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Domino Sugar Rezoning Technical Memorandum

CEQR No. 07DCP094K
ULURP Nos. C100185ZMK, N100186ZRK,
C100187ZSK, C100188ZSK, C100189ZSK,
N100190ZAK, N100191ZCK, N100192ZCK
July 10, 2010

A. INTRODUCTION

The proposed Domino Sugar Rezoning project (the "project") is the subject of a Uniform Land Use Review Procedure (ULURP) application that was approved by the City Planning Commission (CPC) on June 7, 2010, and currently under consideration by the New York City Council (the "Council"). This Technical Memorandum provides background on the ULURP review for the project, identifies modifications to the CPC approval proposed by the Council's Land Use Committee (the "proposed modifications") as part of its review, and analyzes whether the proposed modifications would result in any significant adverse environmental impacts not already identified in the project's Final Environmental Impact Statement (FEIS). The analysis concludes that the proposed modifications would not result in any significant adverse environmental impacts not already identified in the FEIS for the project.

B. BACKGROUND

The project was analyzed in an FEIS that was certified as complete by the lead agency, the CPC, on May 28, 2010. The CPC voted on June 7, 2010 to approve the project's ULURP application, which included a zoning map amendment, zoning text amendments, a special permit for bulk modifications (including height and setback waivers), a special permit to modify use regulations, and a waterfront authorization.[1] Further, as a condition to the special permit for bulk modifications, the applicant agreed to enter into a binding restrictive declaration. As part of the approval, the CPC modified the height and setback waivers requested for Site A to reduce the heights of the three commercial modules to 130 feet, 160 feet, and 250 feet, from 200 feet, 240 feet, and 300 feet, respectively. The modifications to the project by the CPC were the subject of further environmental review in a Technical Memorandum dated June 4, 2010, which found that the CPC modifications would not result in any significant adverse impacts not already identified in the FEIS.

As noted above, the CPC approval of the project's ULURP application is currently under consideration by the Council. The Council's Land Use Committee has proposed modifications to the CPC approval including the associated Restrictive Declaration, which are described in more detail below.

C. DESCRIPTION OF THE PROPOSED MODIFICATIONS

The modifications proposed by the City's Council's Land Use Committee would modify the CPC approved special permit for bulk modifications (including height and setback waivers) and special permit to modify use regulations (C100187ZSK and C100188ZSK, respectively). In general, the proposed

[1] Subsequent to the FEIS, the applicant withdrew its application for a parking special permit; therefore, this was not included in the ULURP application approved by the CPC.

modifications to the bulk special permit would reduce the heights of the tallest building elements on Sites B and C and increase the heights of the three commercial modules on Site A to the heights analyzed in the FEIS. The proposed modification to the use special permit would change the location and extent to which commercial and residential uses occupy the same floors in adjacent building segments. The proposed City Council modifications would also modify the Restrictive Declaration to include additional commitments by the applicant related to shuttle bus service and the community facility space. Further details for each of these proposed modifications are provided below.

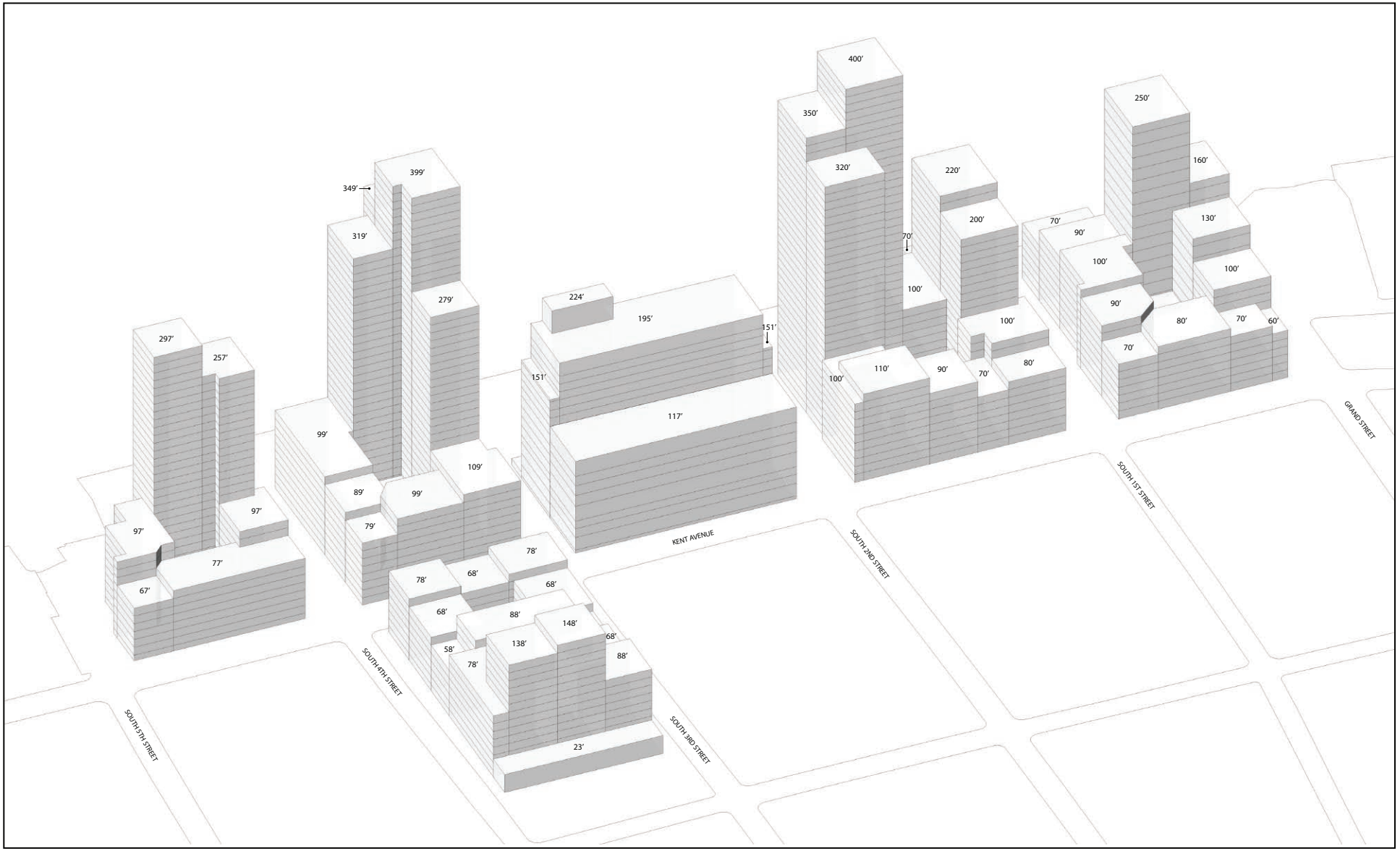
At Sites B and C, the proposed modifications to the bulk special permit would reduce the heights of the tallest buildings from 400 feet to 340 feet and from 399 feet to 339 feet, respectively. To accommodate the residential floor area that would have been located on the upper floors of these two sites (a total of approximately 42,000 gross square feet), the bulk special permit is proposed to be further modified so that floor area that could not be accommodated elsewhere within the CPC-approved building envelopes could be accommodated in the mid-rise and/or low-rise elements of the proposed building sites as specified below.

