Table 5-2
½-Mile Study Area Population

Census Tract	Residential Population[1]	Non-Residential Populations[2]	Total Population
31	2,837	4,019	6,856
33	3,157	1,881	5,038
35	1,550	3,527	5,077
37	1,087	5,982	7,069
39	2,455	2,250	4,705
41	3,540	1,719	5,259
71	5,002	315	5,317
127	3,929	1,006	4,935
129.01	2,577	834	3,411
129.02	2,064	807	2,871
161	3,139	1,014	4,153
179	4,131	717	4,848
181	3,424	816	4,240
Total	**38,892**	**24,887**	**63,779**

Sources:
[1] ACS 2011–2015 (5-Year) Estimates
[2] U.S. Census, Esri Business Analyst

Non-Residential Population

As shown in **Table 5-2**, 2015 Census data compiled by Esri Business Analyst indicates that the existing worker population of the residential study area is approximately 24,887 workers.

Total User Population

As shown in **Table 5-2**, within the residential study area, the total population (i.e., residential plus workers) is estimated to be approximately 63,779 people. Although this analysis conservatively assumes that residents and daytime users are separate populations, as noted earlier, it is likely that some of the residents live near their workplace or work from home. As a result, there is likely to be some double-counting of the daily user population in the study area, resulting in a more conservative analysis.

Age Distribution

Table 5-3 summarizes the age distribution of the ½-mile study area population with a comparison to Brooklyn and New York City as a whole. As shown in **Table 5-3**, the study area has relatively similar age distribution compared with the borough and the City as a whole.

Table 5-3
½-Mile Study Area Residential Population Age Distribution

	Study Area		Brooklyn		New York City	
Age Category	**Persons**	**Percent**	**Persons**	**Percent**	**Persons**	**Percent**
Under 5 Years	2,302	5.9	193,409	7.5	555,811	6.6
5 to 9 Years	1,457	3.8	164,684	6.4	482,767	5.7
10 to 14 Years	1,328	3.4	154,584	6.0	465,647	5.5
15 to 17 Years	787	2.0	94,971	3.7	487,092	5.8
18 to 64 Years	28,124	72.4	1,678,348	64.7	5,363,721	63.7
65 Years and over	4,894	12.6	309,263	11.9	1,071,705	12.7
Total	**38,892**	**100**	**2,595,259**	**100**	**8,426,743**	**100**

Source: U.S. Census, 2011–2015 ACS

Given the range of age groups present in the study area population, the study area has a need for various kinds of active and passive recreation facilities, including open space features that can be used by children and adults. Within a given area, the age distribution of a population affects the way open spaces are used and the need for various types of recreational facilities. Typically, children 5 years old or younger use traditional playgrounds that have play equipment for toddlers and preschool children. Children ages 5 through 9 typically use traditional playgrounds as well as grassy and hard-surfaced open spaces, which are important for activities such as ball playing, running, and skipping rope. Children ages 10 through 14 typically use playground equipment, court spaces, and ball fields. Teenagers' and young adults' needs tend toward court game facilities such as basketball and field sports. Adults (ages 18 to 64) continue to use court game facilities and sports fields, along with more individualized recreation such as rollerblading, biking, and jogging that require bike paths, promenades, and vehicle-free roadways. Adults also gather with families for picnicking, active informal sports such as Frisbee, and recreational activities in which all ages can participate. Senior citizens (65 years and older) engage in active recreation such as handball, tennis, gardening, fishing, walking, and swimming, as well as recreational activities that require passive facilities.

INVENTORY OF PUBLICLY ACCESSIBLE OPEN SPACES

According to the *CEQR Technical Manual*, open space may be public or private and may be used for active or passive recreational purposes. In accordance with the *CEQR Technical Manual*, publicly accessible open space is defined as facilities open to the public at designated hours on a regular basis and is assessed for impacts using both a quantitative and a qualitative analysis, whereas private open space is not accessible to the general public on a regular basis and is considered qualitatively. Community gardens operating under New York City Department of Parks and Recreation's (NYC Parks) GreenThumb program are not considered in the quantitative assessment because they have limited hours of operation and are generally not accessible to the public. Field surveys and secondary sources were used to determine the number, availability, and condition of publicly accessible open space resources in the non-residential and residential study areas.

An open space is determined to be active or passive by the uses that the design of the space allows. Active open space is the part of a facility used for active play such as sports or exercise and may include playground equipment, playing fields and courts, swimming pools, skating rinks, golf courses, lawns, and paved areas for active recreation. Passive open space is used for sitting, strolling, and relaxation, and typically contains benches, walkways, and picnicking areas. However, some passive spaces can be used for both passive and active recreation; a green lawn or riverfront walkway, for example, can also be used for ball playing, jogging, or rollerblading.

As shown in **Figure 5-1** and **Table 5-4,** there are 18 publicly accessible open space resources within a ½-mile of the project site, and 9 publicly accessible open space resources within a ¼-mile of the project site.

Table 5-4
Existing Study Area Open Spaces

Ref. No.	Name	Location	Owner/Agency	Amenities	Acreage	Active	Passive	Condition	Utilization
Resources within ¼-Mile Study Area									
1	Sixteen Sycamores Playground	358 Schermerhorn Street	NYC Parks	Playgrounds, handball courts, spray showers	0.57	0.43	0.14	Good	High
2	Albee Square	DeKalb Avenue	Downtown Brooklyn Partnership	Seating	0.62	0.00	0.62	Excellent	High
3	Atlantic Terminal Mall Plaza	609 Atlantic Avenue	Forest City	Seating	0.54	0.00	0.54	Excellent	High
4	North Pacific Playground	473 Pacific Street	NYC Parks	Handball courts, playgrounds	0.15	0.11	0.04	Good	Low
5	230 Ashland Place POPS	230 Ashland Place	230 Ashland Place	Seating	0.10	0.00	0.10	Excellent	High
6	Theatre for a New Audience Plaza	262 Ashland Place	Theatre for a New Audience	Seating	0.18	0.00	0.18	Very Good	Moderate
7	BAM South Public Plaza POPS	300 Ashland Place	NYC Parks	Stepped topography of the plaza can be used for outdoor programming, such as film screenings and dance performances or farmer's markets.	0.34	0.00	0.34	Excellent	High
8	DOT 3rd Avenue Plaza	64 Flatbush Avenue	DOT/NYC Parks	Trees, benches	0.13	0.00	0.13	Good	Moderate
9	Fox Square	1517 Flatbush Avenue Extension	Downtown Brooklyn Partnership	Trees, benches	0.23	0.00	0.23	Very Good	Temporarily Closed Due to Adjacent Construction
Additional Resources within ½-Mile Study Area									
10	130 Livingston Street POPS	130 Livingston Street	DCAS	Seating	0.44	0.00	0.44	Good	High
11	Fort Greene Park	100 Washington Park	NYC Parks	Basketball and tennis courts, dog areas, nature center, spray showers, Wi-Fi, playgrounds, fitness, barbecuing	30.17	15.09	15.09	Fair	High
12	Nicholas Naquan Heyward Jr. Park	160 Wyckoff Street	NYC Parks	Basketball and handball courts, spray showers, playgrounds	1.04	0.78	0.26	Excellent	Moderate
13	Edmonds Playground	271 Carlton Avenue	NYC Parks	Basketball courts, playgrounds, spray showers	0.92	0.69	0.23	Good	High
14	Barclays Center Plaza	175 Flatbush Avenue	Barclays Center	Seating	0.32	0.00	0.32	Excellent	High
15	University Place	343 Flatbush Avenue	NYC Parks	Seating	1.16	0.00	1.16	Good	Moderate
16	Dean Playground	Dean Street	NYC Parks	Basketball and handball courts, playgrounds, spray showers	1.30	0.65	0.65	Very Good	Low
17	South Oxford Park	197 S. Oxford Street	NYC Parks	Playgrounds, tennis courts, spray showers	1.19	0.89	0.30	Excellent	Moderate
18	Cuyler Gore	795 Fulton Street	NYC Parks	Playgrounds, spray showers	1.16	0.29	0.87	Fair	Moderate
Non-Residential (¼-Mile) Study Area Total					**2.87**	**0.54**	**2.33**		
Residential (½-Mile) Study Area Total					**40.57**	**18.93**	**21.64**		

Notes:
POPS = privately owned public space
DCAS = New York City Department of Citywide Administrative Services
DOT = New York City Department of Transportation
Sources: AKRF field survey, May 2017; NYC Parks

NON-RESIDENTIAL (¼-MILE) STUDY AREA

The ¼-mile study area includes nine open spaces, as shown in **Figure 5-1**, and **Table 5-4**. The ¼-mile study area contains a total of approximately 2.87 acres of publicly accessible open space, of which approximately 2.33 acres are characterized by passive space, and 0.54 acres are characterized by active spaces. The largest open spaces within this study area are the Sixteen

Sycamores Playground one block west of the project site, and the Albee Square plaza ½-mile northwest of the project site.

RESIDENTIAL (½-MILE) STUDY AREA

As shown in **Table 5-4,** the ½-mile study area contains a total of 40.57 acres of open space of which approximately 21.64 acres are used for passive recreation and approximately 18.93 acres are used for active recreation. The largest open space resource in the ½-mile study area is Fort Greene Park, located northeast of the project site between DeKalb Avenue, Myrtle Avenue, and Ashland Place (see **Figure 5-1).** This 30-acre park contains 15 acres of passive space and 15 acres of active space. Passive space amenities include numerous barbecuing areas, seating areas, walkways, and grassy areas. Active space amenities including basketball courts, dog areas, spray showers, tennis courts, and playgrounds.

The ½-mile study area also contains several open space resources that are approximately 1 acre in size, offering both active and passive space. These include South Oxford Park, which contains a turf green, spray showers, and tennis courts, and Nicholas Naquan Heyward Jr. Park, which contains basketball and handball courts, spray showers, and playground equipment. POPS within the study area include 130 Livingston Street, 230 Ashland Place, and the Theatre for a New Audience plaza. There are also a number of community gardens in the study area, including the Rockwell Place Bears Community Garden and the Warren St. Marks Community Garden. As noted above, community gardens are only considered in the qualitative assessment, which ensure a more conservative assessment of open space adequacy.

ASSESSMENT OF OPEN SPACE ADEQUACY

NON-RESIDENTIAL (¼-MILE) STUDY AREA

The analysis of the non-residential study area focuses on passive open spaces that may be used by workers in the area. To assess the adequacy of open spaces in the area, the ratio of workers to acres of passive open space is compared with the City's planning guideline of 0.15 acres of passive space per 1,000 workers.

Quantitative Assessment

The ¼-mile study area includes a total of 2.87 acres of open spaces of which approximately 2.33 acres are passive space. A total of 7,162 residents live within this study area, and 7,658 people work within the non-residential study area boundary; the combined residential and non-residential population is 14,820.

Based on *CEQR Technical Manual* methodology, the non-residential study area has a passive open space ratio of 0.304 acres per 1,000 workers, which is higher than the City's guideline of 0.15 acres. Based on this comparison, the open space needs of workers in the non-residential study area are being met under existing conditions. For informational purposes, the combined workers and residents passive open space ratio is 0.157 acres per 1,000 residents and workers, which is slightly lower than the recommended ratio of 0.15 acres per 1,000 combined users (see **Table 5-5**).

Table 5-5
Adequacy of Open Space Resources: Existing Conditions
Non-Residential (¼-Mile) Study Area

Population		Open Space Acreage			Open Space Ratios per 1,000 Persons			*CEQR Technical Manual* Open Space Guidelines		
		Total	Active	Passive	Total	Active	Passive	Total	Active	Passive
Workers	7,658	2.87	0.54	2.33	N/A	N/A	0.304	N/A	N/A	0.15
Combined Workers and Residents	14,820						0.157			

Note: There may be a small discrepancy within the number values above due to rounding.

Qualitative Assessment

As shown in **Table 5-4**, the non-residential study area open spaces are in good or excellent condition and use levels range from low to high. As the majority of these open spaces are already in good or excellent condition, they are in a condition to be utilized by future to accommodate the future daytime non-residential population.

As noted above, the quantitative analysis is conservative as it assumes that residents and daytime users are separate populations, whereas it is likely, especially considering the size of the study area, that some of the residents live near their workplace, resulting in some double-counting of the daily user population in the non-residential study area.

RESIDENTIAL (½-MILE) STUDY AREA

The following analysis of the adequacy of open space resources within the residential study area takes into consideration the ratios of active, passive, and total open space resources per 1,000 residents, as well as the ratio of passive open space per 1,000 combined residents and workers.

Quantitative Assessment

The residential open space study area has a total of 40.57 acres of open space, of which approximately 18.93 acres are for active use and approximately 21.64 acres are for passive use. With a total residential population of 38,892, the residential study area has an overall open space ratio of 1.043 acres per 1,000 residents (see **Table 5-6**). This is lower than the City's planning guideline of 2.5 acres of combined active and passive open space per 1,000 residents. The study area's residential active and passive open space ratios are 0.487 acres and 0.556 acres per 1,000 residents, respectively, which is both below the *CEQR Technical Manual* guideline of 2 acres of active open space and just above the *CEQR Technical Manual* guideline of 0.5 acres of passive open space per 1,000 residents. As such, there is an existing shortfall of overall and active open space, but a small surplus of passive open space in the residential study area.

Table 5-6
Adequacy of Open Space Resources: Existing Conditions
Residential (½-Mile) Study Area

Population		Open Space Acreage			Open Space Ratios per 1,000 Persons			*CEQR Technical Manual* Open Space Guidelines		
		Total	Active	Passive	Total	Active	Passive	Total	Active	Passive
Residents	38,892	40.57	18.93	21.64	1.043	0.487	0.556	2.5	2	0.5
Combined Workers and Residents	63,779				N/A	N/A	0.339	N/A	N/A	0.5

Note: There may be a small discrepancy within the number values above due to rounding.

When employees who work within the residential study area are added to the population, the passive open space ratio is lower. As described earlier, workers typically use passive open space during the workday, so the passive open space ratio is the relevant ratio for consideration. With a combined worker and residential population of 63,779, the combined passive open space ratio in the residential study area is 0.339 acres per 1,000 users, which is below the recommended guideline of 0.5 acres per 1,000 residents and workers.

Qualitative Assessment

Approximately 47 percent of the open space in the residential study area is dedicated to active use and 53 percent is dedicated to passive use. Although the residential study area does contain a dispersed mix of recreational facilities, the total open space ratio per 1,000 residents still falls well below the guideline goal of 2.5 acres per 1,000 residents and the citywide median of 1.5 acres per 1,000 residents.

As shown in **Table 5-4**, the residential study area open spaces include a wide variety of actively programmed open spaces appropriate for the residential user groups, including children, teenagers, and adults. As noted previously, the residential study area includes a sizable percentage of children and teenagers, similar to Brooklyn and New York City as a whole (see **Table 5-3**). As noted in the *CEQR Technical Manual*, teenagers and young adults tend to use court facilities such as basketball courts and sports facilities such as football or soccer fields. Seven of the residential study area's 18 open spaces include such facilities (see **Table 5-4**). In addition, as noted in **Table 5-4**, most are in good condition with moderate to high utilization rates.

The deficiency of open space resources within the residential study area is partially ameliorated by the presence of several open spaces that are not included in the quantitative analysis due to the guidelines established in the *CEQR Technical Manual*. There are five gardens: the David Foulke Memorial Garden (0.74 acres), the Pacific Street Brooklyn Bear's Community Garden (0.11 acres), Brooklyn Bears Carlton Avenue Garden (0.15 acres), Rockwell Place Bears Community Garden (0.08 acres), and Warren St. Marks Community Garden (0.20 acres), all of which offer passive open space. In addition, it should be noted that Columbus Park, which is slightly more than ½-mile from the project site, offers 3.23 acres of passive open spaces with seating and food amenities. In addition, the 526-acre Prospect Park is located approximately 1 mile south of the project site and Brooklyn Bridge Park, an 85-acre open space resource, located approximately 1 mile west of the project site. Despite the fact that Prospect Park and Brooklyn Bridge Park are beyond the ½-mile study area, they are both considered "destination parks," to which residents would be expected to travel farther than the extent of the residential study area (either by vehicle, transit, or bicycle) to enjoy open space and recreational amenities. In addition, there are two New York City Housing Authority (NYCHA) housing developments, Wyckoff Gardens, and Gowanus Houses, with open spaces located in the residential study area. While these areas were not included in the open space inventory and quantitative analysis as they are primarily meant for use by residents of the housing developments, they would help serve the recreational needs of the study area and provide additional playgrounds and passive seating areas for younger and older age cohorts.

As noted above, the quantitative analysis is conservative as it assumes that residents and daytime users are separate populations, whereas it is likely, especially considering the size of the study area, that some of the residents live near their workplace, resulting in some double-counting of the daily user population in the non-residential study area.

D. FUTURE WITHOUT THE PROPOSED ACTIONS

STUDY AREA POPULATION

In the No Action condition, it is expected that current land use trends and general development patterns will continue and the study areas would continue to experience residential, commercial, and institutional development. As described in Chapter 1, "Project Description," absent the proposed actions, the project site would be redeveloped with a mixed-use development, including approximately 281 DUs, the existing approximately 43,750 sf high school with 312 high school students and 17 staff, 53,185 gsf of retail space, 2,108 gsf of community facility use, and 130 accessory parking spaces. The No Action development would generate approximately 565 residents and 194 workers and employees, which would include the retail and school staff in addition to staff associated with the residential development and parking facility. In addition, approximately 6,379 sf of POPS would be created at the southeast corner of the site, at the intersection of Flatbush Avenue and State Street. Since it is anticipated that this plaza area would be publicly accessible, it has been added to the quantitative analysis.

For the No Action condition, the capacity of existing and projected additional open space resources to serve future populations in the study area is examined using quantitative and qualitative factors. The assessment of the No Action condition examines conditions that are expected to occur in the study area by the 2025 analysis year, absent the proposed actions.

NON-RESIDENTIAL STUDY AREA

Fifteen of the 49 No Build projects are located in the ¼-mile study area. In total, the combined development within a ¼-mile of the project site includes 1,484 DUs, 127,411 gsf of retail space, 333,034 gsf of office space, 83,533 gsf of community facility space, and 215 parking spaces. These known development projects would result in an estimated 2,983 new residents, and 1,865 new employees. Based on these No Build projects, the No Action development and the existing populations, the non-residential study area would have an estimated 9,717 workers by 2025. The combined total number of workers and residents within a ¼-mile of the project site would be 20,427 people.

RESIDENTIAL STUDY AREA

By 2025, 49 No Build projects are anticipated to be built within a ½-mile of the project site. In total, the new development within a ½-mile of the project site will include 6,003 DUs, 777,094 gsf of retail space, 918,600 gsf of office space, 190,878 gsf of community facility space, 1,072 public school seats (elementary and middle), and 1,926 parking spaces. These known development projects within a ½-mile of the project site would result in an estimated 12,395 new residents and 6,567 new workers.[2,3] Based on these No Build projects, the No Action

[2] The ½-mile study area spans Brooklyn CDs 2, 6, and 8 which, according to the 2010 U.S. Census have average household sizes of 2.01, 2.19, and 2.37, respectively. The number of projected new residents in each community district is as follows: CD 2, 9,220 residents; CD 6, 1,542 residents; CD 8, 766 residents. The total result is the sum of the new residential population in each community district.

[3] The No Action non-residential populations are calculated with employment ratio estimates. Retail uses are estimated to have 333 sf per employee; office uses, 250 sf per employee; community facility uses, 1,000 sf per employee; residential developments, 25 DUs per employee; parking facilities, 50 spaces per employee; and elementary/middle schools, 11 students per employee.

development and the existing population, the residential study area would have an estimated 51,851 residents by 2025. The combined total number of workers and residents within a ½-mile of the project site would be 83,499 people.

STUDY AREA OPEN SPACES

In the No Action condition, the project site is conservatively anticipated to contain an approximately 0.146-acre open space on the easternmost side of the project site. Beyond the project site, the City is expected to add new passive open space to the ¼-mile non-residential study area. The long shuddered BAM Park, located on the west side of Fulton Street and Lafayette Avenue, will re-open and provide approximately 0.321 acres of passive open space, and will include new plantings, walkways, and seating areas. To the east of BAM Park, a reconstructed Fowler Square will provide 0.170 acres of passive open space and will include new plantings, bicycle parking, seating areas, and enhanced lighting.

DOT 3rd Avenue Plaza (at Lafayette and Flatbush Avenues), located north of the project site will be improved with new seating and landscaping and the 3rd Avenue slip lane will be reconstructed to be at-grade with the adjacent sidewalk. The design improvements are intended to increase pedestrian safety in Downtown Brooklyn. Immediately adjacent to the project site, DOT is considering the possible closure of Schermerhorn Street between 3rd and Flatbush Avenues, which could expand Temple Square, the triangular-shaped plaza located between Schermerhorn Street, Lafayette Avenue, and Flatbush Avenue. If the closure of Schermerhorn Street, between 3rd and Flatbush Avenues, is approved by the City, the plaza could be expanded to include the area of the closed roadbed. Temple Square is primarily used for pedestrian circulation and currently contains four trees. For these reasons, Temple Square is not considered in the open space inventory under "Existing Conditions" and the potential expansion has not been included as part of the quantitative assessment of open space adequacy.

In addition, one new open space resource, Pacific Park, is anticipated to be added to the open space inventory within a ½-mile of the project site. Pacific Park will add a total of 3.92 acres of open space to the residential study area by 2025. It should be noted that the New York City Economic Development Corporation (EDC) anticipates that the Willoughby Square public space, located on the south side of Willoughby Street between Duffield Street and Gold Street, will introduce approximately 1 acre (50,000 sf) of passive open space to Downtown Brooklyn by 2025. However, although the planned Willoughby Square will be within a ½-mile radius of the project site, it is outside the residential study area as defined by *CEQR Technical Manual* guidelines and is therefore not considered as part of the quantitative analysis.

ASSESSMENT OF OPEN SPACE ADEQUACY

NON-RESIDENTIAL (¼-MILE) STUDY AREA

Quantitative Assessment

The non-residential study area includes a total of 3.50 acres of open space, of which approximately 2.96 acres are passive space. A total of 9,717 people would be working within the non-residential study area under the No Action condition; the combined residential and non-residential population in the ¼-mile study area under the No Action condition would be 20,427. Based on *CEQR Technical Manual* methodology, the non-residential study area would have a passive open space ratio of 0.305 acres per 1,000 workers, which is more than the City's guideline of 0.15 acres (see **Table 5-7**).

Table 5-7
Adequacy of Open Space Resources: No Action Condition

	Population	Open Space Acreage			Open Space Ratios per 1,000 Persons			*CEQR Technical Manual* Open Space Guidelines		
		Total	Active	Passive	Total	Active	Passive	Total	Active	Passive
Non-Residential (¼-Mile) Study Area										
Workers	9,717	3.50	0.54	2.96	N/A	N/A	0.305	N/A	N/A	0.15
Combined Workers & Residents	20,427						0.146			
Residential (½-Mile) Study Area										
Residents	51,851	46.13	19.32	26.81	0.890	0.373	0.518	2.50	2.00	0.50
Combined Workers & Residents	83,499				N/A	N/A	0.322	N/A	N/A	0.50

Note: There may be a small discrepancy within the number values above due to rounding.

As such, workers in the non-residential study area would be adequately served by open space under the No Action condition. The combined workers and residents passive open space ratio would be 0.146 acres per 1,000 residents and workers, which would be slightly lower than the City's guideline of 0.15 acres. As noted in the *CEQR Technical Manual*, residents are more likely to travel farther to reach parks and recreational facilities, as they use both passive and active open spaces.

Qualitative Assessment

As noted on **Table 5-4**, the open spaces in the non-residential study area are in good condition, and use levels are moderate to high at all of these facilities. As noted previously, the new Fowler Square Plaza, BAM Park, the improved DOT 3rd Avenue Plaza, the project site No Action Open Space, and Pacific Park will be located within the non-residential study area, and could be utilized by the No Action worker population during the daytime.

RESIDENTIAL (½-MILE) STUDY AREA

The following analysis of the adequacy of open space resources within the residential study area takes into consideration the ratios of active, passive, and total open space resources per 1,000 residents, as well as the ratio of passive open space per 1,000 combined residents and workers.

Quantitative Assessment

In the No Action condition, with the new open spaces anticipated to be created by 2025, there would be a total of 46.13 acres of open spaces within the ½-mile study area, of which 19.32 would be for active use and approximately 26.81 would be for passive use. The total residential population of 51,851 would yield an overall open space ratio of 0.890 acres per 1,000 residents (see **Table 5-7**).

This is less than the City's planning guideline of 2.5 acres of combined active and passive open space per 1,000 residents. The residential study area's active and passive open space ratios would be 0.373 and 0.518 respectively, which are both above the *CEQR Technical Manual* guideline of 0.5 acres of passive open space and below the *CEQR Technical Manual* guideline of 2.0 acres of active open space per 1,000 residents. As such, there would be a shortfall of active open space in the residential study area under the No Action condition.

When the employees who work within the residential study area are added to the population, the passive open space ratio is lower. As described previously, workers typically use passive open space during the workday, so the passive open space ratio is the relevant ratio for consideration. With a combined worker and residential population of 83,499, the combined passive open space

ratio in the residential study area is 0.322 acres per 1,000 users, which is below the City's guideline of 0.5 acres of passive open space.

Qualitative Assessment

As previously noted, the residential study area contains a mix of community gardens, public parks, and plazas. The additional open space introduced in the No Action condition by Fowler Square Plaza, BAM Park, the DOT 3rd Avenue Plaza, the Project Site No Action Open Space, Pacific Park, and Willoughby Square will provide more and improved open space amenities for users within the study area.

E. FUTURE WITH THE PROPOSED ACTIONS

As described in Chapter 1, "Project Description," in the With Action condition, the project site would be redeveloped with a new mixed-use development, which would include a larger replacement facility for an existing high school, a new lower school, and new residential, office, retail, and cultural community facility space. The proposed project would result in a net increase of 1,288 residents and approximately 1,059 workers (non-residents) to the project area. The open space plaza included on the project site under the No Action condition would not be provided in the With Action condition.

For the With Action condition, the capacity of existing and projected additional open space resources to serve future populations in the study area is examined using quantitative and qualitative factors. The assessment of the With Action condition examines conditions that are expected to occur in the study area by the 2025 analysis year, with the proposed actions.

DIRECT EFFECTS

According to the *CEQR Technical Manual*, a proposed action may result in a significant direct impact on open space resources if there would be direct displacement/alteration of existing open space within the study area that would have a significant adverse effect on existing users, or an imposition of noise, air pollutant emissions, odors, or shadows on public open space that may alter its usability. The proposed actions would not cause increased noise, or air pollutant emissions that would affect the usefulness of any study area open space, whether on a permanent or temporary basis. The proposed actions would not change the use of a publicly accessible open space so that it no longer serves the same user population, nor would it limit public access to any open spaces.

As discussed in Chapter 6, "Shadows," the proposed actions would result in significant adverse impacts related to shadows on the Rockwell Place Bears Community Garden, the BAM South Plaza at 300 Ashland Place, and Temple Square. Measures to minimize and/or mitigate the shadow impact on the open space resources are discussed in Chapter 19, "Mitigation."

On the March 21/September 21, May 6/August 6, and June 21 analysis days, substantial portions of the public plaza located at 300 Ashland Place would receive less than 4 hours of direct sunlight. Given the long duration and at times large extent of incremental shadow, the use and character of the open space could be altered and the health of trees and plants could be significantly affected by new project-generated shadows. On the March 21/September 21, May 6/August 6, and June 21 analysis days, portions of the Rockwell Place Bears Community Garden located at the intersection of Rockwell Place and Lafayette and Flatbush Avenues would receive less than 6 hours of direct sunlight. Given the variety of plants and flowers in the garden, it is possible that some species require full sunlight, i.e. 6 hours of direct sunlight or more, and a reduction to less than 6 hours could significantly impact the health of these species. Although incremental shadows could potentially reduce the utility of the open spaces and affect the health

of plantings and vegetation, other open spaces within the study area would continue to be available and provide for passive open space uses; therefore, the shadow impact would not constitute a direct significant adverse open space impact.

On the March 21/September 21 and May 6/August 6 analysis days, substantial portions of Temple Square, a small triangular plaza that sits north-adjacent to the project site, would be partially or completely in project-generated shadow for long durations, from 3 hours 10 minutes to 5 hours 40 minutes depending on the season. The paved plaza contains trees and is primarily used as pedestrian circulation space. Future improvements may include limited seating and plantings; however, the nature and location of any future plantings are unknown at this time. The resource would receive less than 4 hours of direct sunlight on the March 21 and September 21 analysis day and a small portion of the plaza would receive less than 4 hours of direct sunlight on the May 6 and August 6 analysis day. The project-generated shadow would threaten the survival of vegetation in Temple Square and would potentially result in significant adverse shadow impact. Because other nearby plazas and open space resources with plantings and trees would continue to be available to the public, and given the relative size of this open space resource, the shadow impact would not constitute a direct significant adverse open space impact.

The proposed project is expected to provide private open space, and/or recreational amenity space for residents and users of the commercial office space, and although not accounted for in the quantitative analysis, this could offset some project-generated demand for open space. In addition, several other existing and planned plazas, gardens and parks with passive open space features are located within the study area would and would continue to provide passive open space amenities for residents and workers.

INDIRECT EFFECTS

According to the *CEQR Technical Manual*, a proposed action may result in a significant indirect impact on open space resources if it would reduce the open space ratio and consequently result in the overburdening of existing facilities or further exacerbating a deficiency in open space.

STUDY AREA POPULATION

Under the With Action condition, it is expected that current land use trends and general development patterns would continue and the study areas would continue to experience residential, commercial, and institutional development. It is anticipated that the With Action condition would introduce an estimated 1,288 new residents and 1,059 new workers over the No Action condition. As indicated in **Table 5-8**, the additional population is expected to increase the ¼-mile study area's worker population to 10,776 and the combined worker and residential population to 22,774. The ½-mile study area's residential population is expected to increase to 52,272, and the residential study area's combined worker and residential population is expected to increase to 84,924.

OPEN SPACE RESOURCES

The proposed actions would not result in the creation of any new publicly accessible open spaces. As such, the residential study area would be served by 45.98 acres of open space (including 19.32 acres of active space and 26.66 acres of passive space) in the With Action condition. The non-residential study area would be served by 3.36 acres of open space (0.54 acres active, 2.82 acres passive).

Table 5-8
With Action Open Space Study Area Population

	No Action Population	2025 With Action Population	Increment
Non-Residential (¼-Mile) Study Area			
Workers	9,717	10,776	1,059
Combined Workers and Residents	20,427	22,774	2,347
Residential (½-Mile) Study Area			
Residents	51,851	53,140	1,288
Combined Workers and Residents	83,499	85,847	2,347
Note: There may be a small discrepancy within the number values above due to rounding.			

ASSESSMENT OF OPEN SPACE ADEQUACY

Non-Residential (¼-Mile) Study Area

Quantitative Assessment

As presented in **Table 5-9**, in the With Action condition, the ratio of passive open space per 1,000 workers would decrease to 0.262 (from 0.305), but would remain above the City's guideline ratio of 0.15 acres. The decrease in the passive open space ratio in the With Action condition would represent a 14.10 percent decrease against the No Action condition. The passive open space ratio for the combined population of residents and workers would decrease to 0.124 (from 0.146 under the No Action condition) and would continue to fall short of the City's guideline of 0.15 acres of passive space per 1,000 workers and residents. However, as noted in the *CEQR Technical Manual*, residents are more likely to travel farther to reach parks and recreational facilities and they use both passive and active open spaces.

Table 5-9
Adequacy of Open Space Resources: With Action Condition

		Open Space Acreage			Open Space Ratios per 1,000 Persons			*CEQR Technical Manual* Open Space Guidelines		
	Population	Total	Active	Passive	Total	Active	Passive	Total	Active	Passive
Non-Residential (¼-Mile) Study Area										
Workers	10,776	3.36	0.54	2.82	N/A	N/A	0.262	N/A	N/A	0.15
Combined Workers and Residents	22,774						0.124			
Residential (½-Mile) Study Area										
Residents	53,140	45.98	19.32	26.66	0.866	0.364	0.502	2.50	2.00	0.50
Combined Workers and Residents	85,847				N/A	N/A	0.311	N/A	N/A	0.50
Note: There may be a small discrepancy within the number values above due to rounding.										

Qualitative Assessment

In the With Action condition, the passive open space ratio in the non-residential study area would remain above the City's guideline ratio and the project site would be developed with new mixed-use residential, commercial and community facility developments. The proposed project would include recreation space for students on the rooftops and indoor gymnasiums in the proposed school facilities. In addition, it expected that private recreational amenity space would be provided for residents and users of the commercial office space in the new buildings. This could include private open space with landscaping and seating and recreational amenities that may alleviate some of the overall demand placed on passive open spaces in the non-residential study area.

Residential (½-Mile) Study Area

Quantitative Assessment

Under the With Action condition, the total open space ratio in the residential study area would decrease from 0.890 acres in the No Action condition to 0.866 acres per 1,000 residents in the With Action condition (see **Table 5-9**). The decrease in the total open space ratio in the With Action condition would represent a 2.70 percent decrease against the No Action condition. The active open space ratio would decrease compared to the No Action condition, from 0.373 to 0.364 acres per 1,000 residents, which would continue to be below the City's guideline ratio of 2.0 acres of active open space per 1,000 residents. The passive open space ratio would also decrease compared with the No Action condition, from 0.518 to 0.502 acres per 1,000 residents, and would also remain above the City's guideline of 0.5 acres of passive space per 1,000 residents. The passive open space ratio for combined residential and worker populations would decrease from 0.322 under the No Action condition to 0.311 acres per 1,000 users, and would continue to be below the City's guideline of 0.5 acres.

Qualitative Assessment

In the With Action condition, the ratios of open space in the total and active open space ratios for the residential study area would continue to be below the guideline planning goals, while the passive open space ratio for the residential study area would continue to be above the guideline planning goals. However, the presence of large open space resources including Prospect Park, Columbus Park, and Brooklyn Bridge Park, which lie just outside of the residential study area, in addition to the future Willoughby Square, would provide additional options for residents to use for recreational space in the future. Furthermore, the green private spaces on the rooftop of the proposed project would be accessible to building tenants and would help to meet some of their passive open space needs. The proposed school uses would have dedicated play areas on the roof of the proposed development.

DETERMINATION OF SIGNIFICANCE

A significant adverse open space impact may occur if a proposed action would reduce the open space ratio by more than 5 percent in areas that are currently below the City's median community district open space ratio of 1.5 acres per 1,000 residents. In areas that are extremely lacking in open space, a reduction of as little as one percent may be considered significant, depending on the area of the City. These reductions may result in overburdening existing facilities or further exacerbating a deficiency in open space. **Table 5-10** expresses the percentage change from the No Action condition to the With Action condition for both the non-residential and residential study areas.

