

## **A. INTRODUCTION**

This chapter examines the potential effects of the proposed project on the transportation systems (i.e., traffic, transit, pedestrian, and parking conditions) near the project area. The proposed project would not generate any new travel demand during its operations after completion of construction. However, based on a review of the proposed project and the potential modifications of street configurations, the following intersections were selected for more detailed assessment of potential effects on street operations:

- East 10th Street at Avenue D to assess potential changes related to the East 10th Street bridge;
- East 18th Street and East 20th Street at Avenue C to assess the potential effects of the structural elements of the proposed project on street functions; and
- East 23th Street at Avenue C to assess the potential effects of the structural elements of the proposed project on street functions specifically related to waterfront access for vehicles and pedestrians.

Once installed, the proposed closure structures (e.g., swing floodgates and roller floodgates) are proposed to be tested annually. In addition, the closures structures need to be activated during a design storm event.<sup>1</sup> The proposed project’s potential effects on transportation systems due to the testing and activation of the closure structures are assessed in this chapter. In addition, an evaluation of vehicular and pedestrian safety was performed for the study area to identify high crash locations.

### **STUDY AREA**

The transportation analysis study area assumed a ½-mile radius from the project areas (see **Figure 5.9-1**). This study area covers the extent of the proposed project with respect to the introduction of physical elements into the street and street closures related to operational deployment and the periodic testing of the flood protection system.

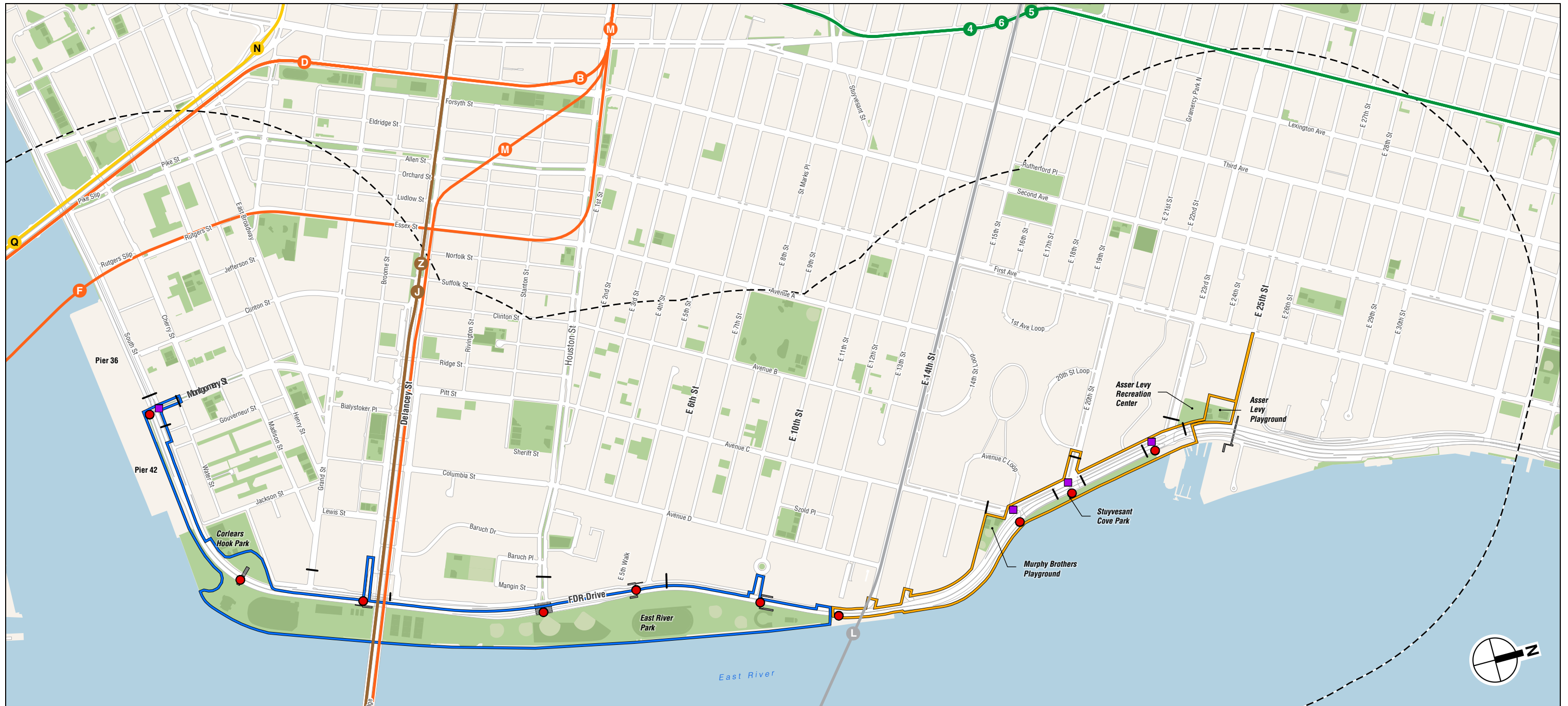
## **B. PRINCIPAL CONCLUSIONS**

As part of the proposed project, East 10th Street between the traffic circle and the FDR Drive service road would be converted from two-way to one-way eastbound and the service road in front of the BP Gas Station would be closed to vehicular traffic at East 23rd Street. These changes would not result in any significant adverse effects on the transportation systems.

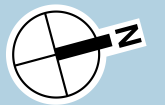
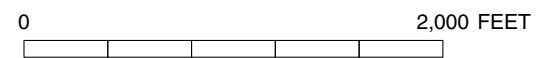
A “Traffic Study Report” (Final Report: September 18, 2018; see **Appendix J**) was prepared to assess the potential effects of the structural elements of the proposed project on street functions, including traffic and pedestrian circulation. This study evaluated three intersections along Avenue C: at East 18th Street; at East 20th Street; and at East 23rd Street. It was the conclusion of that

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<sup>1</sup> The 100-year flood events with Sea Level Rise projections to the 2050s.



- Project Area One
- Project Area Two
- Study Area (1/2-mile Boundary)
- Pedestrian Bridges
- Pedestrian / Bicycle Counts
- Vehicle Counts
- Automatic Traffic Recorder (ATR) Counts
- B D J Subway Lines



report that the proposed project would not affect traffic or pedestrian operations at any of these intersections.

Additional principal conclusions for the project alternatives evaluated are summarized below. As discussed above, the proposed project would not generate any new travel demand during its operation for any alternatives.

**NO ACTION ALTERNATIVE (ALTERNATIVE 1)**

The No Action Alternative assumes that projects planned or currently under construction in the project area are completed by the 2025 analysis year (i.e., No Action projects). These planned projects include Pier 42, Brookdale Campus, One Manhattan Square/Extell, Alexandria Phase 3, and the Two Bridges Large Scale Residential Development. Since traffic, transit, pedestrian, and parking demand in the study area would increase only as a result of background growth and these proposed developments, the No Action Alternative would not result in any potential significant adverse traffic, transit, pedestrian, and parking effects.