- To the landward mid-rise modules:
    - Ten additional feet in height, set back between 10 and 15 feet, would be added to those modules along Kent Avenue and to modules in the western portions of the upland parcel (Site E); and,
    - Twenty additional feet in height would be added to two modules on the upland parcel and one module on Site C on the waterfront parcel.
- To the seaward mid-rise modules:
    - Thirty or forty feet of height would be added to those modules with water frontage on Sites A, C, and D; and,
    - Fifty feet of additional height would be added to one of the modules with water frontage on Site A.
- Twenty additional feet would be added to small portions of the floorplate on either end of the element that crosses between the two courtyards on the upland parcel, increasing this height from 88 feet to 108 feet.

At Site A, the proposed modifications would increase the heights of the three commercial modules to 200 feet, 240 feet, and 300 feet from 130 feet, 160 feet, and 250 feet, respectively. **Figure 1** provides an illustration of the building envelopes as approved by CPC and **Figure 2** provides an illustration of the building envelopes with the proposed modifications.

As briefly noted above, the modifications proposed by the City Council would also modify the project's use special permit, primarily as a result of the proposed modification to the height of the commercial tower elements on Site A. One of the consequences of the bulk modification would be a change in the location and extent to which commercial and residential uses occupy the same floors in adjacent building segments on Site A. As a result, the drawings related to the use special permit would need to be modified.

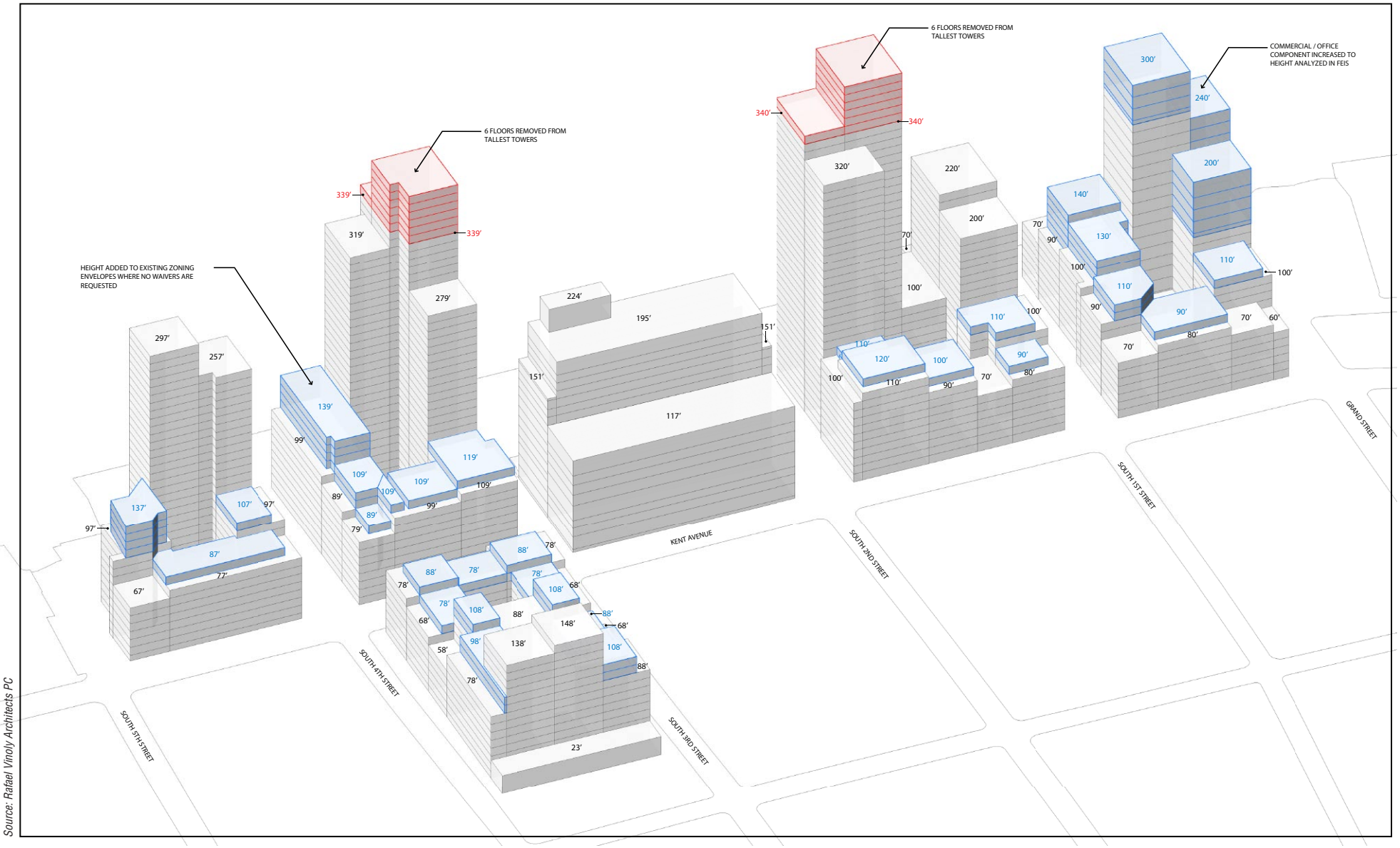
Lastly, the Restrictive Declaration is proposed to be modified to include additional commitments by the applicant related to shuttle bus service and the community facility space. The shuttle bus would provide service from the project site to the Broadway entrance of the Marcy Avenue J/M/Z subway station during the peak morning and evening commuting periods. The other proposed modification to the Restrictive Declaration would require the applicant to gain approval from the Council for any change in use from the current designated community facility use to any other kind of use. Along with these two modifications, additional changes would be made to the Restrictive Declaration for administrative purposes (e.g., to provide for the new stack heights as set forth herein, reference new site plan dates, and remove language that was only relevant when the commercial tower was lower).