Table 5-10
Open Space Ratio Summary

Ratio	*CEQR Technical Manual* Open Space Guideline	Open Space Ratios per 1,000			Percent Change (Future No Action to Future With Action)
		Existing	No Action	With Action	
Non-Residential (¼-Mile) Study Area					
Passive—Workers	0.15	0.304	0.305	0.262	-14.10%
Residential (½-Mile) Study Area					
Total—Residents	2.50	1.043	0.890	0.866	-2.70%
Active—Residents	2.00	0.487	0.373	0.364	-2.41%
Passive—Residents	0.50	0.556	0.518	0.502	-3.09%

Non-Residential (¼-Mile) Study Area

With respect to the non-residential study area, the non-residential study area's passive open space ratio would remain above the City's guideline ratio of 0.15 acres per 1,000 workers, at 2.62 acres per 1,000 workers. Although the passive open space ratio for workers would decrease from the No Action condition, the passive open space ratio would remain above the guideline ratio recommended by the City. In addition, private open space and recreational amenities would be included as part of the proposed project for residents and workers which could help to address some of the passive open space needs of the population generated by the project. Furthermore, the planned reopening of BAM Park, located on the west side of Fulton Street and Lafayette Avenue, will provide approximately 0.321 acres of passive open space, and will include new plantings, walkways and seating areas. To the east of BAM Park, a reconstructed Fowler Square will provide 0.170 acres of passive open space and will include new plantings, bicycle parking, seating areas, and enhanced lighting. Therefore, the proposed actions would not result in any significant adverse indirect open space impacts in the non-residential study area.

Residential (½-Mile) Study Area

In the With Action condition, the residential study area's total and active open space ratios would remain below the City's guideline ratios of 2.5 acres and 2.0 acres per 1,000 residents, respectively. However, the residential study area's passive open space ratio would remain above the City's guideline of 0.5 acres per 1,000 residents. The total residential study area open space ratio would decline by 2.70 percent, to 0.866 acres per 1,000 residents; the active residential study area open space ratio would decline 2.41 percent, to 0.364 acres per 1,000 residents; and the passive residential study area open space ratio would decline by 3.09 percent, to 0.502 acres per 1,000 residents. As none of these decreases would exceed the five percent impact threshold, the proposed actions would not result in indirect significant adverse impacts on open space within the residential study area. Furthermore, it should be noted that additional open space resources are located immediately outside the study area boundary: Thomas Green Playground and the P.S. 261 Playground. Thomas Green Playground, located at 225 Nevins Street is a 2.52 acre park that encompasses an entire City block. Thomas Green Playground is bounded by Nevins Street, 3rd Avenue, Degraw Street, and Douglas Street. The playground's amenities include basketball and handball courts, playgrounds, and an outdoor pool. Further west is the P.S. 261 Playground, located at 314 Pacific Street. The resource is a 0.89 acre schoolyards to playgrounds site. Bounded by Pacific, Dean, Hoyt, and Smith Streets, the playground's amenities include a track, artificial turf, a basketball court, playground, a garden, and seating. Therefore, the proposed actions would not result in any significant adverse indirect open space impacts in the residential study area. ✷

Chapter 6: Shadows

A. INTRODUCTION

This chapter assesses the potential shadow impacts of development resulting from the proposed actions on publicly accessible open spaces and other sunlight-sensitive resources of concern, including sunlight-dependent features of historic resources. Under the 2014 *City Environmental Quality Review (CEQR) Technical Manual* guidelines, a shadows assessment is required if the proposed project would result in structures 50 feet or greater in height, or of any height if the project site is located adjacent to, or across the street from, a sunlight-sensitive resource. As described in Chapter 1, "Project Description," the proposed actions would facilitate the development of the project site with three new buildings, including two mixed-use towers with anticipated building heights of 560 and 986 feet. The proposed development would be adjacent to or across the street from several sunlight-sensitive resources, and therefore a shadow study was prepared to assess the potential effects of the proposed project's shadows. The proposed project would be developed in accordance with the zoning and bulk modifications to height and setback requested as part of the proposed actions, which define the building envelope or maximum zoning envelope within which the proposed structures can be built. The maximum zoning envelope for the proposed project is intended to provide design flexibility, and is larger than the space occupied by the proposed buildings. The shadow analysis considers the maximum zoning envelope for the proposed project.

PRINCIPAL CONCLUSIONS

The proposed actions would result in significant adverse impacts related to shadows.

On the March 21/September 21, May 6/August 6, and June 21 analysis days, substantial portions of the Brooklyn Academy of Music (BAM) South Plaza located at 300 Ashland Place would receive less than 4 hours of direct sunlight. Given the long duration and at times large extent of incremental shadow, the use and character of the open space could be altered and the health of trees and plants could be significantly affected by new project-generated shadows. On the March 21/September 21, May 6/August 6, and June 21 analysis days, portions of the Rockwell Place Bears Community Garden located at the intersection of Rockwell Place and Lafayette and Flatbush Avenues would receive less than 6 hours of direct sunlight. Given the variety of plants and flowers in the garden, it is possible that some species require full sunlight, i.e. 6 hours of direct sunlight or more, and a reduction to less than 6 hours could significantly impact the health of these species.

On the March 21/September 21 and May 6/August 6 analysis days, substantial portions of Temple Square, a small triangular plaza that sits north-adjacent to the project site, would be partially or completely in project-generated shadow for long durations, from 3 hours 10 minutes to 5 hours 40 minutes depending on the season. The paved plaza contains trees and is primarily used as pedestrian circulation space. Temple Square would receive less than 4 hours of direct sunlight on the March 21 and September 21 analysis day and a small portion of the plaza would receive less than 4 hours of direct sunlight on the May 6 and August 6 analysis day. The project-generated shadow would threaten the survival of the existing trees, which would result in significant adverse shadow impacts to the vegetation contained in Temple Square.

Other nearby sunlight-sensitive resources would receive new project-generated shadows but in no other case would they significantly alter the use or character of the resource or threaten the health of vegetation within the resource. No other sunlight-sensitive resources would experience significant adverse shadow impacts as a result of the proposed actions.

B. DEFINITIONS AND METHODOLOGY

This analysis has been prepared in accordance with CEQR procedures and follows the guidelines of the *CEQR Technical Manual.*

DEFINITIONS

Incremental shadow is the additional, or new, shadow that a structure resulting from a proposed project would cast on a sunlight-sensitive resource.

Sunlight-sensitive resources are considered those that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity. Such resources generally include:

- *Public open space* such as parks, beaches, playgrounds, plazas, schoolyards (if open to the public during non-school hours), greenways, and landscaped medians with seating. Planted areas within unused portions of roadbeds that are part of the Greenstreets program are also considered sunlight-sensitive resources.
- *Features of architectural resources that depend on sunlight for their enjoyment by the public.* Only the sunlight-sensitive features need be considered, as opposed to the entire resource. Such sunlight-sensitive features might include design elements that depend on the contrast between light and dark (e.g., recessed balconies, arcades, deep window reveals); elaborate, highly carved ornamentation; stained glass windows; historic landscapes and scenic landmarks; and features for which the effect of direct sunlight is described as playing a significant role in the structure's importance as a historic landmark.
- *Natural resources* where the introduction of shadows could alter the resource's condition or microclimate. Such resources could include surface waterbodies, wetlands, or designated resources such as coastal fish and wildlife habitats.

Non-sunlight-sensitive resources include, for the purposes of CEQR:

- *City streets and sidewalks* (except Greenstreets);
- *Private open space* (e.g., front and back yards, stoops, vacant lots, and any private, non-publicly accessible open space);

A *significant adverse shadow impact* occurs when the incremental shadow added by a proposed project falls on a sunlight-sensitive resource and substantially reduces or completely eliminates direct sunlight, and thereby significantly alters the public's use of the resource or threatens the viability of vegetation or other resources. Each case must be considered on its own merits based on the extent and duration of new shadow and an analysis of the resource's sensitivity to reduced sunlight.

METHODOLOGY

Following the guidelines of the *CEQR Technical Manual*, a preliminary screening assessment must first be conducted to ascertain whether a project's shadow could reach any sunlight-sensitive resources at any time of year. The preliminary screening assessment consists of three tiers of analysis. The first tier determines a simple radius around the proposed building representing the

longest shadow that could be cast. If there are sunlight-sensitive resources within this radius, the analysis proceeds to the second tier, which reduces the area that could be affected by project shadow by accounting for the fact that shadows can never be cast between a certain range of angles south of the project site due to the path of the sun through the sky at the latitude of New York City.

If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier of screening analysis further refines the area that could be reached by project shadow by looking at specific representative days in each season and determining the maximum extent of shadow over the course of each representative day.

If the third tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a detailed shadow analysis is required to determine the extent and duration of the incremental shadow resulting from a project. The detailed analysis provides the data needed to assess the shadow impacts. The effects of the new shadows on the sunlight-sensitive resources are described, and their degree of significance is considered. The results of the analysis and assessment are documented with graphics, a table of incremental shadow durations, and narrative text.

C. PRELIMINARY SCREENING ASSESSMENT

A base map was developed using Geographic Information Systems (GIS)[1] showing the location of the proposed project and the surrounding street layout (see **Figure 6-1**). In coordination with the open space, historic and cultural resources, and natural resources assessments presented in other chapters of this Environmental Impact Statement (EIS), potential sunlight-sensitive resources were identified and shown on the map.

TIER 1 SCREENING ASSESSMENT

For the Tier 1 assessment, the longest shadow that the maximum zoning envelope could cast is calculated, and, using this length as the radius, a perimeter is drawn around the project site. Anything outside this perimeter representing the longest possible shadow could never be affected by project-generated shadow, while anything inside the perimeter needs additional assessment.

According to the *CEQR Technical Manual*, the longest shadow that a structure can cast at the latitude of New York City occurs on December 21, the winter solstice, at the start of the analysis day at 8:51 AM, and is equal to 4.3 times the height of the structure.

Therefore, at a maximum height of 986 feet above curb level, the maximum zoning envelope could cast a shadow up to 4,240 feet in length (986 x 4.3). Using this length as the radius, a perimeter was drawn around the project site (see **Figure 6-1**). The Tier 1 assessment showed that many publicly accessible open spaces and historic resources with sunlight-sensitive features were located within the longest shadow study area, and the next tier of assessment was required.

TIER 2 SCREENING ASSESSMENT

Because of the path that the sun travels across the sky in the northern hemisphere, no shadow can be cast in a triangular area south of any given project site. In New York City this area lies between -108 and +108 degrees from true north. **Figure 6-1** illustrates this triangular area south of the project site. The complementary area to the north within the longest shadow study area represents the remaining area that could potentially experience new project-generated shadow. A number of

[1] Software: Esri ArcGIS 10.3; Data: New York City Department of Information Technology and Telecommunications (DoITT) and other City agencies, and AKRF site visits.

1/10/2018

Project Site

Tier 1: Longest shadow study area polygon

Tier 2: Area south of site that could never be shaded by proposed building

1 Boerum Park
2 Gowanus Playground
3 PS 261K
4 130 Livingston St.
5 Willoughby Plaza
6 Columbus Park
7 Columbus Plaza
8 Mclaughlin Park
9 MetroTech Commons
10 Weinburg Triangle
11 Seating Area 1
12 Albee Square
13 Avalon Fort Greene plaza
14 Golconda Plgd
15 North Pacific Plgd
16 University Place
17 Sixteen Sycamores Playground
18 Ingersoll Houses
19 Arbor Place
20 Rockwell Place Bears Community Garden
21 Commodore Barry Park
22 Theatre for a New Audience
23 230 Ashland Place POPS
24 Oxport Plgd
25 Fowler Square
26 Fort Greene Park
27 NYCHA
28 Person Square
29 South Oxford Tennis Club
30 Cuyler Gore
31 Edmonds Plgd
32 Oracle Plgd
33 Brooklyn Bears Carlton Avenue Garden
34 Albert J. Parham Plgd
35 Gateway Triangle
36 Underwood Park
37 Greene Plgd
38 Hollenback Community Garden
39 300 Ashland Place Plaza
40 BAM Park
41 DOT 3rd Avenue Plaza
42 Temple Square
43 Fox Square
44 Flatbush Avenue Medians
45 Willoughby Square Park

A St. Paul's RC Church
B former St. Ann's Church
C US Post Office
D Cathedral Basilica of St James
E Saint Nicholas Cathedral
F Baptist Temple
G Church of St. Michael and St. Edwards
H Hanson Place Church
I Lafayette Avenue Presbyterian Church
J Institutional Church of God in Christ
K St. Casimir's RC Church
L Cadman Memorial Church
M French Speaking Baptist Church
N Church of St Luke & St Matthew
O Brown Memorial Babtist Church
P Williamsburgh Savings Bank
Q Queen of All Saints Church

Tier 1 and Tier 2 Assessments
Figure 6-1

sunlight-sensitive resources lay within the remaining shadow study area, and therefore the assessment proceeded to the next tier.

TIER 3 SCREENING ASSESSMENT

The direction and length of shadows vary throughout the course of the day and also differ depending on the season. In order to determine whether project-generated shadow could fall on a sunlight-sensitive resource, three-dimensional (3D) computer modeling software[2] is used in the Tier 3 assessment to calculate and display the proposed project's shadows on individual representative days of the year. A computer model was developed containing 3D representations of the elements in the base map used in the preceding assessments, the topographic information of the study area, and a reasonable worst-case 3D representation of the maximum zoning envelope.

REPRESENTATIVE DAYS FOR ANALYSIS

Following the guidance of the *CEQR Technical Manual*, shadows on the summer solstice (June 21), winter solstice (December 21), and spring and fall equinoxes (March 21 and September 21, which are approximately the same in terms of shadow patterns) are modeled to represent the range of shadows over the course of the year. An additional representative day during the growing season is also modeled, generally the day halfway between the summer solstice and the equinoxes, i.e., May 6 or August 6, which have approximately the same shadow patterns.

TIMEFRAME WINDOW OF ANALYSIS

The shadow assessment considers shadows occurring between 1 hour and 30 minutes after sunrise and 1 hour and 30 minutes before sunset. At times earlier or later than this timeframe window of analysis, the sun is down near the horizon and the sun's rays reach the earth at very tangential angles, diminishing the amount of solar energy and producing shadows that are very long, move fast, and generally blend with shadows from existing structures until the sun reaches the horizon and sets. Consequently, shadows occurring outside the timeframe window of analysis are not considered significant under CEQR, and their assessment is not required.

TIER 3 SCREENING ASSESSMENT RESULTS

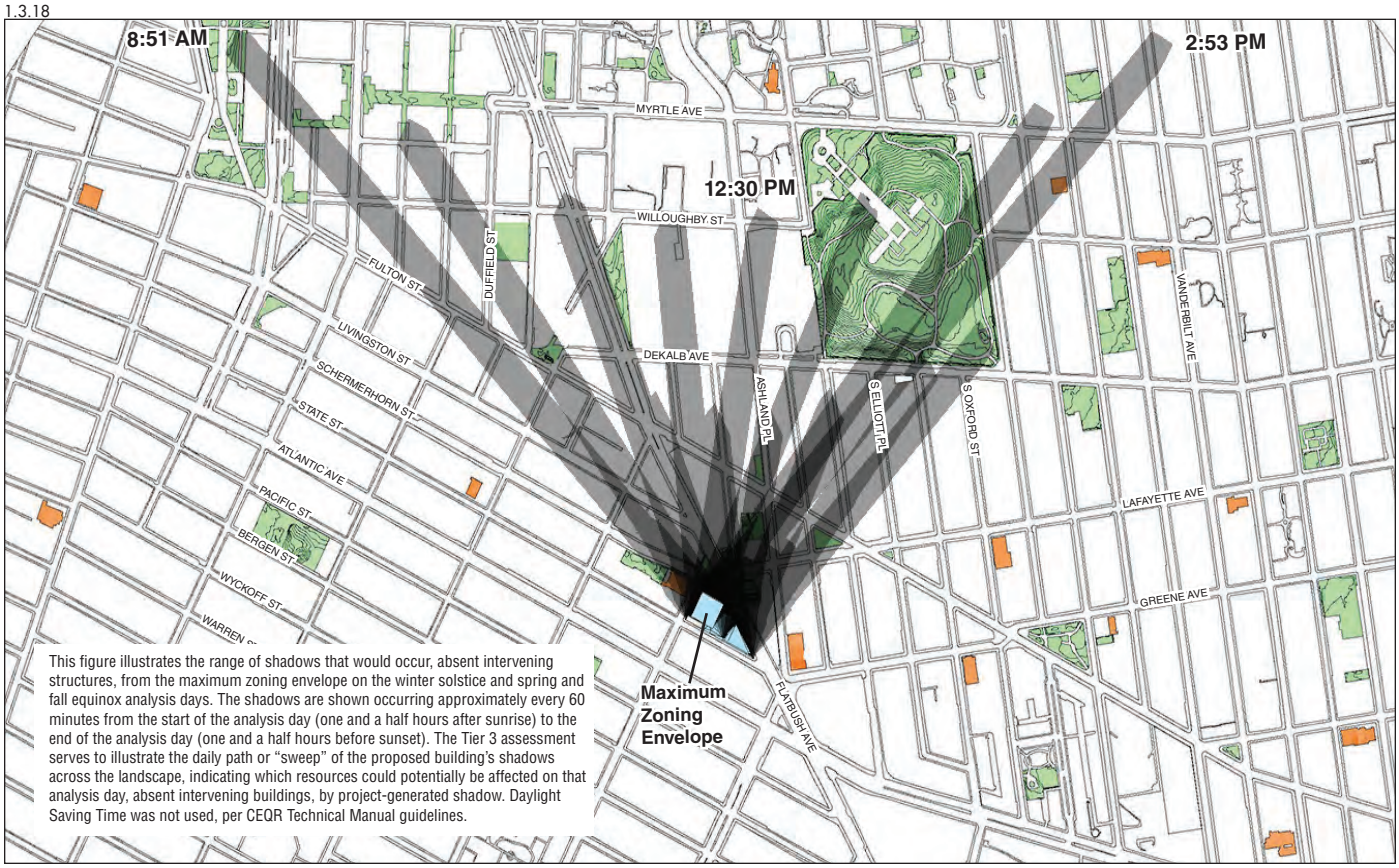
Figures 6-2 and 6-3 illustrate the range of shadows that would occur, in the absence of intervening buildings, from the maximum zoning envelope on the 4 representative days for analysis. As they move east and clockwise over the landscape, the shadows are shown occurring approximately every 60 minutes from the start of the analysis day (1 hour and 30 minutes after sunrise) to the end of the analysis day (1 hour 30 minutes before sunset).

The Tier 3 assessment showed that seven sunlight-sensitive resources could potentially receive incremental shadow on all 4 analysis days, including Sixteen Sycamores Playground and Baptist Temple**,** directly to the west of the project site; two triangular medians at the intersection of 3rd Avenue, Schermerhorn Street, and Flatbush Avenue, directly north of the project site, that contain or are anticipated to contain trees and limited seating by the 2025 build year[3]; Rockwell Place Bears Community Garden and the plaza at Theatre for a New Audience, also north of the project site; and the newly developed 300 Ashland Place Plaza directly to the east. Three other resources

[2] Bentley MicroStation

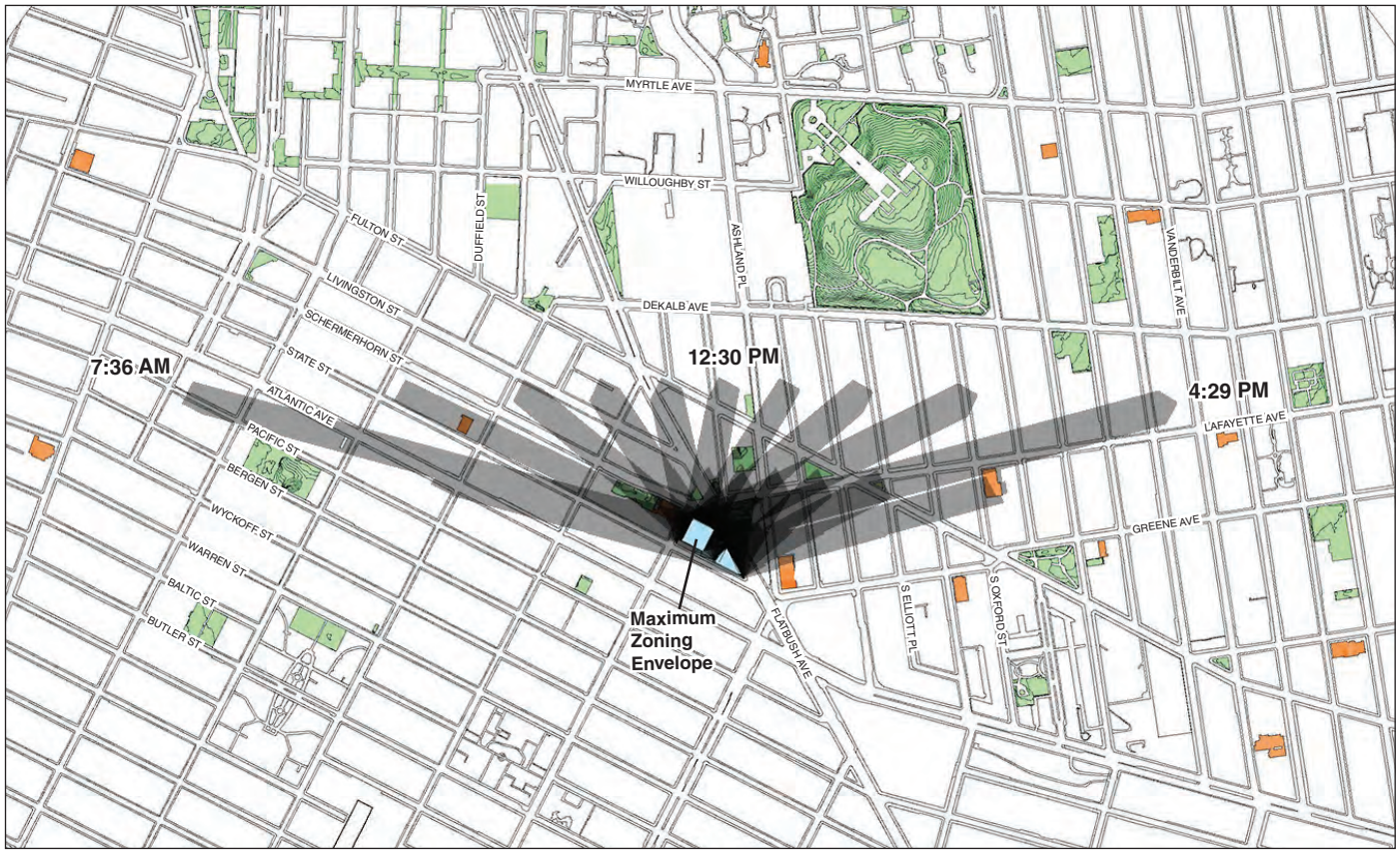
[3] The triangle on the north side of the intersection will be referred to as DOT 3rd Avenue Plaza, and the triangle on the south side is known as Temple Square.

1.3.18



This figure illustrates the range of shadows that would occur, absent intervening structures, from the maximum zoning envelope on the winter solstice and spring and fall equinox analysis days. The shadows are shown occurring approximately every 60 minutes from the start of the analysis day (one and a half hours after sunrise) to the end of the analysis day (one and a half hours before sunset). The Tier 3 assessment serves to illustrate the daily path or "sweep" of the proposed building's shadows across the landscape, indicating which resources could potentially be affected on that analysis day, absent intervening buildings, by project-generated shadow. Daylight Saving Time was not used, per CEQR Technical Manual guidelines.

December 21



March 21/Sept. 21

Publicly Accessible Open Space (see Figure 6-1 for open space names)

Historic Resource with Sunlight-Sensitive Features (see Figure 6-1 for resource names)

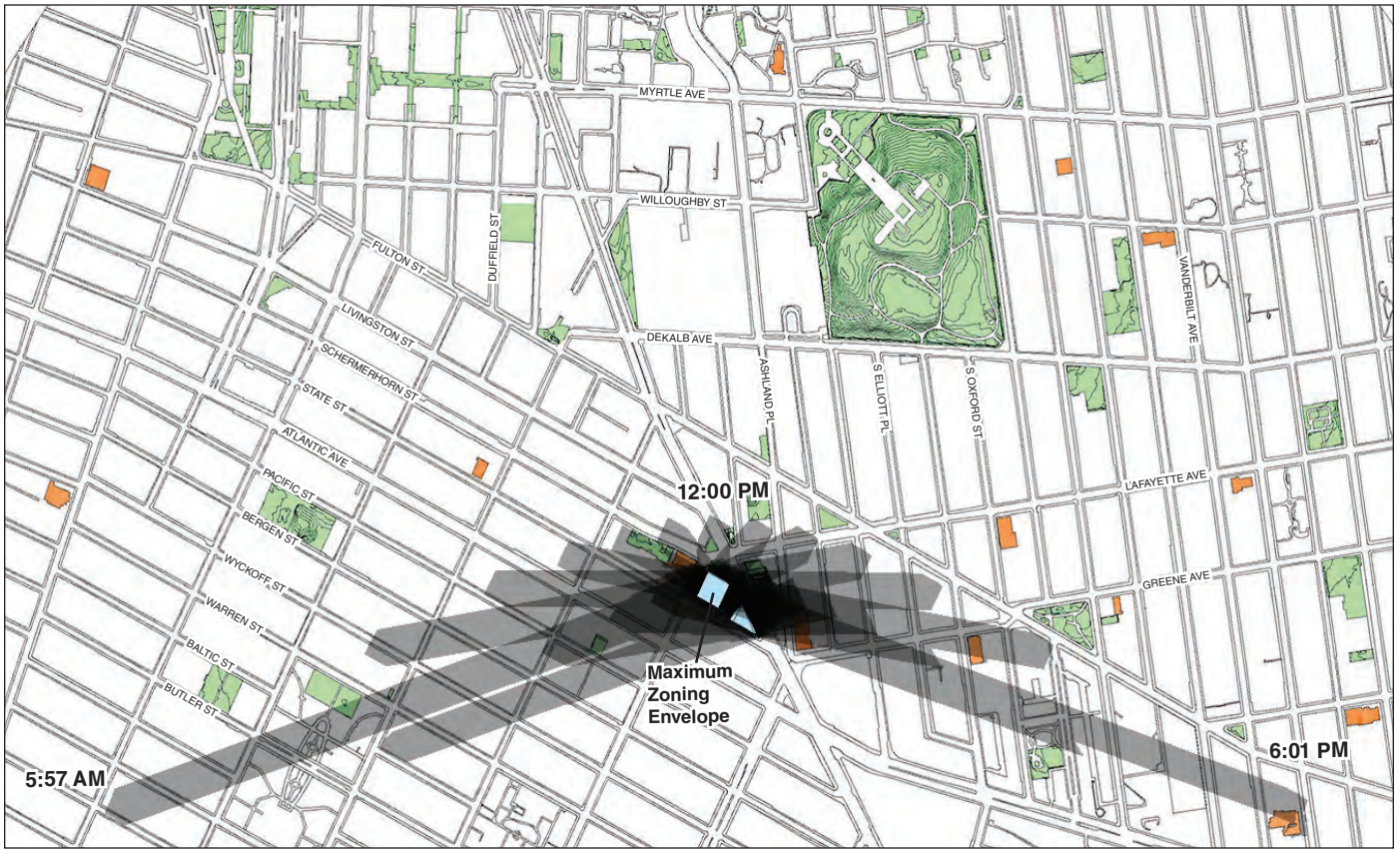
Tier 3 Assessment

ECF 80 FLATBUSH AVENUE

Figure 6-2

1.3.18

May 6/August 6



June 21

Publicly Accessible Open Space (see Figure 6-1 for open space names)

Historic Resource with Sunlight-Sensitive Features (see Figure 6-1 for resource names)

Tier 3 Assessment

ECF 80 FLATBUSH AVENUE

Figure 6-3

could potentially receive project-generated shadow on 3 of 4 analysis days, all located east of the project site: BAM Park (anticipated to be cleaned up and re-opened by 2025), Fowler Square, and the large windows on the west façade of the Williamsburgh Savings Bank, looking in to the main hall on the ground floor. Five additional resources could potentially receive project-generated shadow on 2 of 4 analysis days: Boerum Park and North Pacific Playground to the west, 230 Ashland Place residential plaza and Fox Square at Flatbush Avenue and Fulton Street to the north, and the north and west façades of the historic Hanson Place Church to the east. Seventeen additional resources could potentially receive project-generated shadow on 1 of 4 analysis days. The remaining 30 resources identified in the preliminary Tier 1 / Tier 2 study area could not be reached by project-generated shadow on any of the 4 analysis days and therefore, per *CEQR Technical Manual* guidelines, require no further analysis.

D. DETAILED SHADOW ANALYSIS

The purpose of the detailed analysis is to determine the extent and duration of new incremental shadows that fall on sunlight-sensitive resources as a result of the maximum zoning envelope, compared with the future without the proposed actions (the "No Action" condition), and to assess their potential effects. A baseline or No Action condition is established, containing existing buildings and any future developments planned in the area, to illustrate the baseline shadows. The No Action condition and its shadows can then be compared to the baseline condition to determine the incremental shadows that would result with the proposed project.

The shadows assessment was performed for the analysis year of 2025, comparing the maximum zoning envelope with the No Action condition in which an approximately 400-foot tall building would be developed on the non-City-owned portion of the project site.

Three-dimensional representations of the existing buildings in the study area were developed using data obtained from DoITT and photos taken during project site visits, and were added to the 3D model used in the Tier 3 assessment.

Shadows are in constant movement. The computer simulation software produces an animation showing the movement of shadows over the course of each analysis period. The analysis determines the time when incremental shadow would enter each resource, and the time it would exit.

Shadow analyses were performed for each of the representative days and analysis periods indicated in the Tier 3 assessment.

Table 6-1 summarizes the entry and exit times and total duration of incremental shadows on each affected sunlight-sensitive resource. **Figures 6-4 to 6-60** document the results of the analysis by providing graphic representations from the computer animation of times when incremental shadow would fall on a sunlight-sensitive resource. The figures illustrate the extent of additional, incremental shadow at that moment in time, highlighted in red, and also show existing shadow and remaining areas of sunlight. The detailed analysis showed that 5 of the remaining 32 resources identified in the Tier 3 assessment would not receive any incremental shadow on any analysis day, due to intervening buildings. Five resources would receive only 10 minutes or less of incremental shadow: Boerum Park, Person Square, Oracle Playground, Lafayette Avenue Presbyterian Church, and the former Saint Casimir's Church. Incremental shadow duration of 10 minutes or less is generally not considered significant under CEQR and these resources are not discussed further in the chapter. The remaining 18 open spaces and 4 historic resources containing sunlight-sensitive features would receive incremental shadow durations of more than 10 minutes and are discussed below.