**PREFERRED ALTERNATIVE (ALTERNATIVE 4): FLOOD PROTECTION SYSTEM WITH A RAISED EAST RIVER PARK**

The Preferred Alternative would raise the majority of East River Park. This plan would reduce the length of wall between the community and the waterfront to provide for enhanced neighborhood connectivity and integration. In addition to the Delancey Street and 10th Street bridges, the Corlears Hook bridge would be reconstructed to be universally accessible and ADA-compliant and would improve safety and access/egress to East River Park for pedestrians and bicyclists. Furthermore, a shared-use flyover bridge would be built cantilevered over the northbound FDR Drive to address the narrowed pathway (pinch point) near the Con Edison facility between East 13th Street and East 15th Street, thus providing a more accessible connection between East River Park and Captain Patrick J. Brown Walk.

Since this is a reconstruction of the existing recreational elements in the park, the proposed project would not generate any new travel demand upon its completion or significantly affect traffic, transit, or pedestrian operations within the project area. Modifications to the streets attributable to the proposed project (e.g., East 10th Street) would also not significantly affect vehicle or pedestrian circulation patterns. Therefore, the Preferred Alternative would not result in any significant adverse traffic, transit, and pedestrian effects during non-storm conditions. The 2014 *City Environmental Quality Review (CEQR) Technical Manual* states that if a quantified traffic analysis is not required, it is likely that a parking assessment is also not warranted. Therefore, a quantified parking analysis is not warranted and the proposed project would similarly not be expected to result in any significant adverse parking effects during non-storm conditions.

During a storm event and the periodic testing and maintenance of closure structures, certain streets, FDR Drive Ramps, and segments of the FDR Drive adjacent to the closure structures would need to be temporarily closed to traffic/pedestrian use. The periodic testing and maintenance of closure structures would be temporary in nature and where feasible, would occur during off-peak hours with the necessary traffic management systems in place and therefore would not result in significant adverse effects on transportation systems. During testing and maintenance of the closure structures or under a design storm condition, access and circulation near the project area, including the Waterside Plaza complex, would be affected. Any testing and maintenance of the closures structures would be coordinated between NYPD, FDNY, and NYC Parks, to ensure emergency access routes are maintained in a coordinated manner using alternate routes.

## **OTHER ALTERNATIVES**

The Flood Protection System on the West Side of East River Park Baseline Alternative (Alternative 2) would provide flood protection in Project Areas One and Two using a combination of floodwalls, levees, and closure structures (i.e., deployable gates) from Montgomery Street to East 25th Street. Similar to the Preferred Alternative, a shared-use flyover bridge would be built cantilevered over the northbound FDR Drive to address the narrowed pathway (pinch point) near the Con Edison facility between East 13th Street and East 15th Street, thus providing a more accessible connection between East River Park and Captain Patrick J. Brown Walk. As with the conclusions presented above for the Preferred Alternative, Alternative 2 would not result in significant adverse traffic, transit, pedestrian, and parking effects.

The Flood Protection System on the West Side of East River Park – Enhanced Park and Access Alternative (Alternative 3) provides flood protection using a combination of floodwalls, levees, and closures structures in Project Areas One and Two. Under Alternative 3, the existing pedestrian bridges and bridge landings at Delancey and East 10th Streets would be completely reconstructed to be American Disability Act (ADA)-compliant, and would improve safety and access/egress to East River Park for pedestrians and bicyclists. Additionally, a new raised and landscaped park-side plaza landing would be created at the entrance to the park from East Houston Street overpass. The improvements at the Delancey Street and East 10th Street bridges and East Houston Street overpass would improve safety and access/egress to East River Park for pedestrians and bicyclists. Furthermore, as with the Preferred Alternative, a shared-use flyover bridge would be built cantilevered over the northbound FDR Drive to address the narrowed pathway (pinch point) near the Con Edison facility between East 13th Street and East 15th Street, thus providing a more accessible connection between East River Park and Captain Patrick J. Brown Walk. As with the conclusions presented below for the Preferred Alternative, Alternative 3 would not result in significant adverse traffic, transit, pedestrian, and parking effects.

The Flood Protection System East of FDR Drive (Alternative 5) proposes a flood protection alignment similar to the Preferred Alternative, except for the approach in Project Area Two between East 13th Street and Avenue C. This alternative would raise the northbound lanes of the FDR Drive in this area by approximately six feet to meet the design flood elevation then connect to closure structures at the south end of Stuyvesant Cove Park. Maintaining the flood protection alignment along the east side of the FDR Drive would eliminate the need to cross the FDR Drive near East 13th Street as well as the need to install floodwalls adjacent to NYCHA Jacob Riis Houses, Con Edison property and Murphy Brothers Playground. Furthermore, as with the Preferred Alternative, a shared-use flyover bridge would be built cantilevered over the northbound FDR Drive to address the narrowed pathway (pinch point) near the Con Edison facility between East 13th Street and East 15th Street, thus providing a more accessible connection between East River Park and Captain Patrick J. Brown Walk.

Similar to the Preferred Alternative, Alternative 5 would not result in significant adverse traffic, transit, pedestrian, and parking effects.

## **C. REGULATORY CONTEXT**

The transportation modes in the study area are regulated and/or monitored by Federal, state, and local agencies, including U.S. Coast Guard (USCG), New York State Department of Transportation (NYSDOT), New York City Department of Transportation (NYCDOT), New York’s Metropolitan Transportation Authority (MTA), and the New York City Economic Development Corporation (EDC).



## **D. METHODOLOGY**

The *CEQR Technical Manual* identifies procedures for evaluating potential impacts on transportation systems. This begins with the preparation of a trip generation analysis (Level 1 screening assessment) to estimate the volume of person and vehicle trips attributable to a proposed project. If a proposed project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, a quantified analysis is not needed. When these thresholds are exceeded, detailed trip assignments are performed to estimate the incremental trips at specific transportation elements and to identify potential locations for further analyses (Level 2 screening assessment). As discussed above, the proposed project would not generate any new travel demand upon its completion, and as a result, a Level 2 screening assessments is not needed. The *CEQR Technical Manual* states that if a quantified traffic analysis is not required, it is also likely that a parking assessment is not warranted.

Based on a review of the proposed project and the potential modifications of street configurations, the following intersections were selected for a more detailed assessment of potential effects on street operations:

- East 10th Street at Avenue D to assess potential changes related to the East 10th Street bridge;
- East 18th Street and East 20th Street at Avenue C to assess the potential effects of the structural elements of the proposed project on street functions; and
- East 23th Street at Avenue C to assess the potential effects of the structural elements of the proposed project on street functions specifically related to waterfront access for vehicles and pedestrians.

## **DATA COLLECTION**

Data collection included traffic, pedestrian, and bicycle counts at the East River Park and Stuyvesant Cove Park access/egress locations. The manual traffic intersection counts were conducted during one typical weekday and one typical Saturday and were supplemented with continuous (nine-day) automatic traffic recorder (ATR) counts at key locations in May 2015. Pedestrian and bicycle counts were conducted during two typical weekdays and two typical Saturdays in May 2015. Since the data was collected in 2015, volume comparisons (between 2015 and 2017) at selected study area locations were also prepared to validate the 2015 data. The comparisons showed that the 2017 weekday traffic volumes are lower than the 2015 traffic volumes by approximately 10 percent. Therefore, use of the 2015 data presented below provides a conservative assessment.

