction ≥ 2.4
24.5 to 25.3	Reduction ≥ 2.3
23.5 to 24.4	Reduction ≥ 2.2
22.6 to 23.4	Reduction ≥ 2.1
21.6 to 22.5	Reduction ≥ 2.0
20.7 to 21.5	Reduction ≥ 1.9
19.7 to 20.6	Reduction ≥ 1.8
18.8 to 19.6	Reduction ≥ 1.7
17.8 to 18.7	Reduction ≥ 1.6
16.9 to 17.7	Reduction ≥ 1.5
15.9 to 16.8	Reduction ≥ 1.4
15.0 to 15.8	Reduction ≥ 1.3
14.0 to 14.9	Reduction ≥ 1.2
13.1 to 13.9	Reduction ≥ 1.1
12.1 to 13.0	Reduction ≥ 1.0
11.2 to 12.0	Reduction ≥ 0.9
10.2 to 11.1	Reduction ≥ 0.8
9.3 to 10.1	Reduction ≥ 0.7
8.3 to 9.2	Reduction ≥ 0.6
7.4 to 8.2	Reduction ≥ 0.5
6.4 to 7.3	Reduction ≥ 0.4
<6.4	Reduction ≥ 0.3

Source: 2020 *CEQR Technical Manual.*

TABLE 12-11
Significant Impact Criteria for Corners and Crosswalks in a Non-CBD Location

No-Action Condition Pedestrian Space (sf/ped)	With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 26.6	With-Action Condition < 24.0
25.8 to 26.6	Reduction ≥ 2.6
24.9 to 25.7	Reduction ≥ 2.5
24.0 to 24.8	Reduction ≥ 2.4
23.1 to 23.9	Reduction ≥ 2.3
22.2 to 23.0	Reduction ≥ 2.2
21.3 to 22.1	Reduction ≥ 2.1
20.4 to 21.2	Reduction ≥ 2.0
19.5 to 20.3	Reduction ≥ 1.9
18.6 to 19.4	Reduction ≥ 1.8
17.7 to 18.5	Reduction ≥ 1.7
16.8 to 17.6	Reduction ≥ 1.6
15.9 to 16.7	Reduction ≥ 1.5
15.0 to 15.8	Reduction ≥ 1.4
14.1 to 14.9	Reduction ≥ 1.3
13.2 to 14.0	Reduction ≥ 1.2
12.3 to 13.1	Reduction ≥ 1.1
11.4 to 12.2	Reduction ≥ 1.0
10.5 to 11.3	Reduction ≥ 0.9
9.6 to 10.4	Reduction ≥ 0.8
8.7 to 9.5	Reduction ≥ 0.7
7.8 to 8.6	Reduction ≥ 0.6
6.9 to 7.7	Reduction ≥ 0.5
6.0 to 6.8	Reduction ≥ 0.4
5.1 to 5.9	Reduction ≥ 0.3
< 5.1	Reduction ≥ 0.2

Source: 2020 *CEQR Technical Manual.*

Street User Safety Assessment

Under *CEQR Technical Manual* guidance, an assessment of street user safety is needed for locations within the traffic and pedestrian study areas that have been identified as high crash locations. These are defined as locations with 48 or more total reportable and non-reportable crashes or where five or more pedestrian/bicyclist injury crashes have occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, crash trends would be identified to determine whether projected vehicular and pedestrian traffic would further impact safety, or whether existing unsafe conditions could adversely impact the flow of the projected new trips. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic

and pedestrian volumes, crash types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety should be identified and coordinated with NYCDOT.

Parking

Analysis Methodology

A parking demand forecast for the Proposed Development is provided to document the projected demand at the approximately 250-spaces of on-site accessory parking and whether any demand would need to be accommodated on-street or at nearby off-street public parking facilities.

Significant Shortfall Criteria

Should a proposed action generate the need for more parking than it provides, a shortfall of spaces may be considered significant. The availability of off-street and on-street parking spaces within a convenient walking distance (about a ¼-mile), as well as the availability of alternative modes of transportation, are considered in making this determination.

Under *CEQR Technical Manual* guidance, different criteria for determining significance are applied based on whether or not a proposed project is located in residential or commercial areas designated as Parking Zones 1 and 2 as shown in Map 16-2, "CEQR Parking Zones, May 2010," in the 2020 *CEQR Technical Manual*. As the proposed rezoning area is located within Zone 2 as shown in Map 16-2, the inability of the Proposed Actions or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation.

G. TRANSIT

Existing Conditions

Subway Stations

As discussed above in Section E, "Level 2 Screening Assessment," and shown in **Table 12-6**, the Proposed Actions are expected to exceed the 200-trip *CEQR Technical Manual* threshold for a subway station analysis in both the weekday AM and PM peak hours at the Bedford Avenue station on the Canarsie Line. The Bedford Avenue station is located beneath North 7th Street between Bedford and Driggs avenues and is served at all times by L trains operating between Canarsie, Brooklyn and the 14th Street corridor in Manhattan. The station consists of a single island platform accessed from two mezzanines, one located at Bedford Avenue at the west end of the station, and the second located at Driggs Avenue at the east end of the station. NYC Transit recently implemented a program of improvements to add capacity at the Bedford Avenue station. As originally configured, the Bedford Avenue mezzanine included two street stairs (S3 and S4) located on North 7th Street at the southeast and northeast corners of the intersection, respectively, which provided access to a 24-hour fare booth (H009) with seven low turnstiles. A single stair (P2) connected this mezzanine to the platform below. At the Driggs Avenue mezzanine, two street stairs (S1 and S2) located on North 7th Street at the southeast and northeast corners of the intersection provided access to a fare array (H010) consisting of four low turnstiles and two HEETs. A single stair (P1) connected this mezzanine to the platform.

As shown in **Figure 12-4**, the recent capacity improvements implemented by NYC Transit at the Bedford Avenue station include the following:

- A new seven-foot-wide stair (S7) on Bedford Avenue at the southeast corner of North 7th Street;
- A new seven-foot-wide stair (S8) on Bedford Avenue at the northeast corner of North 7th Street;
- A new seven-foot-wide stair (S5) on Driggs Avenue at the southeast corner of North 7th Street;
- A new seven-foot-wide stair (S6) on Driggs Avenue at the northeast corner of North 7th Street;
- Replacement of existing platform stair P1 with two new 7'6"-wide stairs (P1 and P6);
- Replacement of existing platform stair P2 with two new 7'6"-wide stairs (P2/P3 and P4/P5);
- A new street-level elevator to the mezzanine at northeast corner of North 7th Street and Bedford Avenue and a new elevator from the Bedford Avenue mezzanine to the platform level;
- Extension of the Bedford Avenue mezzanine to accommodate the new elevators and platform stairs;
- An increase from seven low turnstiles to eight (grouped in two banks of four) at the Bedford Avenue fare array (H009); and
- Replacement of the existing fare array (four low turnstiles and two HEETs) at the Driggs Avenue fare array (H010) by eight low turnstiles (also grouped in two banks of four).