1.30.18

6:00 AM

6:30 AM

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

ECF 80 FLATBUSH AVENUE

Figure 6-4

1.30.18

10:45 AM

10:50 AM

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

ECF 80 FLATBUSH AVENUE

Figure 6-5

1.30.18

11:00 AM

Publicly Accessible Open Space

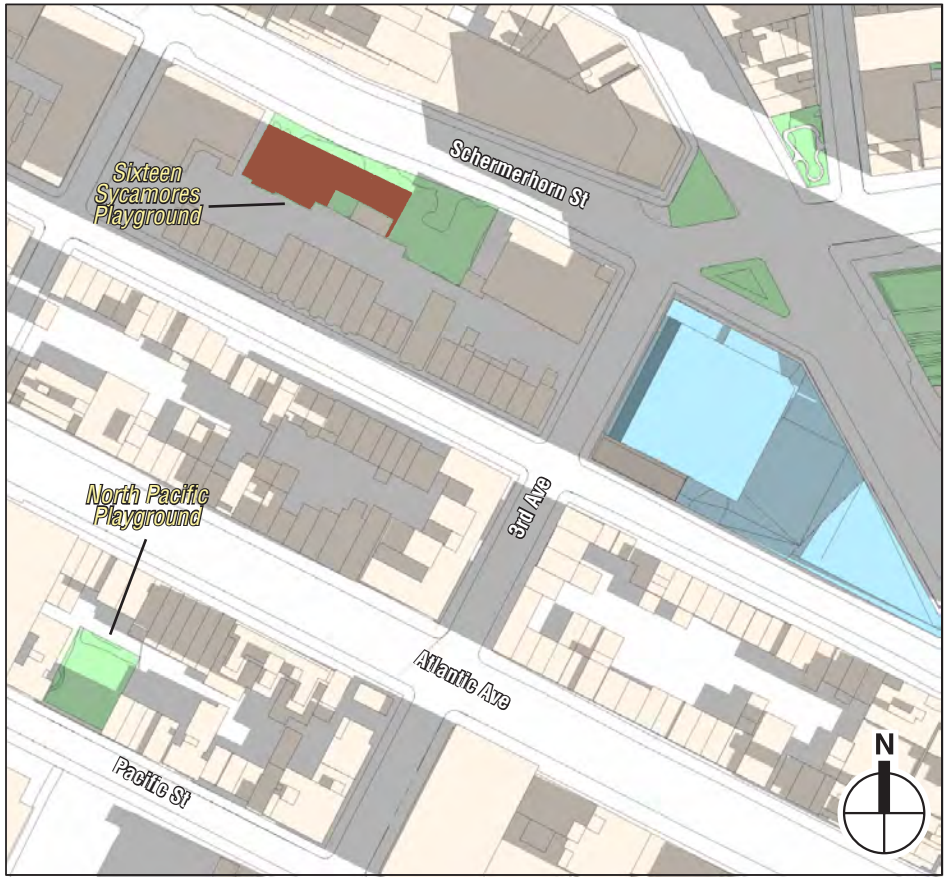
Incremental Shadow

Detailed Shadow Analysis
December 21

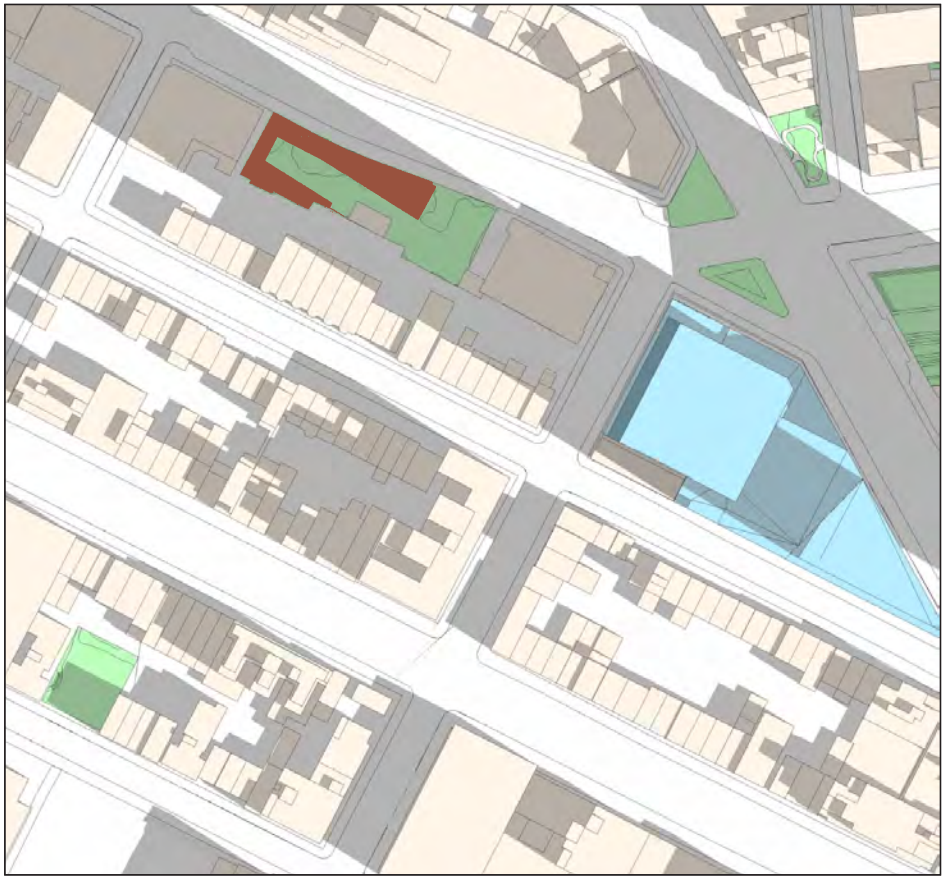
ECF 80 FLATBUSH AVENUE

Figure 6-6

1.30.18



8:30 AM



9:00 AM

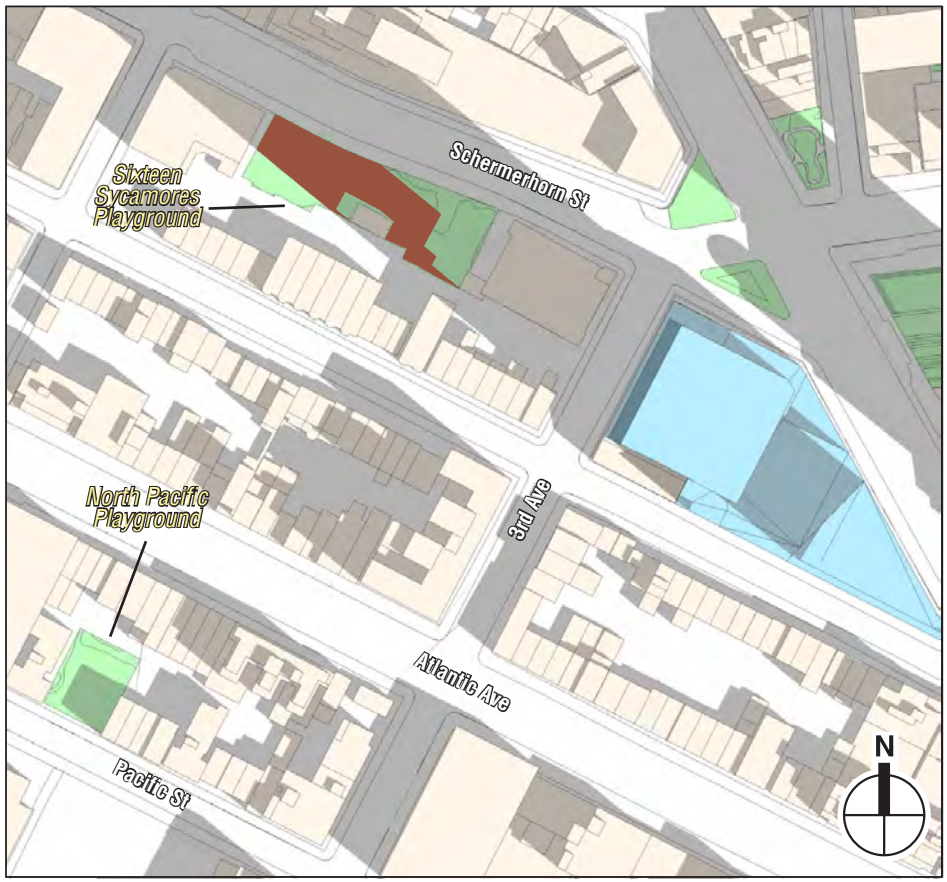
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18



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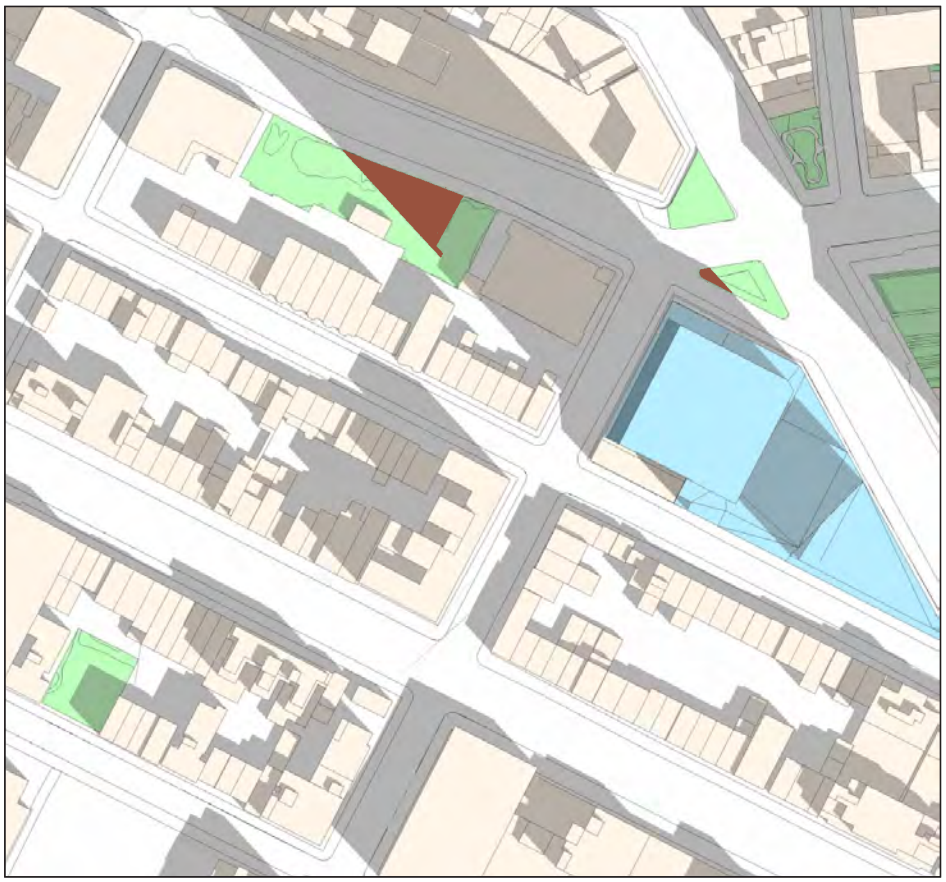

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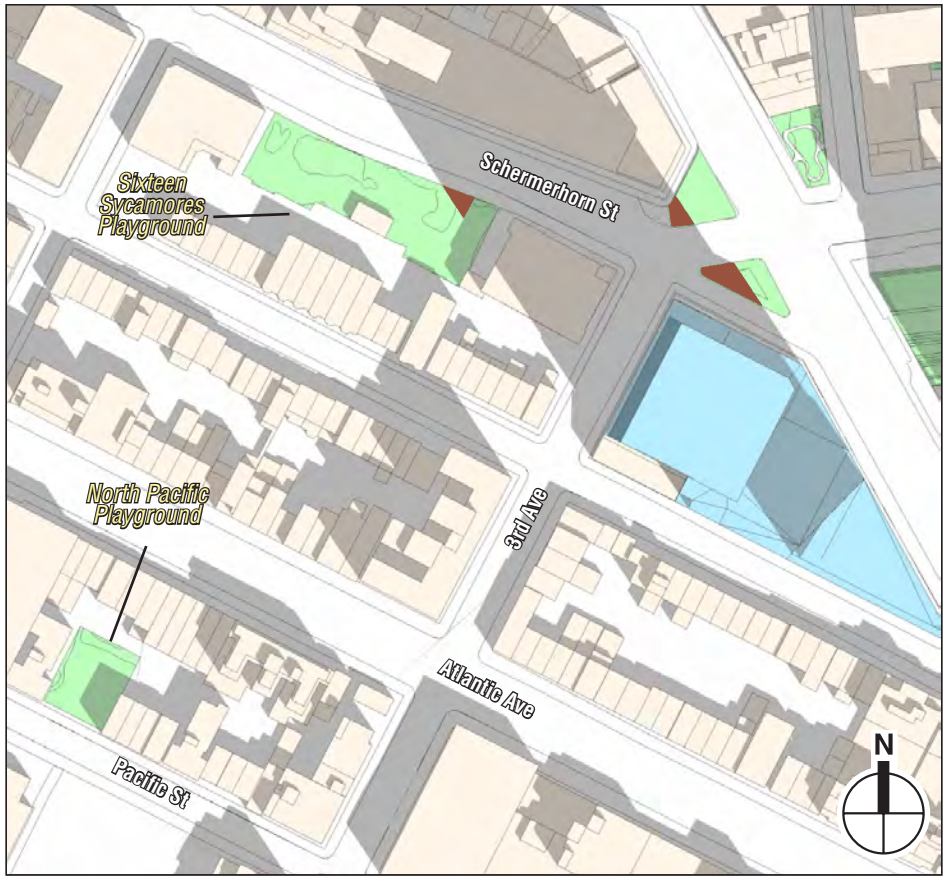
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18



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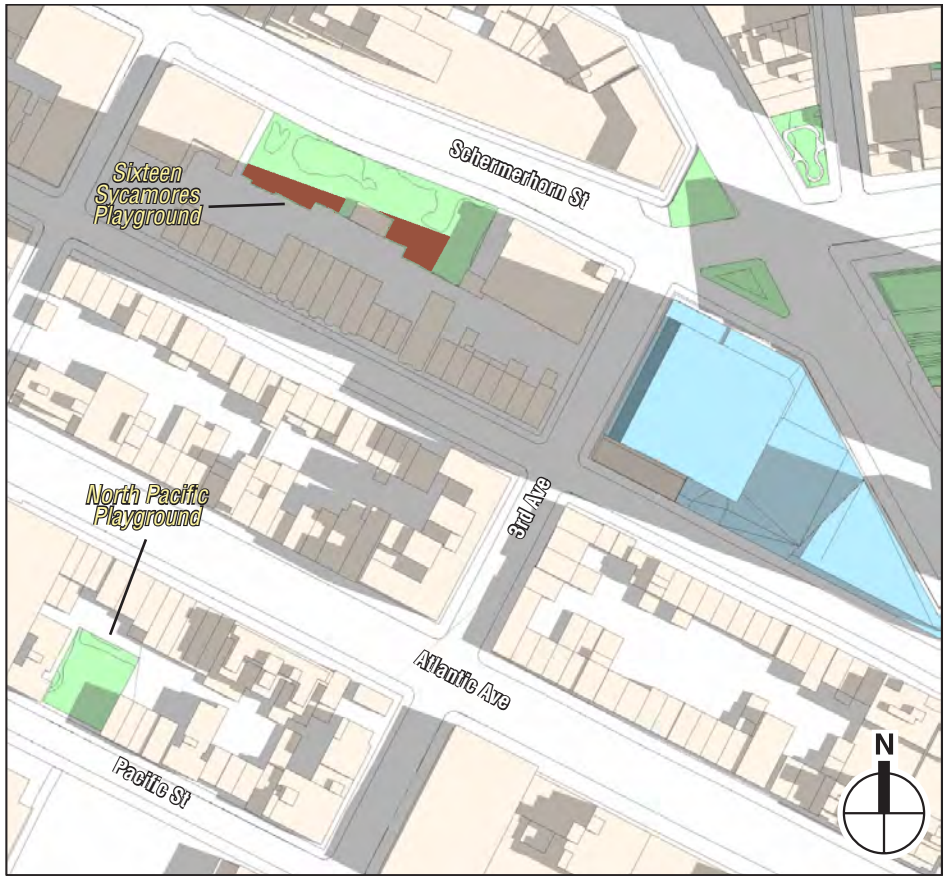
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21



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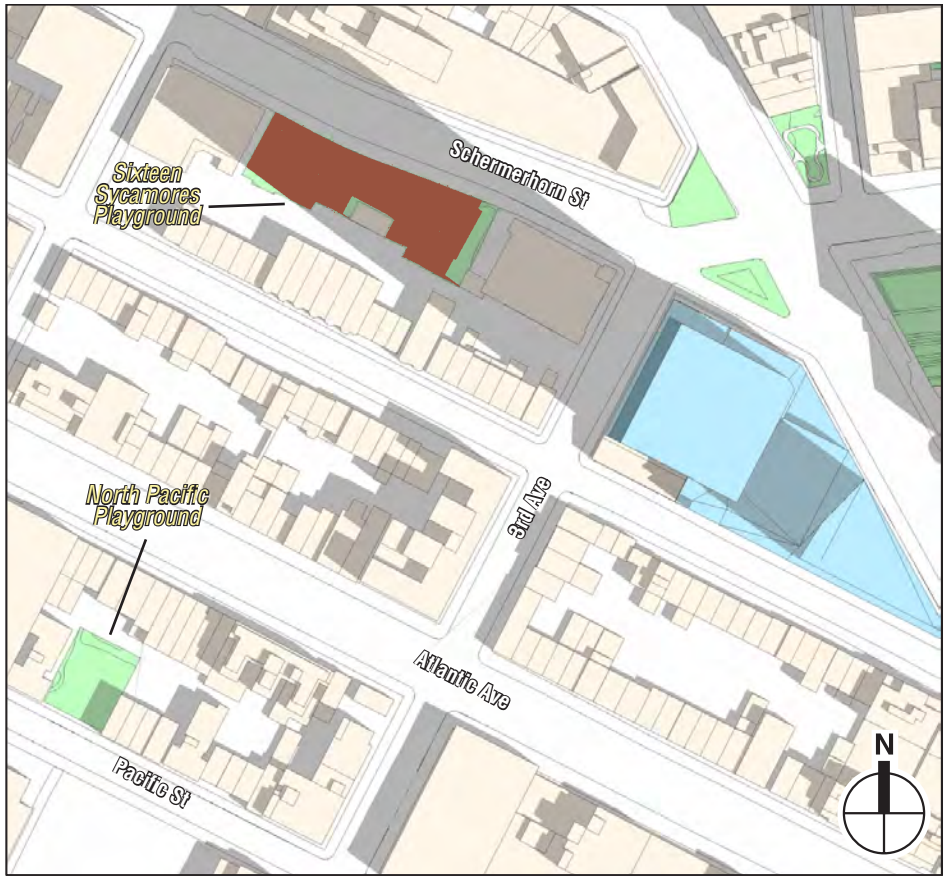
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6



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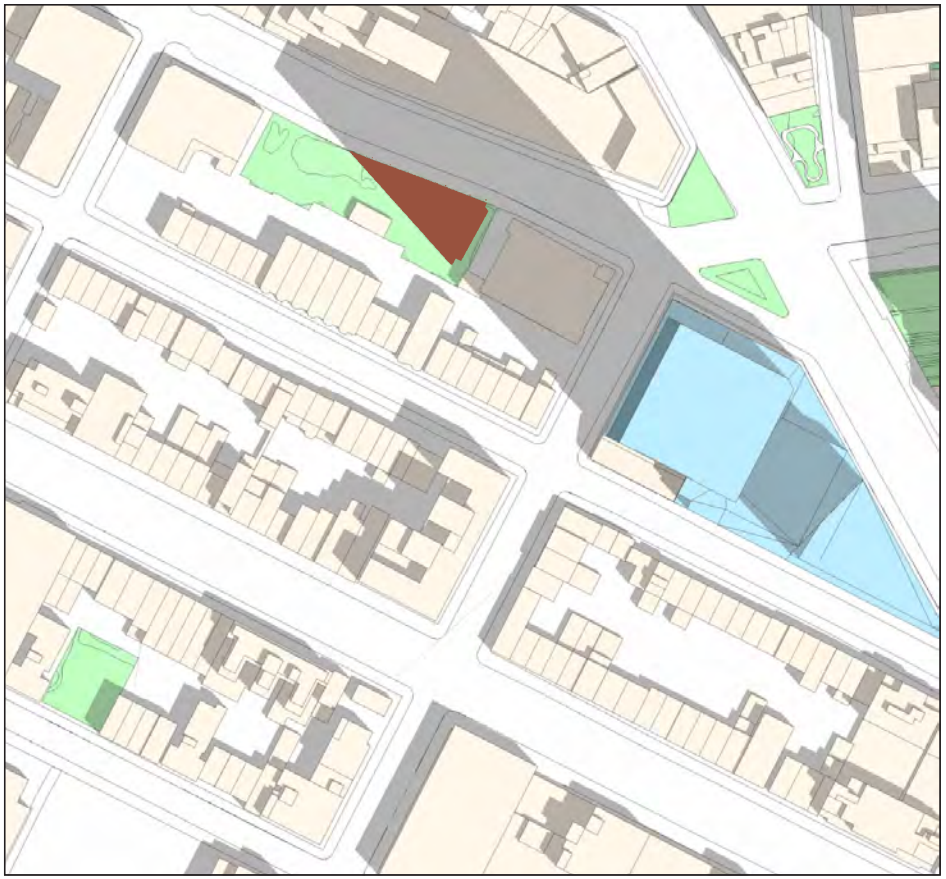

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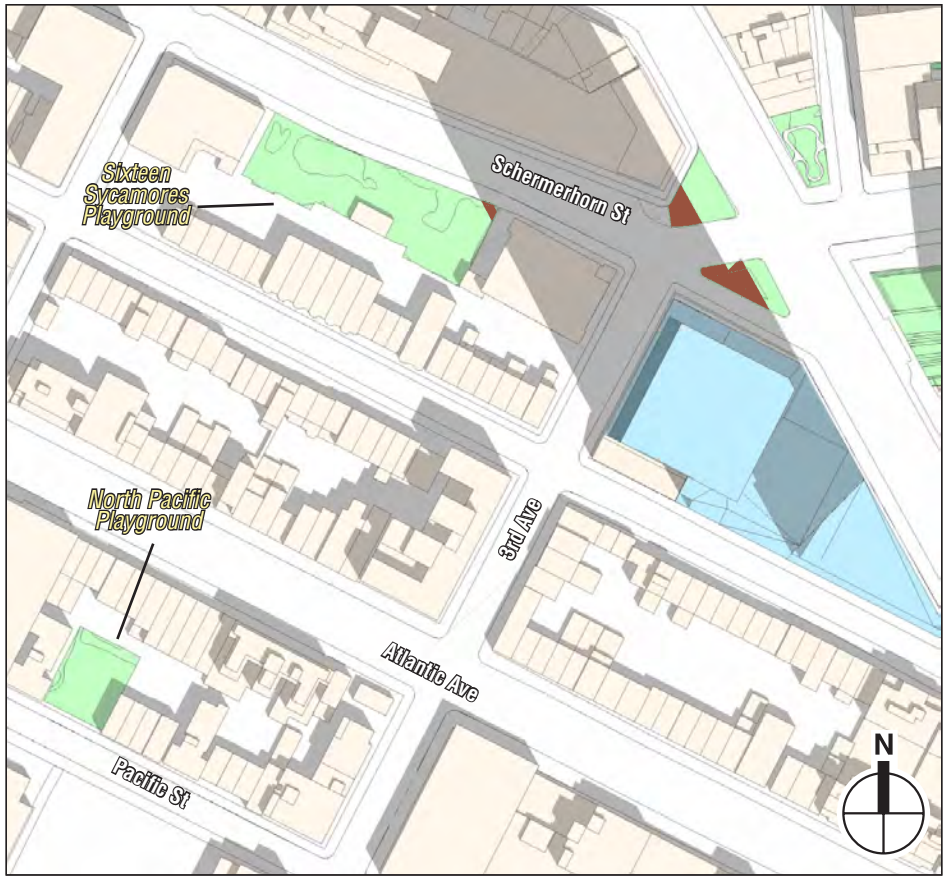
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



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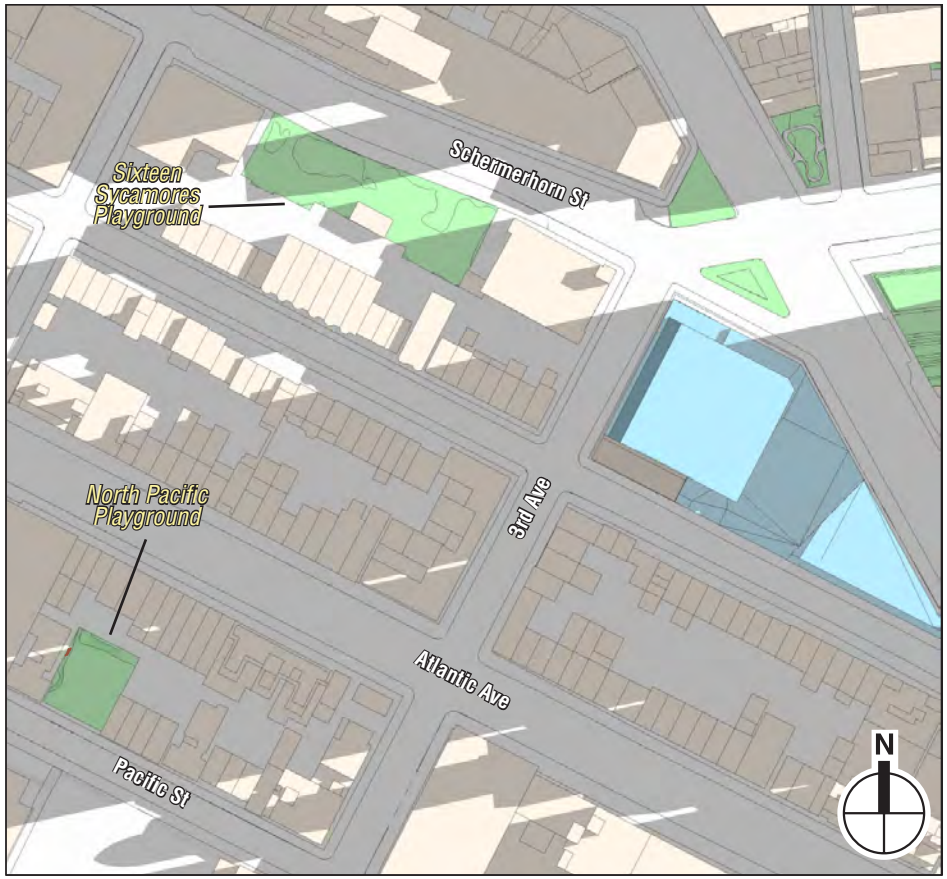
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6



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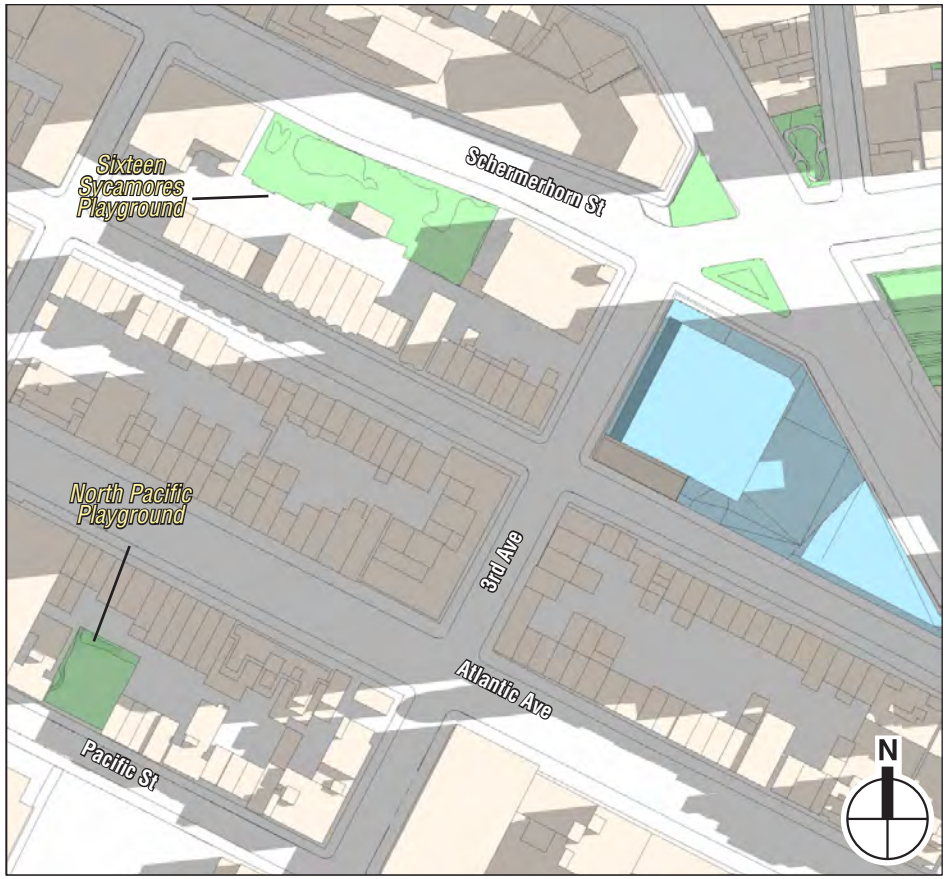
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18



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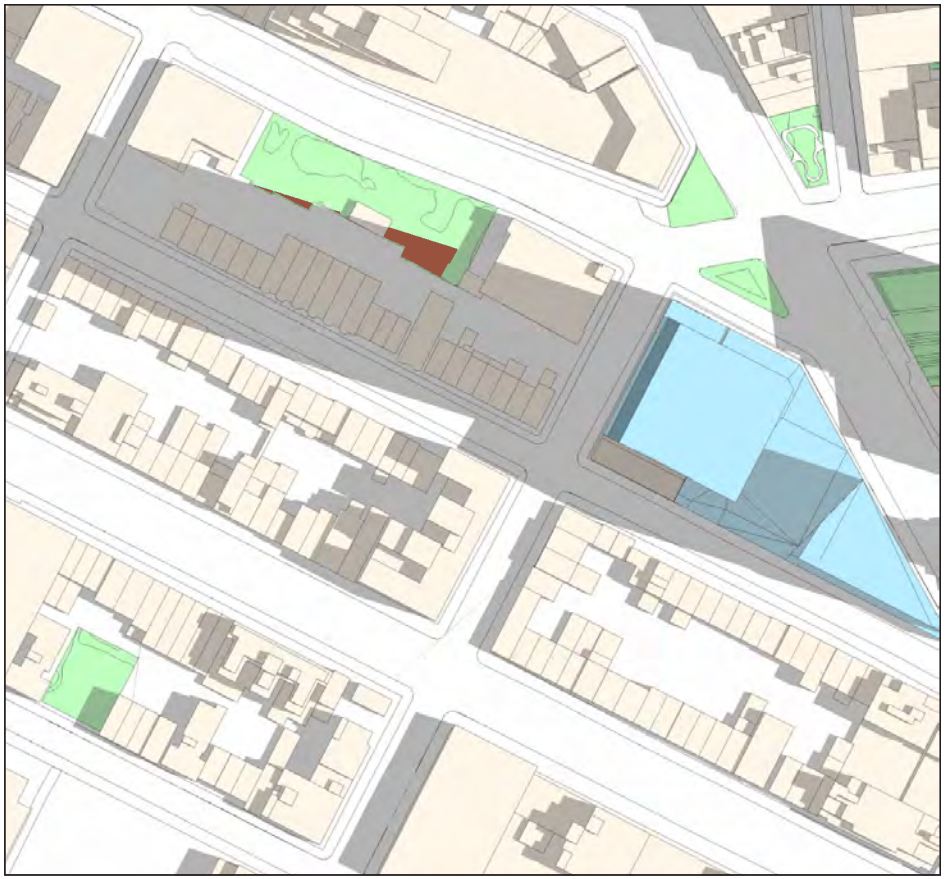

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Project Site

Publicly Accessible Open Space

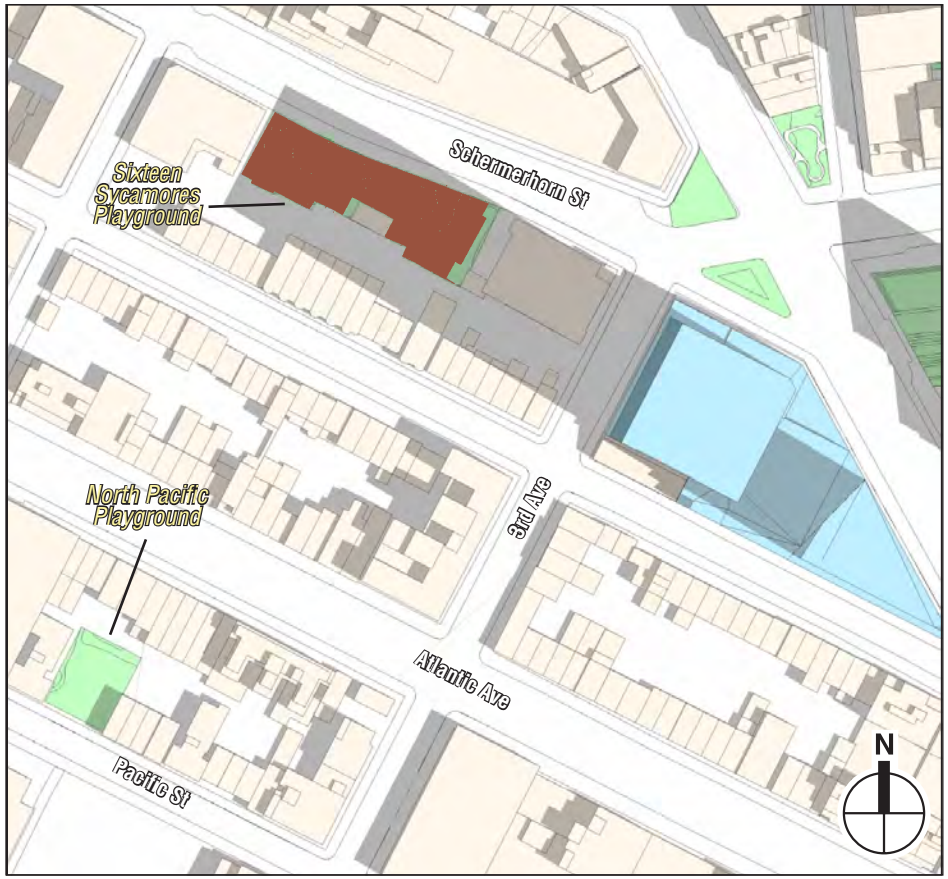
Incremental Shadow

Detailed Shadow Analysis
June 21

ECF 80 FLATBUSH AVENUE

Figure 6-14

1.30.18



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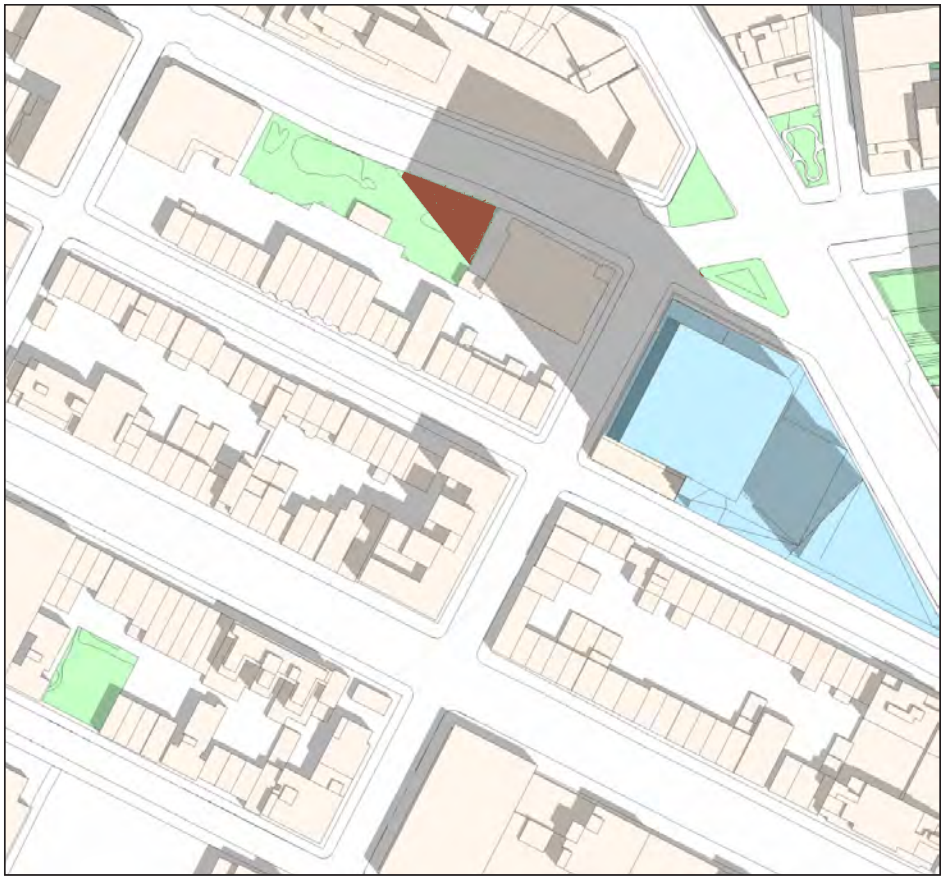

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Project Site

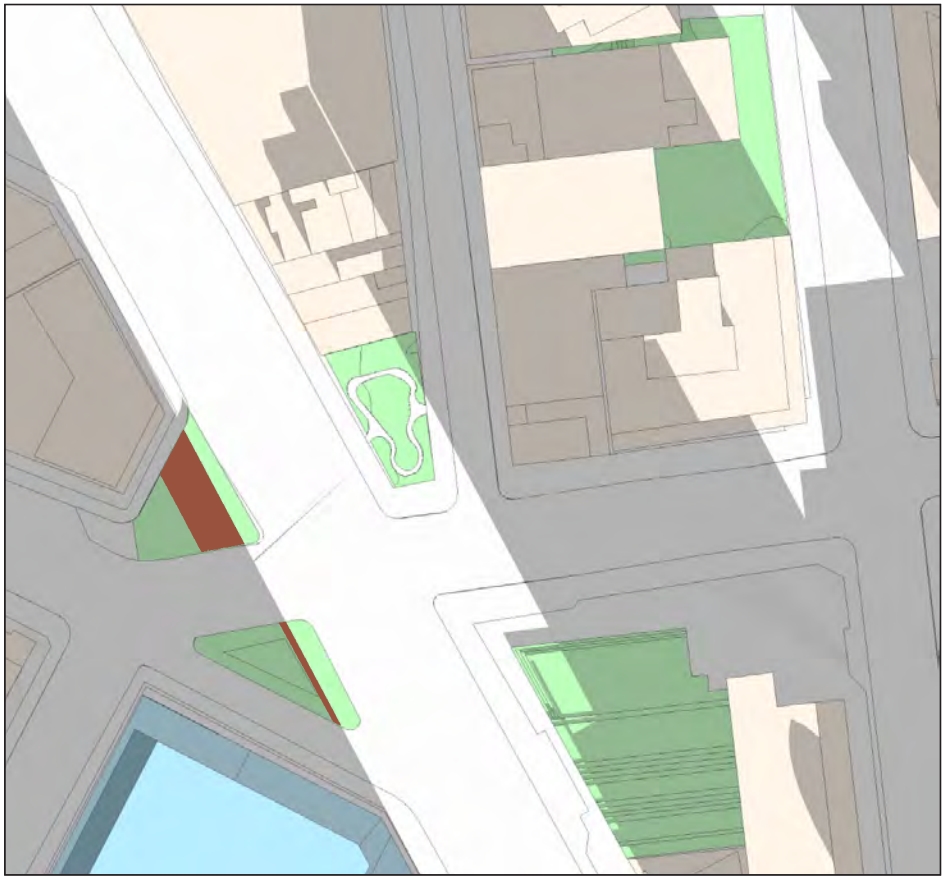
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