Data collection was conducted to capture three weekday peak periods and one Saturday peak period: Weekday 7:00 AM to 10:00 AM, 11:00 AM to 2:00 PM, and 4:00 PM to 8:00 PM, and Saturday 9:00 AM to 5:00 PM at the following locations:

- Montgomery Street and South Street (traffic, pedestrians, and bicycles);
- Corlears Hook bridge (pedestrians and bicycles);
- Delancey Street bridge (pedestrians and bicycles);
- Grand Street and the FDR Drive Service Road (traffic);
- East Houston Street overpass (pedestrians and bicycles);
- East 6th Street bridge (pedestrians and bicycles);
- East 10th Street bridge (pedestrians and bicycles);

- Avenue C Loop and East 18th Street Extension (traffic, pedestrians, and bicycles);
- Avenue C and East 20th Street (traffic, pedestrians, and bicycles);
- Avenue C and East 23rd Street (traffic, pedestrians, and bicycles);
- Bicycle/Pedestrian pathway at Con Edison facility; and
- Bicycle/Pedestrian pathway just north of the East Houston Street overpass.

**Table 5.9-1** compares the pedestrian and bicycle counts during the entire count period at each bridge/overpass spanning the FDR Drive to access East River Park (see **Figures 5.9-2a and 5.9-2b**). The volumes range from approximately 1,000 to 2,000 pedestrians and bicyclists. The lowest pedestrian and bicycle counts were collected at the Corlears Hook bridge, while the highest counts were collected at the East 6th Street bridge during the weekday and the East Houston Street overpass during the weekend.

**Table 5.9-1  
Pedestrian Bridge/Overpass Counts**

<b>Location</b>	<b>Weekday</b>	<b>Weekend Day</b>
Corlears Hook Bridge	<i>1,002</i>	<i>1,136</i>
Delancey Street Bridge	1,426	1,491
East Houston Street Overpass	1,558	<b>2,092</b>
East 6th Street Bridge	<b>1,912</b>	1,889
East 10th Street Bridge	1,553	1,641
<b>Notes:</b> Includes both bicyclists and pedestrians during the entire count period. <i>Italic</i> indicates the minimum count; <b>BOLD</b> indicates the maximum count.		

**VEHICULAR AND PEDESTRIAN SAFETY**

Per the *CEQR Technical Manual*, an evaluation of vehicular and pedestrian safety is necessary for locations within traffic and pedestrian study areas that have been identified as high-crash locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, crash trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety effects depends on the type of area where the project site is located, traffic volumes, crash types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with NYCDOT for their approval.

**E. AFFECTED ENVIRONMENT**

**TRANSPORTATION ELEMENTS**

*ROADWAY NETWORK*

The key roadways in the study area include the FDR Drive, South Street, Avenue C, First Avenue, Montgomery Street, Grand Street, Delancey Street, East Houston Street, East 20th Street, and East 23rd Street. The physical and operational characteristics of the study area roadways are as follows:

- **FDR Drive** is a major two-way northbound-southbound parkway open to passenger cars only and closed to commercial traffic. The FDR Drive starts north of the Battery Park Underpass at South and Broad Streets and runs along the entire length of the East River to the 125th Street/Robert F. Kennedy Bridge exit, where it becomes the Harlem River Drive. The FDR



Project Area One

Pedestrian / Bicycle Count Locations (w/ Location ID)

0 1,000 FEET



Project Area Two

Pedestrian / Bicycle Count Locations (w/ Location ID)

0 1,000 FEET



Drive has three lanes in each direction for the majority of its span. It is elevated south of Montgomery Street, between the East 18th Street Extension and East 25th Street, between East 29th Street and East 38th Street, and between East 93rd Street and East 99th Street and is at grade level for the remaining stretch of roadway. The elevated sections of the FDR Drive are within NYSDOT jurisdiction while the local roadways/non-elevated roadways are within NYCDOT jurisdiction. FDR Drive entrance/exit ramps provide access/egress to multiple corridors within the study area, including South Street, East Houston Street, East 18th Street Extension, and East 23rd Street.

- **South Street** is a local two-way northbound-southbound roadway to the south of Montgomery Street and a one-way southbound roadway between Montgomery Street and Jackson Street. South Street is located immediately adjacent to the East River and operates from Whitehall Street to Jackson Street near the Williamsburg Bridge. South Street is approximately 34 feet wide curb-to-curb and is a NYCDOT-designated truck route south of Pike Street. There is a designated two-way bicycle lane along South Street that connects to/from the shared-use pathway within East River Park and Stuyvesant Cove Park. South Street provides vehicular, pedestrian, and bicycle access/egress to the East River Park at Montgomery Street.
- **Avenue C** is a major two-way northbound-southbound roadway that operates north of East Houston Street with a curb-to-curb width of approximately 45 feet. South of East Houston Street, Avenue C is known as Pitt Street and operates one-way northbound from north of Grand Street to East Houston Street with a curb-to-curb width ranging from 25 feet to 70 feet. South of Grand Street, Pitt Street becomes Montgomery Street and runs two-way northbound-southbound with a curb-to-curb width of approximately 70 feet. The M9 bus route operates along Avenue C in both directions north of East Houston Street. Curbside parking is provided along both sides of the street for the majority of the roadway. There is a designated two-way bicycle lane along Avenue C to the north of East Houston Street. Avenue C provides pedestrian and bicycle access/egress to the waterfront at East 18th and East 20th Streets and vehicular, pedestrian, and bicycle access/egress at East 23rd Street.
- **First Avenue** is a major one-way northbound roadway that operates north of East Houston Street with a curb-to-curb width of approximately 70 feet. South of East Houston Street, First Avenue is known as Allen Street and operates two-way northbound-southbound with a curb-to-curb width of approximately 115 feet. First Avenue/Allen Street is a NYCDOT-designated truck route and the M15 local and Select Bus Service (SBS) bus routes operate along Allen Street in both directions and operates northbound along First Avenue and southbound along Second Avenue. Curbside parking is provided along both sides of the street. There is a designated two-way bicycle lane along Allen Street and a one-way northbound bicycle lane along First Avenue.
- **Second Avenue** is a major one-way southbound roadway that operates north of East Houston Street with a curb-to-curb width of approximately 60 feet. South of East Houston Street, Second Avenue is known as Chrystie Street and operates two-way northbound-southbound with a curb-to-curb width of approximately 70 feet. Second Avenue/Chrystie Street is a NYCDOT-designated truck route and the M15 local and SBS bus routes operate southbound along Second Avenue north of East Houston Street. Curbside parking is provided along both sides of the street. There is a designated two-way bicycle lane along Chrystie Street and a one-way southbound bicycle lane along Second Avenue.
- **Grand Street** is a local street that operates two-way eastbound-westbound to the east of Chrystie Street. West of Chrystie Street, Grand Street runs one-way eastbound. Curbside parking is provided along both sides of Grand Street. West of Chrystie Street the curb-to-curb