Source: Rafael Vinoly Architects PC

Building Envelopes as Approved by CPC

Figure 1



Source: Rafael Vinoly Architects PC

Height Increased

Height Reduced

Building Envelopes with Proposed Modifications

Figure 2

D. ANALYSIS FRAMEWORK UNDER THE PROPOSED MODIFICATIONS

The proposed modifications would affect the project's building envelopes, but not permitted floor area or uses. With the reduced tower heights on Sites B and C, residential floor area could be located on Sites A, B, C, D, and/or E. In total, the amount of residential floor area affected by the reduced tower heights would be approximately 42,000 gross square feet (gsf) or 42 dwelling units (based on the FEIS assumption of 1,000 gsf per dwelling unit).

This Technical Memorandum analyzes a reallocation of the residential floor area to Sites A, B, C, and D. As shown in **Table 1**, under this scenario the residential floor areas of Sites A, C, and D would increase by 7,789 gsf (or approximately seven or eight dwelling units), 3,119 gsf (three units), and 10,272 gsf (10 units), respectively, while the residential floor area of Site B would decrease by 21,180 gsf (21 units). Therefore, for analysis purposes, the reallocation of residential floor area due to the modification to the tower heights on Site B and C is assumed to result in approximately 13 dwelling units shifting from the north end of the waterfront parcel of the project site to the south end.

Table 1
Analysis Framework Comparison: FEIS Residential Floor Area versus Proposed Modifications Reallocation

	Site A	Site B	Refinery	Site C	Site D	Site E	Total
FEIS (gsf)	203,984	761,727	260,522	576,893	320,742	318,437	2,442,305
Reallocation (gsf)	211,773	740,547	260,522	580,012	331,014	318,437	2,442,305
Difference (gsf)	7,789	-21,180	0	3,119	10,272	0	0

Notes: gsf = gross square feet
The residential floor area could be reallocated to any site except the Refinery. This distribution represents a reasonable assumption regarding the reallocation of the residential floor area.
Sources: Rafael Vinoly Architects PC.

As noted above, the proposed modifications at Site A would increase the heights of the three commercial modules to 200 feet, 240 feet, and 300 feet from 130 feet, 160 feet, and 250 feet, respectively. The increased heights would be the same heights as analyzed in the FEIS. With the establishment of these heights, 11,000 square feet of community facility space would not be reallocated from Site A to elsewhere on the waterfront parcels, as contemplated in the June 4th Technical Memorandum.

In terms of project design, the proposed modifications would affect only the building envelopes for the project. Except for the building envelopes, all above-grade uses with the proposed modifications, including building design and materials, and access/egress points, would be the same as those for the project. The proposed modifications would also have the same total square footage, public open space, and upland connections as the project.

The proposed modifications would not affect the project's development program as analyzed in the FEIS, except that the project would now include a shuttle bus service. With the proposed modifications, the total number of residential units in the project would remain the same as analyzed in the FEIS. Furthermore, the amount of commercial and community facility floor area on each site and in the project overall would remain the same as analyzed in the FEIS with the proposed modifications. The proposed modifications would not change the number of parking spaces provided in any of the project's garages. As noted above, subsequent to the FEIS the applicant withdrew the application for the parking special permit, and CPC approved a program with 1,428 parking spaces.

E. POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROPOSED MODIFICATIONS

As noted above, the project's overall development program including the public open space would remain the same under the proposed modifications, except that the project would now include a shuttle bus

service. Therefore, the significant adverse impacts—and the associated mitigation measures to address those impacts—related to community facilities, historic resources, and pedestrians identified in the FEIS for the project would not be affected if the project were modified as described above. Furthermore, the commitment to consider any change in use for proposed community facility space in the project a major modification would also not affect the conclusions of the FEIS. In the technical areas where the FEIS found no significant adverse impacts would occur, the project with the proposed modifications would also have no significant adverse impacts in those areas.

Therefore, the analysis below focuses only on the technical areas affected by changes to the building envelopes, height, shifts in floor area, and the operation of the shuttle bus, specifically shadows, urban design and visual resources, traffic, transit, air quality, and construction. Consistency with the policies of the City's Waterfront Revitalization Program (WRP) will also be considered in the assessment under shadows and urban design and visual resources.