Based on the location of this station relative to the Project Area, it is anticipated that most, if not all new project-generated subway trips would utilize new west mezzanine street stair S7 located on Bedford Avenue adjacent to the southeast corner of North 7th Street, (see **Figure 12-4**). These trips would also use the adjoining bank of four turnstiles at fare array H009 and new platform stairs (P2/P3 and P4/P5). As shown in **Table 12-12**, all of these stairs currently operate at an uncongested LOS C or better in the AM and PM peak hours with the exception of street stair S7 which operates at LOS D in the PM peak hour. As shown in **Table 12-13**, the bank of four turnstiles at fare array H009 adjacent to street stairs S3 and S7 currently operates at an uncongested LOS B in both the AM and PM peak hours.

Bedford Avenue (L) Subway Station

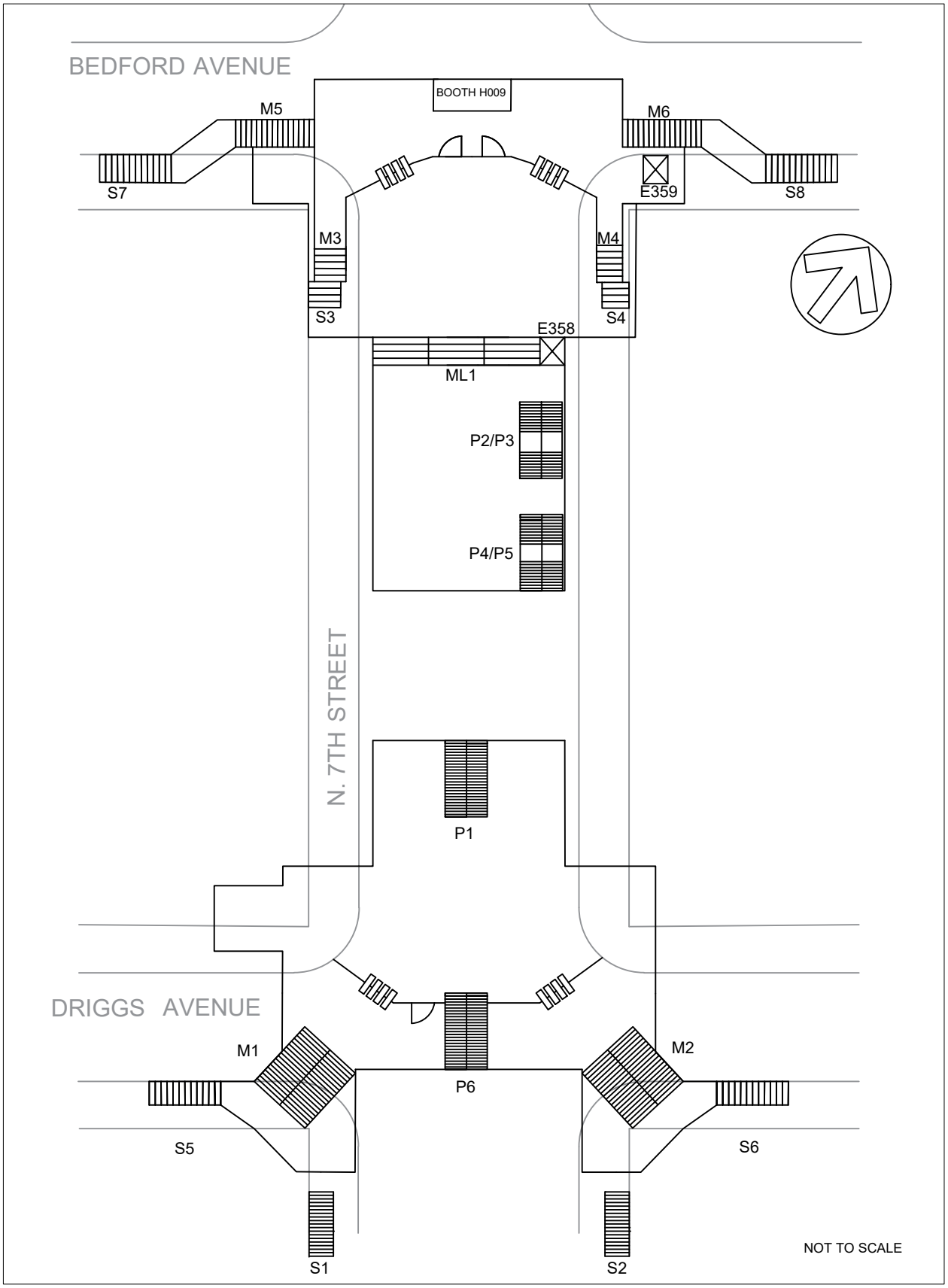


TABLE 12-12
Existing Conditions Stair Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Stair	Total Width (feet)	Effective Width (feet)	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Entering Station	Exiting Station	Entering Station	Exiting Station			
AM	S7 (Bedford SE @ N.7th St)	7.00	6.00	1,658	536	1.00	0.80	0.9	0.90	C
	P4/P5 (platform)	7.50	6.50	425	645	1.00	0.75	0.9	0.46	B
	P2/P3 (platform)	7.50	6.50	2,103	247	1.00	0.75	0.9	0.87	C
PM	S7 (Bedford SE @ N.7th St)	7.00	6.00	1,145	1,411	1.00	0.80	0.9	1.12	D
	P4/P5 (platform)	7.50	6.50	333	1,840	1.00	0.75	0.9	0.99	C
	P2/P3 (platform)	7.50	6.50	1,408	655	1.00	0.75	0.9	0.81	C

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.

TABLE 12-13
Existing Conditions Fare Array Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Fare Array	Control Elements	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
		Turnstiles	Entering Station	Exiting Station	Entering Station	Exiting Station			
AM	H009 (S3/S7)	4	1,806	645	1.0	0.8	0.9	0.48	B
PM	H009 (S3/S7)	4	1,484	1,483	1.0	0.8	0.9	0.56	B

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.

Subway Line Haul

Line haul is the volume of transit riders passing a defined point on a given transit route. For subway routes in New York City to and from Brooklyn, line haul is typically measured either at East River bridge and tunnel crossings or at the actual maximum load point on each subway route (the point where the trains carry the greatest number of passengers during the peak hour). As discussed above, the Project Area is served by four NYCT subway routes—J, M and Z trains operating on the Broadway Line and L trains operating on the Canarsie Line. As the Proposed Actions' RWCDS is expected to generate fewer than 200 peak hour trips on J, M and Z trains, significant adverse line haul impacts to these services are not anticipated. The analysis therefore focuses on the Proposed Actions' potential for impacts to L train service. Line Haul conditions on the L train are assessed leaving Bedford Avenue in the peak Manhattan-bound (northbound) direction in the AM peak hour and leaving 14th Street-Union Square in the peak Brooklyn-bound (southbound) direction in the PM. Maximum load point data from 2016-2017 were provided by NYCT, and were grown by 0.5 percent per year to account for any increases in demand during the 2017-2021 period.