- width is approximately 40 feet and east of Chrystie Street the curb-to-curb width is approximately 65 feet. Grand Street is a NYCDOT-designated truck route between Church Street and Allen Street and the M14A bus route operates along Grand Street in both directions to the east of Essex Street. There is a designated two-way bicycle lane along Grand Street east of Chrystie Street and a one-way eastbound bicycle lane west of Chrystie Street.
- **Delancey Street** is a major two-way eastbound-westbound roadway, west of the Williamsburg Bridge, with pedestrian refuge islands within the roadway's median to separate the two-directional traffic and provide storage for pedestrians. West of the Williamsburg Bridge (the Delancey Street mainline), Delancey Street generally consists of four travel lanes in each direction with curbside parking on both sides of the street with a curb-to-curb width of approximately 110 feet. East of Clinton Street, the Delancey Street mainline leads onto the Williamsburg Bridge and its service roads extend to/from the FDR Drive. The Delancey Street service road operates two-way eastbound–westbound to the east of Clinton Street and the two-directional traffic is separated by a median underneath the Williamsburg Bridge. The Delancey Street service road consists of one travel lane and a shared bicycle lane that connects to/from the FDR Drive service road in each direction with curbside parking on both sides of the street with a curb-to-curb width of approximately 50 feet per direction. The Delancey Street mainline is a NYCDOT-designated truck route and the M14D bus route operates along Delancey Street in the westbound direction only between Columbia Street and the FDR Drive. There is a designated two-way bicycle lane along Delancey Street to the east of Chrystie Street that connects to/from the Williamsburg Bridge. The Delancey Street service road provides access/egress for pedestrians and bicyclists to the East River Park via the existing bridge.
  - **Houston Street** is a major two-way east-west roadway with three moving lanes in each direction and provides curbside parking on both sides of the street. East Houston Street is approximately 100 feet wide curb-to-curb and is a NYCDOT-designated truck route west of Allen Street/First Avenue. The M14D bus route operates along Houston Street in the eastbound direction only between Avenue D and the FDR Drive. The M21 bus route operates along Houston Street in both directions. There is a designated two-way bicycle lane along Houston Street. East Houston Street provides access/egress for pedestrians and bicyclists to the East River Park via the existing pedestrian overpass.
  - **East 10th Street** is a local roadway that operates one-way eastbound west of Avenue A and two-way eastbound-westbound east of Avenue A and provides curbside parking on both sides of the street. West of Avenue A the curb-to-curb width is approximately 30 feet and east of Avenue A the curb-to-curb width is approximately 45 feet. The M8 bus route operates along East 10th Street in both directions between Avenue A and the traffic circle to the east of Avenue D. There is a designated two-way bicycle lane along East 10th Street east of Avenue A and a one-way eastbound bicycle lane west of Avenue A. East 10th Street provides access/egress for pedestrians and bicyclists to the East River Park via the existing pedestrian bridge.
  - **East 20th Street** operates one-way eastbound west of First Avenue and two-way eastbound-westbound east of First Avenue and provides curbside parking on both sides of the street. West of First Avenue the curb-to-curb width is approximately 35 feet and east of First Avenue the curb-to-curb width is approximately 55 feet. The M23 SBS bus route operates westbound along East 20th Street between Avenue C and First Avenue. There is a designated two-way bicycle lane along East 20th Street east of First Avenue and a one-way eastbound bicycle lane west of First Avenue. East 20th Street provides pedestrian and bicycle access/egress to the waterfront at Avenue C.



## East Side Coastal Resiliency Project EIS

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- **East 23rd Street** is a local two-way east-west roadway with two moving lanes in each direction and provides curbside parking on both sides of the street. East 23rd Street is approximately 65 feet wide curb-to-curb and is a NYCDOT-designated truck route west of First Avenue. The M23 SBS bus route operates along East 23rd Street in both directions. East 23rd Street provides vehicular, pedestrian, and bicycle access/egress to the waterfront at Avenue C.

### *PEDESTRIAN*

Within the study area, the pedestrians would access the waterfront at four at-grade streets and five bridges, as follows:

- Montgomery Street at South Street (East River Park access);
- Corlears Hook bridge (East River Park access);
- Delancey Street bridge (East River Park access);
- East Houston Street overpass (East River Park access);
- East 6th Street bridge (East River Park access);
- East 10th Street bridge (East River Park access);
- Avenue C at East 18th Street (Stuyvesant Cove Park access);
- Avenue C at East 20th Street (Stuyvesant Cove Park access); and
- Avenue C at East 23rd Street (Stuyvesant Cove Park access).

In addition, the waterfront is accessible in the north-south direction via the existing shared-use pathway.

### *BICYCLE NETWORK*

There are designated bicycle lanes along South Street (that connect to/from the shared-use pathway within East River Park and Stuyvesant Cove Park), East Houston Street, Grand Street, Montgomery Street, First Avenue, Second Avenue, East 10th Street, and East 20th Street. These bicycle lanes provide connections to/from the East River Park, Stuyvesant Cove Park, Murphy Brothers Playground, and Asser Levy Playground.

### *TRANSIT*

#### *Introduction*

Transit service to the study area is provided by New York City Transit (NYCT) and includes the F6 subway lines and the M8, M9, M14A, M14D, M15, M21, M22, M23, and M34A local bus routes (see **Figure 5.9-1**). Both subway and bus systems are described in greater detail below.

#### *Subway Service*

Subway service in the area to East River Park is limited as only the F train stops within ½-mile of an East River Park access point, at the East Broadway Station. However, the J, M, Z, L, and No. 6 subway lines make stops approximately 0.60 to 0.75 miles away from the nearest East River Park access points and have been excluded from the discussion below.

- The F subway line (Queens Boulevard Express/Sixth Avenue Local) operates between Stillwell Avenue, Brooklyn and Jamaica, Queens via the 63rd Street connector. The F line runs express along Queens Boulevard.

*Bus Service*

**Table 5.9-2** provides a summary of the NYCT local bus routes that provide regular service to the study area and their weekday AM and PM frequencies of service.