SHADOWS

The proposed modifications would result in slightly different building massing arrangements than the project as analyzed in the FEIS. As described above, the height of the tallest portions of Sites B and C would be reduced and the heights of the low-rise bases would be increased between one and five stories. As noted above, these increases could occur within the modified building envelopes of the mid- to low-rise elements on any site except for the Refinery, but are currently contemplated for Sites A, B, C, and D (see **Figure 2**). In addition, the heights of the three commercial modules on Site A would be increased to the heights analyzed in the FEIS. Compared to the FEIS analysis, the proposed modifications would result in shorter shadows from the tower portions of Sites B and C and slightly longer shadows from the additional stories on the mid- to low-rise elements of Sites A, B, C, and D. Overall however, the shadows resulting from the modifications would be similar to those of the project analyzed in the FEIS. The proposed modifications, as with the project, would not result in any significant adverse shadow impacts to the East River or the PS 84 William Sheridan Playground.

With the increase in the heights of the three commercial modules on Site A to the heights analyzed in the FEIS, the proposed modifications would result in greater shadows cast on Grand Ferry Park than those discussed in the June 4th Technical Memorandum. However, the proposed modifications would result in the same shadows on Grand Ferry Park as the project analyzed in the FEIS. Therefore, the proposed modifications would result in the same significant adverse impact to Grand Ferry Park during the fall, winter, and early spring and would require the same mitigation measures. The proposed modifications would not result in any significant adverse shadows impacts to Grand Ferry Park that were not previously identified in the FEIS.

The project with the proposed modifications would continue to create the same substantial amount of new public open space that would connect to Grand Ferry Park and therefore would still adhere to the policy of public access to the waterfront. Consequently, the project with the proposed modifications would remain consistent with the City's Waterfront Revitalization Program.

URBAN DESIGN AND VISUAL RESOURCES

Compared to the project analyzed in the FEIS, the proposed modifications would result in shorter towers on Sites B and C and up to fifty feet of additional height on the lower elements of Sites A, B, C, and D. The reduction in heights at Sites B and C would result in less articulation between the tallest portions of those sites compared to the project, and would thus require the elimination of the design controls that mandate a four-story articulation between the two tallest segments of each building. Nonetheless, the proposed modifications would still be consistent with the overall design principles of stepping up building heights from Kent Avenue to the waterfront and staggering the heights of the buildings, although to a lesser extent than the project analyzed in the FEIS. Like the project analyzed in the FEIS, the proposed modifications would still allow the buildings to meet the neighboring context at Kent Avenue because the proposed modifications would allow only one additional story along Kent Avenue. On the lower elements

of Sites B and C along Kent Avenue, the proposed modifications would only include up to one additional story, and therefore would be comparable in height to the Refinery, like the project analyzed in the FEIS.

Except for the differences described above, the project with the proposed modifications would be the same as the project without the modifications in terms of layout, landscaping, open spaces, and overall urban design. The potential effects of the proposed modifications on urban design and visual resources would be the same as with the project. Therefore, the proposed modifications would not change the FEIS conclusions and would not result in any significant adverse urban design and visual resource impacts.

The project with the proposed modifications would continue to enhance the visual quality of this stretch of waterfront by restoring the Refinery, creating new public open space, and extending the street grid into the project site to facilitate public access to the site and the waterfront; therefore the project with the proposed modifications would still adhere to the policy to protect scenic resources that contribute to the visual quality of the City's coastal area. Consequently, the project with the proposed modifications would remain consistent with the City's Waterfront Revitalization Program.

TRAFFIC AND PARKING

The total number of residential units in the project would remain the same as analyzed in the FEIS with the proposed modifications. Furthermore, the amount of commercial and community facility floor area on each site and in the project overall would remain the same as analyzed in the FEIS with the proposed modifications. As discussed above, there could a small shift in residential units (approximately 13 units) from the northern end to the southern end of the project site. This represents a very small fraction of the total 2,400 residential units analyzed in the FEIS for the future 2020 Full-Buildout conditions. This very small shift in residential units would not alter the conclusions presented in the FEIS regarding the traffic operating conditions at the study intersections.

The proposed modifications would not change the number of parking spaces provided in any of the project's garages. As noted above, subsequent to the FEIS the applicant withdrew the application for the parking special permit, and the CPC approved a program with 1,428 parking spaces. The proposed modifications would also have the same access/egress points, total square footage, public open space, and upland connections as analyzed in the FEIS.

Although the proposed modifications to the bulk special permit would not alter the conclusions pertaining to traffic and parking found in the FEIS, the addition of the shuttle bus requirement in the Restrictive Declaration was evaluated for its potential effect on traffic conditions. The following sections discuss the proposed shuttle bus operations and provide an assessment of the effects of the proposed shuttle bus service on local traffic operations.

PROPOSED SHUTTLE BUS

The proposed modifications include a commitment by the applicant to provide shuttle bus service for project occupants upon full occupancy of Phase 1 of the project (Site E) during the morning and evening peak commuting periods to the main control area at the Broadway entrance of the Marcy Avenue J/M/Z subway station. The proposed weekday AM and PM peak period shuttle bus service would provide a more direct connection for the project-generated transit users between the project site and the Marcy Avenue station.

As the project is developed, the applicant would monitor demand for shuttle bus service to determine the capacity of the shuttle bus fleet and hours of operation. Based on the project-generated demand identified in the FEIS for the Full-Buildout, it is anticipated that up to seven shuttle buses (consisting of a mix of 25-passenger and 44-passenger capacity buses) would be used. Upon Full-Buildout, the capacity of the shuttle bus fleet could vary from what is analyzed below depending on demand.