Table 12-14 shows existing line haul conditions on L trains in the peak direction at the maximum load points during the AM and PM peak hours. As shown in **Table 12-14**, northbound L trains are currently operating over guideline capacity with a volume-to-capacity (v/c) ratio of 1.06 in the AM peak hour, and have available capacity southbound in the PM peak hour (a v/c ratio of 0.92).

TABLE 12-14
Existing Conditions Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Cars Per Train	Average Cars Per Hour	Average Passengers Per Hour (2)	Average Passengers Per Car	Guideline Passengers Per Car (3)	V/C Ratio (4)
AM	L	NB	Bedford Av	20	8	160	24,618	154	145	1.06
PM	L	SB	14 St-Union Sq	17	8	136	18,125	133	145	0.92

Notes:
(1) Trains per hour based on 2017 scheduled trains per hour.
(2) Based on 2017 ridership data from NYCT. Passenger volumes grown by 0.5 percent/year to account for growth in demand during 2017-2021 period.
(3) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.
(4) Volume to guideline capacity ratio.

The Future Without the Proposed Actions (No-Action Condition)

Between 2021 and 2027, it is expected that subway demand in the vicinity of the Development Site will increase due to long-term background growth as well as planned development. In order to forecast future subway conditions without the Proposed Actions (the No-Action condition), the developments within ¼-mile of the Development Site listed in **Table 2-5** in Chapter 2, "Land Use, Zoning and Public Policy," were considered, along with more distant developments that would potentially generate trips at analyzed subway stations. The Future No-Action subway volumes also reflect annual background growth rates of 0.5 percent per year. This background growth rate, recommended in the 2020 *CEQR Technical Manual* for projects in Brooklyn outside of the Downtown area, is applied to account for smaller projects and as-of-right developments not reflected in **Table 2-5** and general increases in travel demand not attributable to specific development projects.

Subway Stations

Future No-Action conditions at analyzed stairs, and fare array H009, at the Bedford Avenue (L) subway station are shown in **Tables 12-15 and 12-16**. As shown in **Table 12-15**, in the future No-Action condition, street stair S7 is expected to operate at a congested LOS E in the AM and PM peak hours. Platform stair P4/P5 is expected to operate at LOS B in the AM peak hour and at a marginal LOS D in the PM, while platform stair P2/P3 is expected to operate at LOS D in both peak hours. As shown in **Table 12-16**, the bank of four turnstiles at fare array H009 adjacent to street stairs S3 and S7 is projected to operate at an acceptable LOS B in the AM peak hour and LOS C in the PM in the future No-Action condition.

TABLE 12-15
No-Action Stair Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Stair	Total Width (feet)	Effective Width (feet)	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Entering Station	Exiting Station	Entering Station	Exiting Station			
AM	S7 (Bedford SE @ N.7th St)	7.00	6.00	2,090	1,117	1.00	0.80	0.9	1.34	E
	P4/P5 (platform)	7.50	6.50	507	1,078	1.00	0.75	0.9	0.69	B
	P2/P3 (platform)	7.50	6.50	2,477	405	1.00	0.75	0.9	1.08	D
PM	S7 (Bedford SE @ N.7th St)	7.00	6.00	1,890	1,868	1.00	0.80	0.9	1.63	E
	P4/P5 (platform)	7.50	6.50	470	2,196	1.00	0.75	0.9	1.21	D
	P2/P3 (platform)	7.50	6.50	2,032	786	1.00	0.75	0.9	1.10	D

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.

TABLE 12-16
No-Action Fare Array Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Fare Array	Control Elements	Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
		Turnstiles	Entering Station	Exiting Station	Entering Station	Exiting Station			
AM	H009 (S3/S7)	4	2,242	1,229	1.0	0.8	0.9	0.67	B
PM	H009 (S3/S7)	4	2,238	1,942	1.0	0.8	0.9	0.79	C

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.

Subway Line Haul

Table 12-17 shows anticipated 2027 No-Action line haul conditions in the peak direction at the maximum load points on the Canarsie (L) Line. The data in **Table 12-17** reflect both background growth for the 2021 through 2027 period and the addition of demand from new development in proximity to the Development Site. Also reflected is an expected increase in the number of northbound trains in the AM peak hour (from 20 to 22) that will be implemented by NYCT in 2023. As shown in **Table 12-17**, in the AM peak hour, northbound L trains are expected to operate essentially at capacity with a v/c ratio of 1.02 leaving Bedford Avenue (compared to 1.06 under Existing conditions). In the PM peak hour, southbound L trains are expected to operate close to capacity with a v/c ratio of 0.98 leaving 14th Street-Union Square.

TABLE 12-17
No-Action Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Average Cars Per Hour	Average Passengers Per Hour (2)	Average Passengers Per Car	Guideline Passengers Per Car (3)	V/C Ratio (4)
AM	L	NB	Bedford Av	22	176	25,975	148	145	1.02
PM	L	SB	14 St-Union Sq	17	136	19,295	142	145	0.98

Notes:
(1) 2027 trains per hour increased from 20 to 22 in the AM peak hour based on NYCT data.
(2) No-Action volumes reflect demand from No-Action development plus a background growth rate of 0.5%/year for the 2021-2027 period.
(3) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.
(4) Volume to guideline capacity ratio.

The Future with the Proposed Actions (With-Action Condition)

Subway Service

SUBWAY STATIONS

As shown in **Table 12-6**, the Proposed Actions' RWCDS is expected to generate a net total of 567 and 531 new subway trips in the weekday AM and PM peak hours, respectively. Based on existing travel patterns and the proximity of subway stations to the Project Area, it is estimated that the Bedford Avenue (L) station on the Canarsie Line would experience approximately 497 new trips (in and out combined) in the AM peak hour and 466 in the PM peak hour. **Tables 12-18 and 12-19** show conditions at analyzed stairs and analyzed fare array H009 at this subway station in the future with the Proposed Actions. As shown in **Table 12-18**, under With-Action conditions street stair S7 would continue to operate at LOS E in the AM peak hour and degrade from LOS E to LOS F in the PM peak hour. Platform stair P2/P3 would continue to operate at LOS D during both periods. Platform stair P4/P5 would operate at an acceptable LOS C in the AM peak hour (versus LOS B in the No-Action), and would degrade from LOS D to LOS E in the PM. As the WIT for each of these stairs would remain below the impact thresholds shown in **Table 12-8** in all periods, the Proposed Actions would not result in any significant adverse subway stair impacts based on *CEQR Technical Manual criteria*. As shown in **Table 12-19**, the bank of four turnstiles at fare array H009 adjacent to street stairs S3 and S7 would continue to operate at an acceptable LOS C in both the AM and PM peak hours in the With-Action condition. The Proposed Actions are therefore also not expected to result in a significant adverse impact to fare array H009 in either period.