**Table 5.9-2  
NYCT Local Bus Routes Serving the Study Area**

Bus Route	Start Point	End Point	Routing in Study Area	Frequency of Bus Service (in Minutes)	
				Weekday AM	Weekday PM
M8 (EB/WB)	West Village	East Village	E. 8th/E. 9th Street	10/10	15/15
M9 (NB/SB)	Bellevue Hospital Center	Battery Park City	Avenue C	15/9	12/15
M14A (EB/WB)	West Village	Lower East Side	Grand Street	9/8	10/10
M14D (EB/WB)	West Village	Lower East Side	Delancey Street/ E. Houston Street	4/3	6/6
M21 (EB/WB)	West Village	Lower East Side	E. Houston Street	15/12	20/20
M22 (EB/WB)	Battery Park City	Lower East Side	Madison Street/ Grand Street	12/12	15/15
M23 (EB/WB)	Peter Cooper Village	Chelsea Piers	E. 23rd Street	9/15	7/7
M34A (EB/WB)	Waterside Plaza	Port Authority Bus Terminal	FDR Drive Service Road/E. 23rd Street	9/9	10/10

**Source:** Metropolitan Transportation Authority NYCT Bus Time Tables (2018)

**PARKING**

Inventories of off-street parking facilities within ¼-mile of the project area were conducted in June 2015. There are 9 off-street parking facilities, with a total capacity of approximately 4,050 spaces. Throughout the weekday peak periods, these parking facilities are approximately 70 to 80 percent utilized, with 800 to 1,200 spaces available within ¼-mile of the project area. As part of the reconstruction of the East 10th Street and Delancey Street bridges, approximately 12 and 7 on-street parking spaces would be removed, respectively. Vehicles currently using these 19 parking spaces would have to park at other off-street facilities. Based on the off-street parking survey, the 12 on-street parking spaces that would be removed adjacent to the East 10th Street pedestrian bridge could be accommodated at off-street parking facilities within ¼-mile where capacity was observed. However, the 7 on-street parking spaces that would be removed adjacent to the Delancey Street pedestrian bridge could result in a parking shortfall within ¼-mile. It is expected that excess parking demand adjacent to the Delancey Street pedestrian bridge would need to be accommodated by on-street parking or off-street parking beyond a ¼-mile walk. As stated in the *CEQR Technical Manual*, a parking shortfall resulting from a project located in Manhattan does not constitute a significant adverse parking impact, due to the magnitude of available alternative modes of transportation. Additionally, as part of the installation of the north interceptor gate, up to 11 parking spaces could be removed on East 20th Street to the west of Avenue C. Vehicles currently using these parking spaces would park on-street or at off-street parking facilities within ¼-mile where capacity was observed and would not result in a parking shortfall. Therefore, the proposed project would not result in any significant adverse parking effects..

**VEHICULAR AND PEDESTRIAN SAFETY EVALUATION**

Crash data for the study area intersections were obtained from NYSDOT for the time period between January 1, 2015 and December 31, 2017. The data obtained quantify the total number of reportable crashes (involving fatality, injury, or more than \$1,000 in property damage), fatalities,

and injuries during the study period, as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location.

During the January 1, 2015 and December 31, 2017 three-year period, a total of 236 reportable and non-reportable crashes, 1 fatality, 214 injuries, and 41 pedestrian/bicyclist-related crashes occurred at the study area intersections. A rolling total of crash data identifies one study area intersection, First Avenue at East 23rd Street, as a high crash location in the 2015 to 2017 period. **Table 5.9-3** depicts total crash characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle crashes by year and location.

### *FIRST AVENUE AND EAST 23RD STREET*

Based on the review of the crash history at the intersection of First Avenue and East 23rd Street, no prevailing trends with regard to geometric deficiencies were identified as the primary causes of recorded crashes. With respect to geometric deficiencies that could potentially cause safety hazards, the intersection of First Avenue and East 23rd Street is signalized and provides four high visibility crosswalks. In addition, countdown timers are posted on all crosswalks. There is a designated bike lane along the northbound approach and a bicycle signal head that regulates northbound bicycle flow. Absent the proposed project, additional safety measures, such as the installation of signage warning vehicles to yield to pedestrians in the crosswalk, could be installed on the north, east, and west approaches to improve pedestrian safety at this intersection.

**Table 5.9-4** shows a detailed description of each pedestrian/bicyclist-related crash at the high-crash location listed above during the three-year period.

### *VISION ZERO INITIATIVE*

Approximately 4,000 New Yorkers are seriously injured and more than 250 are killed each year in vehicle crashes. In 2014, Mayor Bill De Blasio announced the launch of the Vision Zero Initiative in the five boroughs of New York City. The goal of Vision Zero is to increase pedestrian and vehicle safety through a variety of measures, such as traffic calming, narrower travel lanes, raised crosswalks, and increasing the number of school crossing guards. As part of the Vision Zero Initiative, the speed limit on local roadways and arterials was lowered from 30 to 25 miles per hour across all five boroughs. The Vision Zero Action Plan establishes the City's commitment to improving street safety in every neighborhood and borough through expanded enforcement against dangerous moving violations, new street designs to improve safety, broad public outreach and communications and a legislative agenda to increase penalties for dangerous drivers. As documented within the "2019 Borough Pedestrian Safety Action Plans Update," within Project Areas One and Two, the following have been identified as Vision Zero priority corridors: 23rd Street, 14th Street, First Avenue, Second Avenue, Third Avenue, Houston Street, and Canal Street.

**Table 5.9-3  
Crash Summary**

Intersection		Study Period				Crashes by Year						
North-South Roadway	East-West Roadway	All Crashes by Year			Total Fatalities	Total Injuries	Pedestrian			Bicycle		
		2015	2016	2017			2015	2016	2017	2015	2016	2017
South Street	Montgomery Street	1	3	1	0	3	0	1	1	0	0	0
Water Street	Montgomery Street	0	0	0	0	0	0	0	0	0	0	0
Cherry Street	Montgomery Street	1	0	0	0	0	0	0	0	0	0	0
Monroe Street	Montgomery Street	0	0	0	0	0	0	0	0	0	0	0
Madison Street	Montgomery Street	2	2	0	0	3	1	0	0	0	0	0
Henry Street	Montgomery Street	1	0	1	0	2	1	0	0	0	0	1
South Street	Gouverneur Slip W	0	0	0	0	0	0	0	0	0	0	0
Water Street	Gouverneur Slip W	0	1	0	0	0	0	0	0	0	0	0
South Street	Gouverneur Slip E	0	1	0	0	1	0	0	0	0	0	0
Water Street	Gouverneur Slip E	0	0	0	0	0	0	0	0	0	0	0
South Street	Jackson Street	0	0	0	0	0	0	0	0	0	0	0
Water Street	Jackson Street	0	1	0	0	1	0	0	0	0	0	0
FDR Drive	Grand Street	6	5	2	0	11	0	0	1	0	0	0
Madison Street	Grand Street	1	0	1	0	2	0	0	0	0	0	1
Lewis Street	Grand Street	0	0	0	0	0	0	0	0	0	0	0
Jackson/Henry St	Grand Street	1	0	3	0	4	0	0	1	0	0	1
FDR Drive	Delancey Street	6	2	4	0	13	0	0	0	0	0	0
Lewis Street	Delancey Street	0	0	0	0	0	0	0	0	0	0	0
Mangin Street	Delancey Street	0	0	0	0	0	0	0	0	0	0	0
Cannon Street	Delancey Street	0	0	0	0	0	0	0	0	0	0	0
Abraham Kazan St	Delancey Street	0	0	0	0	0	0	0	0	0	0	0
FDR Drive	Delancey Street N	0	0	0	0	0	0	0	0	0	0	0
Baruch Drive	Delancey Street N	0	0	0	0	0	0	0	0	0	0	0
Columbia Street	Delancey Street N	0	2	3	0	5	0	1	1	0	1	0
FDR Drive	E Houston Street	7	7	7	0	21	0	0	0	0	0	1
Mangin Street	E Houston Street	0	2	0	0	4	0	0	0	0	0	0
Baruch Place	E Houston Street	0	1	5	0	8	0	0	0	0	0	1
Baruch Drive	E Houston Street	2	1	2	0	2	0	1	0	0	0	0
Lillian Wald Drive	E Houston Street	1	0	0	0	1	0	0	0	0	0	0
<b>Columbia Street/ Avenue D</b>	<b>E Houston Street</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
FDR Drive	E 6th Street	4	2	6	0	10	0	0	0	0	0	0
Avenue D	E 6th Street	1	2	1	0	4	0	0	1	1	0	0
FDR Drive	E 10th Street	0	2	1	0	2	0	0	0	0	0	0
Avenue D	E 10th Street	2	1	2	0	6	0	0	0	0	0	1
Avenue C	E 16th Street/Avenue C Loop	4	4	4	0	14	0	0	0	1	0	0
Avenue C	E 20th Street	5	6	6	0	21	2	0	2	0	0	1
Avenue C	E 23rd Street	1	1	0	0	2	0	0	0	0	0	0
20th Street Loop	E 20th Street	0	0	0	0	0	0	0	0	0	0	0
First Avenue	E 21st Street	3	1	1	0	3	2	0	0	0	0	0
First Avenue	E 22nd Street	2	0	1	0	3	1	0	0	0	0	0
Asser Levy Place	E 23rd Street	1	1	1	0	3	1	0	0	0	0	0
<b>First Avenue</b>	<b>E 23rd Street</b>	<b>11</b>	<b>18</b>	<b>8</b>	<b>0</b>	<b>33</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>
Second Avenue	E Houston Street	0	0	3	0	3	0	0	0	0	0	0
FDR Drive	E 23rd Street	4	7	11	0	13	0	0	0	0	0	0