Changes to Modal Splits

In terms of modal splits, the FEIS transit analysis assumed that 80 percent of the patrons taking the J/M/Z lines at the Marcy Avenue station would use the local Q59 bus route, while the remaining 20 percent

would walk. With the provision of shuttle bus service (which will be more convenient and faster as compared to the local NYCT bus service), it can be reasonably expected that patrons walking and using the Q59 bus would shift to the shuttle bus in the future conditions. Specifically, it is anticipated that 75 percent of the patrons taking the J/M/Z lines at the Marcy Avenue station would use the shuttle bus, 15 percent would walk and the remaining 10 percent would use the Q59 bus. Also, given the proximity of the secondary control area to the Q59 bus stop and the project site, it is assumed that patrons walking or taking Q59 to the Marcy Avenue station would use the secondary control area (25 percent of the J/M/Z subway riders), whereas all the patrons using the shuttle bus service would use the main control area (75 percent of the J/M/Z subway riders).

Shuttle Bus Trips

As noted above, the applicant would monitor demand for shuttle bus service. It is anticipated that up to seven shuttle buses (consisting of a mix of 25-passenger and 44-passenger capacity buses) would be used to meet the project-generated demand identified in the FEIS. Upon Full-Buildout, the capacity of the shuttle bus fleet could vary depending on demand.

For the purposes of this analysis, the number of shuttle buses needed to accommodate the project-generated demand identified in the FEIS was estimated assuming typical 25-and 44-passenger capacity buses. It was also assumed that each shuttle bus would make two roundtrips per hour. Based on these assumptions, it was estimated that a single shuttle bus would be needed to accommodate the project generated demand in the future 2013 conditions with the completion of Site E on the upland parcel. This would yield a total of 4 vehicle trips (2 inbound and 2 outbound) during the weekday AM and PM peak hours, respectively. For the future 2020 Full-Buildout conditions, it was estimated that a total of 7 shuttle buses (consisting of six 25-passenger and one 44-passenger capacity buses) would be needed to accommodate the project generated demand. This would yield a total of 28 vehicle trips (14 inbound and 14 outbound) during the weekday AM and PM peak hours, respectively. In terms of frequency, this will translate to one bus leaving the Domino site for the Marcy Avenue station (Broadway entrance) approximately every four-to-five minutes during the morning and evening peak periods in the 2020 Full-Buildout conditions.

Shuttle Bus Logistics and Proposed Route

The proposed modifications to the Restrictive Declaration to require shuttle bus service between the project site and Marcy Avenue subway station do not address specific service logistics and routing; however for analysis purposes reasonable assumptions about these have been identified. In terms of logistics for the passenger loading/unloading, it is assumed that the turnaround within the project site at South 4th Street (located west of Kent Avenue) could be used as the shuttle bus stop in the future 2013 conditions with the completion of Site E on the upland parcel. Depending on demand, there could be the potential for a second shuttle bus stop in the latter phases of development with the completion of Sites A and B at the northern end of the project site. It is assumed that this potential second shuttle bus stop could be located at the turnaround within the project site at South 1st Street west of Kent Avenue.

In terms of routing, the shuttle bus would exit the first shuttle bus stop at South 4th Street by making a left-turn onto Kent Avenue and will travel north to the second shuttle bus stop at South 1st Street. After picking-up the passengers at the second stop, the shuttle bus would exit by making a left-turn onto Kent Avenue and will travel north to the intersection of Kent Avenue and Grand Street. At this point, the shuttle bus would make a right-turn onto Grand Street and travel east to Driggs Avenue. The shuttle bus would travel south on Driggs Avenue up to the intersection of Broadway and Driggs Avenue where it will make a left-turn onto Broadway and travel east to the Marcy Avenue station. The shuttle bus would drop-off passengers at the far side B24/B46 bus stop located just east of the intersection of Broadway and Marcy Avenue. At the Marcy Avenue Station, the shuttle bus would pick-up passengers destined for the project site at the same location (far side B24/B46 bus stop) and will then travel east on Broadway to Rodney Street. It will then travel north on Rodney Street to South 4th Street to travel west. At the intersection of South 4th Street and Marcy Avenue, the shuttle bus would make a left-turn onto Marcy

Avenue and travel south to the intersection of Broadway and Marcy Avenue where it would make a right-turn onto Broadway. The shuttle bus would travel west on Broadway to the intersection of Bedford Avenue and Broadway/South 6th Street and would continue westbound on South 6th Street up to Kent Avenue where it would make a right-turn and travel north on Kent Avenue back to the project site (see **Figure 3**). As noted above, the shuttle bus route, as illustrated in **Figure 3**, is for analysis purposes only.

Effect of Shuttle Bus Service on Traffic Conditions

Based on the review of service conditions at the study area intersections on the shuttle bus route, it was determined that the shuttle bus trips in the future 2013 and 2020 conditions would not alter the conclusions regarding the traffic operating conditions at these intersections presented in the FEIS. The measures identified in the FEIS to mitigate the impacts at some of these intersections would still be valid with the shuttle bus operations in the future 2013 and 2020 conditions. The exceptions would be the intersections of Broadway and Havemeyer Street (which would require an additional second of retiming for a total of 4 seconds of signal retiming with the shuttle bus compared to 3 seconds of signal retiming identified in the FEIS) and Bedford Avenue and South 6th Street (which would require an additional second of retiming for a total of 6 seconds of signal retiming with the shuttle bus compared to 5 seconds of signal retiming identified in the FEIS) with the shuttle bus operations in the 2020 Full Build-Out conditions during the PM peak hour. Furthermore, the signal-phasing plan identified as a mitigation measure for the intersection of Kent Avenue and South 6th Street would have to be adjusted slightly by providing 32 and 48 seconds of green time for the eastbound/westbound and northbound phases, respectively, compared to 31 and 49 seconds of green time identified for the same phases in the FEIS, with the shuttle bus operations in the 2020 Full Build-Out conditions during the PM peak hour.