TABLE 12-18
With-Action Stair Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Stair	Total Width (feet)	Effective Width (feet)	Project Increment		Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS	WIT (inches)	Impact Threshold (inches)
				Entering Station	Exiting Station	Entering Station	Exiting Station	Entering Station	Exiting Station					
AM	S7 (Bedford SE @ N.7th St)	7.00	6.00	471	26	2,561	1,143	1.00	0.80	0.9	1.54	E	0.93	2.00
	P4/P5 (platform)	7.50	6.50	85	19	592	1,097	1.00	0.75	0.9	0.73	C	---	---
	P2/P3 (platform)	7.50	6.50	386	7	2,863	412	1.00	0.75	0.9	1.22	D	0.89	6.00
PM	S7 (Bedford SE @ N.7th St)	7.00	6.00	89	377	1,979	2,245	1.00	0.80	0.9	1.85	F	0.75	2.00
	P4/P5 (platform)	7.50	6.50	16	275	486	2,471	1.00	0.75	0.9	1.35	E	0.71	5.00
	P2/P3 (platform)	7.50	6.50	73	102	2,105	888	1.00	0.75	0.9	1.17	D	0.41	6.00

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.
WIT - width increment threshold.

TABLE 12-19
With-Action Fare Array Analysis at the Bedford Avenue (L) Subway Station

Peak Hour	Fare Array	Control Elements	Project Increment		Peak Hour Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
		Turnstiles	Entering Station	Exiting Station	Entering Station	Exiting Station	Entering Station	Exiting Station			
AM	H009 (S3/S7)	4	471	26	2,713	1,255	1.0	0.8	0.9	0.77	C
PM	H009 (S3/S7)	4	89	377	2,327	2,319	1.0	0.8	0.9	0.87	C

Notes:
Analysis based on *CEQR Technical Manual* methodology.
V/C = volume-to-capacity.

SUBWAY LINE HAUL

Table 12-20 shows line haul conditions on L trains in the future with the Proposed Actions. As shown in **Table 12-20**, peak direction L trains are expected to be operating over capacity in the AM peak hour with a v/c ratio of 1.04 (compared to a No-Action v/c ratio of 1.02). In the PM peak hour, they would be operating at capacity with a v/c ratio of 1.00 (compared to a No-Action v/c ratio of 0.98). As discussed previously in Section F, "Transportation Analyses Methodologies," *CEQR Technical Manual* criteria specify that any increases in subway line haul load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads exceeding guideline capacity. As peak direction L trains would experience an average of no more than 2.82 additional passengers per car at their maximum load point in either the AM or PM peak periods, L train service would not be considered significantly adversely impacted by the Proposed Actions under *CEQR Technical Manual* impact criteria.

TABLE 12-20
With-Action Subway Line Haul Analysis

Peak Period	Route	Direction	Maximum Load Point (leaving station)	Average Trains Per Hour (1)	Average Cars Per Hour	Project Increment	Average Passengers Per Hour	Average Passengers Per Car	Guideline Passengers Per Car (2)	V/C Ratio (3)	Average Additional Passengers per Car
AM	L	NB	Bedford Av	22	176	449	26,424	150	145	1.04	2.55
PM	L	SB	14 St-Union Sq	17	136	383	19,678	145	145	1.00	2.82

Notes:
(1) 2027 trains per hour based on NYCT data.
(2) Guideline capacities are based on NYCT rush hour loading guidelines, which vary by car type, line, and location based on frequency and type of service.
(3) Volume to guideline capacity ratio.

H. PEDESTRIANS

Existing Conditions

As discussed previously in Section E, "Level 2 Screening Assessment," the analysis of pedestrian conditions focuses on 26 pedestrian elements where new trips generated by projected developments are expected to exceed 200 trips in the weekday AM and PM peak hours and/or the Saturday peak hour. (The midday peak hour is not included for analysis as none of the 26 analyzed elements would experience more than 200 incremental pedestrian trips in this period.) As shown in **Figure 12-3**, analyzed elements include eight sidewalks, 13 corner areas and five crosswalks in the immediate proximity of the Proposed Development Site, along the Metropolitan Avenue corridor, and along Bedford Avenue in proximity to the subway station entrances at North 7th Street.

Sidewalks

As shown in **Table 12-21**, the highest pedestrian flows on analyzed sidewalks are generally found along Bedford Avenue in the vicinity of North 6th Street where demand from adjacent residential and retail uses and nearby subway station entrances generate up to 1,249 persons/hour. By contrast, the lowest existing pedestrian volumes are found along Metropolitan Avenue between River Street and Kent Avenue which currently experiences ten or fewer persons per hour in the analyzed peak hours. Analyzed sidewalks typically range from 10 feet in width (along segments of Metropolitan Avenue) to almost 19 feet in width (along Bedford Avenue). Features present along these sidewalks that reduce the effective width available for pedestrian flow include street furniture such as fire hydrants, curbside signage, bollards, tree pits and posts for traffic signals and street lamps, as well as larger installations such as subway stairs.

Table 12-21 shows the existing peak hour pedestrian volumes, average pedestrian space (in ft^2/ped), and platoon-adjusted LOS at analyzed sidewalks. As shown in **Table 12-21**, all analyzed sidewalks currently operate at an acceptable LOS C or better in the weekday AM and PM and Saturday peak hours.

Corner Areas

Table 12-22 shows the average pedestrian space (in ft^2/ped) and levels of service at analyzed corner areas under existing conditions. As shown in **Table 12-22**, all analyzed corner areas currently operate at an uncongested LOS A or B in all analyzed peak hours.

Crosswalks

Study area intersections are a mix of signalized and stop controlled, and the signalized intersections generally include pedestrian signals. High visibility crosswalk striping is present at many locations. **Table 12-23** shows the existing peak hour volumes, average pedestrian space (in ft^2/ped), and LOS at analyzed crosswalks. As shown in **Table 12-23**, all analyzed crosswalks currently operate at an acceptable LOS C or better in all analyzed peak hours.

TABLE 12-21
Existing Sidewalk Conditions

	Location	Sidewalk	Effective Width	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Platoon-Adjusted Level of Service		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
S1	Bedford Ave Btwn N 6th St & N 7th St	East	6.0	417	860	1,249	177.5	92.2	66.9	B	B	C
S2	Metropolitan Ave Btwn Berry St & Wythe Ave	North	9.5	50	90	123	2,342.5	1,384.8	817.9	A	A	A
S3	Metropolitan Ave Btwn Berry St & Wythe Ave	South	10.8	33	80	107	3,888.0	1,774.8	1,374.9	A	A	A
S4	Metropolitan Ave Btwn Kent Ave & Wythe Ave	South	11.5	56	42	125	2,862.5	3,252.8	1,267.8	A	A	A
S5	Metropolitan Ave Btwn Kent Ave & Wythe Ave	North	5.7	45	26	98	1,745.5	2,257.2	681.7	A	A	A
S6	Metropolitan Ave Btwn River St & Kent Ave	South	10.9	13	23	74	8,632.8	5,404.9	1,306.5	A	A	A
S7	Metropolitan Ave Btwn River St & Kent Ave	North	14.3	2	4	10	56,430.0	28,215.0	6,997.3	A	A	A
S8	River St Btwn Metroplitan Ave & N 1st St	West	6.0	243	246	460	340.1	343.7	185.7	A	A	A