9:15 AM



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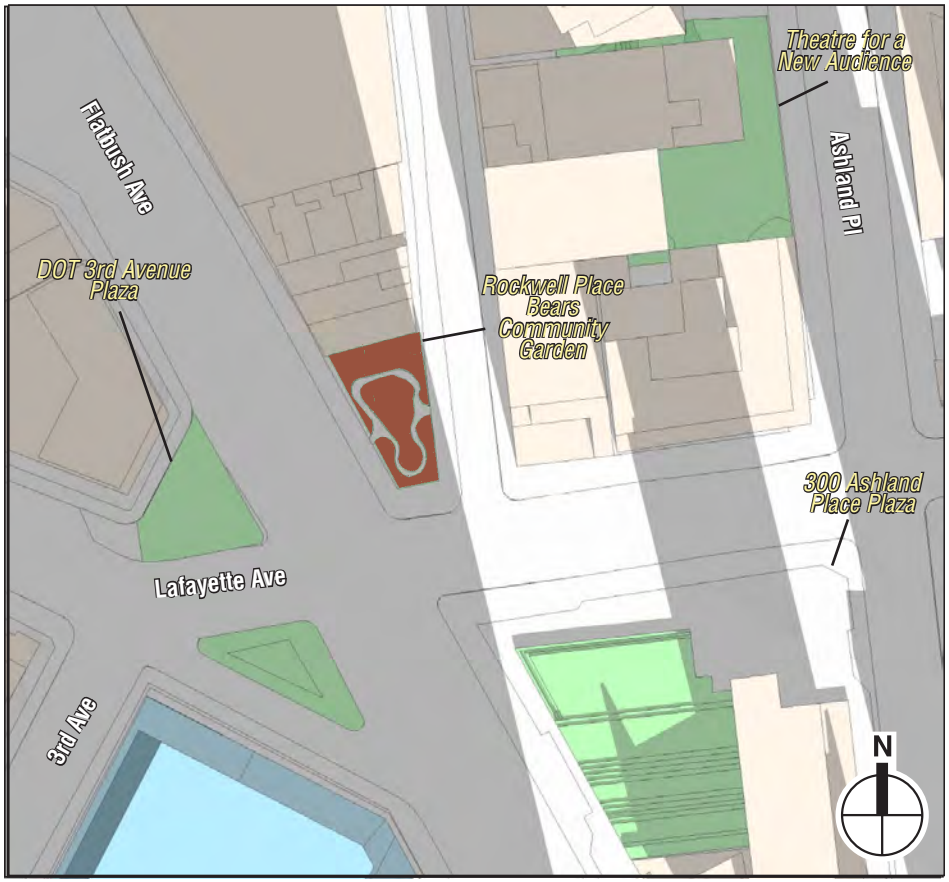
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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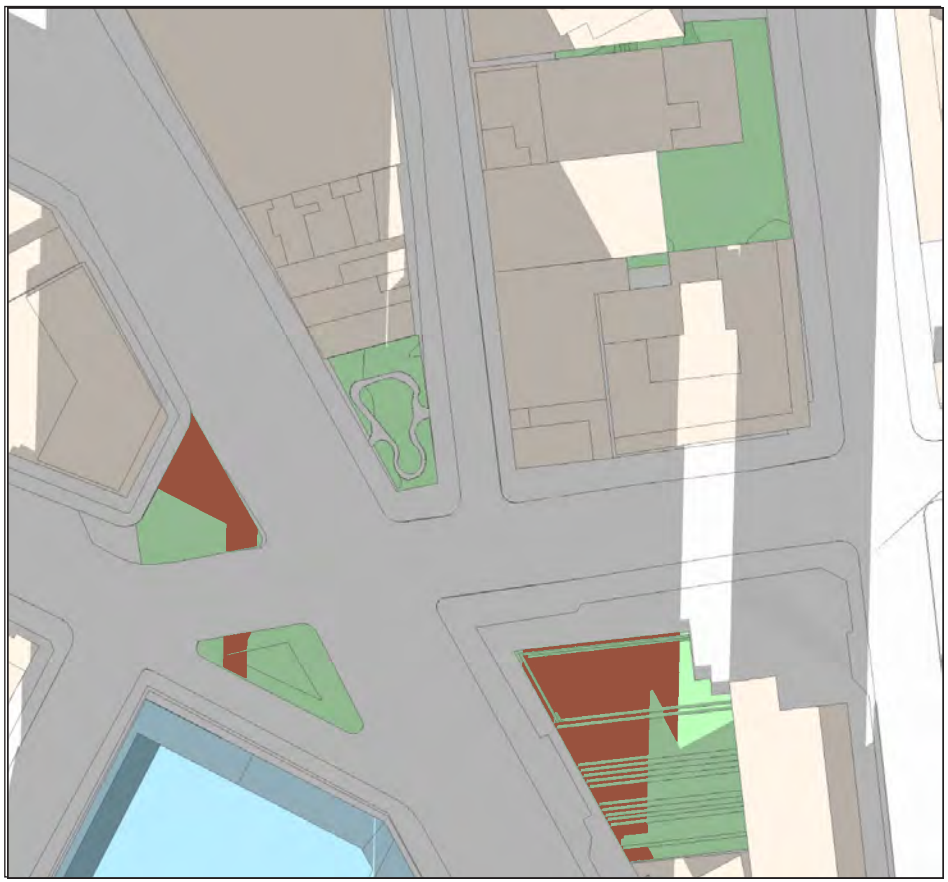

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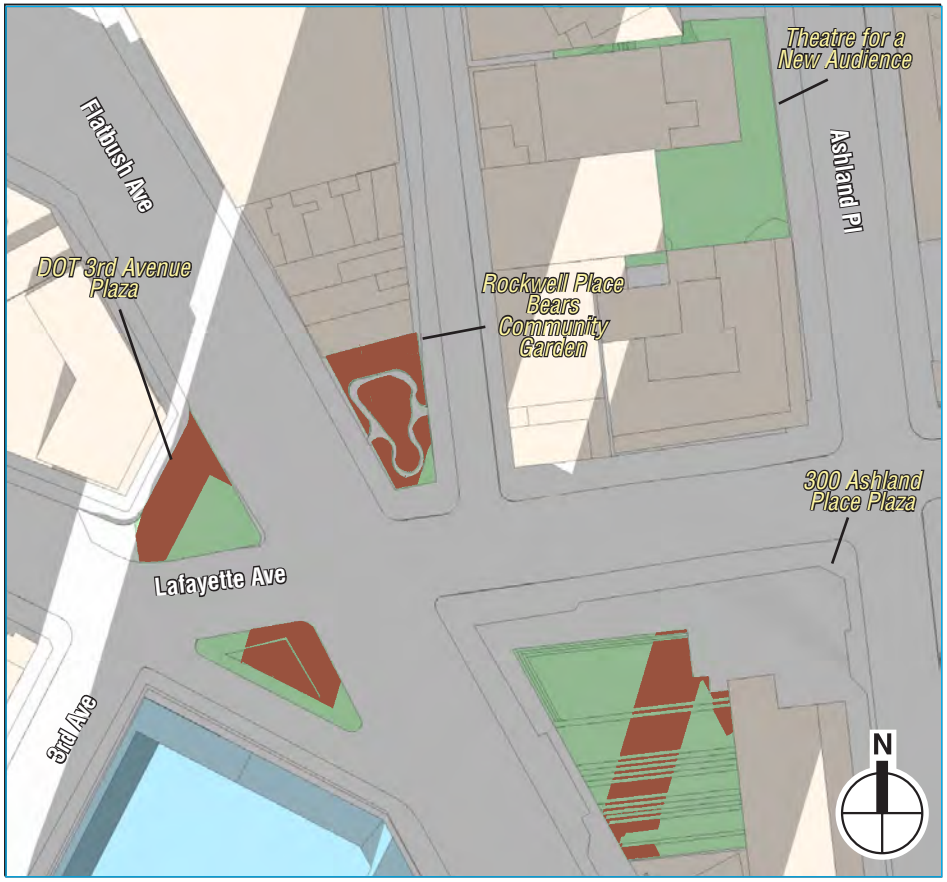
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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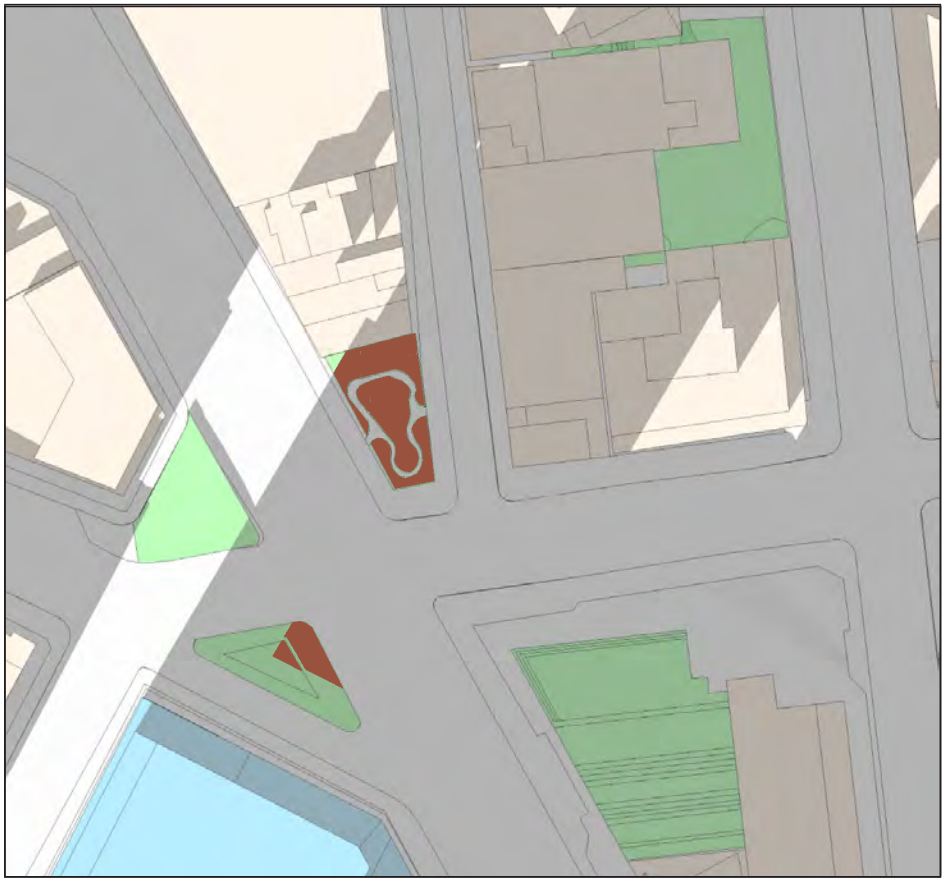

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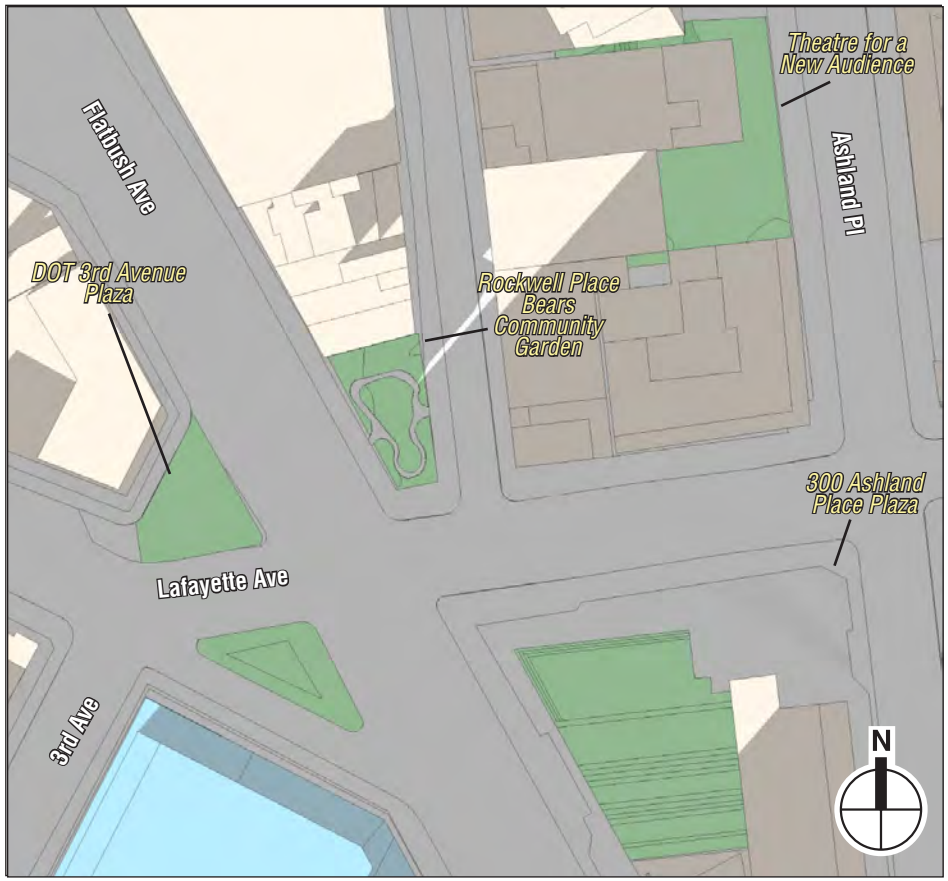
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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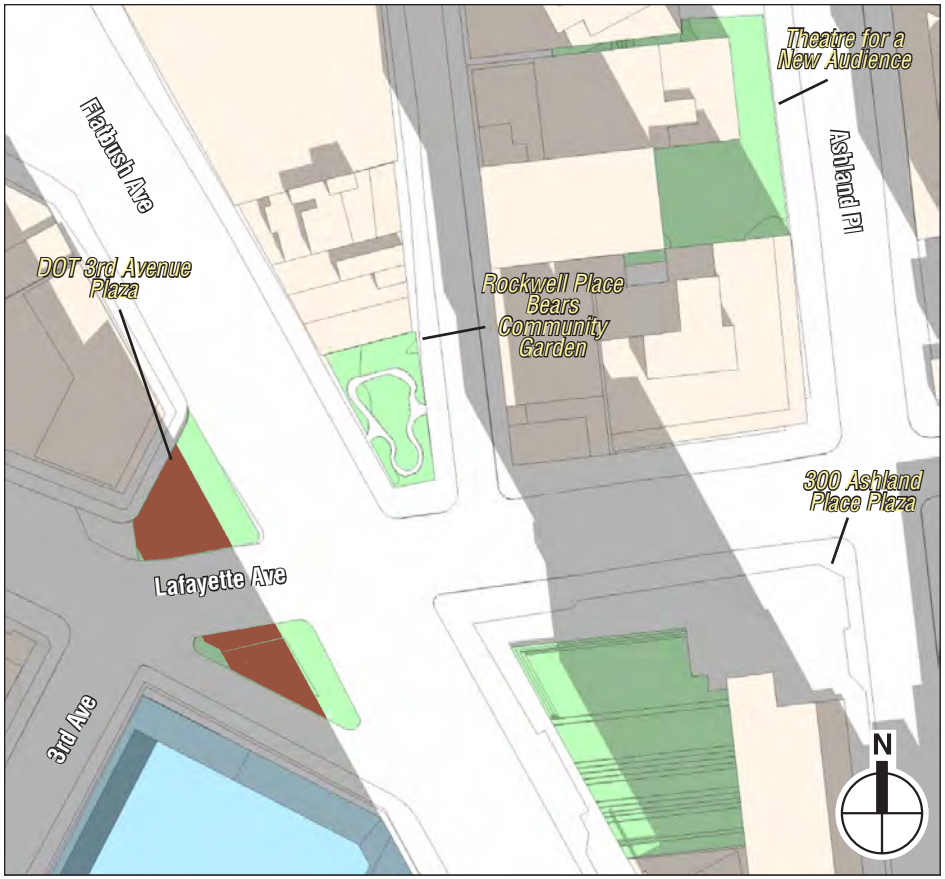
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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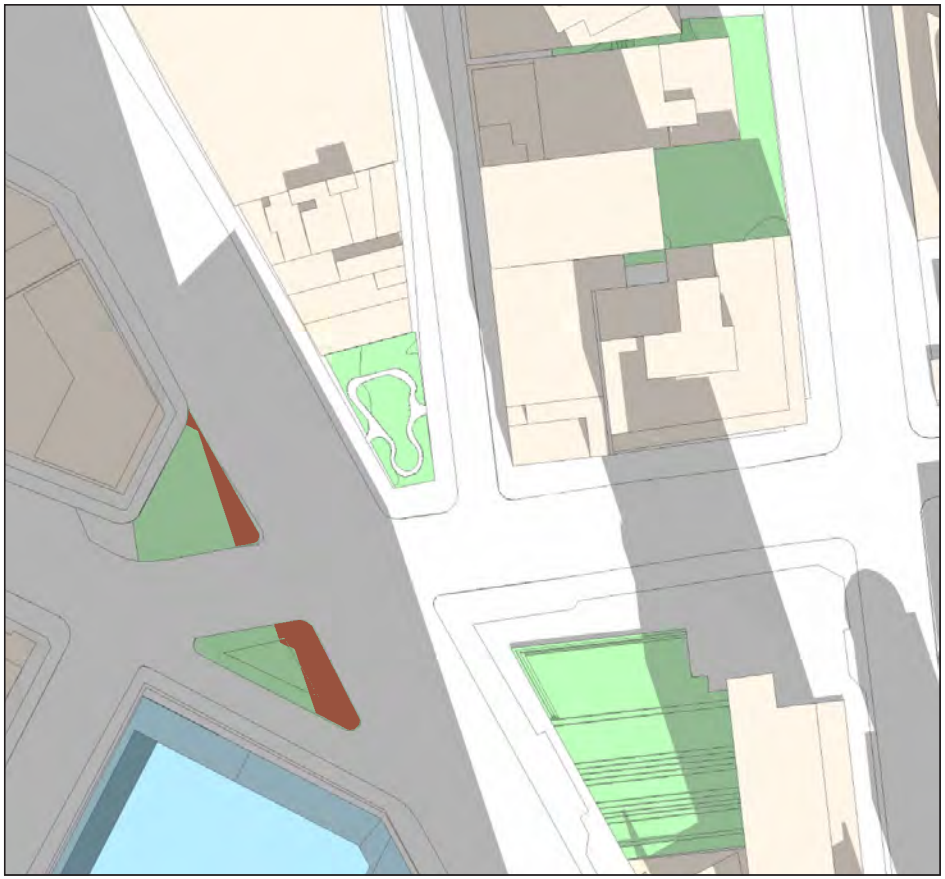

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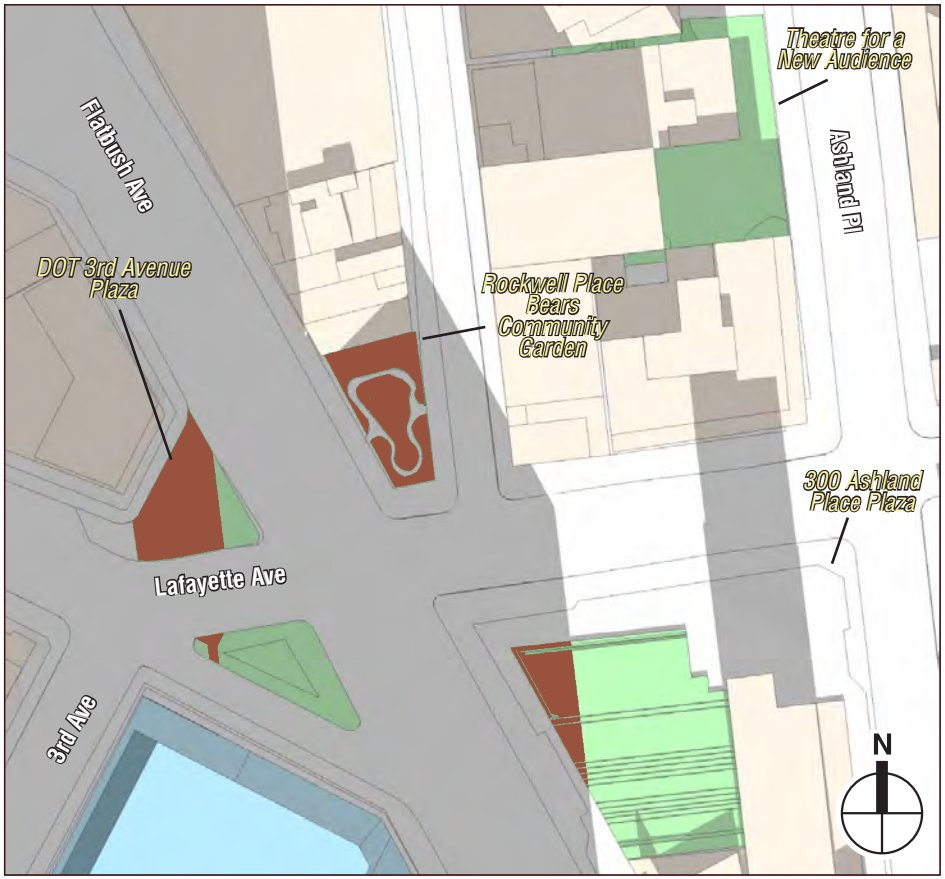
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18



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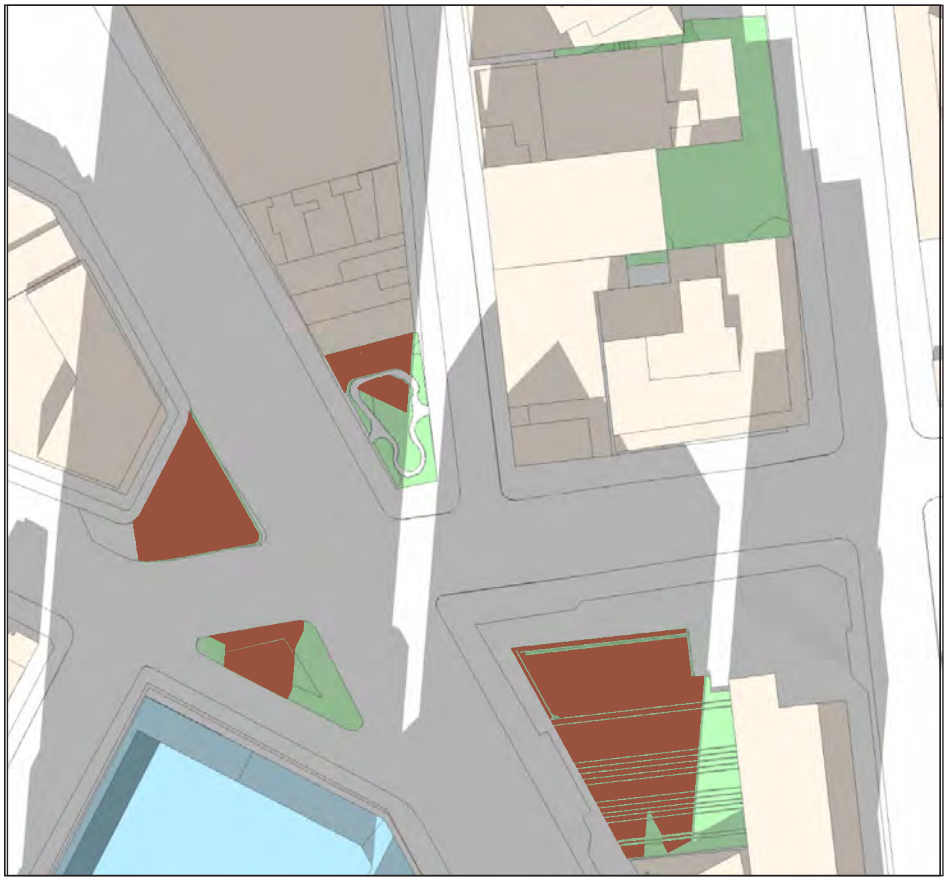

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Project Site

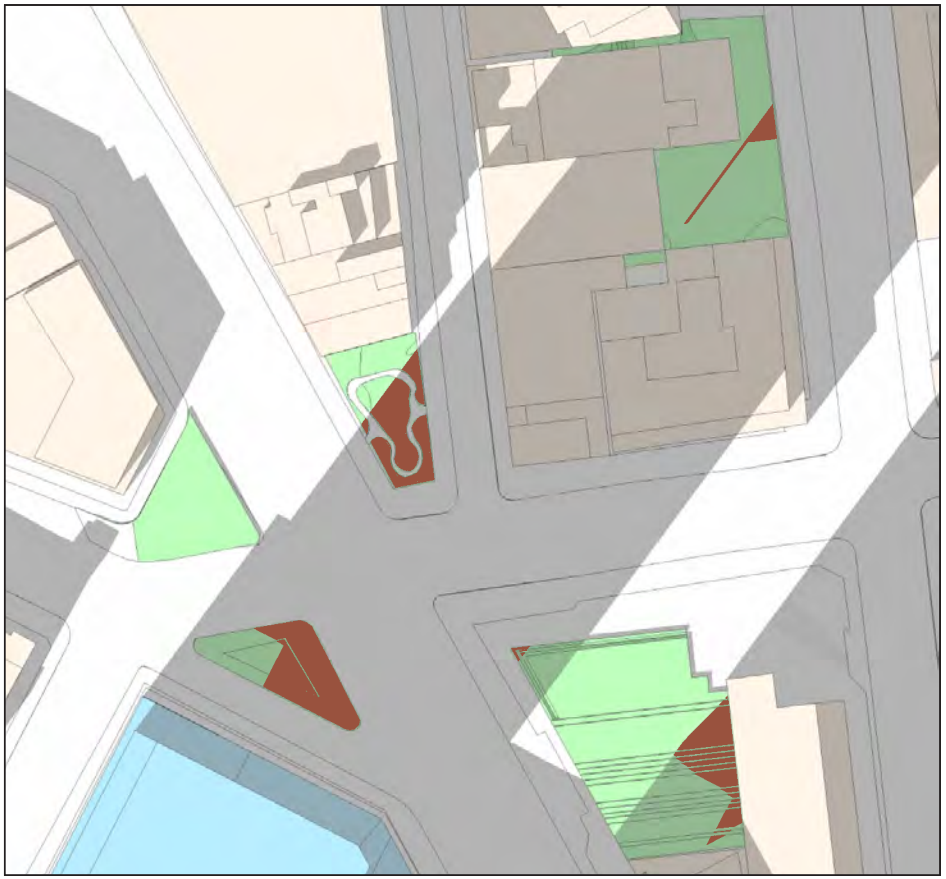
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

1:15 PM



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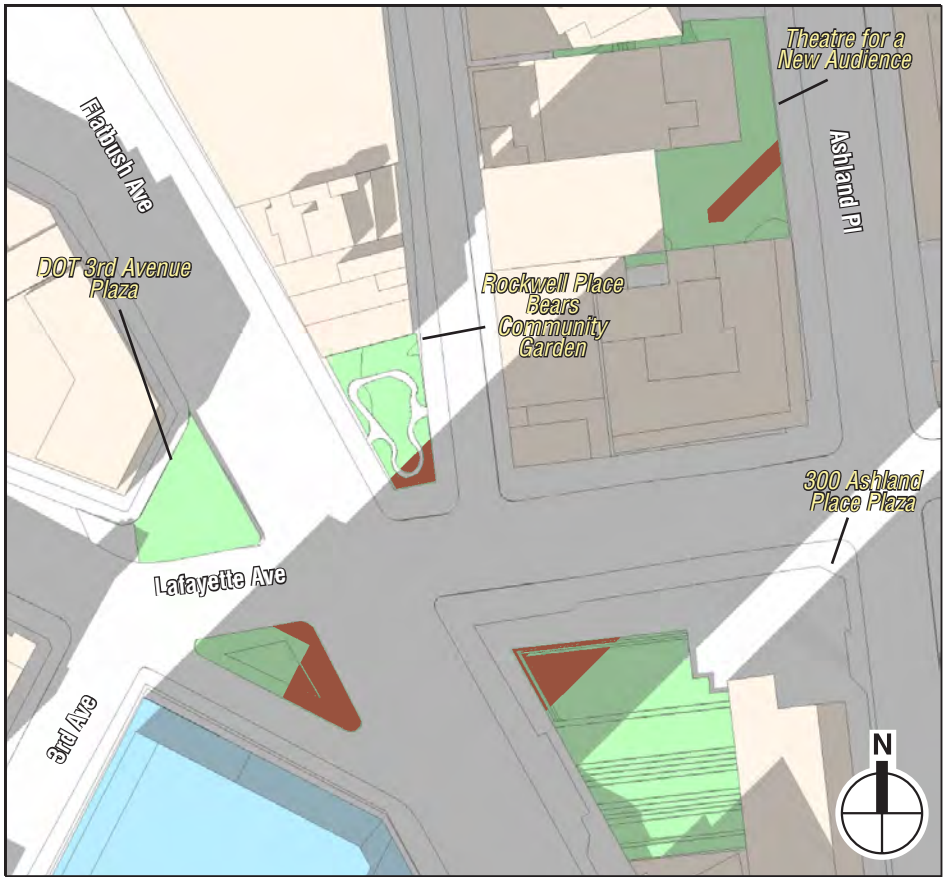
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21



2:15 PM

3:15 PM

Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

4:15 PM

Project Site

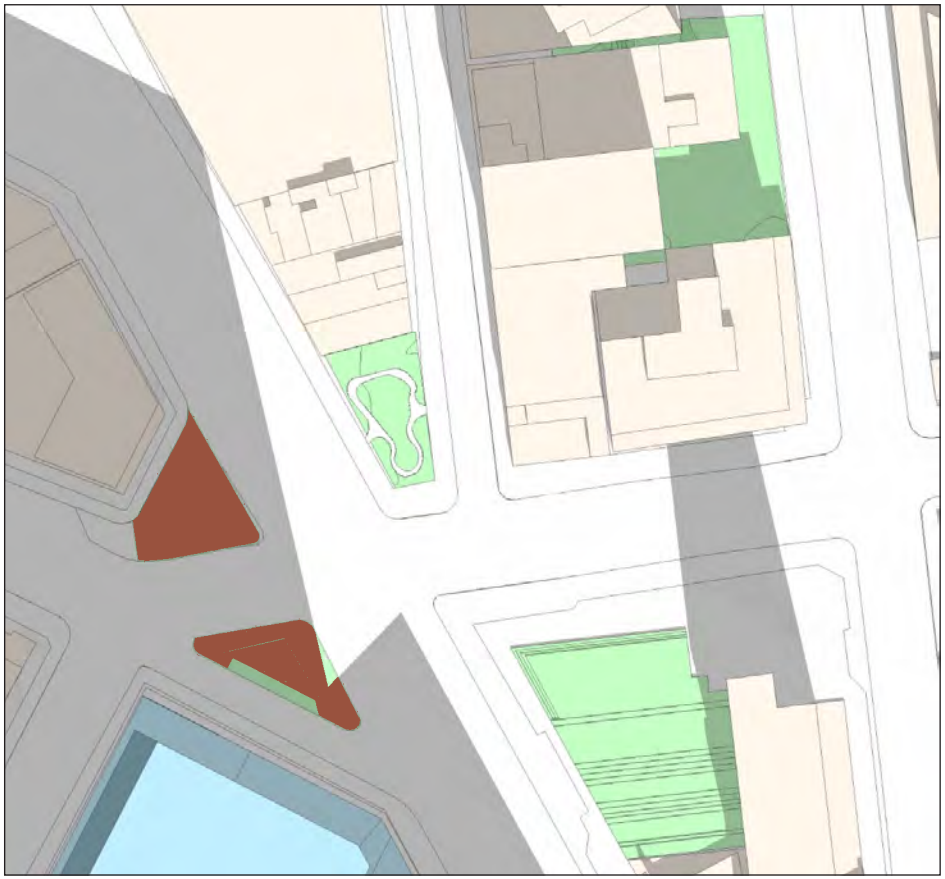
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

11:00 AM



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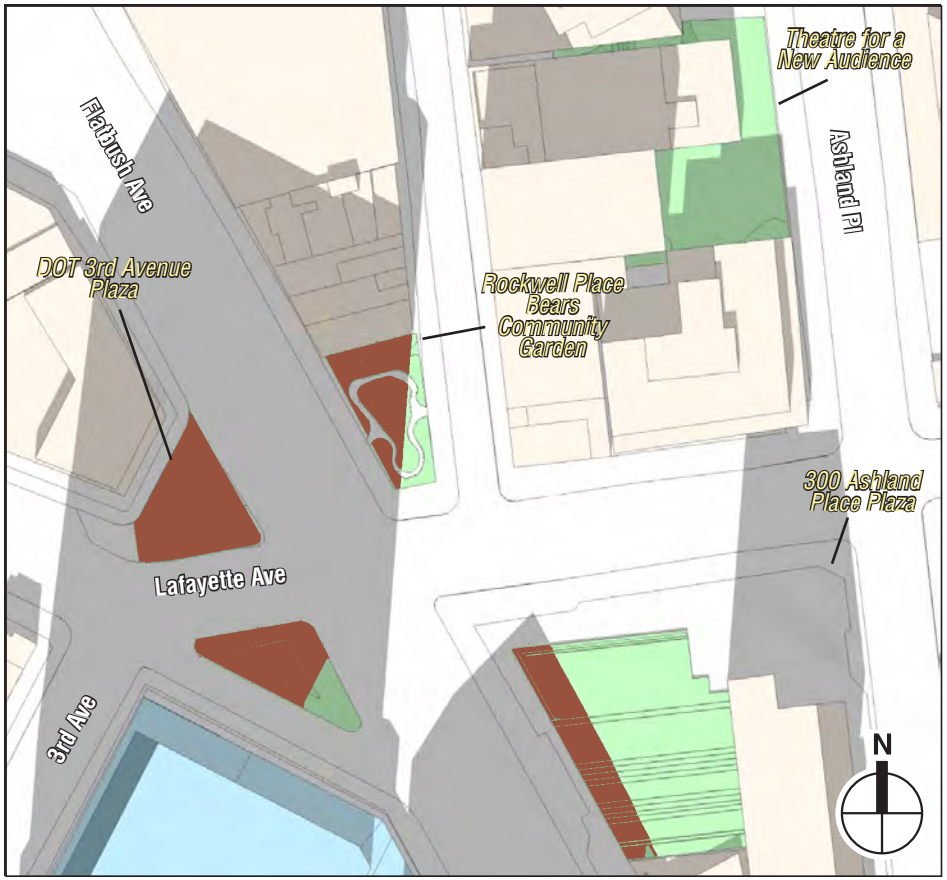
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