**Source:** NYSDOT January 1, 2015, through December 31, 2017, crash data.  
**Bold intersections** are high pedestrian crash locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three year period for which data are available.

**Table 5.9-4  
Vehicle and Pedestrian Crash Details**

Intersection	Year	Date	Time	Crash Class		Action of Vehicle	Action of Pedestrian	Cause of Crash			
				Injured	Killed			Left / Right Turns	Pedestrian Error/ Confusion	Driver Inattention	Other
First Avenue at East 23rd Street	2015	4/11	12:10am	x		Going straight – North	Not in roadway				Alcohol involvement
		5/12	10:05am	x		Making right turn – West	Crossing with signal	x			Reaction to other uninvolved vehicle
		5/20	12:44pm	x		Making right turn – North	Crossing with signal	x			Failure to yield R.o.W.
		6/30	8:45am	x		Going straight – East	Crossing/No signal or crosswalk		x		
	2016	4/8	6:15am	x		Making right turn – West	Crossing with signal	x			
		7/16	2:25am	x		Going straight – East	Crossing with signal		x		
		7/27	12:00am	X		Going straight – East	Crossing with signal				Failure to yield R.o.W.
		10/5	10:50pm	x		Making right turn – North	Unknown	x	X		
		12/7	3:00pm	x		Unknown	Unknown				Not entered
	2017	1/31	7:15pm	x		Unknown – North	Crossing with signal			x	

**F. ENVIRONMENTAL EFFECTS**

The alternatives described below and analyzed in this chapter are described in greater detail in Chapter 2.0, “Project Alternatives.” The following section evaluates the alternatives based on their potential transportation related effects, whether traffic, transit, or pedestrian and bicycle related.

**NO ACTION ALTERNATIVE (ALTERNATIVE 1)**

Many of the planned projects would result in modest pedestrian and bicycle generators near the waterfront, and would be accounted for as part of the background growth. As per *CEQR Technical Manual* guidelines, 2015 existing pedestrian and bicycle volumes are assumed to increase by an annual background growth rate of 0.25 percent for the first five years and 0.125 percent for each additional year in Manhattan. However, as per information received from NYCDOT based on recent growth trends at similar facilities in Manhattan, bicycle volumes are assumed to increase by an annual background growth rate of 5 percent and pedestrian volumes would increase by an annual background growth rate of 6 percent within East River Park.

Projects planned or under construction near the waterfront that are expected to generate a greater magnitude of pedestrian and bicycle trips along the waterfront in the future are described in more detail below.

*PIER 42 (2021)*

At the southern end of Project Area One, NYC Parks plans to reconstruct a portion of Pier 42 as a public recreational resource. There will be access to the new open space from the bikeway/walkway along the FDR service road or from Montgomery Street under the elevated FDR Drive on the west and from East River Park on the east. This project will enhance the pedestrian experience by activating the site with new, public uses, and reestablishing public access to the waterfront at this location. The Pier 42 project will generate additional pedestrian and bicycle trips

along the East River Park shared-use pedestrian and bicycle path, the Montgomery Street corridor, and the bridges that provide access/egress for pedestrians and bicyclists to East River Park.

*BROOKDALE CAMPUS (2022)*

The City of New York proposes to redevelop the block generally bounded by First Avenue, East 25th Street, the FDR Drive, and a private drive (formerly East 26th Street). The Brookdale Campus of Hunter College of the City University of New York is currently vacating the property, and the New York City Department of Sanitation (DSNY) proposes to use a portion of the site to construct a four-story garage complex to store equipment and provide personnel support services and operational space. The remainder of the block would be redeveloped pursuant to a request for proposals managed by NYCEDC. This project is undergoing City environmental review, and two development scenarios are proposed for a reasonable worst-case development scenario analysis: a commercial scenario consisting of 82,980 square feet of retail, 82,980 square feet of community facility space, 1,175,640 square feet of office, and 450,000 square feet of manufacturing space; and a mixed-use scenario consisting of 1,176 dwelling units, 82,980 square feet of retail, 82,980 square feet of community facility space, and 450,000 square feet of manufacturing space. This proposed development will generate additional trips along the East 23rd Street corridor.

*ONE MANHATTAN SQUARE/EXTELL (2019)*

A large, mixed-use development of approximately 1,020 dwelling units and 48,683 square feet of retail on the block bounded by Pike Street, Cherry Street, South Street, and Essex Street is under development. The development will generate additional trips along the Pike Street corridor, the South Street corridor, and the Montgomery Street corridor.

*TWO BRIDGES DEVELOPMENT (2021)*

Located south of the proposed project area, this is a large, mixed-use development of approximately 2,775 dwelling units and 28,000 square feet of retail and community facility space bounded by the midblock area between Clinton Street and Montgomery Street; Cherry, Clinton, and South Streets; and midblock between Rutgers Slip and Pike Slip. The development will generate additional trips along the Pike Street corridor, the South Street corridor, and the Montgomery Street corridor.

*ALEXANDRIA PHASE 3 (2022)*

A large development including approximately 1.3 million square feet of mixed-use commercial, academic, and community facility space on the block bounded by East 29th Street, the FDR Drive, East 28th Street, and First Avenue is under development. The development will generate additional trips along the East 28th Street, East 25th Street corridor, and the First Avenue corridor.