TABLE 12-22
Existing Corner Conditions

	Location	Corner	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
C1	N 6th St & Bedford Ave	NE	31	44	192	195.2	117.8	66.0	A	A	A
C2		SE	10	24	470	239.8	135.0	51.1	A	A	B
C3	Berry St & Metropolitan Ave	NE	7	51	17	1,449.8	405.3	332.8	A	A	A
C4		SW	5	24	28	720.3	375.6	264.6	A	A	A
C5		NW	29	39	55	714.0	394.2	279.7	A	A	A
C6	Wythe Ave & Metropolitan Ave	NE	25	17	28	723.6	326.4	200.1	A	A	A
C7		SE	7	6	17	687.4	348.1	199.8	A	A	A
C8		SW	41	27	20	831.4	705.3	435.5	A	A	A
C9		NW	9	12	11	1,021.3	534.7	348.0	A	A	A
C10	Kent Ave & Metropolitan Ave	NE	19	18	19	621.0	458.4	355.0	A	A	A
C11		SE	26	1	32	428.9	398.9	190.4	A	A	A
C12		SW	6	12	25	506.9	369.4	216.1	A	A	A
C13		NW	2	4	4	523.0	374.6	291.5	A	A	A

TABLE 12-23
Existing Crosswalk Conditions

	Location	Crosswalk	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
X1	N 6th St & Bedford Ave	East	306	674	1,196	95.8	49.7	26.0	A	B	C
X2	Wythe Ave & Metropolitan Ave	North	39	98	137	705.1	249.6	170.6	A	A	A
X3	Wythe Ave & Metropolitan Ave	South	61	96	129	492.5	297.1	184.8	A	A	A
X4	Kent Ave & Metropolitan Ave	North	83	120	74	176.9	122.7	211.5	A	A	A
X5	Kent Ave & Metropolitan Ave	South	67	82	95	264.5	202.7	169.8	A	A	A

The Future Without the Proposed Actions (No-Action Condition)

Under No-Action conditions, pedestrian volumes along analyzed pedestrian elements are expected to increase through 2027 because of background growth, demand from the office, retail and industrial/warehouse/distribution uses that would be developed under the No-Action RWCDS, and demand from other developments in the vicinity.

Sidewalks

Table 12-24 shows the No-Action peak hour pedestrian volumes, average pedestrian space, and platoon-adjusted LOS at analyzed sidewalks. As shown in **Table 12-24**, it is expected that all analyzed sidewalks would continue to operate at an acceptable LOS C or better in all analyzed peak hours in the future without the Proposed Actions.

Corner Areas

Table 12-25 shows the average pedestrian space and LOS at analyzed corner areas in the No-Action condition. As shown in **Table 12-25**, all analyzed corner areas are expected to operate at an acceptable LOS C or better in all analyzed peak hours in the future without the Proposed Actions.

Crosswalks

Table 12-26 shows the peak hour volumes, average pedestrian space, and LOS at analyzed crosswalks in the No-Action condition. As shown in **Table 12-26**, in the future without the Proposed Actions, the east crosswalk on North 6th Street at Bedford Avenue would operate at a marginal LOS D in the Saturday peak hour, as would the north and south crosswalks on Kent Avenue at Metropolitan Avenue in both the PM and Saturday peak hours. In other peak periods, these crosswalks would operate at LOS C or better, as would all other analyzed crosswalks in all periods.

TABLE 12-24
No-Action Sidewalk Conditions

	Location	Sidewalk	Effective Width	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Platoon-Adjusted Level of Service		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
S1	Bedford Ave Btwn N 6th St & N 7th St	East	6.0	879	1,459	1,720	83.7	53.7	48.1	C	C	C
S2	Metropolitan Ave Btwn Berry St & Wythe Ave	North	9.5	285	661	735	410.8	188.3	136.5	B	B	B
S3	Metropolitan Ave Btwn Berry St & Wythe Ave	South	10.8	262	691	754	489.6	205.2	194.8	B	B	B
S4	Metropolitan Ave Btwn Kent Ave & Wythe Ave	South	11.5	339	788	929	472.7	173.1	170.3	B	B	B
S5	Metropolitan Ave Btwn Kent Ave & Wythe Ave	North	8.5	343	753	891	341.3	115.8	111.3	A	A	A
S6	Metropolitan Ave Btwn River St & Kent Ave	South	10.9	200	429	475	561.0	289.6	203.3	A	B	B
S7	Metropolitan Ave Btwn River St & Kent Ave	North	14.3	139	254	249	811.9	444.2	280.8	A	B	B
S8	River St Btwn Metroplitan Ave & N 1st St	West	7.0	349	453	679	157.6	124.0	83.3	A	A	A

TABLE 12-25
No-Action Corner Conditions

	Location	Corner	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
C1	N 6th St & Bedford Ave	NE	32	45	197	98.4	70.0	50.1	A	A	B
C2		SE	10	25	483	115.5	74.4	40.0	A	A	C
C3	Berry St & Metropolitan Ave	NE	7	52	17	346.4	154.5	134.1	A	A	A
C4		SW	38	92	107	243.9	124.6	107.7	A	A	A
C5		NW	49	101	125	265.9	143.4	118.1	A	A	A
C6	Wythe Ave & Metropolitan Ave	NE	26	17	29	178.2	83.0	66.2	A	A	A
C7		SE	7	6	17	171.8	82.9	58.5	A	A	B
C8		SW	87	160	201	274.3	162.3	113.7	A	A	A
C9		NW	35	56	57	266.5	129.9	108.0	A	A	A
C10	Kent Ave & Metropolitan Ave	NE	23	26	24	159.9	88.6	83.9	A	A	A
C11		SE	27	1	33	93.4	44.8	35.4	A	B	C
C12		SW	6	12	26	117.9	46.3	38.0	A	B	C
C13		NW	2	4	4	136.9	61.6	58.7	A	A	B

TABLE 12-26
No-Action Crosswalk Conditions

	Location	Crosswalk	Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
X1	N 6th St & Bedford Ave	East	621	1,110	1,544	45.7	29.0	19.6	B	C	D
X2	Wythe Ave & Metropolitan Ave	North	415	756	850	84.4	30.5	25.3	A	C	C
X3	Wythe Ave & Metropolitan Ave	South	320	780	860	85.6	33.0	24.7	A	C	C
X4	Kent Ave & Metropolitan Ave	North	318	676	667	40.1	18.8	19.9	B	D	D
X5	Kent Ave & Metropolitan Ave	South	364	854	924	47.9	18.0	15.3	B	D	D

The Future with the Proposed Actions (With-Action Condition)

The Proposed Actions would generate new pedestrian demand on area sidewalks, corner areas and crosswalks by 2027. This new demand would include trips made solely by walking, as well as pedestrian trips en route to and from subway station entrances, bus and ferry stops, and off-site parking. As discussed previously, pedestrian trips generated by the Proposed Actions are expected to be most concentrated in proximity to the Proposed Development Site, along the Metropolitan Avenue corridor, and along Bedford Avenue in proximity to the subway station entrances at North 7th Street.