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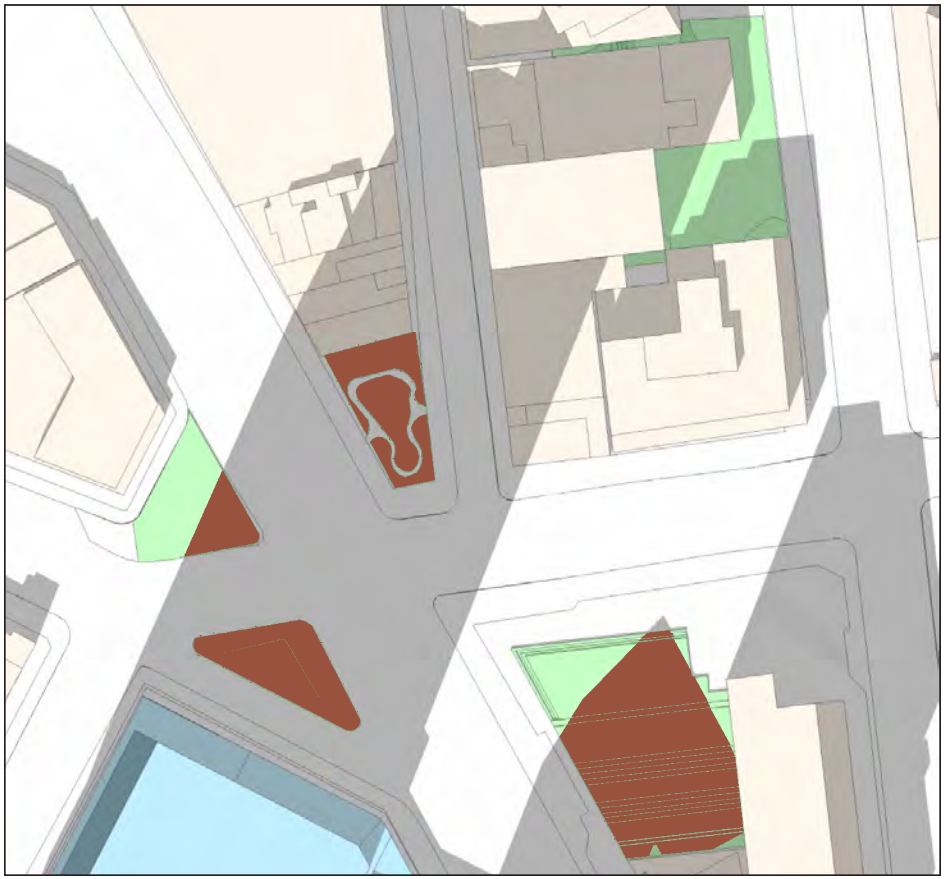

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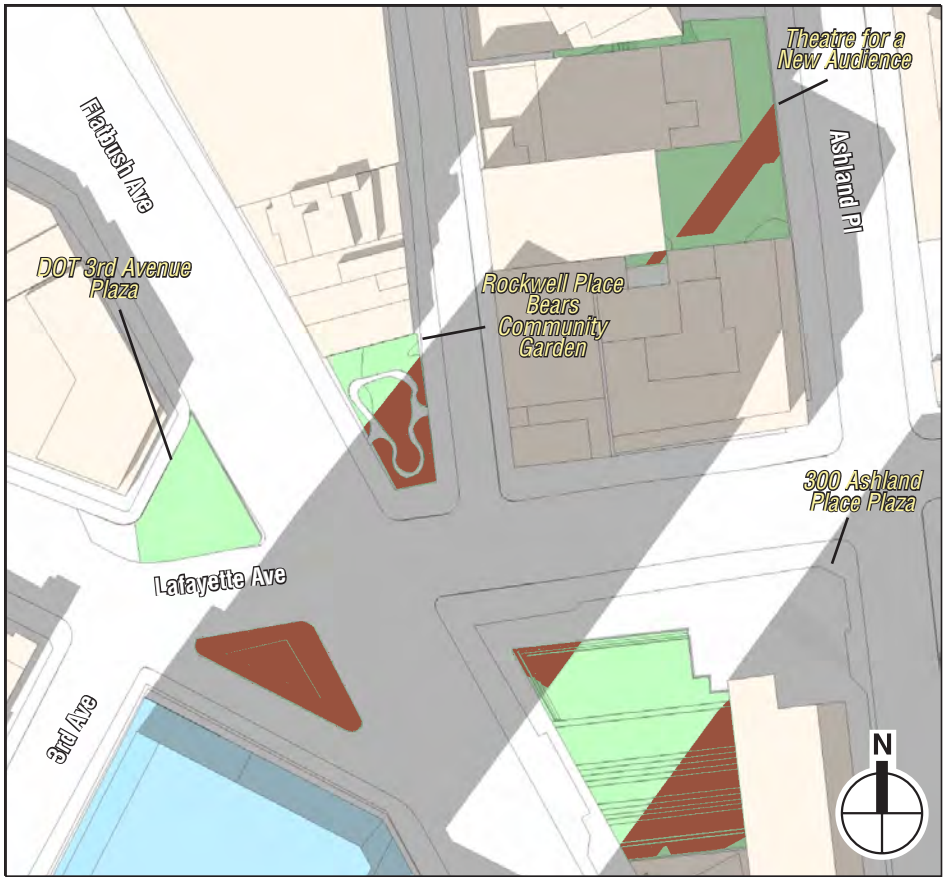
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



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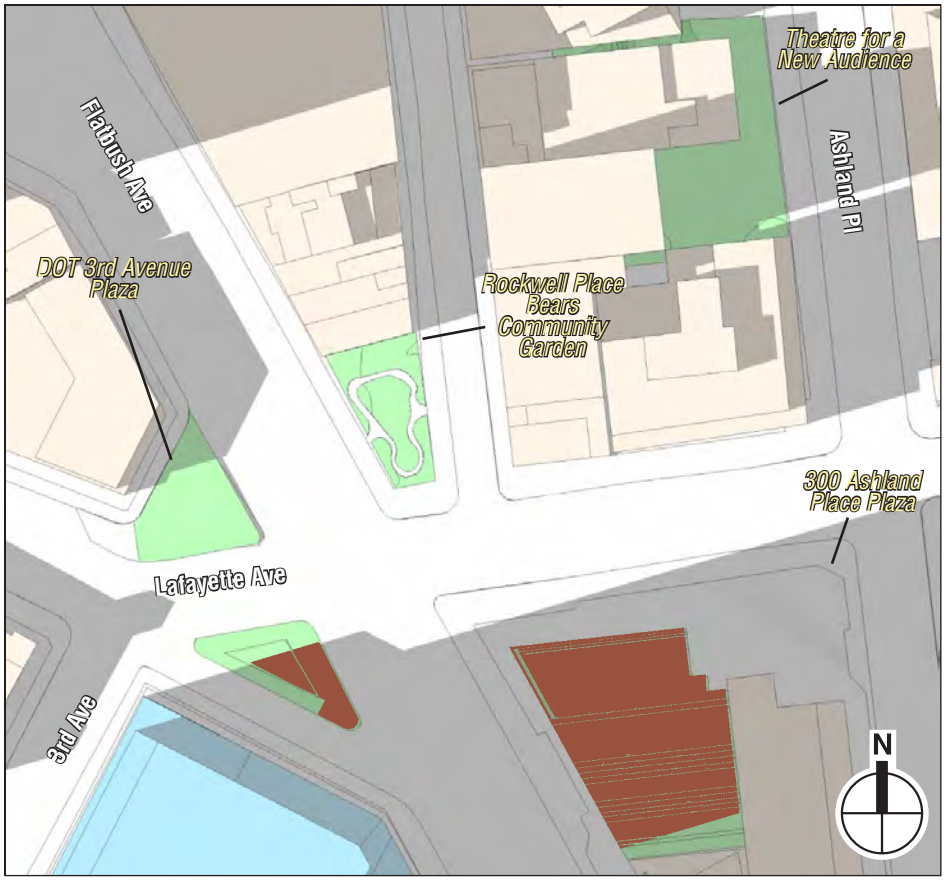
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



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Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18

5:00 PM

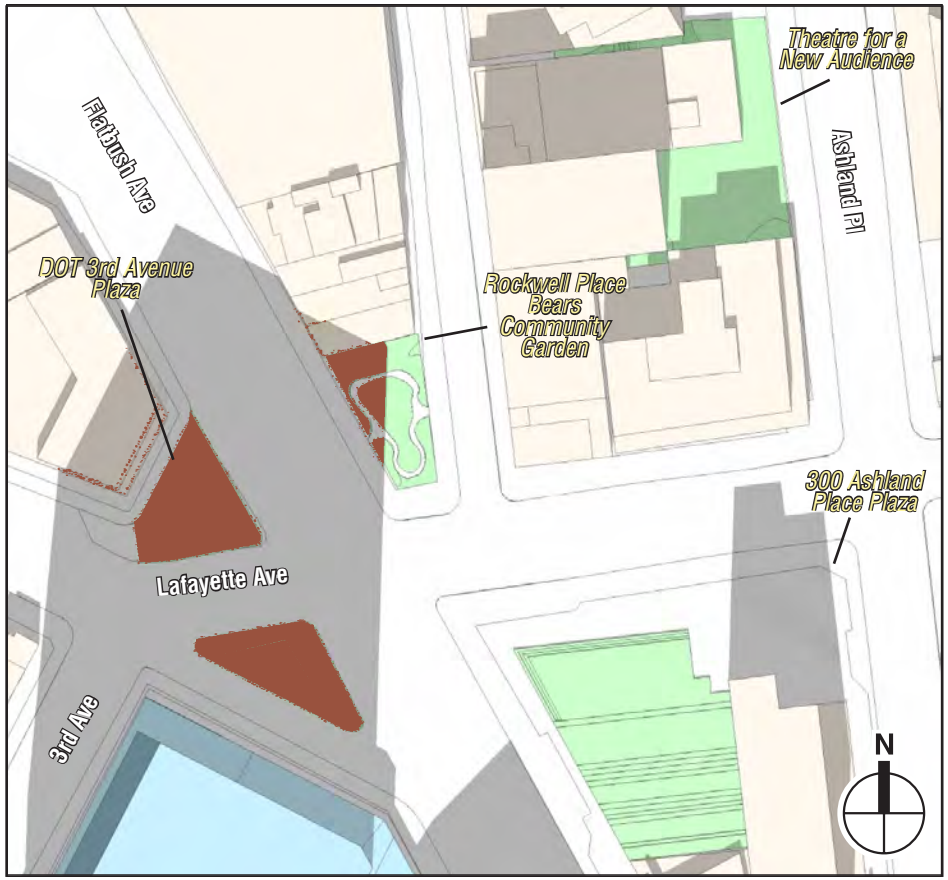
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



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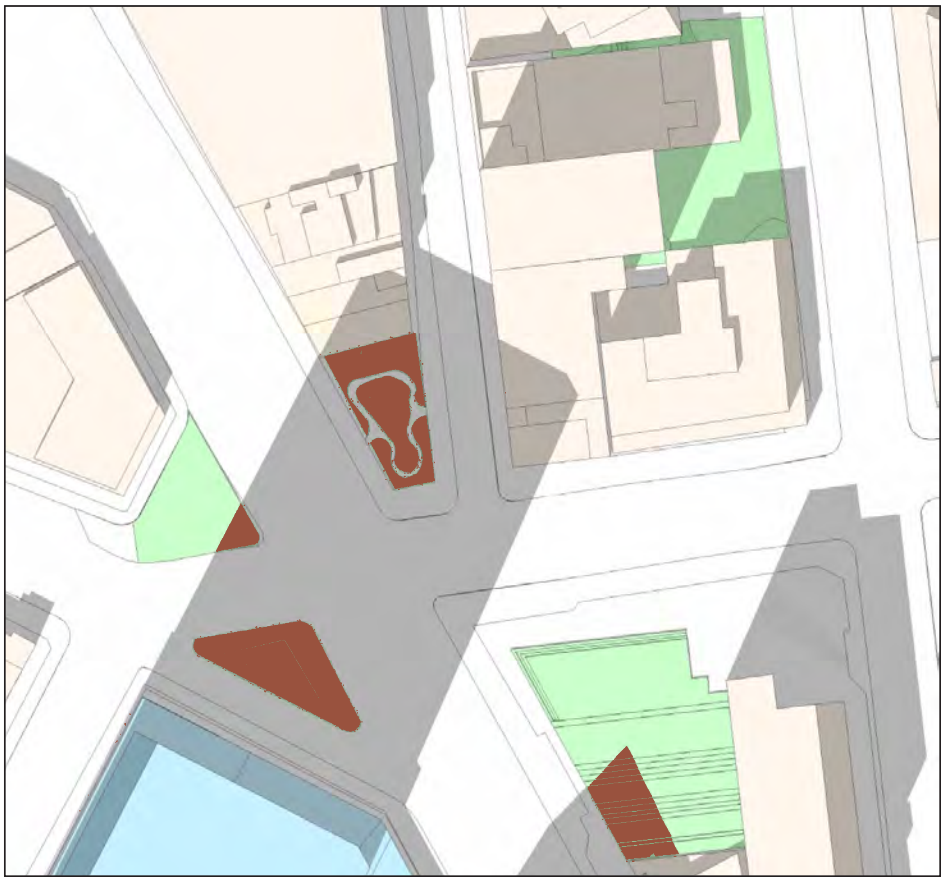

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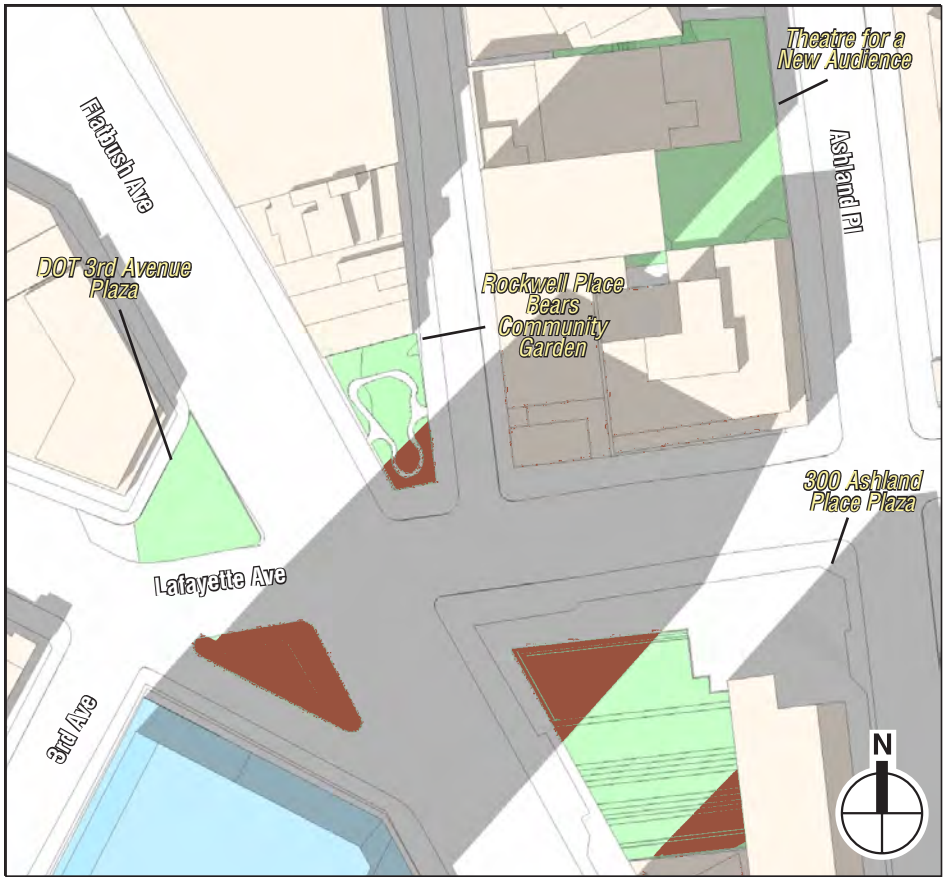
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18



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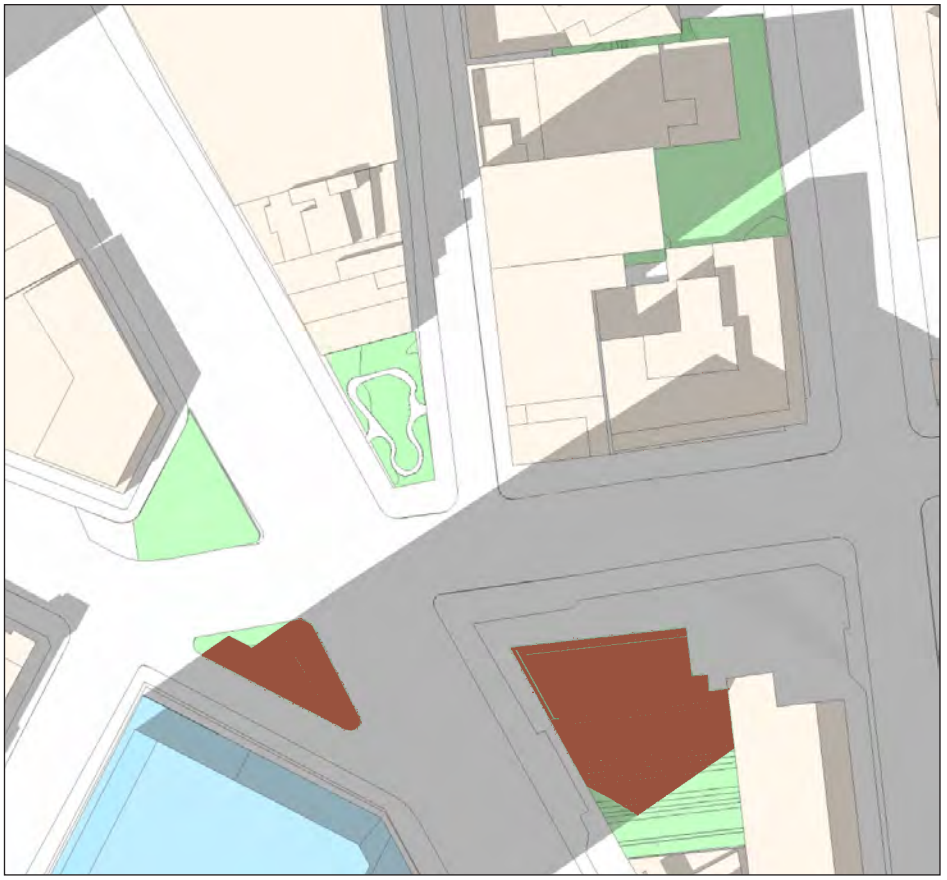

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Project Site

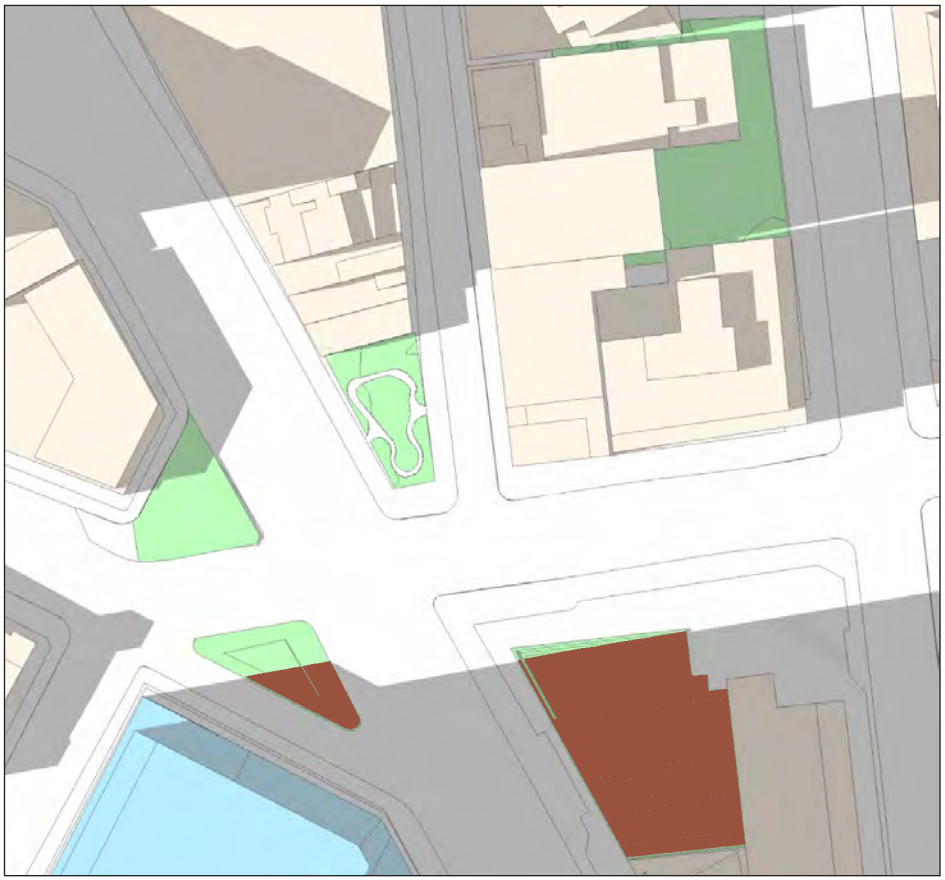
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

2:00 PM



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Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

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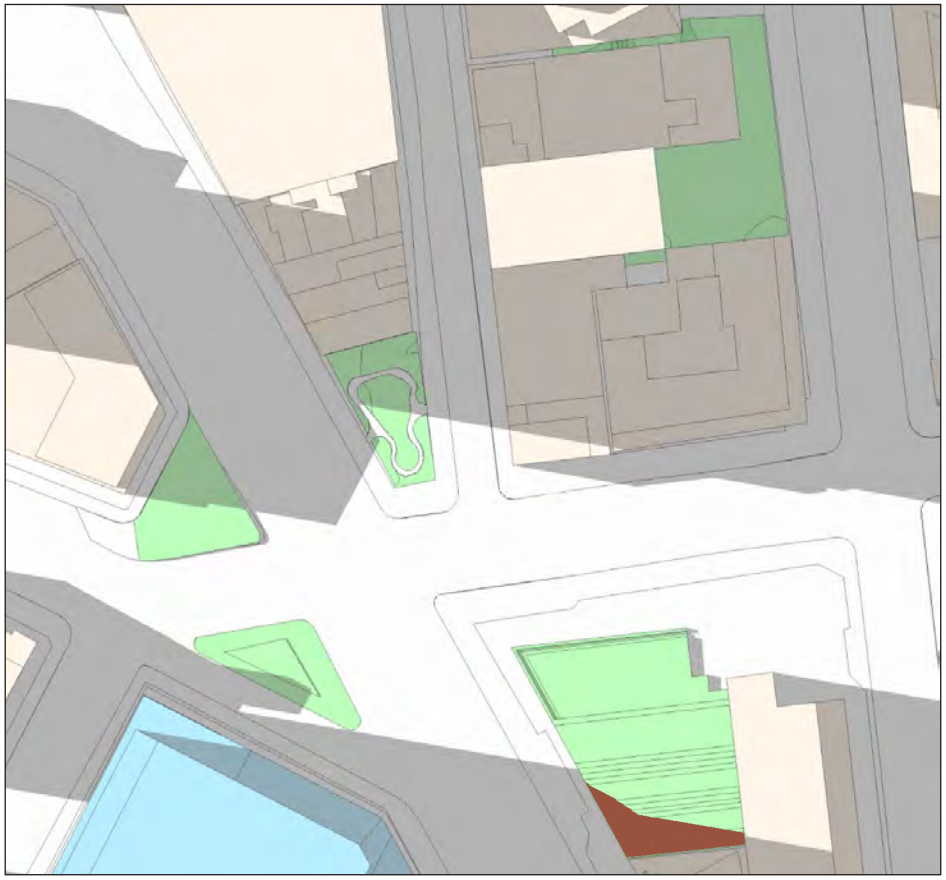

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Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

1:00 PM

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Publicly Accessible Open Space

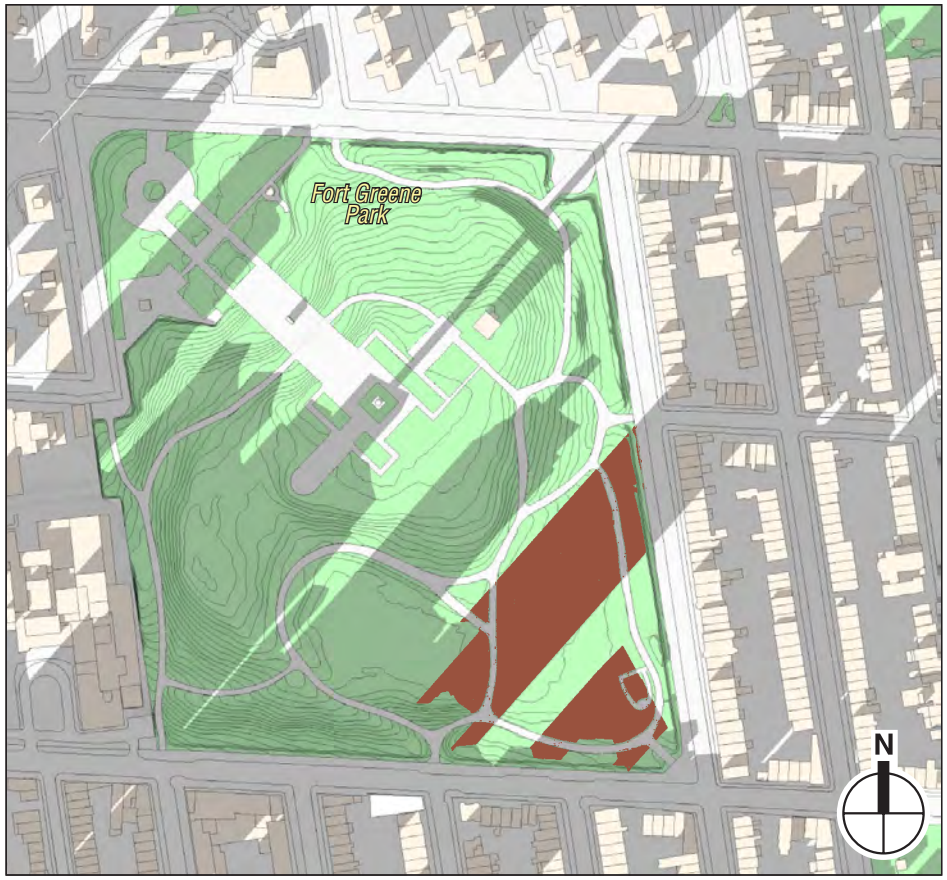
Incremental Shadow

Detailed Shadow Analysis
December 21

ECF 80 FLATBUSH AVENUE

Figure 6-34

1.30.18



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Publicly Accessible Open Space

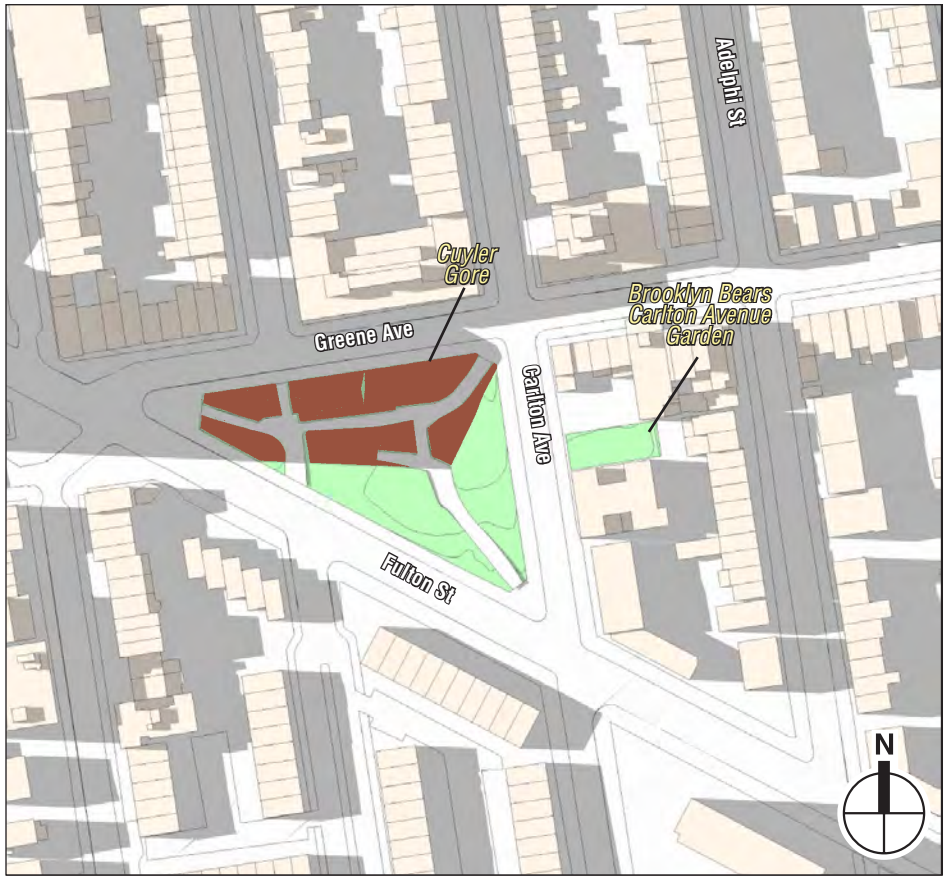
Incremental Shadow

Detailed Shadow Analysis
December 21

ECF 80 FLATBUSH AVENUE

Figure 6-35

1.30.18



4:45 PM

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Publicly Accessible Open Space

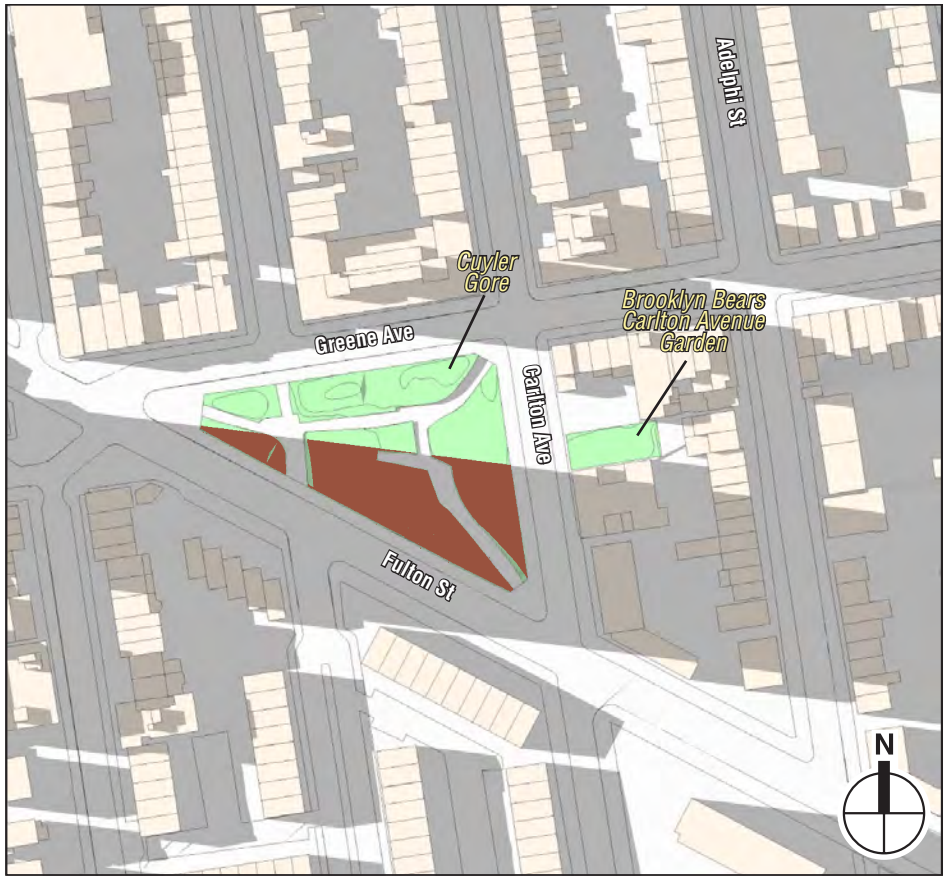
Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

ECF 80 FLATBUSH AVENUE

Figure 6-36

1.30.18



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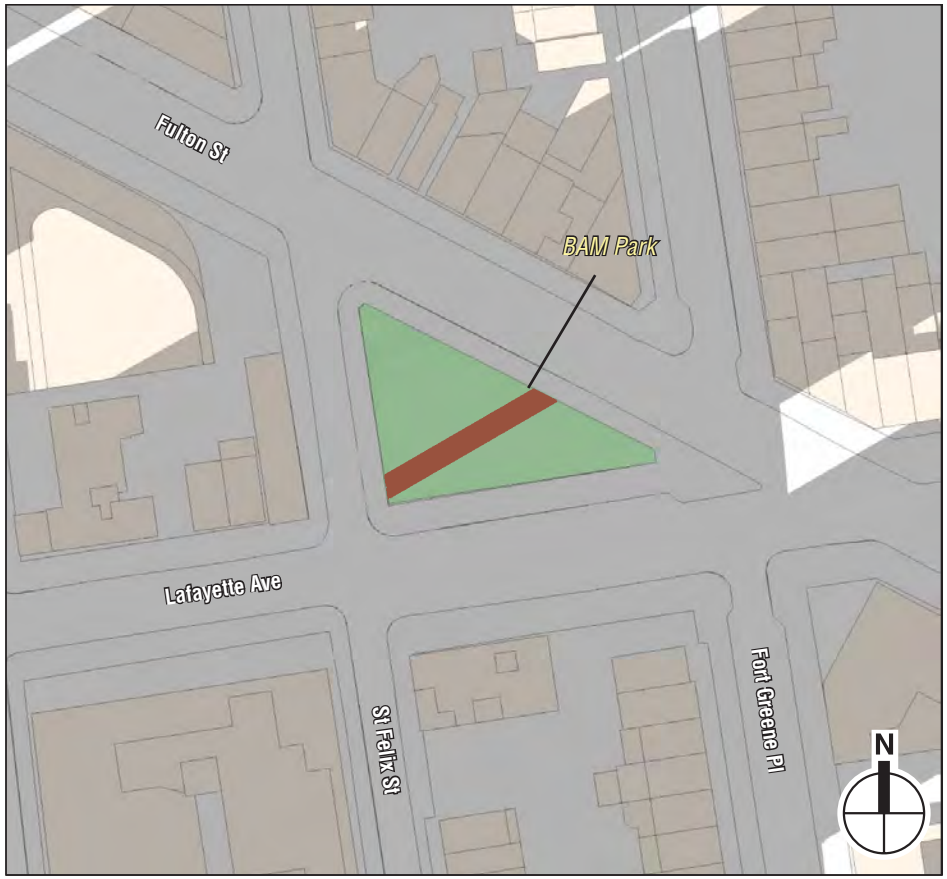
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6