Therefore, based on the above discussion, it is determined that both the proposed modifications and the project would result in the same significant adverse traffic impacts and would require the same potential mitigation measures as identified in the FEIS.

TRANSIT

The total number of residential units in the project would remain the same as analyzed in the FEIS with the proposed modifications. Furthermore, the amount of commercial and community facility floor area on each site and in the project overall would remain the same as analyzed in the FEIS with the proposed modifications. The proposed modifications would also have the same access/egress points, total square footage, public open space, and upland connections as the project.

PROPOSED SHUTTLE BUS

The proposed modifications include a commitment by the applicant to provide shuttle bus service upon full occupancy of Phase 1 of the project (Site E) during the AM and PM peak periods to the main control area at the Broadway entrance of the Marcy Avenue J/M/Z subway station. The proposed weekday AM and PM peak period shuttle bus service would provide a more direct connection for the project-generated transit users between the project site and the Marcy Avenue station.

The transit analysis conducted for the FEIS determined that the project related significant transit impacts would only occur at the Manhattan-bound and Queens-bound secondary control areas at the Marcy Avenue J/M/Z station's entrance/exit located at Havemeyer Street. As identified in the FEIS, these control area impacts would be fully mitigated by replacing the existing High Entrance and Exit Turnstiles (HEETs) with two sets of low-turnstiles at these control areas to increase capacity.

It should be noted that with the shift in patrons from the secondary to the main control area of the Marcy Avenue (J/M/Z) subway station with the provision of shuttle bus service in the future conditions, the secondary control area is expected to operate at better service conditions than identified in the FEIS, and thus there would be no potential for any new or additional significant adverse impacts on the secondary control area not already identified in the FEIS. To determine if this potential shift would result in significant adverse impacts at the main control area of the Marcy Avenue (J/M/Z) subway station, an analysis of the control area elements at the main station was performed. This analysis was based on the

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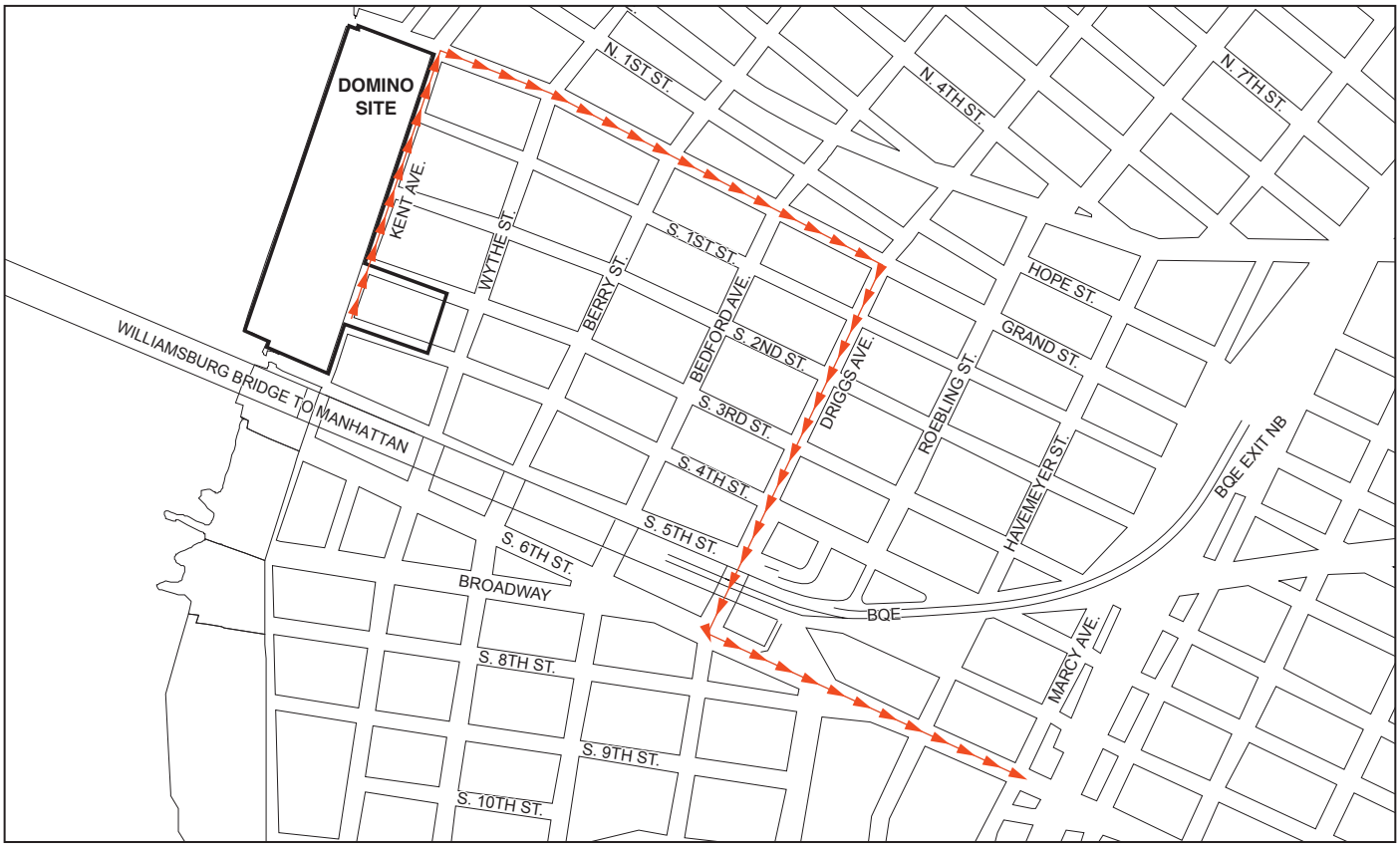
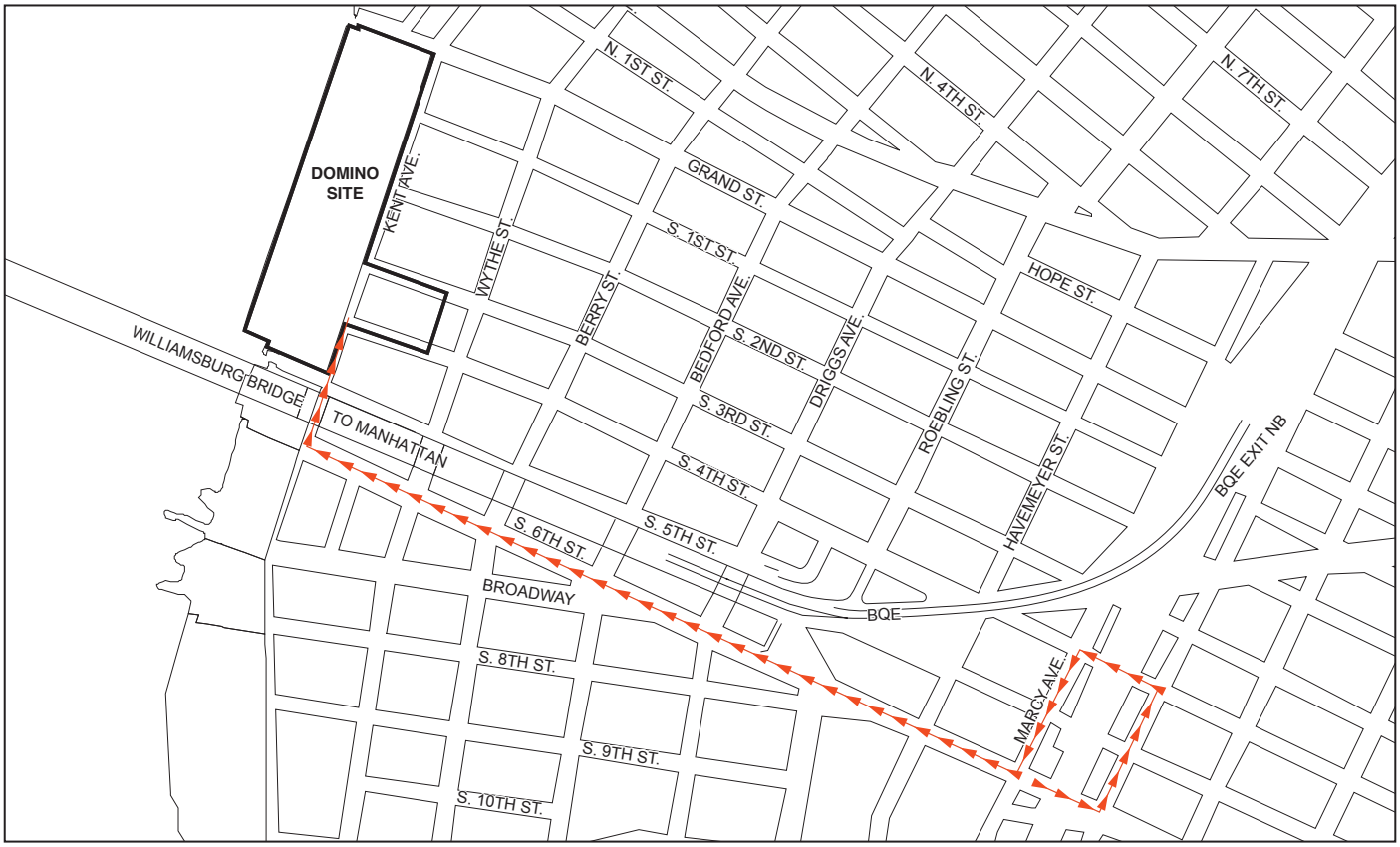