*CONCLUSION*

Under the No Action Alternative, due to background growth and the above described projects that are expected to be constructed and occupied, there would be growth in traffic, transit, pedestrian, and parking volumes and demands in the study area.



**PREFERRED ALTERNATIVE (ALTERNATIVE 4): FLOOD PROTECTION SYSTEM WITH A RAISED PARK ALTERNATIVE**

*NON-STORM CONDITIONS*

Components of the proposed project have the potential to result in different effects under the two future operational conditions: storm and non-storm, and so the transportation analysis presented below is evaluated under both operational conditions. Storm conditions are defined as flood events that meet the criteria of the design storm event (the 100-year flood events with sea level rise to 2050s) for when the protection system would be fully deployed and engaged. Non-storm conditions are defined as typical day-to-day conditions without the occurrence of a design storm event.

*Traffic*

As part of the proposed project, East 10th Street between the traffic circle and the FDR Drive service road would be converted from two-way to one-way eastbound and the service road in front of the BP Gas Station would be closed to vehicular traffic at East 23rd Street the Preferred Alternative. Assessments were prepared below to determine if the East 10th Street conversion or closing the service road in front of the BP Gas Station to vehicular traffic would result in any significant adverse effects.

*East 10th Street Conversion to One-Way<sup>2</sup>*

As described above, in association with the relocation of the East 10th Street pedestrian/bicycle bridge, it has been proposed to convert the east end segment of East 10th Street between a traffic circle and the FDR Drive service road from a 40 foot wide two-way roadway to an 18 foot wide one-way eastbound roadway. There is an existing traffic circle on East 10th Street located midblock between Avenue D and the FDR Drive service road that provides two-way (eastbound and westbound) vehicular access to the buildings on the north and south sides of East 10th Street. However, east of the traffic circle, there is no turnaround, and the only outlet for eastbound traffic on this segment is to proceed on the one-way southbound FDR Drive service road. Therefore, the only vehicles traveling westbound on this segment of East 10th Street between the traffic circle and the FDR Drive service road are eastbound vehicles that have performed a multi-point turn at the east end of East 10th Street to U-turn westbound. In addition, the East 10th Street bridge would be modified to improve visibility of the bridge and enhance pedestrian circulation and access to the East River Park by widening the pedestrian ramp and shifting the entrance further inland to allow pedestrians to access the bridge earlier than the existing condition. All 12 on-street parking spaces would be also be removed in this section.

Based on data collected in 2017, the existing hourly background traffic volumes traveling westbound along the East 10th Street segment are low, with an average of 15 vehicles per hour between 6:00 AM and 8:00 PM and a maximum of 35 vehicles in an hour within that same period. It is estimated that a portion of these vehicles would use the traffic circle to return to Avenue D, which is not a diversion from East 10th Street, and a portion would divert to the southbound FDR Drive service road; those existing vehicles would be diverted to surrounding intersections. Since the number of diverted vehicles in any hour would be fewer than 50 vehicle trips, which is the *CEQR Technical Manual* minimum threshold for further traffic analysis, it is anticipated that the conversion of East 10th Street between the traffic circle and the FDR Drive service road from two-

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<sup>2</sup> Both the East 10th Street Conversion to One Way and the East 23rd Street and Avenue C Service Road Closure would be implemented with the proposed project.

way to one-way eastbound would not result in any significant adverse traffic effects. Although pedestrian and bicycle traffic from the East 10th Street bridge over the FDR Drive would be diverted from the north side to the south side of East 10th Street, existing pedestrian and bicycle traffic on East 10th Street would not be diverted by the proposed street modifications.

*East 23rd Street and Avenue C Service Road Closure<sup>1</sup>*

As described above, it has been proposed to close the service road in front of the BP Gas Station east of East 23rd Street and Avenue C to vehicular traffic. Currently the service road operates one-way southbound and connects vehicles to the parking lot underneath the FDR Drive where they can exit onto Avenue C and travel northbound back towards East 23rd Street. According to observations, however, two-way traffic has been observed on this segment. With the service road closed to vehicular traffic, the existing roadway would be able to be used solely by pedestrians and bicyclists, which would provide more width than the existing sidewalk between the BP Gas Station and the service road, and better align with the multi-use path segments to the north and south. The closure of the service road to vehicular traffic would not affect the two existing Avenue C access points to the parking lot. As with the existing conditions, vehicles traveling northbound on Avenue C would access the parking area underneath the FDR Drive at the East 20th Street and Avenue C intersection or on Avenue C between East 20th and East 23rd Streets. Similarly, vehicles traveling southbound on Avenue C would access the parking area at the intersection of East 20th Street and Avenue C.

Based on data collected in 2017, the existing hourly traffic volumes traveling southbound along the service road are low, with an average of 10 vehicles per hour between 6:00 AM and 8:00 PM and a maximum of 22 vehicles in an hour within that same period. These existing vehicles would be diverted to the westbound approach of the intersection as part of the closure. Since the number of diverted vehicles in a peak hour would be fewer than 50 vehicle trips, which is the *CEQR Technical Manual* minimum threshold for further traffic analysis, it is anticipated that closing the service road to vehicular traffic would not result in any significant adverse traffic effects.

*Pedestrian and Bicycles*

As currently contemplated, the proposed flyover bridge would be a steel thru-truss superstructure supported on footings placed adjacent to the eastern edge of the northbound FDR Drive lanes, within the limits of the existing East River Bikeway. The proposed flyover bridge would be cantilevered over the northbound FDR Drive. The thru truss bridge would be approximately 1,000 feet long and 15 feet wide and approximately 19 feet tall from the surface of the bridge deck to the top of the truss. The bridge would have a 16-foot minimum clearance above the elevated roadway between East 13th and East 15th Streets adjacent to the Con Edison pier. The total height of the flyover bridge would be approximately 40 feet above grade. The flyover bridge would slope down to connect to East River Park on the south and to Captain Patrick J. Brown Walk around East 16th Street on the north.

With the implementation of the new comprehensive coastal flood protection systems described above, existing sidewalk/shared-use pedestrian and bicycle path widths would be narrowed at the following locations (see also the schematic figures presented in **Appendices B2 and C**):

- Based on the current conceptual design (January 2019), sidewalk widths at the northwest corner of Montgomery and South Streets would be reduced by approximately three feet along each corridor for a distance of approximately 60 to 100 feet. As a result, the sidewalk width on Montgomery Street would be narrowed from 9.5 feet to 6.5 feet and the sidewalk width on South Street would be narrowed from 14.5 feet to 12 feet. Since the pedestrian volumes at this

intersection are low, with less than 100 pedestrians per element per hour, and only a short segment of Montgomery and South Streets would be affected and no significant adverse pedestrian effects on pedestrian movements are anticipated. Given the narrowing of the sidewalks, during final design it will be determined if street trees can be maintained in these segments and that the designs and clearances are ADA-compliant. If the street trees here cannot be replaced, then replacement street trees would be provided elsewhere in the proposed project area.