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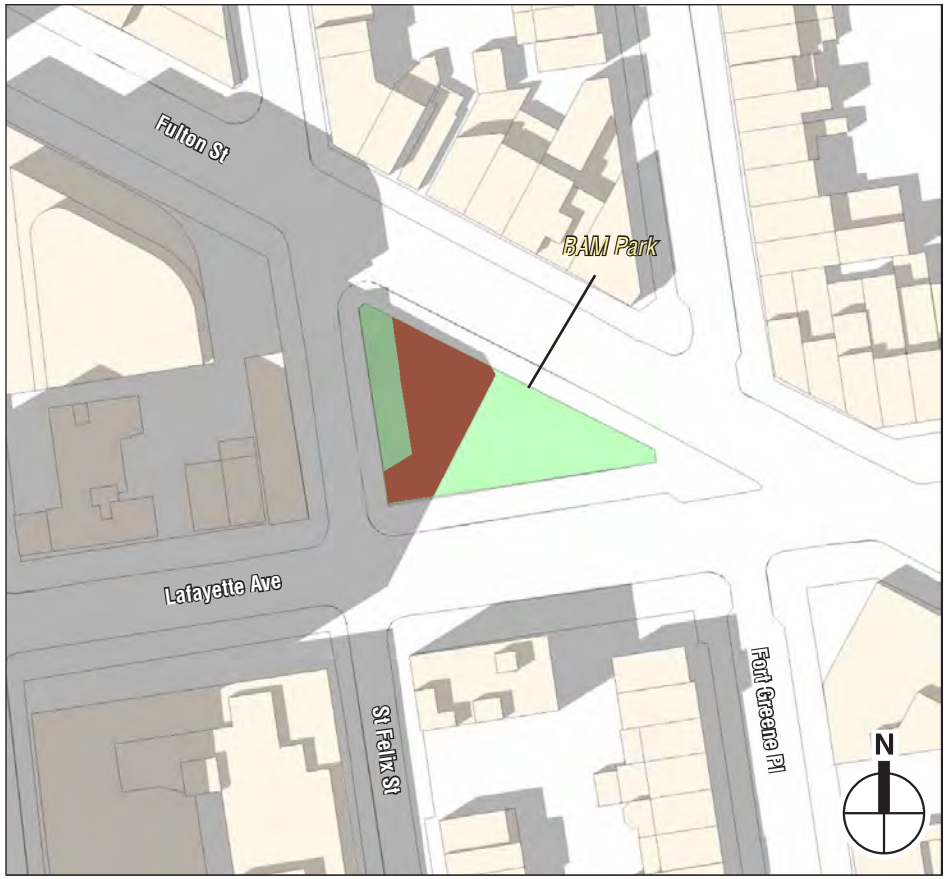
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21



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Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

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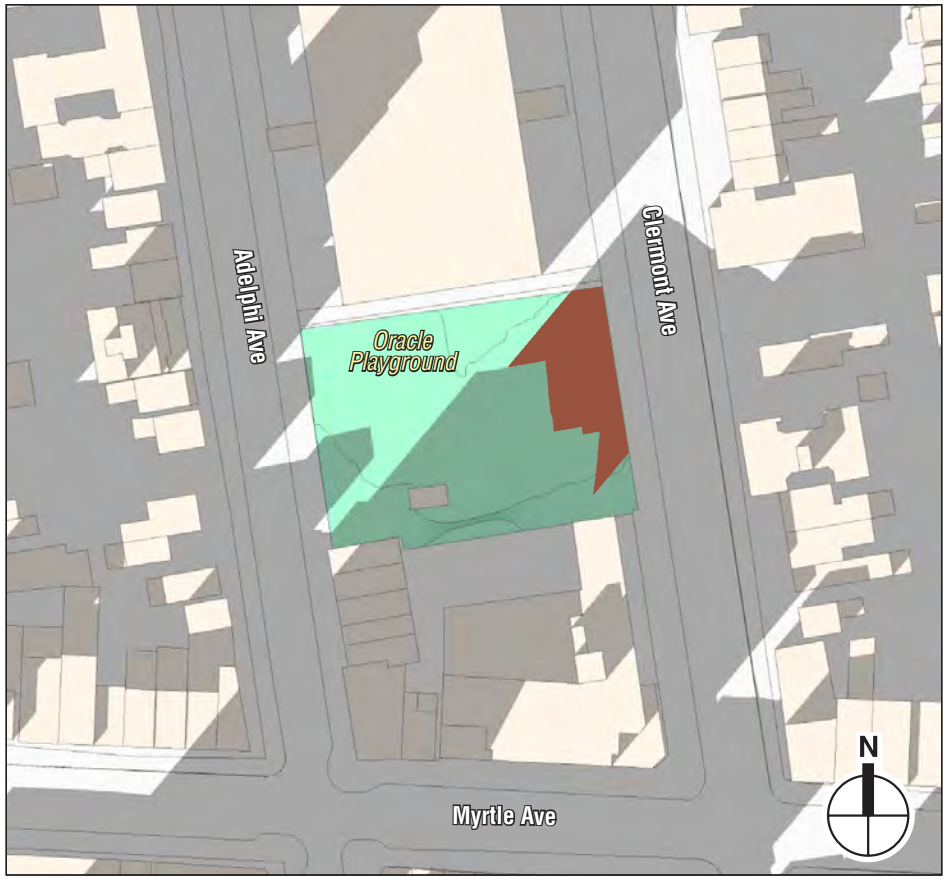

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Publicly Accessible Open Space

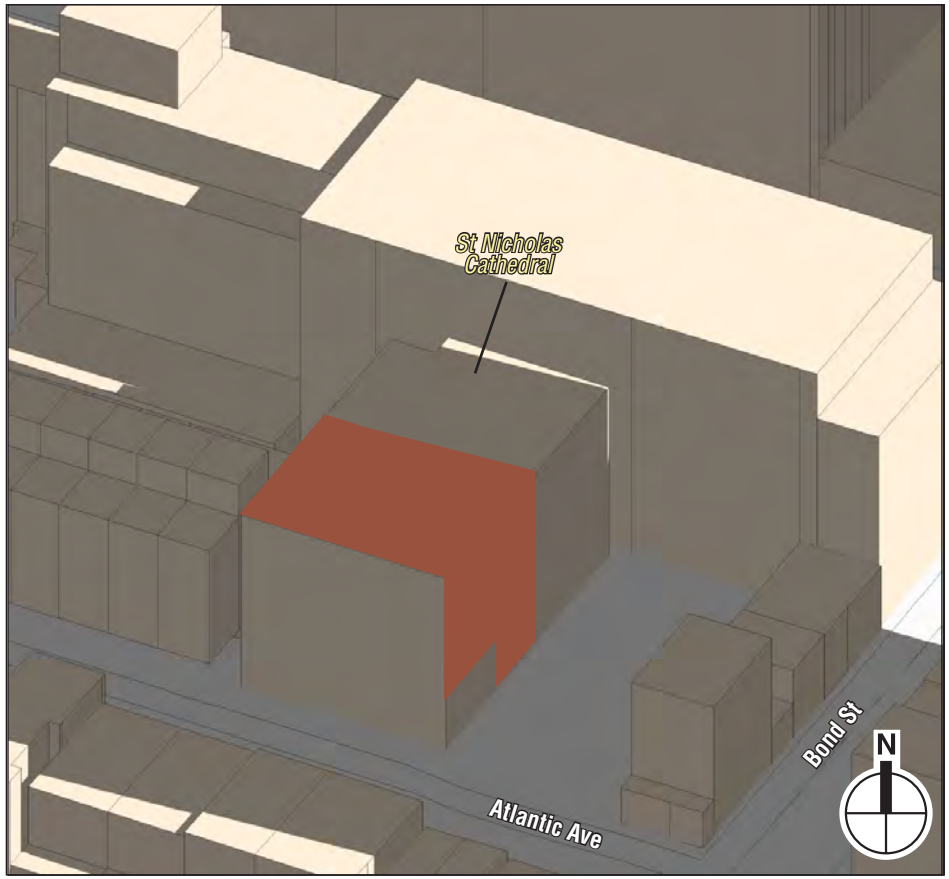
Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

ECF 80 FLATBUSH AVENUE

Figure 6-40

1.30.18



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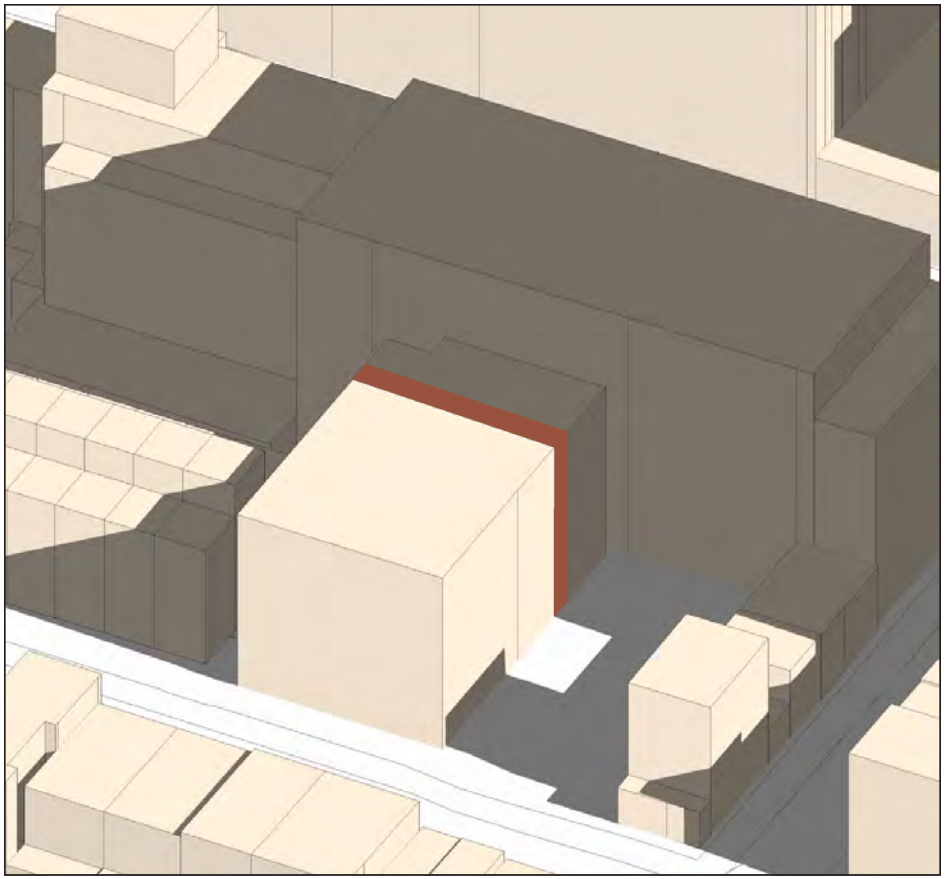
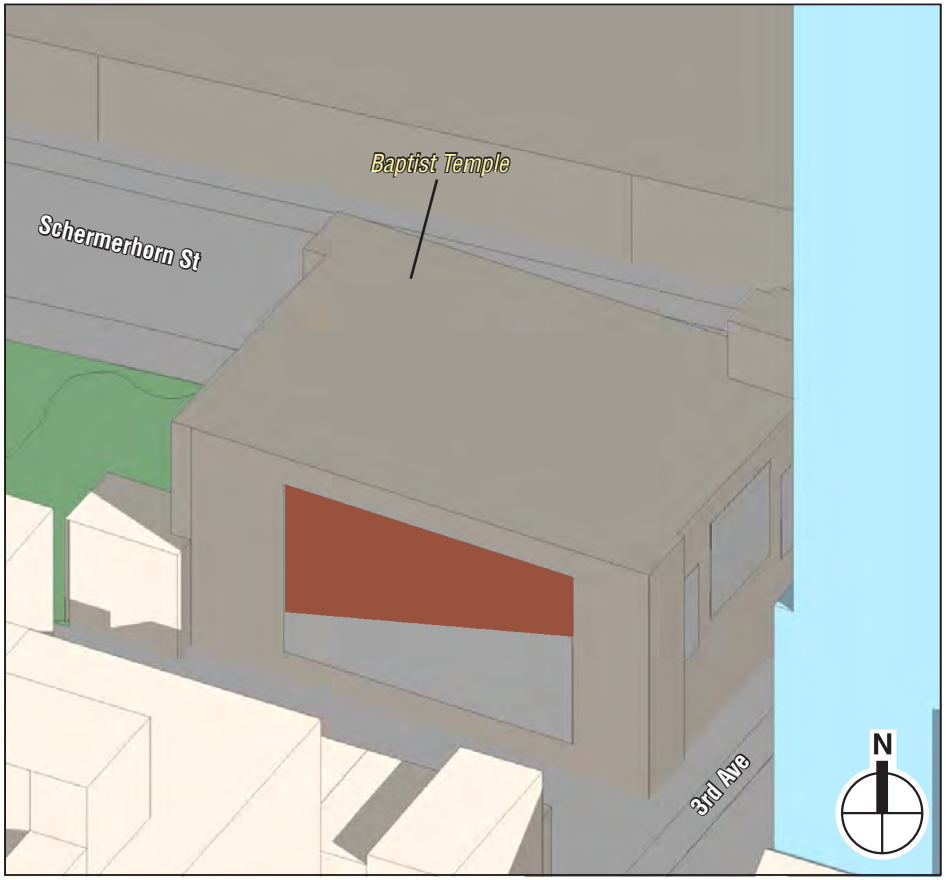


8:45 AM

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18



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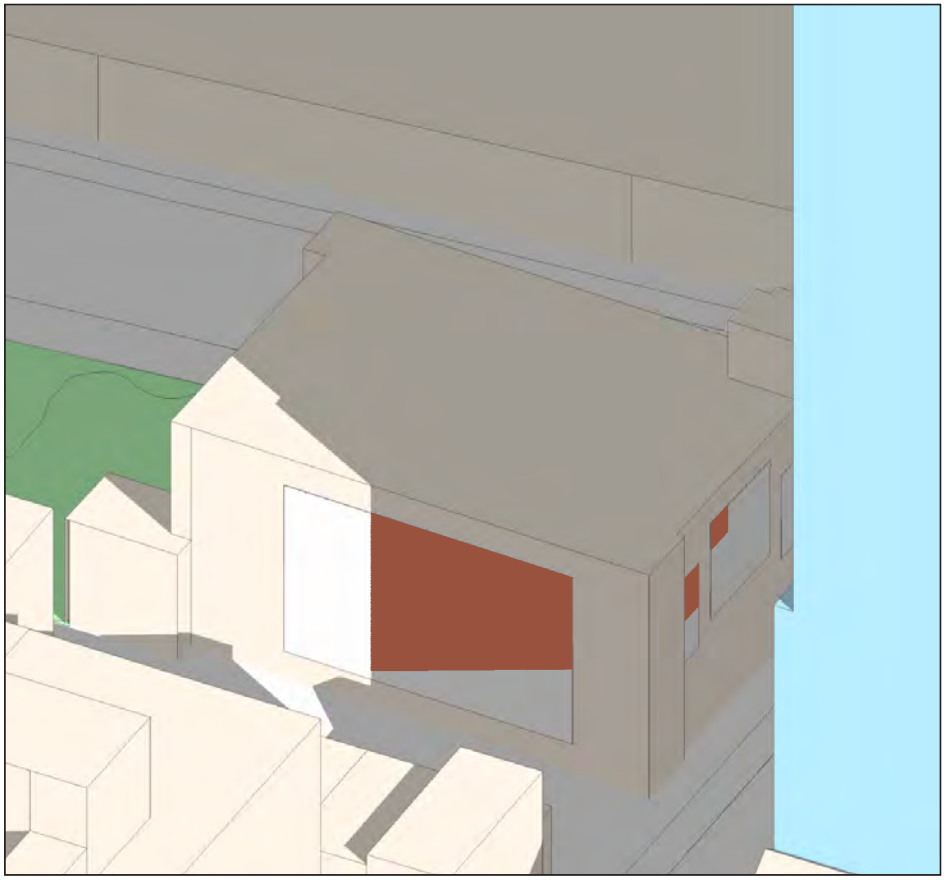


9:30 AM

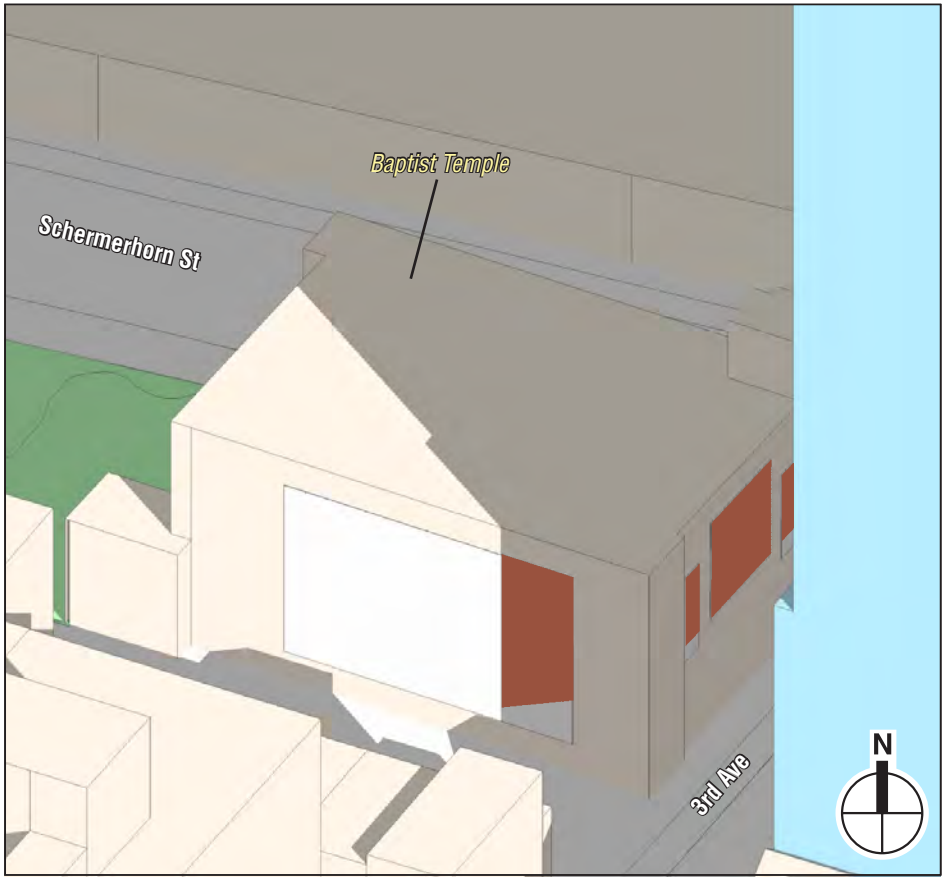
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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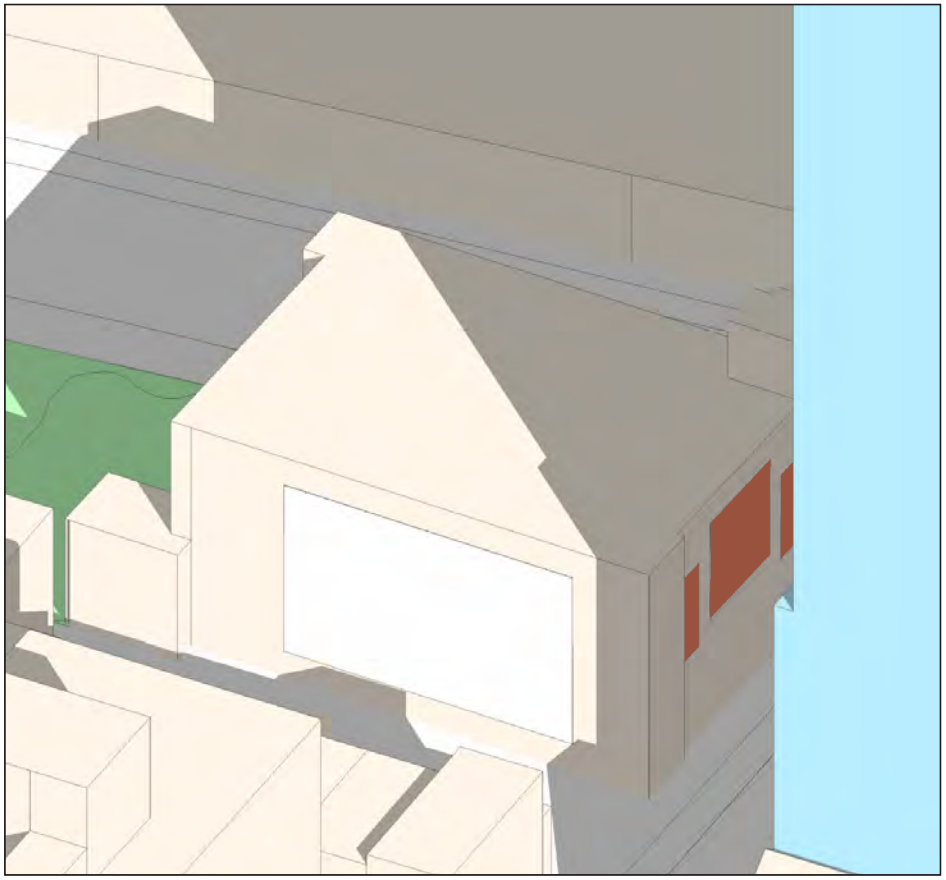

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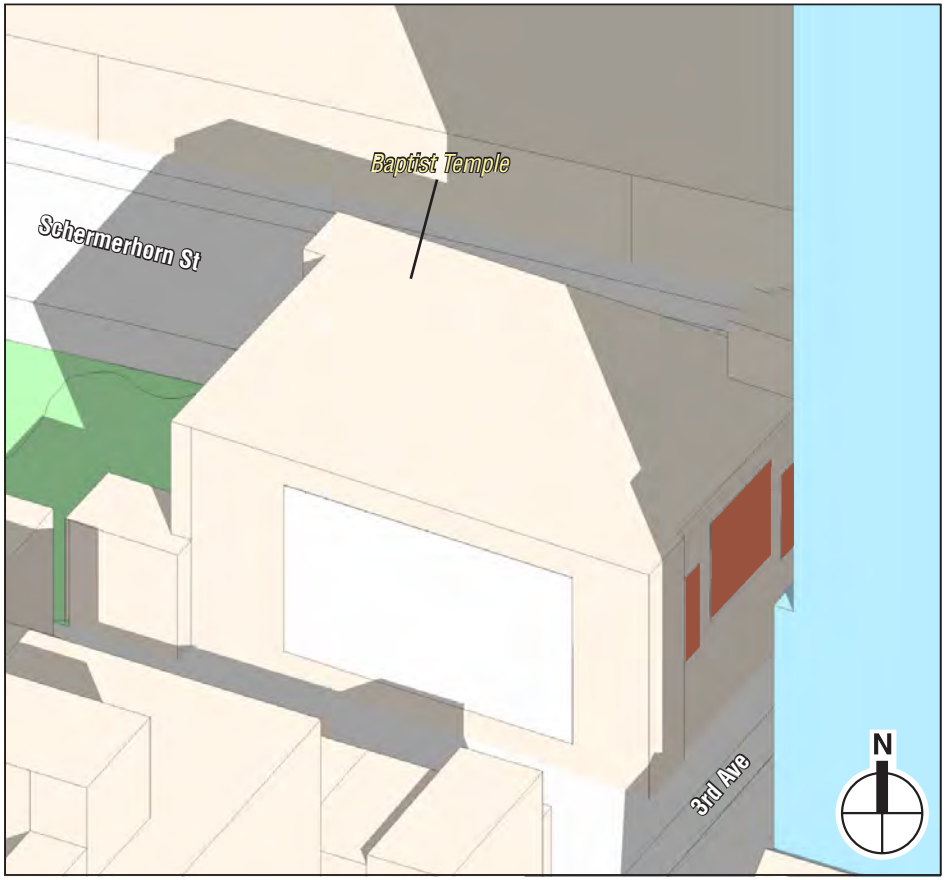
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



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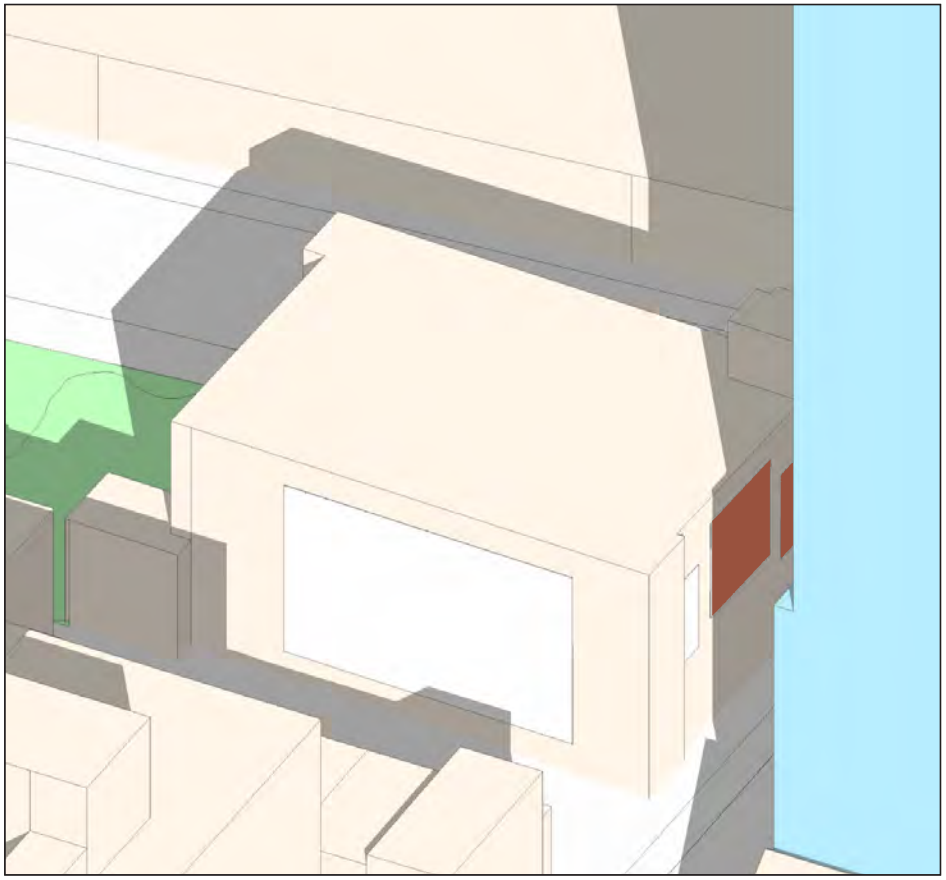


11:30 AM

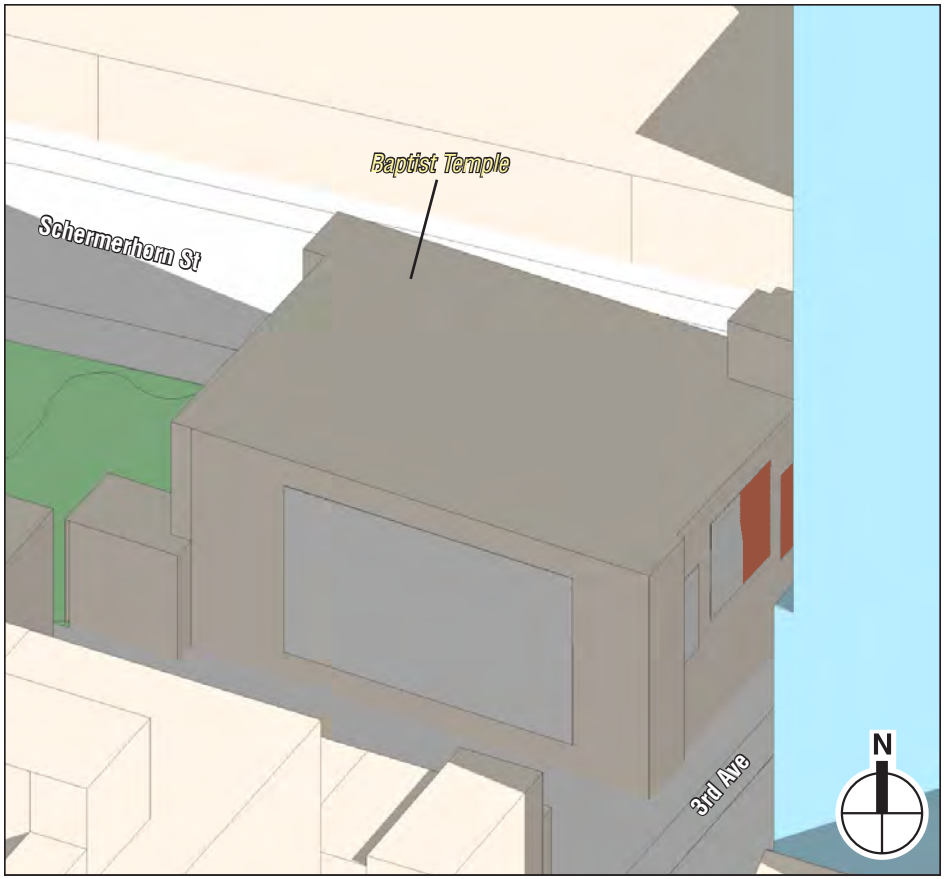
Project Site

Publicly Accessible Open Space

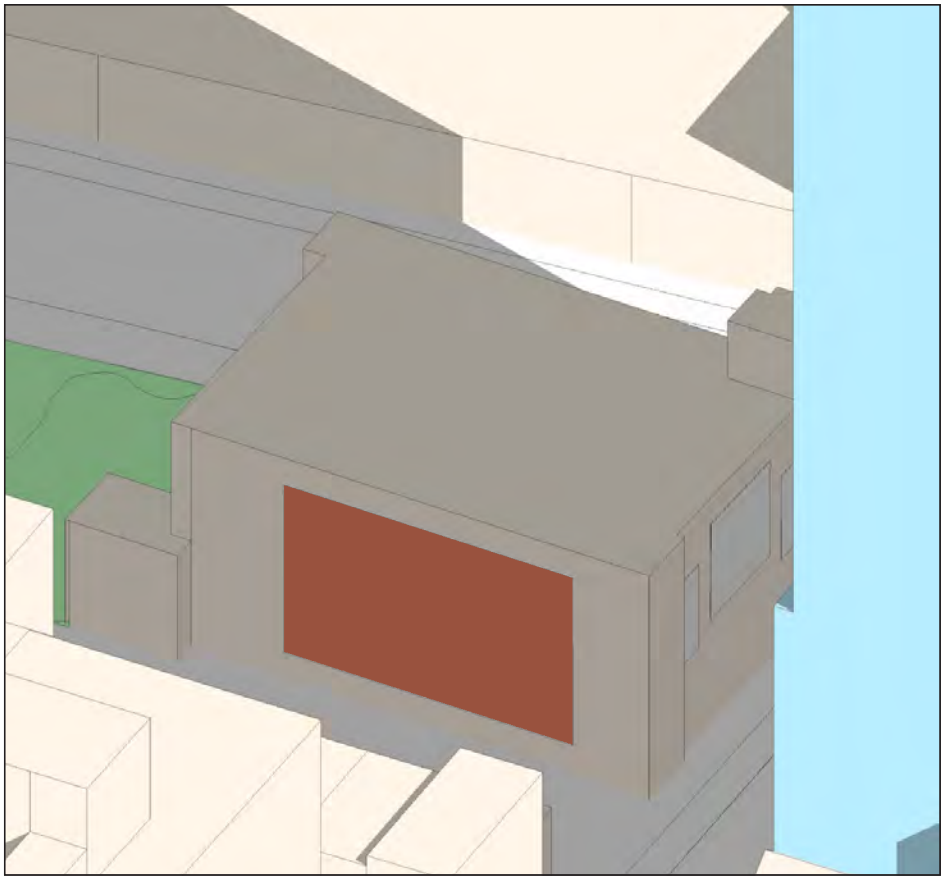
Incremental Shadow

Detailed Shadow Analysis
December 21

1.30.18



9:15 AM



9:45 AM

Project Site

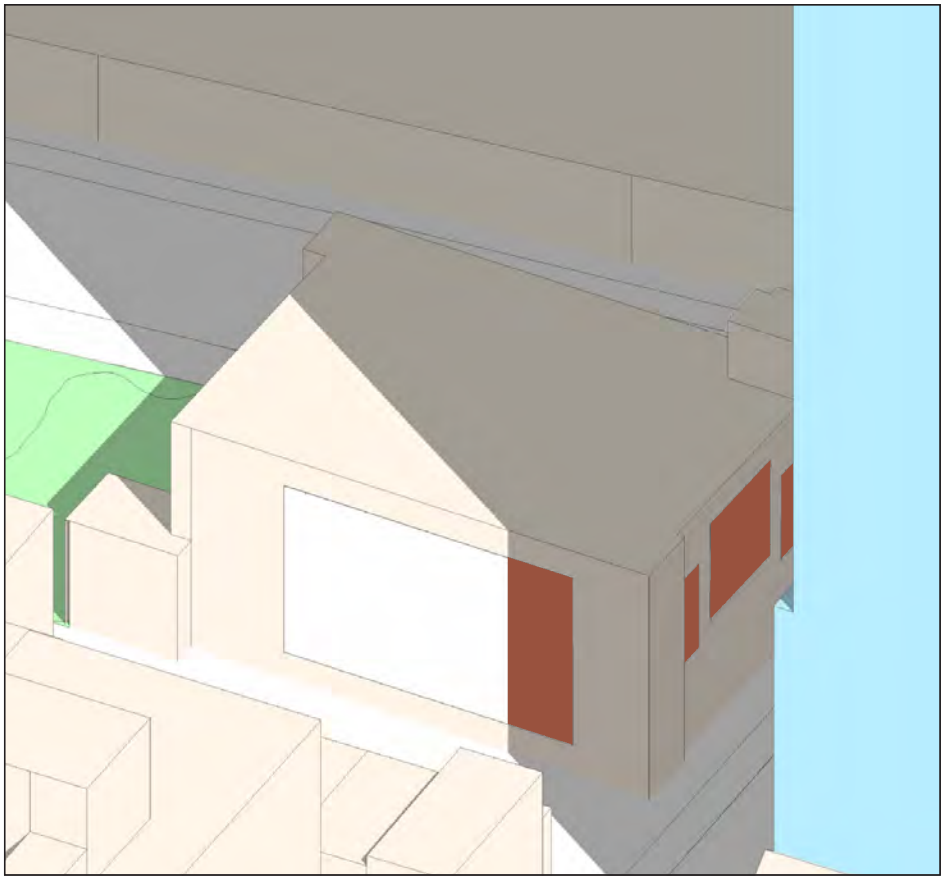
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