From the Domino Site to the Marcy Avenue Station

0 1000 FEET
SCALE



From the Marcy Avenue Station to the Domino Site

Proposed Shuttle Bus Route
Figure 3

transit count data collected in February 2010 at the Marcy Avenue main control areas. Based on the analysis results, the main control area and the stairways would have adequate capacity to accommodate the shift of transit riders. The additional transit riders at the main control area would not result in any new significant adverse impacts in the 2020 Full-Buildout and 2013 Interim conditions (see **Tables 2 and 3**).

Table 2
2020 Build Conditions: Marcy Avenue (J/M/Z Lines) Main Control Area
Stairway Analysis

Stairway	Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	15-Minute V/SVCD Ratio	15-Minute LOS
			Up	Down				
AM Peak Period								
Marcy Avenue (J/M/Z)								
			Enter	Exit				
Broadway/Marcy Avenue (S1, SE Corner) :Queens-bound	5.0	4.0	15	26	0.80	0.90	0.09	A
Broadway/Marcy Avenue (S3, SW Corner) :Queens-bound	5.0	4.0	13	50	0.80	0.80	0.16	A
Broadway/Marcy Avenue (S2, NE Corner) :Manhattan-bound	5.0	4.0	139	46	0.80	0.80	0.41	A
Broadway/Marcy Avenue (S4, NW Corner) :Manhattan-bound	5.0	4.0	88	143	0.80	0.90	0.49	B
PM Peak Period								
Marcy Avenue (J/M/Z)								
			Enter	Exit				
Broadway/Marcy Avenue (S1, SE Corner) :Queens-bound	5.0	4.0	38	154	0.80	0.80	0.48	B
Broadway/Marcy Avenue (S3, SW Corner) :Queens-bound	5.0	4.0	35	121	0.80	0.80	0.39	A
Broadway/Marcy Avenue (S2, NE Corner) :Manhattan-bound	5.0	4.0	50	20	0.80	0.80	0.16	A
Broadway/Marcy Avenue (S4, NW Corner) :Manhattan-bound	5.0	4.0	46	36	0.80	0.90	0.17	A

Note: Capacities were calculated based on rates presented in the 2010 *CEQR Technical Manual* .