As shown in **Table 12-5**, the Proposed Actions are expected to generate a net total of approximately 121, 86 and 40 walk-only trips in the weekday AM and PM peak hours, and Saturday peak hour, respectively. Persons en route to and from subway station entrances, bus and ferry stops, and off-site parking would add approximately 696, 651, and 590 additional pedestrian trips during these periods, respectively.[2] These pedestrian volumes were added to the projected No-Action volumes to generate the With-Action pedestrian volumes for analysis.

In addition to generating increased pedestrian demand, it is anticipated that there would be several changes to the study area pedestrian network in conjunction with the Proposed Actions. As shown in **Figure 1-6** in Chapter 1, "Project Description," under the Proposed Actions the existing sidewalk on River Street between North 1st Street and Metropolitan Avenue adjacent to the Proposed Development Site would be increased from the existing 10 feet in width to 15 feet in width near North 1st Street, and would gradually widen approaching Metropolitan Avenue. (The sidewalk adjacent to the Proposed Development Site on River Street between Metropolitan Avenue and North 3rd Street would be similarly widened to 15 near North 3rd Street in the With-Action condition.) The portion of Metropolitan Avenue on the Proposed Development Site would be demapped and would provide pedestrian access to the waterfront public open space. Consequently, there would be substantially more pedestrian circulation space along the west side of River Street under the Proposed Actions than in the No-Action condition. It should also be noted

[2] As discussed later in this chapter, it is estimated that approximately 36 percent of residential parking demand generated by the Proposed Actions' RWCDS would not be accommodated on-site and would instead park at nearby off-site public parking facilities or on-street.

that at present, the only crosswalk on River Street in proximity to the Project Area is located at North 3rd Street. However, for pedestrian trip assignment purposes, it was conservatively assumed that in the future, a new pedestrian crossing would be installed on River Street at the intersection with Metropolitan Avenue to accommodate pedestrian demand generated by the Proposed Actions, including the demand generated by the proposed waterfront public open space. A pedestrian crossing may also potentially be implemented at the intersection of River Street and North 1st Street. However, to be conservative with respect to the potential for pedestrian impacts, a new pedestrian crossing on River Street at North 1st Street was not assumed for pedestrian trip assignment and impact analysis purposes, thereby concentrating demand at Metropolitan Avenue.

Anticipated conditions at analyzed sidewalks, corner areas and crosswalks in the future with the Proposed Actions are shown in **Tables 12-27 through 12-29**. As discussed below, all analyzed sidewalks and corner areas would continue to operate at acceptable levels of service in all analyzed peak hours in the With-Action condition; however, all five analyzed crosswalks would be considered significantly adversely impacted in one or more peak hours as a result of the Proposed Actions. Potential measures to mitigate these crosswalk impacts are discussed in Chapter 19, "Mitigation."

Sidewalks

Table 12-27 shows the incremental change in the weekday AM and PM peak hour and Saturday peak hour pedestrian volumes attributable to the Proposed Actions and the total With-Action pedestrian volumes, average pedestrian space, and platoon-adjusted LOS at analyzed sidewalks. As shown in **Table 12-27**, in the With-Action condition, the east sidewalk on Bedford Avenue between North 6th and North 7th streets would operate at LOS D in the Saturday peak hour and LOS C in other periods. This sidewalk would not be considered significantly adversely impacted in the Saturday peak hour based on the *CEQR Technical Manual* impact criteria discussed above in Section F, "Transportation Analyses Methodologies." All other analyzed sidewalks would continue to operate at an acceptable LOS B or C in all analyzed peak hours. Therefore, the Proposed Actions would not result in any significant adverse sidewalk impacts

Corner Areas

Table 12-28 shows the With-Action average pedestrian space and LOS at analyzed corner areas. As shown in **Table 12-28**, in the With-Action condition all analyzed corner areas would continue to operate at an acceptable LOS C or better in all analyzed peak hours. Therefore, the Proposed Actions would not result in any significant adverse corner area impacts based on the *CEQR Technical Manual* impact criteria discussed above in Section F, "Transportation Analyses Methodologies."

Crosswalks

Table 12-29 shows the incremental change in peak hour pedestrian volumes attributable to the Proposed Actions and the total With-Action pedestrian volumes, average pedestrian space, and LOS at analyzed crosswalks. As shown in **Table 12-29**, in the future with the Proposed Actions, all five analyzed crosswalks would be considered significantly adversely impacted in one or more analyzed peak hours based on the *CEQR Technical Manual* impact criteria cited in Section F, "Transportation Analyses Methodologies." The east crosswalk on North 6th Street at Bedford Avenue and the north crosswalk on Wythe Avenue at Metropolitan Avenue would both operate at LOS D in the PM and Saturday peak hours and would be significantly adversely impacted during these periods, as would the south crosswalk on Wythe Avenue at Metropolitan Avenue in the Saturday peak hour. The north sidewalk on Kent Avenue at Metropolitan Avenue would operate at LOS D in the weekday AM peak hour and LOS E in the weekday PM and Saturday peak hours and would be significantly adversely impacted in all three periods. Lastly, the south crosswalk on Kent Avenue at Metropolitan Avenue would operate at LOS E in the weekday PM and Saturday peak

hours and would be significantly adversely impacted in both of these periods. Potential measures to mitigate these crosswalk impacts are discussed in Chapter 19, "Mitigation."

TABLE 12-27
With-Action Sidewalk Conditions

	Location	Sidewalk	Effective Width	Project Increment			Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Platoon-Adjusted Level of Service		
				AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
S1	Bedford Ave Btwn N 6th St & N 7th St	East	6.0	497	466	448	1,376	1,925	2,168	52.9	40.2	37.6	C	C	D
S2	Metropolitan Ave Btwn Berry St & Wythe Ave	North	9.5	201	198	202	486	859	937	240.8	144.7	106.9	B	B	B
S3	Metropolitan Ave Btwn Berry St & Wythe Ave	South	10.8	202	201	180	464	892	934	276.3	158.8	157.2	B	B	B
S4	Metropolitan Ave Btwn Kent Ave & Wythe Ave	South	11.5	244	237	190	583	1,025	1,119	274.8	132.9	141.2	B	B	B
S5	Metropolitan Ave Btwn Kent Ave & Wythe Ave	North	8.5	231	245	256	574	998	1,147	203.8	87.1	86.2	B	C	C
S6	Metropolitan Ave Btwn River St & Kent Ave	South	10.9	267	255	193	467	684	668	240.1	181.4	144.4	B	B	B
S7	Metropolitan Ave Btwn River St & Kent Ave	North	14.3	254	271	290	393	525	539	287.0	214.7	129.4	B	B	B
S8	River St Btwn Metroplitan Ave & N 1st St	West	9.0	522	497	325	871	950	1,004	133.1	130.4	127.4	B	B	B