10:15 AM



10:45 AM

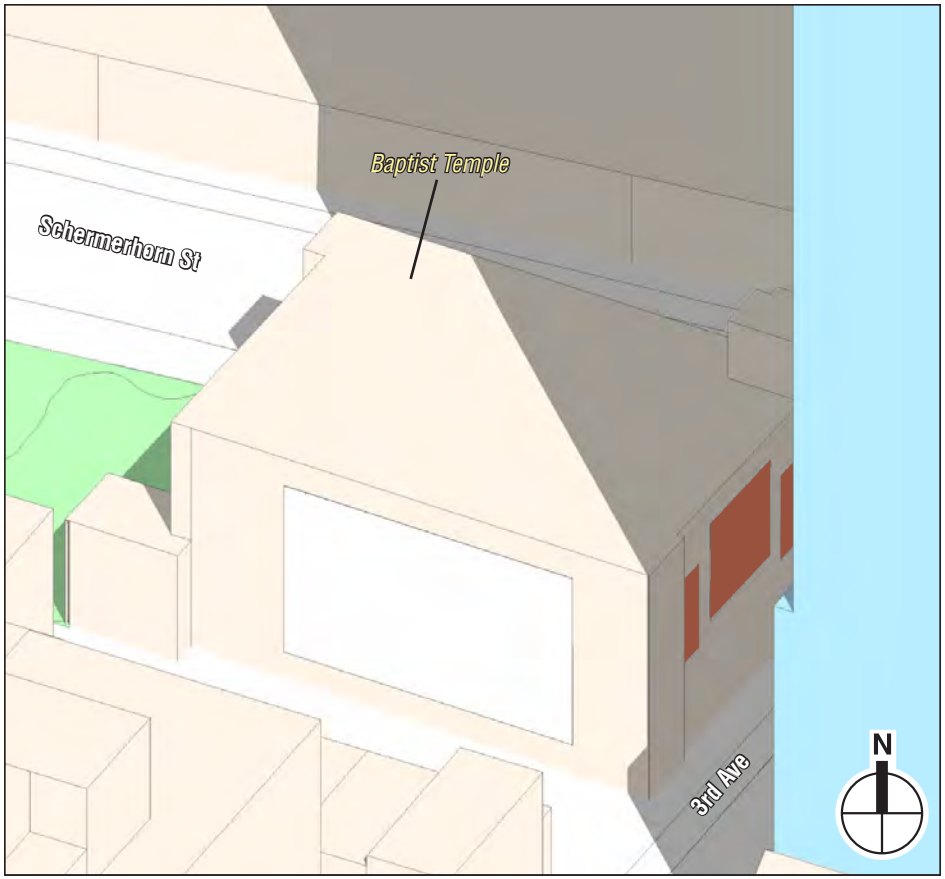
Project Site

Publicly Accessible Open Space

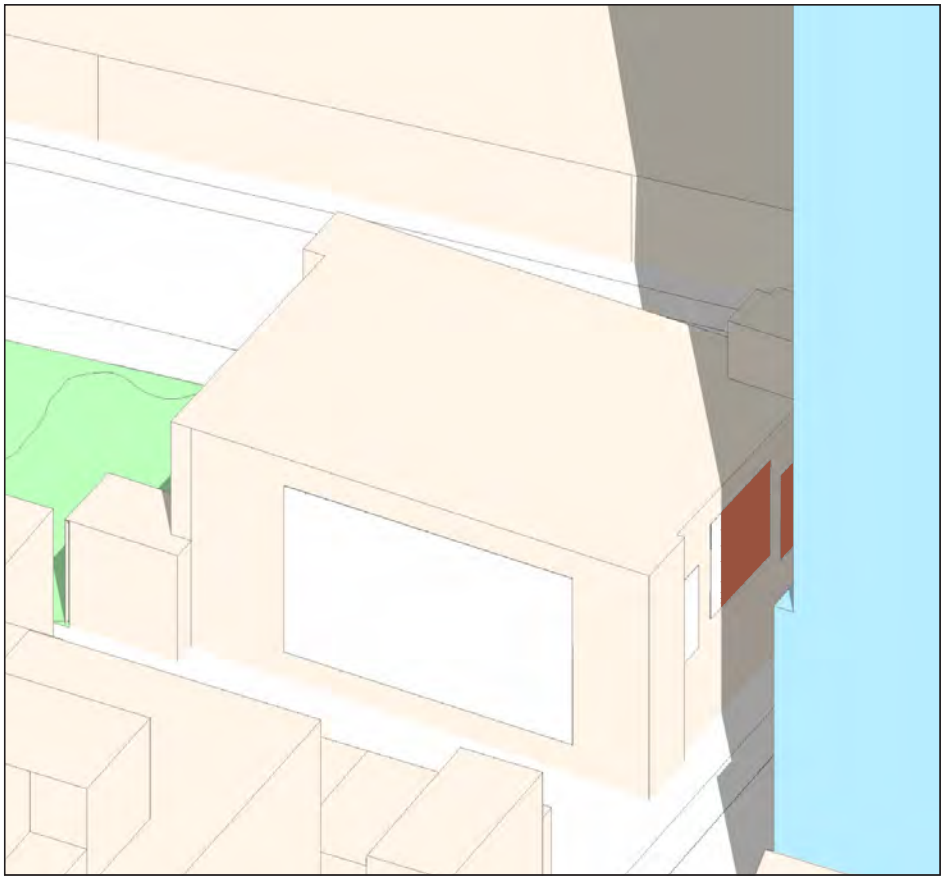
Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18



11:15 AM



11:45 AM

Project Site

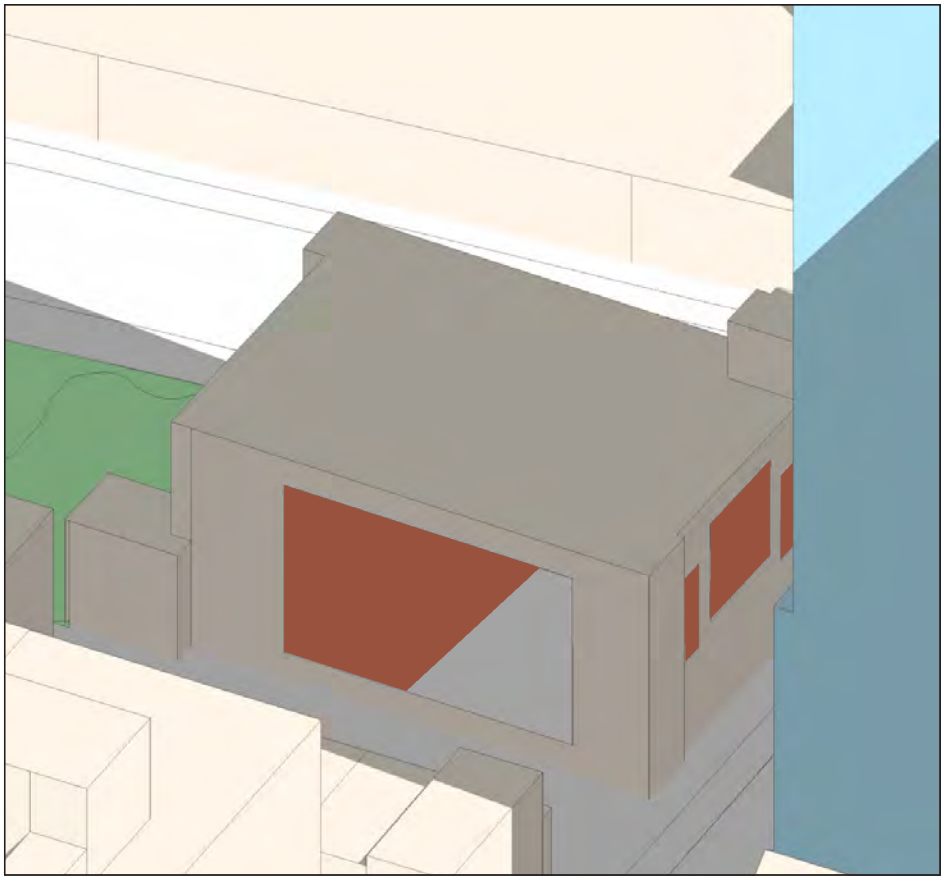
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

9:15 AM



9:45 AM

Project Site

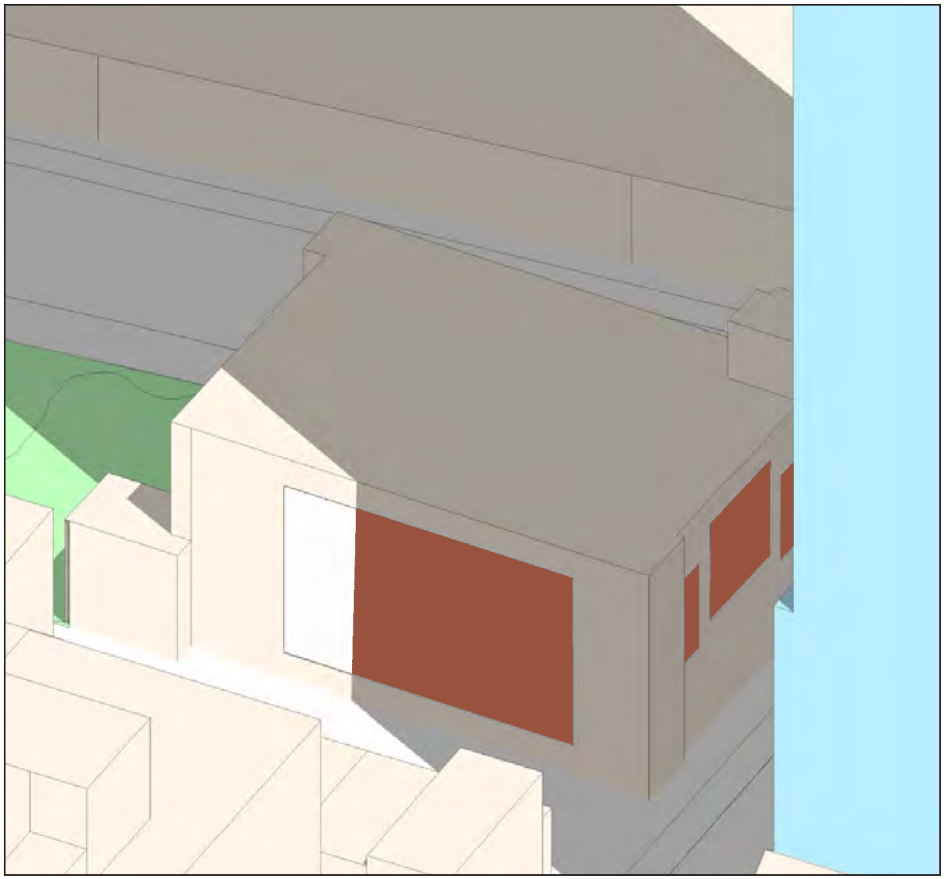
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18

10:15 AM



10:45 AM

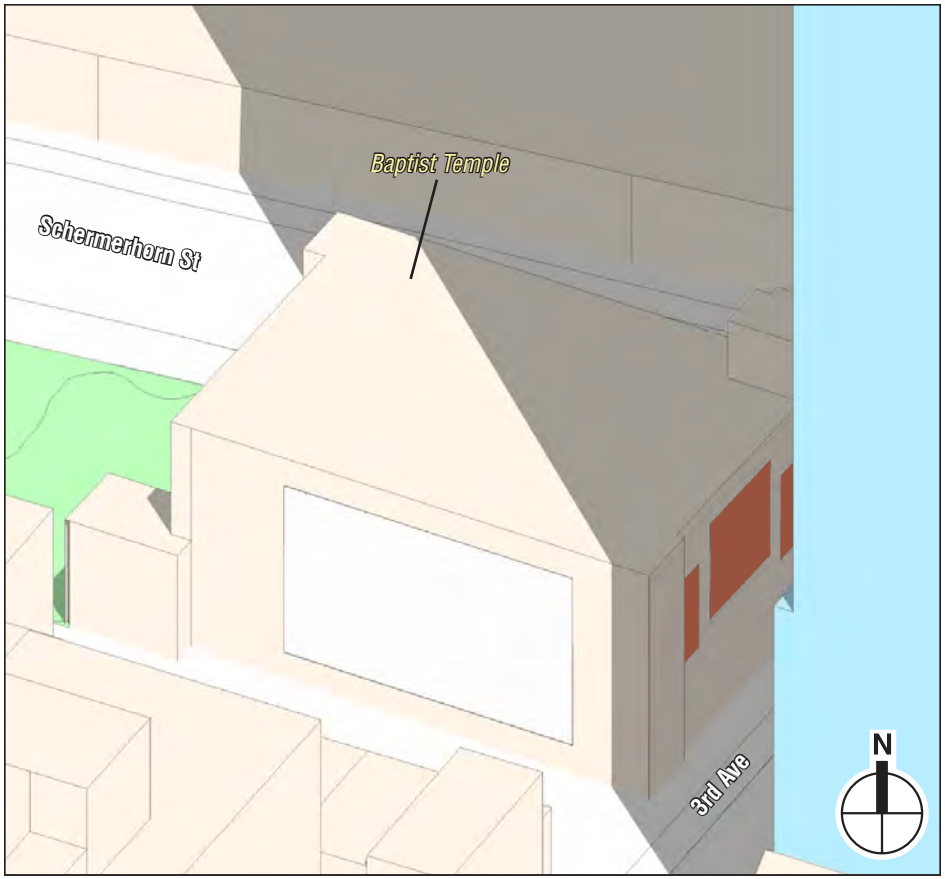
Project Site

Publicly Accessible Open Space

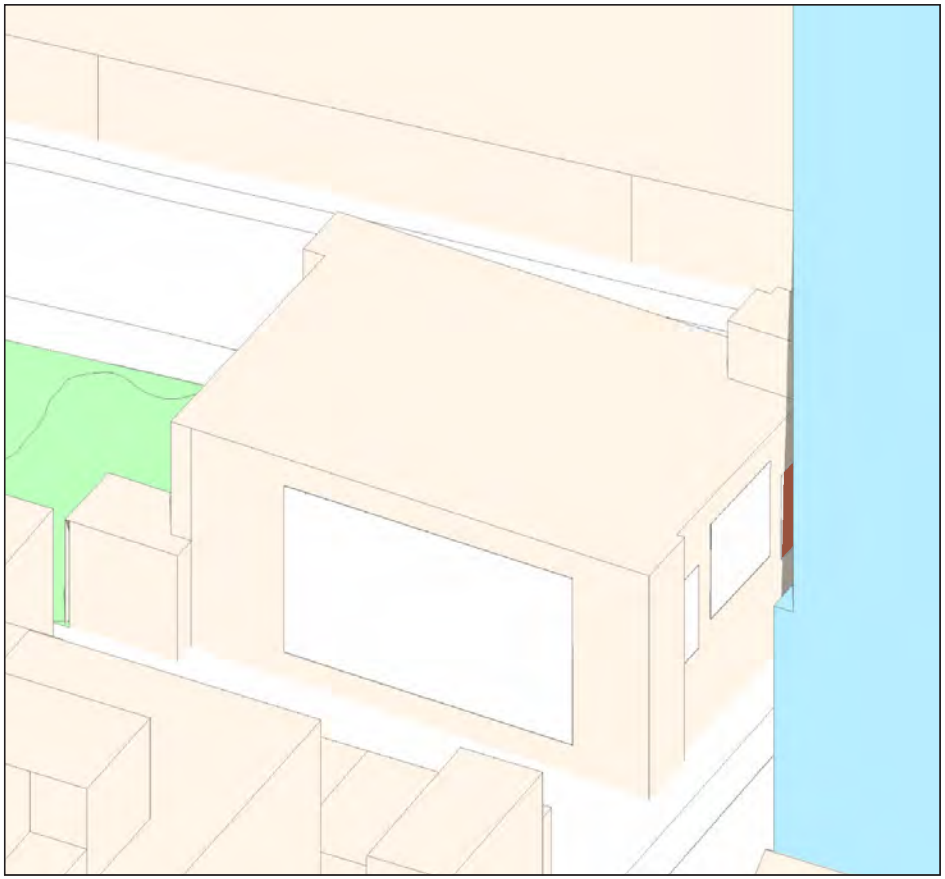
Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18



11:15 AM



11:50 AM

Project Site

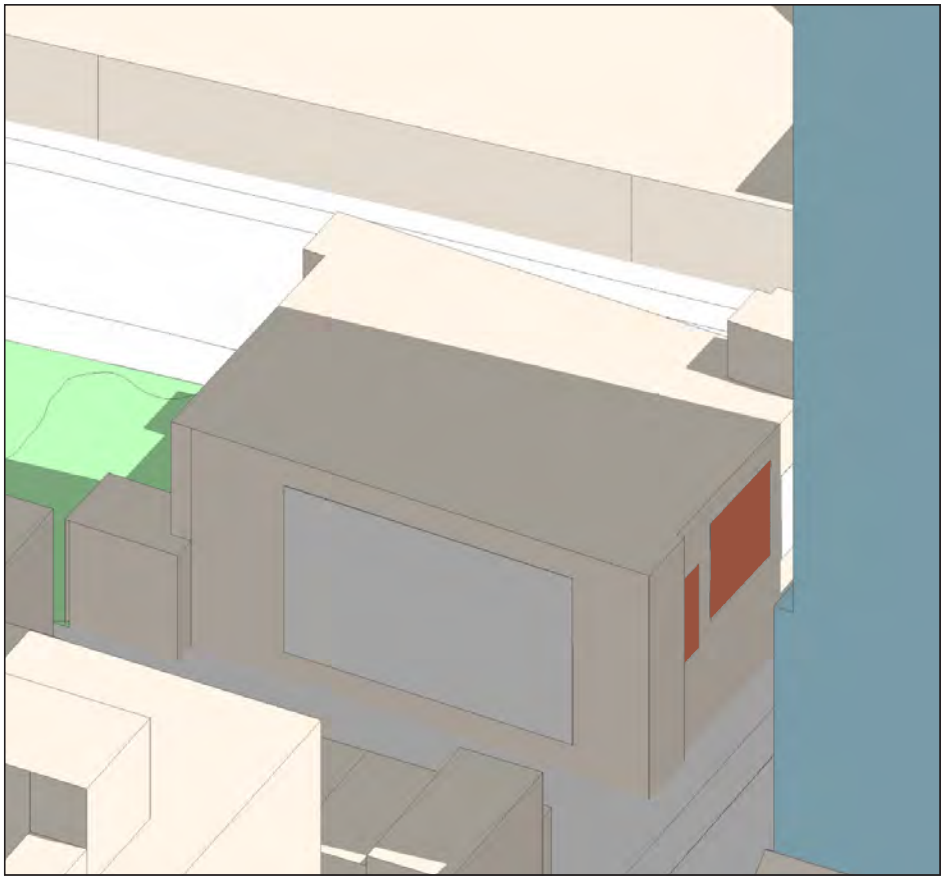
Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

1.30.18

9:15 AM



9:45 AM

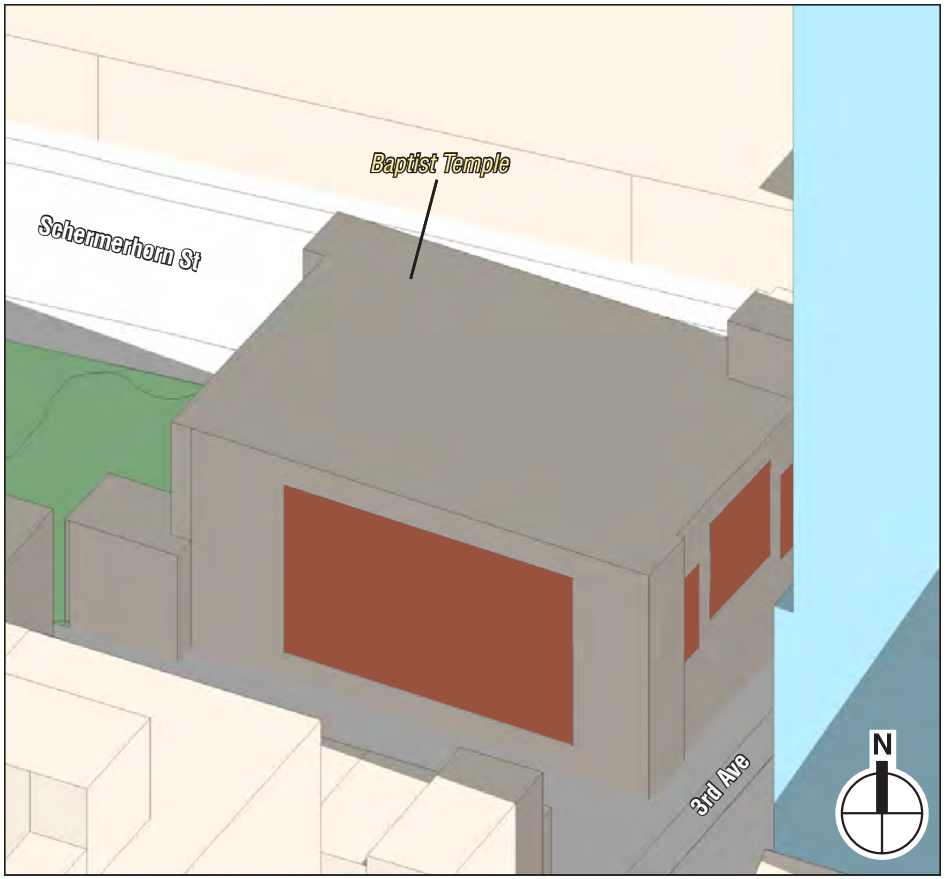
Project Site

Publicly Accessible Open Space

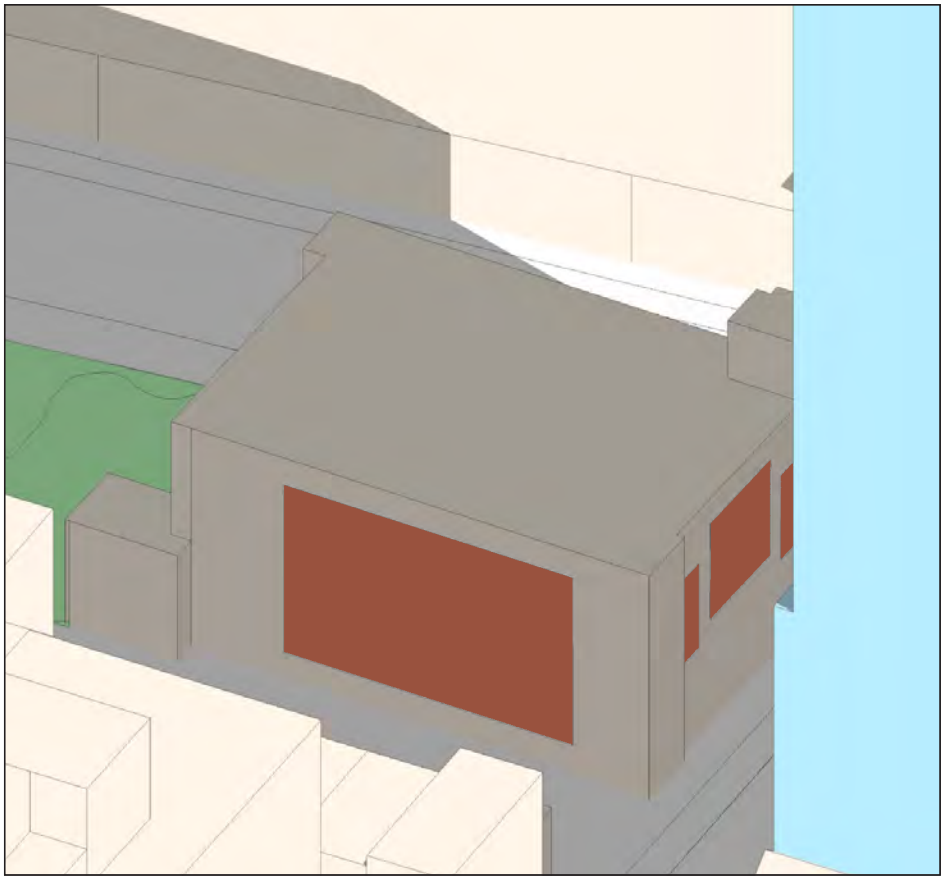
Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18



10:15 AM



10:45 AM

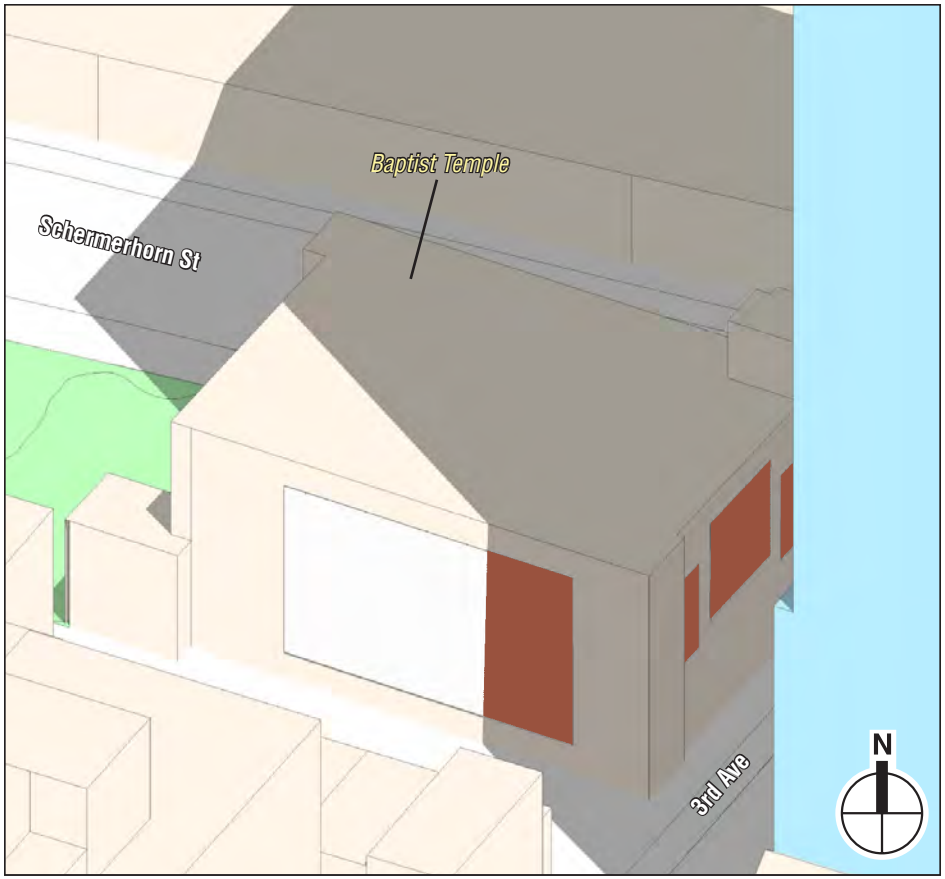
Project Site

Publicly Accessible Open Space

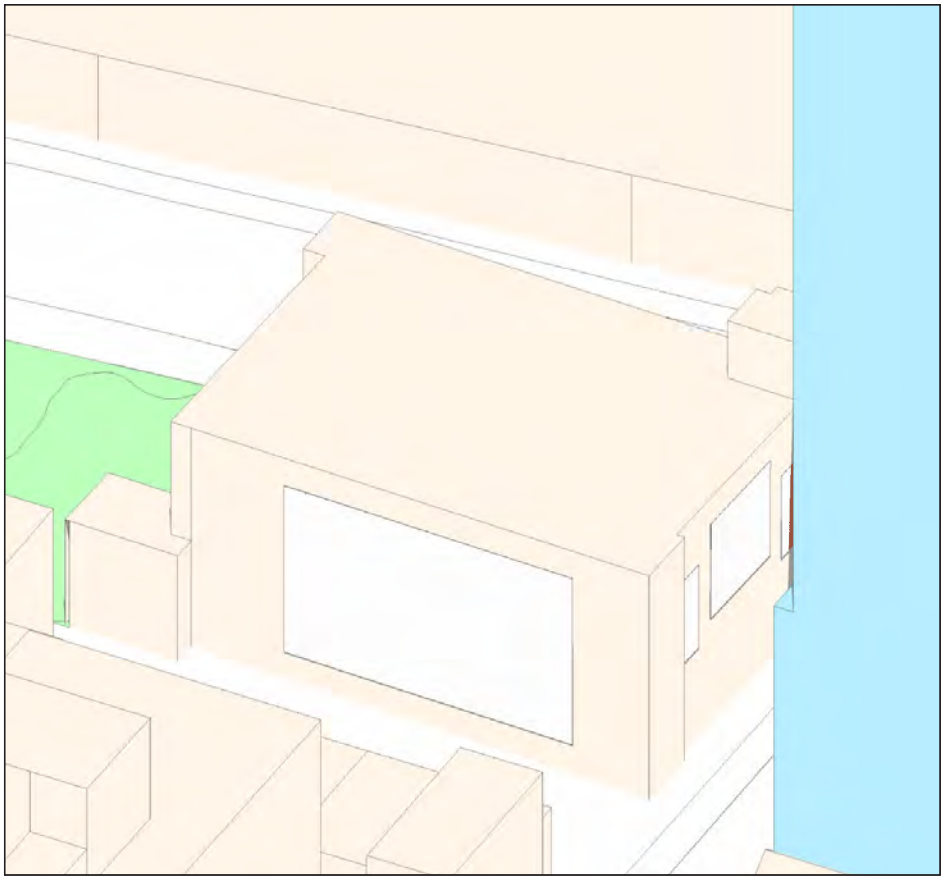
Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18