- Based on the current conceptual design (January 2019), the proposed flood protection system would be aligned along the FDR Drive westerly curblin for a distance of approximately 220 feet between about East 13th Street and East 14th Street. This would reduce the sidewalk width in this segment by approximately three feet, from 8 feet to 5.5 feet. Currently, the sidewalk at this location is fenced off from public use north of East 13th Street and is not used by any pedestrians. Therefore, since no pedestrian movements would be affected, there would be no significant adverse pedestrian effects on pedestrian flows.
- Based on the current conceptual design (January 2019), the sidewalk width along the west side of the FDR Drive service road north of East 15th Street would reduce by approximately three feet, from 8.5 feet to 6 feet. Since the pedestrian volumes along this segment are also limited, with fewer than 20 pedestrians per hour, there would be no significant adverse effects on pedestrians at this location.
- Based on the current conceptual design (January 2019), the sidewalk width along the west side of the FDR Drive service road north of East 23rd Street would reduce by approximately two feet, from 7.5 feet to 5.5 feet. Since the pedestrian volumes along this segment are also limited, with fewer than 20 pedestrians per hour, there would be no significant adverse effects on pedestrians at this location.
- The Delancey Street bridge would be modified to enhance pedestrian circulation and access to East River Park for pedestrians. The modifications are not anticipated to impact vehicular or transit operations.

The improvements at the Delancey Street and East 10th Street bridges and East Houston Street overpass would improve safety and access/egress to East River Park for pedestrians and bicyclists. In addition, the Corlears Hook Bridge would be reconstructed to be universally accessible and ADA-compliant and would similarly improve safety and access/egress for pedestrians and bicyclists. A shared-use flyover bridge would be built cantilevered over the northbound FDR Drive to address the narrowed pathway (pinch point) near the Con Edison facility between East 13th Street and East 15th Street, thus providing a more accessible connection between East River Park and Captain Patrick J. Brown Walk. The proposed project would include the installation of interceptor gates so that flood waters would not back up into the upland neighborhood underneath the flood protection equipment through combined sewer outfalls in the East River. Two interceptor gates would be installed; these would each consist of a below-ground interceptor chamber and above-ground interceptor house. One gate would be installed along the service road in Corlears Hook Park just west of the FDR Drive between Jackson and Cherry Streets, and another along the eastbound approach of East 20th Street just west of Avenue C. These are referred to as the “south gate” and “north gate,” respectively, in the subsequent description. The south gate chamber and house would be just off the service road on the west side of the FDR Drive and would not occupy any part of the service road, sidewalks, or nearby streets. The north gate chamber would be located below the street on the eastbound service road of East 20th Street just west of Avenue C and north of the south sidewalk. This gate chamber would be accessed via manholes in the street.

As discussed in Chapter 6.9, “Construction—Transportation,” up to 11 parking spaces could be removed along East 20th Street during the construction of the north gate. The parking removal would continue after construction is completed and would affect both construction and operational conditions.

#### *System Testing and Maintenance*

Testing and maintenance of the closure structures along the project area during non-storm conditions will be required annually at a minimum, to ensure the floodgates remain in working condition. During these periods, certain streets, FDR Drive Ramps, and segments of the FDR Drive adjacent to the closure structures would need to be temporarily closed to traffic/pedestrian use. The periodic testing and maintenance of closure structures would not result in significant adverse effects on transportation systems because the testing and maintenance would be temporary in nature and would occur rarely each year; would occur during off-peak commuter hours, when possible; and be subject to a traffic management plan in place during these periods, which will be coordinated amongst the different relevant agencies. During testing and maintenance of the closure structures, access and circulation near the project area, including the Waterside Plaza complex, would be affected. Any testing and maintenance of the closures structures would be coordinated between NYCDOT, NYPD, and FDNY, to ensure safe access is coordinated and maintained with alternate access routes, as needed.

#### *Storm Conditions*

The extent of effects on transportation systems during storm deployment conditions would also be managed in coordination with a plan to be developed with input from City’s Emergency Management Department (NYCEM), NYCDOT, NYPD, FDNY, NYC Parks, and other City and state agencies including the MTA for coordination with respect to transit management. Once a design storm impact on the City is determined to be increasingly likely, NYCEM would begin its emergency preparedness actions to ensure that transportation routes critical to evacuation are managed in coordinated manner. Should evacuations be required as a result of an impending design storm event, closure of the proposed closure structures will require management of traffic circulation patterns in coordination with NYCDOT, NYPD, and FDNY. Under these conditions, access/egress to Waterside Plaza, once actuated, the closure structures at East 23rd Street and the west service road will affect access/egress to Waterside Plaza. Traffic management to allow for circulation of emergency vehicles and local Waterside Plaza traffic will be implemented and maintained by NYPD, FDNY, and NYCDOT.

### **ALTERNATIVE 2 – FLOOD PROTECTION SYSTEM ON THE WEST SIDE OF EAST RIVER PARK – BASELINE**

Alternative 2 would not introduce any changes to the transportation network that would result in adverse effects. It is also expected that the transportation assessments prepared for the Preferred Alternative 4 (see above) would also apply to Alternative 2 during non-storm conditions and storm event conditions during the testing and activation of the closure structures (referred to as “storm conditions” below). As described below, it is not expected that Alternative 2 would result in any significant adverse effects on transportation systems.

### **OTHER ALTERNATIVE (ALTERNATIVE 3): FLOOD PROTECTION SYSTEM ON THE WEST SIDE OF EAST RIVER PARK – ENHANCED PARK AND ACCESS**

Alternative 3 would not introduce any changes to the transportation network that would result in additional effects beyond those described below for the Preferred Alternative. Therefore, the

detailed traffic, transit, pedestrian, and parking assessments prepared for the Preferred Alternative and those effects would also be applicable for Alternative 3 during non-storm and storm conditions. Therefore, it is not expected that Alternative 3 would result in any significant adverse effects on transportation systems.

**OTHER ALTERNATIVE (ALTERNATIVE 5): FLOOD PROTECTION SYSTEM EAST OF FDR DRIVE**

Alternative 5 proposes a flood protection alignment similar to Alternative 4, except for the approach in Project Area Two between East 13th Street and Avenue C. This alternative would raise the northbound lanes of the FDR Drive in this area by approximately six feet to meet the design flood elevation then connect to closure structures at the south end of Stuyvesant Cove Park. Maintaining the flood protection alignment along the east side of the FDR Drive would eliminate the need to cross the FDR Drive near East 13th Street as well as the need to install floodwalls adjacent to NYCHA Jacob Riis Houses, Con Edison property, and Murphy Brothers Playground.

This alternative would include drainage components to reduce the risk of interior flooding, carbon fiber wrapping of Con Edison transmission lines, and construction of the shared-use flyover bridge to address the Con Edison pinch point.

*NON-STORM CONDITIONS*

As described above under the Preferred Alternative, the proposed flood protection systems would not impact traffic, parking, transit, or pedestrian operations and would not result in any significant adverse traffic, transit, pedestrian, and parking effects.

*STORM CONDITIONS*

The operation and management during a storm event and the testing and activation of the closure structures under Alternative 5 would be the same as the Preferred Alternative, other than the removal of closure structures across the FDR Drive (between East 13th and East 18th Streets), across East 15th Street, and across East 18th Street. \*