V/C = [Vin / (150 * We * Sf * Ff)]+ [Vx/ (150 * We * Sf * Ff)]
Where
Vin = Peak 15-minute entering passenger volume
Vx= Peak 15-minute exiting passenger volume
We= Effective width of stairs
Sf = Surging factor (if applicable)
Ff= Friction factor (if applicable)

Sample Calculation: Build 2020 AM
S2 Stairway at Marcy Avenue
V/C = [139 (Vol_{in}) / (150 * 4.0 * 1.0 * 0.8)] +
[46 (Vol_{Exit}) / (150 * 4.0 * 0.8 * 0.8)]
= 0.41

Table 3
2020 Build Conditions: Marcy Avenue (J/M/Z Lines) Main Control Area
Control Area Analysis

Control Area Elements	Quantity	15-Minute Pedestrian Volumes In	15-Minute Pedestrian Volumes Out	Surging Factor	Friction Factor	15-Minute V/SVCD Ratio	15-Minute LOS
AM Peak Period							
Broadway / Marcy Ave. (J/M/Z) Main Control Area							
Manhattan Bound							
Emergency Exit	1	8	8	-	-	-	-
HEET(Exit only)	2	0	114	0.75	1.00	0.14	A
Two-Way Turnstiles	3	320	45	0.75	0.90	0.32	A
Queens Bound							
Emergency Exit	1	0	6	-	-	-	-
HEET(Exit only)	2	0	48	0.75	1.00	0.06	A
HEET	1	9	23	0.75	0.90	0.10	A
Two-Way Turnstiles	3	48	10	0.75	0.90	0.05	A
PM Peak Period							
Broadway / Marcy Ave. (J/M/Z) Main Control Area							
Manhattan Bound							
Emergency Exit	1	5	4	-	-	-	-
HEET(Exit only)	2	0	33	0.75	1.00	0.04	A
Two-Way Turnstiles	3	108	19	0.75	0.90	0.11	A
Queens Bound							
Emergency Exit	1	2	15	-	-	-	-
HEET(Exit only)	2	0	176	0.75	1.00	0.21	A
HEET	1	31	36	0.75	0.90	0.23	A
Two-Way Turnstiles	3	78	70	0.75	0.90	0.12	A

Note: Capacities were calculated based on rates presented in the 2010 *CEQR Technical Manual*.

V/C = [Vin/ Cin* Ff] + [Vx/ Cx* Sf*Ff]
Where
Vin = Peak 15-minute entering passenger volume
Cin = Total 15-minute capacity of all turnstiles for entering passengers
Vx = Peak 15-minute exiting passenger
Cx = Total 15-minute capacity of all turnstile for exiting passengers
Sf = Surging factor (if applicable)
Ff = Friction factor

Sample Calculation: Build 2020 AM
Two-way Turnstile at Marcy Avenue – to Manhattan
V/C = [320 (V_{in}) / (3*420 * 0.9)] +
[45 (V_{Exit}) / (3 * 645* 0.75 * 0.9)]
= 0.32

AIR QUALITY

As noted above, with the proposed modifications, the tallest buildings on Sites B and C would be reduced by approximately 60 feet in height, and the residential floor area would be reallocated to lower elements on Sites A, B, C and D. The potential effect of these modifications on air quality was examined.

An analysis of the HVAC system for this alternative found that none of the buildings' HVAC systems would result in a significant adverse air quality impact. The stack height and location restrictions on Site A would not change. Furthermore, the restrictions specified in the FEIS regarding stack location would remain unchanged. However, the minimum stack heights for Sites B and C have been revised to reflect the proposed reduction in height for the tallest building on these sites. The restriction on the use of natural gas as fuel on all buildings would remain the same. The results of the analysis are shown in **Table 4** below. Therefore, the proposed modifications would not change the FEIS conclusion that the project would not result in any significant adverse air quality impacts associated with HVAC systems.

Table 4
Comparison of Stack Parameters

Parameter	Project			Proposed Modifications		
	Site A	Site B	Site C	Site A	Site B	Site C
Modeled Stack Height (ft)	309	407	400	309	350	342
$PM_{2.5}$ ST Emissions (g/s) @ 100% Load	0.0132	0.0352	0.0402	0.0136	0.0343	0.0403
Max $PM_{2.5}$ 24-Hour Concentration	1.92			1.96		
Location of maximum receptor	329 ft on Northern Façade of Site B			329 ft on Northern Façade of Site B		

Any residential floor area reallocated to Site A would be located below 110 feet, and therefore there would be no significant adverse air quality impacts due to emissions from the NYPA facility.

The operation of the shuttle bus service would result in an additional 28 vehicle trips during the weekday AM and PM peak hours. These additional trips would result in negligible increases in mobile source emissions and would therefore not result in any exceedance of NAAQS or CEQR *de minimis* criteria for carbon monoxide, or the City's $PM_{2.5}$ interim guidance criteria. Therefore, the operation of the shuttle bus service would not alter the FEIS conclusion that the project would not result in any significant adverse mobile source air quality impacts.

CONSTRUCTION

Although the proposed modifications would result in small changes in building heights and shifts in floor area, when compared to the project, it is expected that construction activities associated with these modifications would result in similar construction effects as the project since both would construct similar types of buildings. The construction phasing would also not be affected by the proposed modifications. Therefore, both the proposed modifications and the project would result in the same significant adverse construction traffic and noise impacts and would require the same potential mitigation measures. The proposed modifications would not result in any significant adverse construction impacts not previously identified in the FEIS.

CONCLUSION

The proposed modifications would not have the potential for any new or additional significant adverse impacts not already identified in the FEIS for the project.