TABLE 12-28
With-Action Corner Conditions

	Location	Corner	Project Increment			Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
C1	N 6th St & Bedford Ave	NE	0	0	0	32	45	197	65.9	51.4	40.3	A	B	B
C2		SE	0	0	0	10	25	483	73.1	56.8	34.0	A	B	C
C3	Berry St & Metropolitan Ave	NE	0	0	0	7	52	17	225.3	127.1	111.3	A	A	A
C4		SW	-2	3	2	36	95	109	173.9	104.7	93.1	A	A	A
C5		NW	14	32	32	63	133	157	185.4	118.4	98.8	A	A	A
C6	Wythe Ave & Metropolitan Ave	NE	0	0	0	26	17	29	129.0	64.4	54.3	A	A	B
C7		SE	0	0	0	7	6	17	120.6	65.5	48.9	A	A	B
C8		SW	10	19	-11	97	179	190	203.5	133.5	99.8	A	A	A
C9		NW	15	24	27	50	80	84	190.8	102.7	87.2	A	A	A
C10	Kent Ave & Metropolitan Ave	NE	0	0	0	23	26	24	109.3	65.1	64.2	A	A	A
C11		SE	0	0	0	27	1	33	64.1	32.8	29.5	A	C	C
C12		SW	0	0	0	6	12	26	79.0	38.5	32.5	A	C	C
C13		NW	0	0	0	2	4	4	90.9	49.7	46.7	A	B	B

TABLE 12-29
With-Action Crosswalk Conditions

	Location	Crosswalk	Project Increment			Peak Hour Volume			Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
X1	N 6th St & Bedford Ave	East	311	286	272	932	1,396	1,816	29.4	22.6	16.3	C	D	D
X2	Wythe Ave & Metropolitan Ave	North	116	221	229	531	977	1,079	50.2	22.5	19.4	B	D	D
X3	Wythe Ave & Metropolitan Ave	South	220	220	191	540	1,000	1,051	50.3	24.6	19.5	B	C	D
X4	Kent Ave & Metropolitan Ave	North	254	271	290	572	947	957	21.3	12.6	13.3	D	E	E
X5	Kent Ave & Metropolitan Ave	South	267	255	193	631	1,109	1,117	26.2	13.3	12.4	C	E	E

- shading denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

I. STREET USER SAFETY ASSESSMENT

Recent NYCDOT Initiatives

Vision Zero Brooklyn Pedestrian Safety Action Plan

The City's Vision Zero initiative seeks to eliminate all deaths from traffic crashes regardless of whether on foot, bicycle, or inside a motor vehicle. In an effort to drive these fatalities down, NYCDOT and the New York City Police Department (NYPD) developed a set of five plans, each of which analyzes the unique conditions of one New York City borough and recommends actions to address the borough's specific challenges to pedestrian safety. These plans pinpoint the conditions and characteristics of pedestrian fatalities and severe injuries; they also identify priority corridors, intersections, and areas that disproportionately account for pedestrian fatalities and severe injuries, prioritizing them for safety interventions. The plans outline a series of recommended actions comprised of engineering, enforcement, and education measures that intend to alter the physical and behavioral conditions on City streets that lead to pedestrian fatality and injury.

The *Vision Zero Brooklyn Pedestrian Safety Action Plan* was released on February 19, 2015 and updated in 2019. The plan identifies Bedford Avenue as a Priority Corridor (added in 2019). No Priority Intersections or Priority Areas were identified in proximity to the Development site. Actions recommended in the *Vision Zero Brooklyn Pedestrian Safety Action Plan* to enhance pedestrian safety in Brooklyn are summarized below.

ENGINEERING AND PLANNING

- Implement at least 50 Vision Zero safety engineering improvements at Priority Corridors, Intersections, and Areas citywide, informed by community input
- Expand exclusive pedestrian crossing time, install expanded speed limit signage, and modify signal timing to reduce off-speak speeding on Priority Corridors and Intersections where feasible

- Expand community outreach and engagement with regard to Priority Corridors, Intersections, and Areas
- Install additional lighting under elevated trains and around other key transit stops
- Install 60 new speed bumps in Brooklyn annually
- Develop additional Neighborhood Slow Zones in Priority Areas
- Coordinate with MTA to ensure bus operations contribute to a safe pedestrian environment
- Expand a bicycle network in Brooklyn that improves safety for all road users
- Proactively design for pedestrian safety in high-growth areas in Brooklyn

ENFORCEMENT

- Deploy speed camera at Priority Corridors, Intersections, and Areas
- Focus enforcement and deploy dedicated resources to Brooklyn NYPD precincts that overlap substantially with Priority Areas
- Prioritize targeted enforcement at all Priority Corridors, Intersections, and Areas annually

EDUCATION AND AWARENESS CAMPAIGNS

- Target child and senior safety education at Priority Corridors and Priority Areas
- Launch multilingual public information campaigns in Priority Areas
- Target intensive street-level outreach at Priority Corridors, Intersections, and Areas

Study Area High Crash Locations

Crash data for intersections in the pedestrian study area (i.e., along River Street adjacent to the Development Site, along Metropolitan Avenue from River Street to Bedford Avenue, and along Bedford Avenue at North 6th and North 7th streets) were obtained from NYCDOT for the three-year period between January 1, 2016 and December 31, 2018 (the most recent three-year period for which data are available). The data quantify the total number of crashes as well as the total number of crashes involving injuries to pedestrians or bicyclists. During the three-year reporting period, 26 crashes including eight pedestrian/bicyclist-related injury crashes occurred at these intersections. None of these crashes involved fatalities. **Table 12-30** provides a summary of crashes by intersection during the 2016 to 2018 period, as well as a breakdown of pedestrian and bicycle crashes by year and location.

According to the 2020 *CEQR Technical Manual*, a high crash location is one where there were 48 or more reportable and non-reportable crashes or five or more pedestrian/bicyclist-related crashes in any consecutive 12 months within the most recent three-year period for which data are available. As shown in **Table 12-30**, based on these criteria, no intersections in the pedestrian study area are classified as high crash locations.

Lastly, the neighborhood of the Project Area is not included within a designated Senior Pedestrian Focus Area (SPFA), which were identified by NYCDOT based on the density of senior pedestrian (age 65+) crashes resulting in fatalities or severe injuries in a five-year period, as well as variables such as senior trip generators, concentrations of senior centers, and senior housing locations.

TABLE 12-30
Summary of Motor Vehicle Crash Data 2016-2018

Intersection		Pedestrian Injury Crashes			Bicycle Injury Crashes			Total Pedestrian/ Bicycle Injury Crashes			Total Crashes		
North-South	East-West	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
River Street	N 3 St	0	0	0	0	0	0	0	0	0	0	0	1
	Metropolitan Ave	0	0	0	0	0	0	0	0	0	1	1	0
	N 1 St	0	0	0	0	0	0	0	0	0	1	0	1
Kent Avenue	Metropolitan Ave	0	0	0	0	1	0	0	1	0	1	1	0
Wythe Avenue	Metropolitan Ave	0	0	1	0	0	0	0	0	1	0	1	4
Berry Street	Metropolitan Ave	1	1	1	1	0	0	2	1	1	2	1	3
Bedford Avenue	N 5 St	0	0	1	0	0	0	0	0	1	0	3	2
	N 6 St	0	0	0	0	1	0	0	1	0	0	2	1

Potential Pedestrian Access and Safety Improvements

As discussed previously, at present the only crosswalk on River Street in proximity to the Project Area is located at North 3rd Street. It is therefore likely that some pedestrians en route to and from the Proposed Development Site would choose to cross River Street at a more proximate location where a crosswalk is not present, such as at Metropolitan Avenue or North 1st Street. This would result in a significant pedestrian safety impact. As discussed in Chapter 19, "Mitigation," this potential impact is expected to be fully mitigated by the installation of a new pedestrian crossing at one or both of these locations.

J. PARKING

Table 12-31 shows a forecast of the total hourly weekday parking demand that would be generated by the Proposed Actions' RWCDS. The parking forecast was derived from the forecast of daily auto trips from the proposed uses. Parking demand from the proposed local retail, office, warehouse and medical office uses would typically peak in the midday, while community center and waterfront park uses would typically peak in the afternoon. Demand from these uses would decline during the late afternoon and evening. By contrast, parking demand from the residential component would peak in the overnight period. As shown in **Table 12-31**, midday (12 PM to 2 PM) parking demand generated by the Proposed Actions' residential component would total approximately 219 spaces, and would peak at approximately 388 spaces in the overnight period. Parking demand from the office use would peak at approximately 25 spaces during the 2 PM to 3 PM period, while demand from the proposed local retail use would peak at approximately 18 spaces during the 1 PM to 2 PM period. The Proposed Actions' warehouse, medical office, community center and waterfront park uses would each generate a peak parking demand of six or fewer spaces in any one hour over the course of the day. Overall, parking demand would total approximately 270 spaces in the midday and would peak at 389 spaces during the 8 PM to 9 PM period.

As shown in **Table 12-1**, the Proposed Actions' RWCDS includes approximately 250 on-site accessory parking spaces in a below-grade parking facility (compared with 579 spaces under the No-Action RWCDS). This on-site capacity would be sufficient to accommodate approximately 64 percent of the parking demand during the peak 8 PM to 9 PM period as well as the peak overnight period for residential parking

demand. The remaining demand (approximately 139 autos) would need to be accommodated in nearby off-street public parking facilities or on-street.

As discussed in Section F, "Transportation Analysis Methodologies," under *CEQR Technical Manual* guidance, should a proposed action generate the need for more parking than it provides, a shortfall of spaces may be considered significant. The availability of off-street and on-street parking spaces within a convenient walking distance (about a ¼-mile), as well as the availability of alternative modes of transportation, are considered in making this determination.

TABLE 12-31
Total Weekday Hourly Parking Accumulation for the Proposed Development

	Local Retail 29,741 gsf 448 auto trips/day			Office 60,000 gsf 78 auto trips/day			Residential 1,250 D.U. 1,018 auto trips/day		Overnight Demand 388	Warehouse 6,741 gsf 4 auto trips/day			Medical Office 6,741 gsf 96 auto trips/day			Community Center 50,000 gsf 68 auto trips/day			Waterfront Park 3.10 acres 12 auto trips/day			Total Demand		
	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.	#In	#Out	Accum.
12-1 AM	0	0	0	0	0	0	6	0	382	0	0	0	0	0	0	0	0	0	0	0	0	6	0	382
1-2	0	0	0	0	0	0	6	0	388	0	0	0	0	0	0	0	0	0	0	0	0	6	0	388
2-3	0	0	0	0	0	0	0	0	388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	388
3-4	0	0	0	0	0	0	0	0	388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	388
4-5	0	0	0	0	0	0	0	0	388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	388
5-6	0	0	0	0	0	0	6	11	383	0	0	0	0	0	0	0	0	0	0	0	0	6	11	383
6-7	0	0	0	1	0	1	6	34	355	0	0	0	0	0	0	0	0	0	1	0	1	8	34	357
7-8	4	2	2	2	0	3	6	51	310	1	0	1	0	0	0	2	1	1	1	1	1	16	55	318
8-9	7	7	2	13	1	15	15	86	239	1	0	2	5	3	2	2	1	2	0	0	1	43	98	263
9-10	14	10	6	9	2	22	14	24	229	0	0	2	5	3	4	3	4	1	0	0	1	45	43	265
10-11	15	7	14	2	1	23	21	28	222	0	0	2	5	4	5	2	3	0	0	0	1	45	43	267
11-12	15	12	17	1	2	22	21	22	221	0	0	2	6	5	6	3	3	0	1	0	2	47	44	270
12-1 PM	17	16	18	1	1	22	20	22	219	0	0	2	4	4	6	3	2	1	1	1	2	46	46	270
1-2	43	43	18	1	2	21	25	25	219	0	0	2	5	5	6	4	3	2	1	1	2	79	79	270
2-3	18	19	17	5	1	25	25	17	227	0	0	2	4	4	6	3	2	3	0	0	2	55	43	282
3-4	18	19	16	1	2	24	39	11	255	0	0	2	5	5	6	3	2	4	0	0	2	66	39	309
4-5	18	21	13	1	9	16	58	23	290	0	0	2	5	5	6	3	4	3	0	0	2	85	62	332
5-6	23	23	13	1	15	2	78	33	335	0	1	1	3	5	4	1	2	2	1	1	2	107	80	359
6-7	15	18	10	1	3	0	49	22	362	0	1	0	1	4	1	3	3	2	0	1	1	69	52	376
7-8	9	13	6	0	0	0	34	22	374	0	0	0	0	1	0	2	2	2	0	1	0	45	39	382
8-9	6	9	3	0	0	0	34	22	386	0	0	0	0	0	0	0	2	0	0	0	0	40	33	389
9-10	2	5	0	0	0	0	17	19	384	0	0	0	0	0	0	0	0	0	0	0	0	19	24	384
10-11	0	0	0	0	0	0	18	22	380	0	0	0	0	0	0	0	0	0	0	0	0	18	22	380
11-12	0	0	0	0	0	0	11	15	376	0	0	0	0	0	0	0	0	0	0	0	0	11	15	376
Total	224	224		39	39		509	509		2	2		48	48		34	34		6	6		862	862	

Different criteria for determining significance are applied based on whether or not a proposed project is located in residential or commercial areas designated as Parking Zones 1 and 2 as shown in Map 16-2, "CEQR Parking Zones, May 2010," in the 2020 *CEQR Technical Manual*. As the Project Area is located within Zone 2 as shown in Map 16-2, the inability of the Proposed Actions or the surrounding area to accommodate future parking demands would be considered a parking shortfall, but would generally not be considered significant due to the magnitude of available alternative modes of transportation. Therefore, based on *CEQR Technical Manual* guidance, the projected shortfall of approximately 139 spaces of on-site parking capacity during the 8 PM to 9 PM and overnight periods under the Proposed Actions would not constitute a significant adverse parking impact.