11:15 AM



11:55 AM

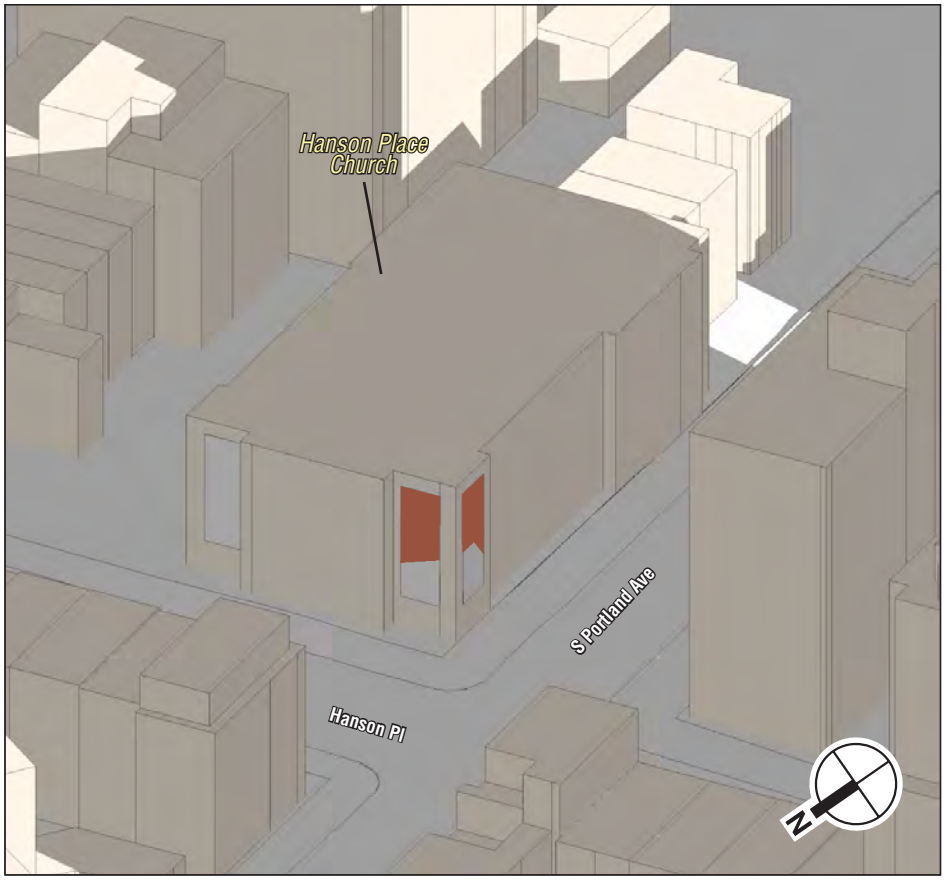
Project Site

Publicly Accessible Open Space

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

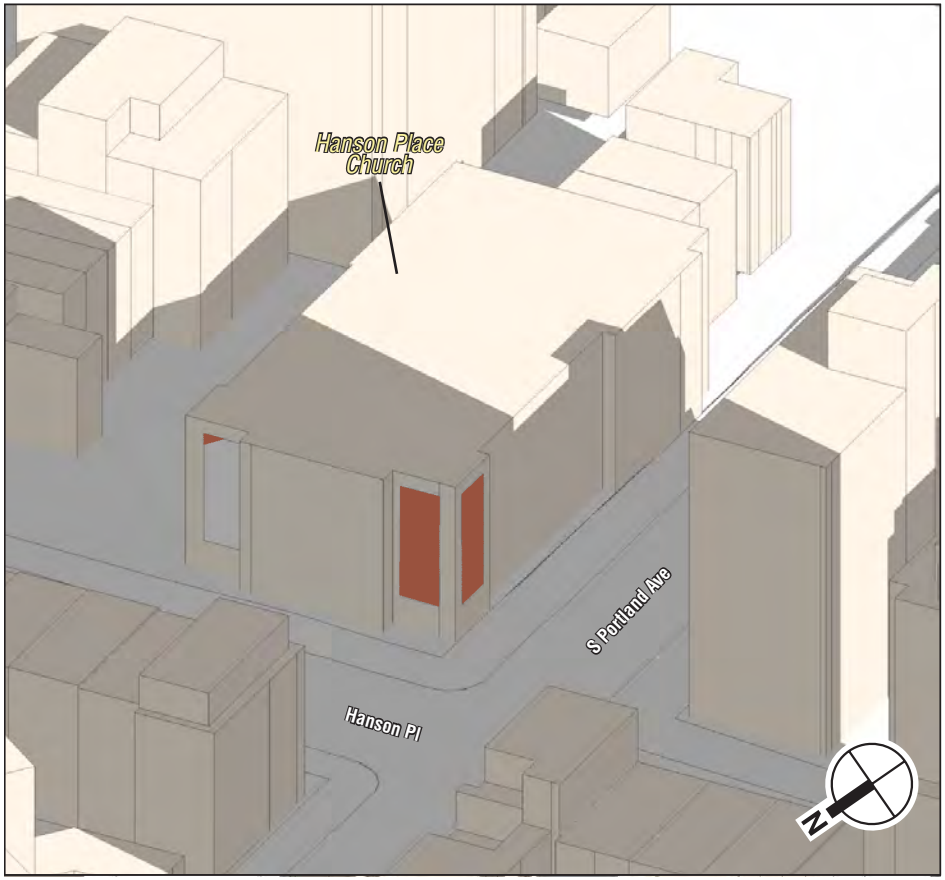


5:15 PM

Incremental Shadow on Sunlight-Sensitive Feature

Detailed Shadow Analysis
May 6 / August 6

1.30.18



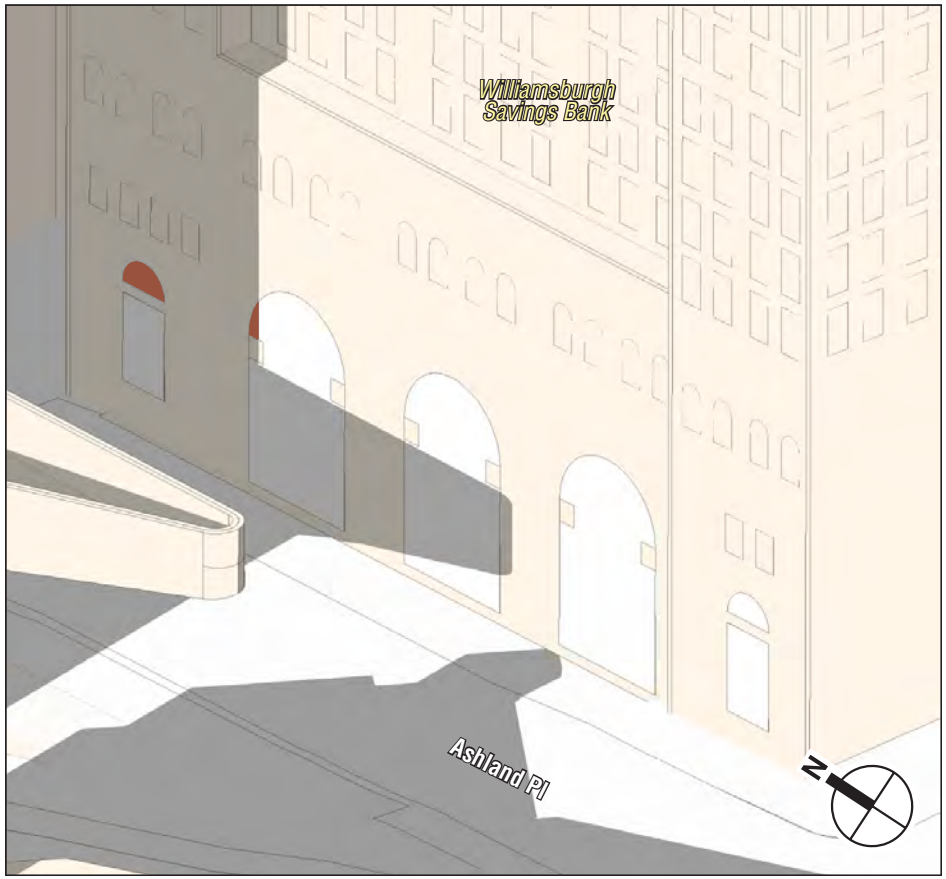
4:45 PM

5:15 PM

Incremental Shadow on Sunlight-Sensitive Feature

Detailed Shadow Analysis
June 21

1.30.18



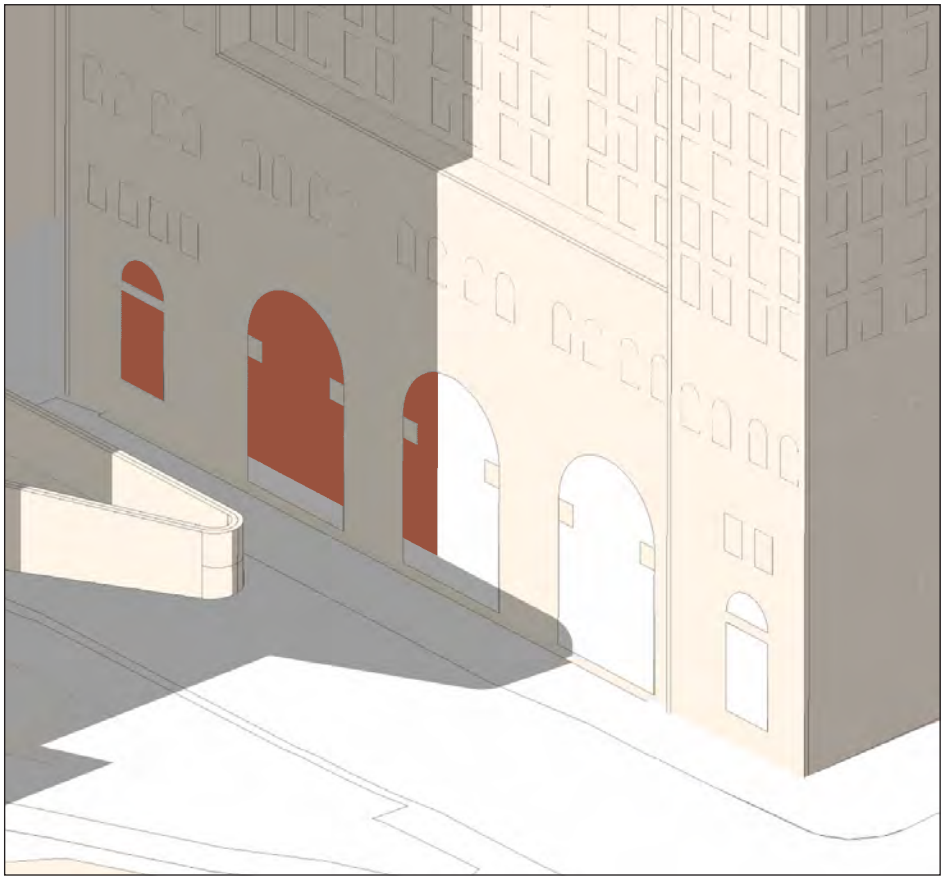
4:20 PM

Incremental Shadow

Detailed Shadow Analysis
March 21 / September 21

1.30.18

3:00 PM



4:00 PM

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6
Figure 6-57

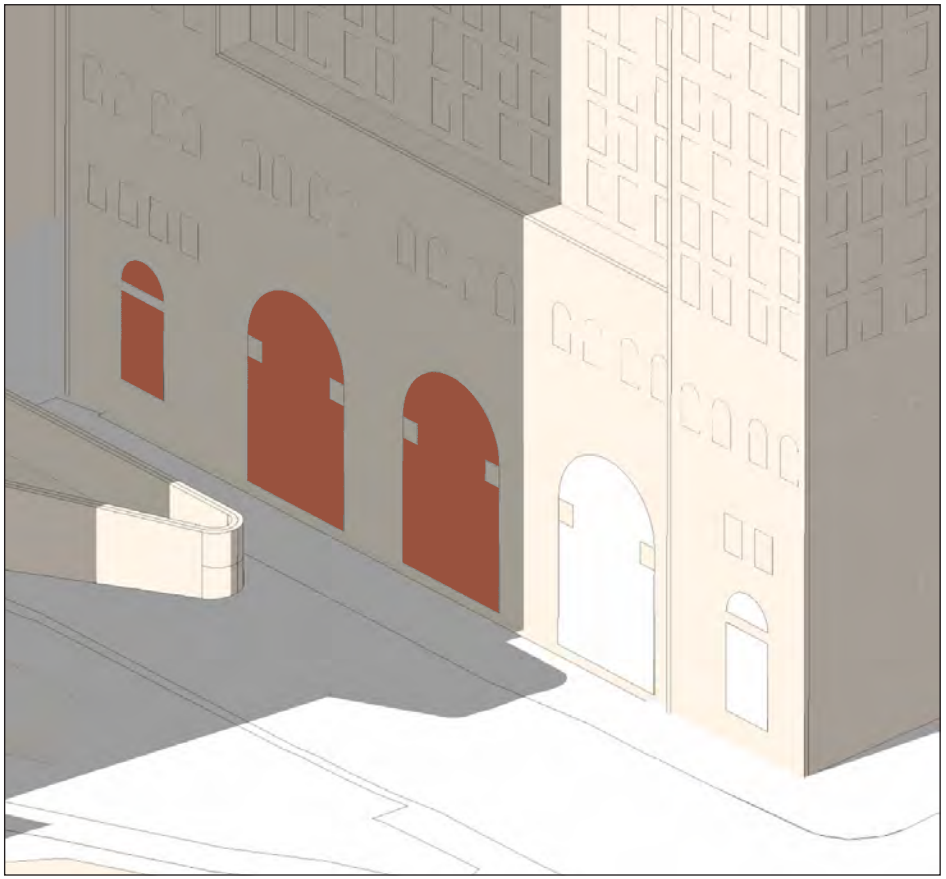
1.30.18

5:00 PM

Incremental Shadow

Detailed Shadow Analysis
May 6 / August 6

3:00 PM



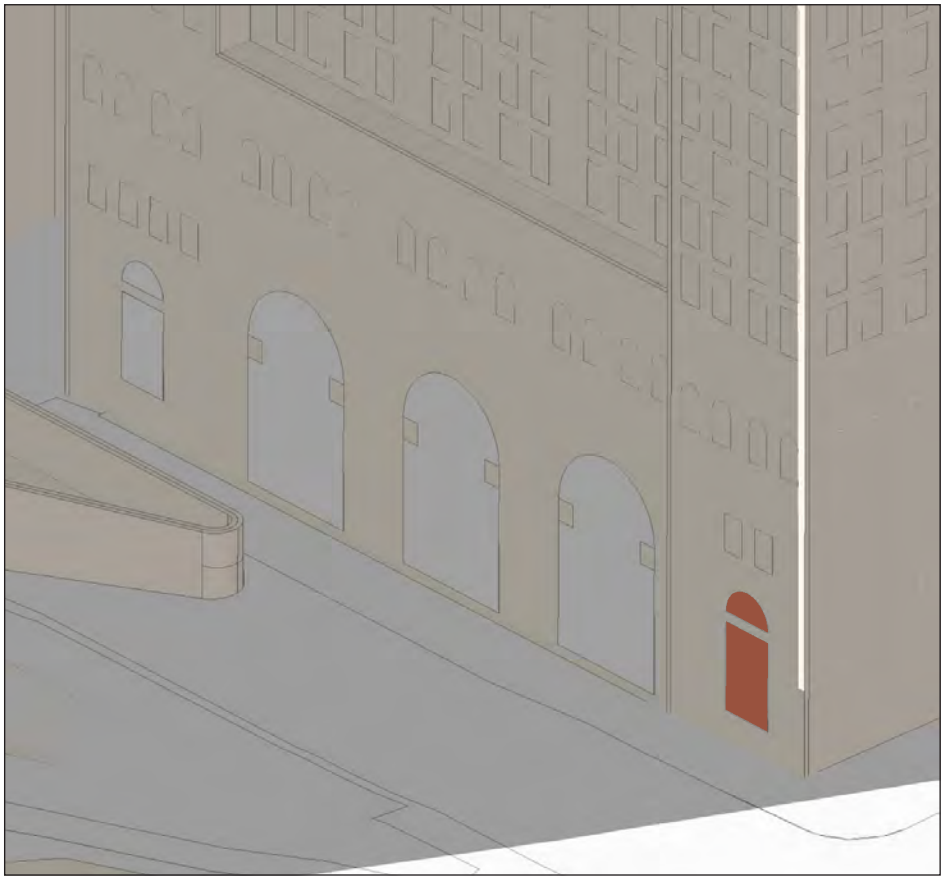
4:00 PM

Incremental Shadow

Detailed Shadow Analysis
June 21

1.30.18

5:00 PM



6:00 PM

Incremental Shadow

Detailed Shadow Analysis
June 21

Table 6-1
Incremental Shadow Durations on Sunlight-Sensitive Resources

Analysis day and timeframe window	December 21 8:51 AM–2:53 PM	March 21/Sept. 21 7:36 AM–4:29 PM	May 6/August 6 6:27 AM–5:18 PM	June 21 5:57 AM–6:01 PM
Publicly Accessible Open Spaces				
Nicholas Naquan Heyward Jr, Park	—	—	—	5:57 AM–6:45 AM Duration: 48 min
Boerum Park	—	—	6:27 AM–6:35 AM Duration: 8 min	—
North Pacific Playground	—	—	—	6:40 AM–7:35 AM Duration: 55 min
Sixteen Sycamores Playground	—	7:50 AM–10:40 AM Duration: 2 hr 50 min	8:25 AM–11:00 AM Duration: 2 hr 35 min	9:05 AM–11:15 AM Duration: 2 hr 10 min
Albee Square	9:05 AM–9:30 AM Duration: 25 min	—	—	—
DOT 3rd Avenue Plaza	9:10 AM–10:25 AM 11:20 AM–1:40 PM Duration: 3 hr 35 min	10:20 AM–1:35 PM Duration: 3 hr 15 min	10:45 AM–12:50 PM Duration: 2 hr 5 min	11:05 AM–12:40 PM Duration: 1 hr 35 min
Temple Square	10:00 AM–10:25 AM 11:50 AM–2:35 PM Duration: 3 hr 10 min	9:45 AM–3:30 PM Duration: 5 hr 45 min	10:40 AM–4:15 PM Duration: 5 hr 35 min	11:05 AM–4:45 PM Duration: 5 hr 40 min
Fox Square	10:15 AM–11:20 AM Duration: 1 hr 5 min	11:05 AM–11:30 AM Duration: 25 min	—	—
Flatbush Avenue Medians	10:20 AM–10:50 AM Duration: 30 min	—	—	—
University Place	10:30 AM–11:05 AM Duration: 35 min	—	—	—
Rockwell Place Bears Community Garden	10:40 AM–11:30 AM 12:20 PM–2:40 PM Duration: 3 hr 10 min*	11:20 AM–2:30 PM Duration: 3 hr 10 min	11:45 AM–1:30 PM Duration: 1 hr 45 min	11:55 AM–1:10 PM Duration: 1 hr 15 min
300 Ashland Place plaza	11:10 AM–1:50 PM Duration: 2 hr 40 min	11:35 AM–4:29 PM Duration: 4hr 54 min	11:55 AM–5:18 PM 5hr 23 min	12:15 PM–5:55 PM 5hr 40 min
230 Ashland Place plaza	12:05 PM–12:40 PM 35 min	—	—	—
Theatre for a New Audience	—	1:20 PM–2:30 PM Duration: 1 hr 10 min	12:40 PM–1:30 PM Duration: 50 min	—
Fort Greene Park	12:55 PM–2:53 PM Duration 1 hr 58 min	—	—	—
BAM Park	—	2:20 PM–4:20 PM Duration: 2 hr	1:50 PM–2:55 PM Duration: 1 hr 5 min	—
Person Square	2:24 PM–2:26 PM Duration: 2 min	—	—	—
Oracle Playground	2:40 PM–2:50 PM Duration: 10 min	—	—	—
Fowler Square	—	3:25 PM–3:50 PM Duration: 25 min	3:00 PM–3:35 PM Duration: 35 min	—
Cuyler Gore	—	—	4:35 PM–5:18 PM Duration: 43 min	—
Brooklyn Bears Carlton Avenue Garden	—	—	4:55 PM–5:10 PM Duration: 15 min	—

Table 6-1 (cont'd)
Incremental Shadow Durations on Sunlight-Sensitive Resources

Analysis day and timeframe window	December 21 8:51 AM–2:53 PM	March 21/Sept. 21 7:36 AM–4:29 PM	May 6/August 6 6:27 AM–5:18 PM	June 21 5:57 AM–6:01 PM
Historic Resources with Sunlight-Sensitive Features				
Baptist Temple–east façade	9:25 AM–12:00 PM Duration: 2 hr 35 min	8:10 AM–9:30 AM 9:55 AM–12:00 PM Duration: 3 hr 25 min	6:27 AM–6:55 AM 8:00 AM–11:50 AM Duration: 4 hr 18 min	6:10 AM–7:40 AM 7:50 AM–11:55 AM Duration: 5 hr 35 min
Baptist Temple–south façade	8:51 AM–10:20 AM Duration: 1 hr 29 min	9:15 AM–10:55 AM Duration: 1 hr 40 min	9:45 AM–11:05 AM Duration: 1 hr 20 min	10:20 AM–11:20 AM Duration: 1 hr
Saint Nicholas Cathedral	—	8:10 AM–8:45 AM Duration: 35 min	—	—
Williamsburgh Savings Bank west façade ground-floor windows	—	3:40 PM–4:29 PM Duration: 49 min	2:25 PM–5:18 PM Duration: 2 hr 53 min	2:10 PM–6:01 PM Duration: 3 hr 51 min
Lafayette Avenue Presbyterian Church	—	4:25 PM–4:29 PM Duration: 4 min	—	—
Hanson Place Church	—	—	4:55 PM–5:18 PM Duration: 23 min	4:35 PM–5:25 PM Duration: 50 min
St. Casimir's Church			4:55 PM–5:00 PM Duration: 5 min	

Notes:
Table indicates entry and exit times and total duration of incremental shadow for each sunlight-sensitive resource.
Daylight saving time is not used—times are Eastern Standard Time, per *CEQR Technical Manual* guidelines. However, as Eastern Daylight Time is in effect for the March/September, May/August, and June analysis periods, add 1 hour to the given times to determine the actual clock time.
*The Garden is closed to the public during the winter.

ASSESSMENT OF SHADOW IMPACTS

The determination of significance of shadow impacts on a sunlight-sensitive resource is based on (1) the information resulting from the detailed shadow analysis describing the extent and duration of incremental shadows and (2) an analysis of the resource's sensitivity to reduced sunlight. The goal of the assessment is to determine whether the effects of incremental shadows on a sunlight-sensitive resource are significant under CEQR.

A shadow impact occurs when the incremental shadow from a proposed project falls on a sunlight-sensitive resource or feature and reduces its direct sunlight exposure. Determining whether this impact is significant or not depends on the extent and duration of the incremental shadow and the specific context in which the impact occurs.

Per CEQR, a significant shadow impact generally occurs when an incremental shadow of 10 minutes or longer falls on a sunlight sensitive resource and results in one of the following:

Vegetation

- A substantial reduction in sunlight available to a sunlight-sensitive feature of the resource to less than the minimum time necessary for its survival (when there was sufficient sunlight in the future without the proposed actions). Generally, 4 to 6 hours a day of sunlight, particularly in the growing season, is a minimum requirement.

- A reduction in direct sunlight exposure where the sensitive feature of the resource is already subject to substandard sunlight (i.e., less than minimum time necessary for its survival).

Historic and Cultural Resources

- A substantial reduction in sunlight available for the enjoyment or appreciation of the sunlight-sensitive features of an historic or cultural resource.

Open Space Utilization

- A substantial reduction in the usability of open space as a result of increased shadows.

For Any Sunlight-Sensitive Feature of a Resource

- Complete elimination of all direct sunlight on the sunlight-sensitive feature of the resource, when the complete elimination results in substantial effects on the survival, enjoyment, or, in the case of open space or natural resources, the use of the resource.

NICHOLAS NAQUAN HEYWARD JR. PARK

The Nicholas Naquan Heyward Jr. Park is a mostly paved playground, which contains basketball and handball courts, playgrounds, bathrooms, and sprinklers. In the early morning on the June 21 analysis day, shadow from the maximum zoning envelope would partially pass over the playground from 5:57 AM to 6:45 AM (see **Figure 6-4**). Considering that there are few users on playgrounds this early in the morning and the total duration of incremental shadow would be limited to less than 1 hour, and would never eliminate the remaining sunlight on the playground, the proposed project would not cause significant adverse shadow impacts to this open space.

No incremental shadow would fall on this resource on any other analysis day.

ALBEE SQUARE

On December 21, incremental shadow would pass across this small plaza from 9:05 AM to 9:30 AM, eliminating the remaining sun for the final 10 minute period from 9:20 AM to 9:30 AM. The new shadow would occur outside the growing season and would not significantly affect the planters in the plaza. Given the limited duration and early hour, the 25 minutes of new shadow would not significantly impact the use of this space. No incremental shadow would occur on the other analysis days.

FOX SQUARE

Fox Square is a street improvement located at the southeast corner of Flatbush Avenue and Fulton Street. The former median was recently improved with the addition of several benches, landscaping, and several trees.

On December 21, incremental shadow would enter the small space at 10:15 AM, eliminate the remaining sun from 10:20 AM to 11:10 AM, and exit the space completely at 11:20 AM (see **Figures 6-5 and 6-6**). This approximately 1 hour of new shadow would not be expected to significantly alter the user experience of this street improvement on the winter analysis day when usage is typically low and small urban plazas are generally shady. Vegetation would not be affected by shadow on the winter analysis day.

On March 21 and September 21 a portion of the space would receive incremental shadow for 25 minutes, from 11:05 AM to 11:30 AM. This short duration and limited extent would not be expected to significantly impact the space.

No incremental shadow would occur on the other analysis days.

FLATBUSH AVENUE MEDIANS

These medians feature landscaping and a bench at each intersection.

On the December 21 analysis day, Incremental shadow would pass across the medians from 10:20 AM to 10:50 AM (see **Figure 6-5**). This brief duration of new shadow on the winter analysis day would not significantly affect any use of the bench and would not affect vegetation outside the growing season.

No incremental shadow would occur on the other analysis days.

UNIVERSITY PLACE

The University Place plaza contains large paved open areas and walkways, landscaped areas of lawns and plantings, but only a few benches, which are located in the southern part of the space.

On the December 21 analysis day the shadow from the maximum zoning envelope would briefly sweep over the plaza from 10:30 AM to 11:05 AM (see **Figures 6-5** and **6-6**). The incremental shadow would be brief, 35 minutes in total and the park would be in complete shadow for only 5 minutes (from approximately 10:45 AM to 10:50 AM. Therefore the proposed project would not result in significant shadow impacts to the use of University Place in the winter. No incremental shadow would occur during the growing season months.

No incremental shadow would occur on the other analysis days.

SIXTEEN SYCAMORES PLAYGROUND

This playground has a handball court in its eastern end and play equipment for children and benches in the rest of the space. The park was aptly named for the several sycamore trees that can be found throughout the space. Sycamores, also known as plane trees, are very popular as ornamental trees and can grow over 100 feet in height. These trees provide shade on the playground when they have leaves in the spring, summer and fall.

On the March 21/September 21 analysis day incremental shadow would be cast on portions of the playground from 7:50 AM to 10:40 AM for a total duration of 2 hours and 50 minutes (see **Figures 6-7**, **6-8 and 6-9**). The playground would be completely in shadow for approximately 30 minutes from 8:45 AM to 9:15 AM. Despite the incremental shadow the playground would still receive 4 hours or more of direct sunlight throughout the analysis day, with the exception of two small areas adjacent to existing structures that already receive less than 4 hours of sunlight in the No Action condition, and therefore the trees and other vegetation would not be significantly impacted by the project-generated shadow. With respect to use and users, the shadow would move across the space, shading different areas at different times, and sunlit areas would remain for all but 30 minutes of the total duration. Beneath the tree canopy, from the perspective of the park's users during the "leaf-on" months, the effects of the maximum zoning envelope's new shadow would likely be minimal, although not undetectable as small areas of sunlight do typically shine through small gaps in the leafy canopy. The incremental shadow would not significantly alter the use of the space on this analysis day.

On the May 6/August 6 analysis day a shadow would be cast on the playground from 8:25 AM to 11:00 AM (see **Figures 6-10**, **6-11 and 6-12**). The space would be completely in shadow for 15 minutes (from approximately 9:40 AM to 9:55 AM). Despite the incremental shadow the playground would still receive 5 hours or more of direct sunlight throughout the analysis day, and

therefore the vegetation would not be significantly impacted by the project-generated shadow. With respect to use and users, similar to the March 21/September 21 analysis day, the shadow would move across the space, shading different areas at different times, and sunlit areas would remain for all but 5 minutes of the total duration. Beneath the tree canopy, from the perspective of the Park's users during the "leaf-on" months, the effects of the maximum zoning envelope's new shadow would likely be minimal, although not undetectable as small areas of sunlight do typically shine through small gaps in the leafy canopy. Therefore the incremental shadow would not significantly alter the use of the space on this analysis day.

On the June 21 analysis day a shadow would be cast on the playground from 9:05 AM to 11:15 AM (see **Figures 6-14 and 6-15**). The incremental shadow would cover the entire park for only a few minutes at around 10:15 AM. The incremental shadow would move over the course of the 2-hour duration, falling on different areas at different times. Despite the incremental shadow, the playground would receive approximately 8 or more hours of direct sunlight throughout the analysis day. Therefore the incremental shadow would not significantly alter the use of the space on this analysis day.

No incremental shadow would fall on this resource on the December 21 analysis day.

NORTH PACIFIC PLAYGROUND

On the June 21 analysis day the shadow from the maximum zoning envelope would move over the playground from 6:40 AM to 7:35 AM (see **Figure 6-13**). Total shadow duration would be 55 minutes. The incremental shadow would eliminate the remaining sunlight for 40 minutes from 6:40 AM to 7:20 AM. However, the incremental shadow would not significantly affect the utilization of the open space on June 21 due to the early hour of the day in which it would occur, its small coverage (particularly at the time when it would eliminate the remaining sunlit area), and the active nature of the space's use.

No incremental shadow would fall on this resource on any other analysis day.

DOT 3RD AVENUE PLAZA

DOT 3rd Avenue Plaza currently contains seating and trees. Planned future improvements include new seating, curbside planting beds, and other landscaping. The 3rd Avenue slip lane will be reconstructed to be at-grade with the adjacent sidewalk, effectively expanding the size of the plaza.

On the December 21 analysis day new shadow from the maximum zoning envelope would fall on a portion of the plaza beginning at 9:10 AM, and would shade the entire plaza beginning approximately 1 hour later at 10:05 AM, and would exit completely 20 minutes later at 10:25 AM when existing shadows would cover the space (see **Figure 6-16**). Incremental shadow would cover the entire plaza again from 11:20 AM until 12:55 PM, and then a portion of the plaza until 45 minutes when it would exit at 1:40 PM (see **Figures 6-17 and 6-18**).

On the March 21/September 21 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 10:20 AM to 1:35 PM (see **Figures 6-20**, **6-21** and **6-22**). Incremental shadow would shade the plaza completely from 10:55 AM to 12:40 PM.

On the May 6/August 6 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 10:45 AM to 12:50 PM (see **Figures 6-25 and 6-26**). Incremental shadow would shade the plaza completely from 11:20 AM to 12:15 PM.

On the June 21 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 11:05 AM to 12:40 PM (see **Figure 6-30**). Incremental shadow would shade the plaza completely from 11:35 AM to 12:10 PM.

DOT 3rd Avenue Plaza would receive approximately 3 hours to 3 hours and 30 minutes of new shadow in the fall, winter, and early spring seasons, and approximately 1 hour and 30 minutes to 2 hours in the late spring and summer. Although the amount of shadow is substantial, especially in winter time, the paved plaza will primarily be used as pedestrian circulation space, and will contain limited seating. The longest incremental shadow occurs in the winter, which will not have an effect on the growing season of vegetation in the plaza. The plaza would still receive over 5 hours of sunlight on both the May 6/August 6 and June 21 analysis days and over 4 hours on the March 21/September 21 analysis day except for a small area in the southwest corner which would receive just under 4 hours. The project-generated shadow would not be expected to affect the intended use of the plaza, nor would it threaten the survival of its vegetation, and therefore the proposed project would not result in significant adverse shadow impacts on the DOT 3rd Avenue Plaza.

TEMPLE SQUARE

This small triangular plaza sits north-adjacent to the project site between Schermerhorn Street, Lafayette Avenue, and Flatbush Avenue. The plaza contains trees and is primarily used for pedestrian circulation space. The City is considering an independent pedestrian improvement project involving the closure of Schermerhorn Street between 3rd and Flatbush Avenues, which could expand Temple Square. If the closure of Schermerhorn Street is approved, the plaza could be expanded to include the vacated roadbed. The City currently has no approved plans for the future improvement of Temple Square.

On the December 21 analysis day new shadow from the maximum zoning envelope would fall on a portion of the plaza beginning at 10:00 AM, and would shade the entire plaza from 10:10 AM to 10:25 AM (see **Figure 6-16**). Incremental shadow would eliminate the entire remaining sunlight from the plaza from 11:50 AM until 2:35 PM. (see **Figures 6-17 and 6-18**).

On the March 21/September 21 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 9:45 AM to 3:30 PM (see **Figures 6-20, 6-21, 6-22, and 6-23**). Incremental shadow would shade the plaza completely from 10:55 AM to 2:10 PM.

On the May 6/August 6 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 10:40 AM to 4:15 PM (see **Figures 6-25, 6-26, 6-27, and 6-28**). Incremental shadow would shade the plaza completely from 11:45 AM to 1:15 PM.

On the June 21 analysis day incremental shadow from the maximum zoning envelope would fall on the plaza from 11:05 AM to 4:45 PM (see **Figures 6-30, 6-31, 6-32, and 6-33**). Incremental shadow would shade the plaza completely from 11:55 AM to 12:50 PM.

This small plaza would be partially or completely in project-generated shadow for long durations, from 3 hours 10 minutes to 5 hours 40 minutes depending on the season. The paved plaza contains trees and is primarily used as pedestrian circulation space. Future improvements could include plantings and seating. The nature and location of any future plantings are unknown at this time but the resource would receive less than 4 hours of direct sunlight on the March 21 and September 21 analysis day and a small portion of the plaza would receive less than 4 hours of direct sunlight on the May 6 and August 6 analysis day. The project-generated shadow would threaten the survival of the existing trees, and therefore the proposed project would result in significant adverse shadow impacts to the vegetation contained in Temple Square. Any future plantings should be shade-

tolerant, but to the extent that they are not, future plantings would also be impacted by project-generated shadows on those analysis days in the locations that receive 4 hours or less of sun.

ROCKWELL PLACE BEARS COMMUNITY GARDEN

This community garden in the junction of Rockwell Place and Lafayette and Flatbush Avenues is used to grow vegetables and flowers. It is part of the New York City Department of Parks and Recreation (NYC Parks) GreenThumb program. According to a posted sign,[4] it is open to the public from April to October on weekends and whenever the gate is open. Use of the garden is devoted to the maintenance and care of the plantings. There is a path that winds through the small garden, and approximately 10 chairs or benches located among the plantings and path.

On the December 21 analysis day the shadow from the maximum zoning envelope would move into the northwest corner of the community garden beginning at 10:40 AM. Incremental shadow would move eastward and from 11:00 AM to 11:30 AM would eliminate the remaining sunlight in the garden (see **Figure 6-17**. An incremental shadow would be cast on the space again from 12:20 PM to 2:40 PM. The incremental shadow would completely eliminate the sun between 12:20 PM and 1:50 PM. (see **Figure 6-18**).

Vegetation is not affected by shadows on the winter analysis day, which is outside the growing season. Further, as noted above the garden is closed in winter and the winter shadows would therefore not significantly affect the space on this analysis day.

On the March 21/September 21 analysis day incremental shadow from the maximum zoning envelope would pass over the garden in a similar fashion entering at 11:20 AM and exiting at 2:30 PM (see **Figures 6-21, 6-22 and 6-23**). The garden would be completely in incremental shadow for 10 minutes, from 11:40 AM to 11:50 AM, and again for 45 minutes from 12:30 PM to 1:15 PM. Despite the incremental shadow from the maximum zoning envelope, the garden would still receive between 4 hours and 6 hours and 30 minutes of direct sunlight on this analysis day, depending on the specific location within the garden. Given the variety of plants and flowers in the garden, it is possible that some species require full sun, i.e. 6 hours of direct sunlight or more, and a reduction to 4 or 5 hours would significantly impact the health of these species. Use of the garden is devoted to active maintenance and care of the plantings, and the incremental shadow would likely not affect this activity. For users seeking sunlight, during the limited periods when the incremental shadow would eliminate all the sunlit area, other sunlit areas would be available across the street in the DOT 3rd Avenue Plaza and in the 300 Ashland Place plaza or down the street in Sixteen Sycamores Playground. Therefore the incremental shadow would not significantly affect the use or users of this space. However, as noted above, it would likely significantly impact any shade intolerant species of plants.

On the May 6/August 6 analysis day the shadow would enter the garden at 11:45 AM and leave the garden at 1:30 PM (see **Figures 6-26 and 6-27**). The garden would be completely in project-generated shadow for 25 minutes, from 12:10 PM to 12:35 PM. Despite the incremental shadow from the maximum zoning envelope, the garden would still receive between 5 and 9 hours of direct sunlight on this analysis day. Given the variety of plants and flowers in the garden, it is possible that at least some species require full sun, i.e. 6 hours of direct sunlight or more, and a reduction to 5 hours could significantly impact the health of these species. Use of the garden is devoted to active maintenance and care of the plantings, and the incremental shadow would likely not affect this activity. For users

[4] Seen on a site visit on July 28, 2017.

seeking sunlight, during the 15 minutes when the incremental shadow would eliminate all the sunlit area, other sunlit areas would be available across the street in the DOT 3rd Avenue Plaza and in the 300 Ashland Place plaza or down the street in Sixteen Sycamores Playground. Therefore the incremental shadow would not significantly affect the use or users of this space. However, as noted above, it would likely significantly impact any shade intolerant species of plants.

On the June 21 analysis day, incremental shadow from the maximum zoning envelope would move across the garden from 11:55 AM to 1:10 PM and the garden would be completely in shadow caused by the proposed building for 20 minutes, from 12:10 PM to 12:30 PM (see **Figures 6-30 and 6-31**). Despite the incremental shadow from the maximum zoning envelope, all areas of the garden would still receive over 5 hours of direct sunlight on this analysis day, with some areas receiving more than 9 hours. A small area in the northeast corner of the garden would receive between 5 and 6 hours of direct sunlight, and given the variety of plants and flowers in the garden, it is possible that some species in that small area require full sunlight, i.e. 6 hours of direct sunlight or more, and a reduction to less than 6 could significantly impact the health of these species. As noted above, the garden is primarily used for growing vegetables and flowers. Members are provided access to plots for growing vegetables or may tend the flower garden or other features of the garden, with the garden use generally reserved for active maintenance and care of the plantings. The incremental shadow would not affect this activity. The garden contains a small seating area along Rockwell Place, which would be sunlit at other times of the day. In addition, for users seeking sunlight, during the 20 minutes when the incremental shadow would eliminate all the sunlit area, other sunlit areas would be available across the street in the DOT 3rd Avenue Plaza and in the 300 Ashland Place plaza or down the street in Sixteen Sycamores Playground. Therefore the incremental shadow would not significantly affect the use or users of this space. However, as noted above, it would likely significantly impact any shade intolerant species of plants.

300 ASHLAND PLACE PLAZA

Opened in mid-2017, this large new public space surrounding a new development located east across Flatbush Avenue from the project site has plantings and long steps for seating in its southern half, and a large mostly featureless paved open plaza in its northern half with a few small trees in planters inset into the plaza and four steps around the plaza, separating it from the sidewalk, providing seating.

On the December 21 analysis day, the shadow from the maximum zoning envelope would enter the plaza at 11:10 AM from its northwestern corner and would move eastward across the northern portion of the space. By noon, the incremental shadow would cover a little more than half of the space, with some sunlit area remaining (see **Figure 6-17**). From 12:20 PM to 1:50 PM, the incremental shadow would remove the remaining sunlight (see **Figure 6-18**). After 1:50 PM, and continuing to the end of the analysis day at 2:53 PM, the entire space would be in existing/No Action shadow, so no incremental shadow would occur. December 21 is outside the growing season so the space's plantings would not be significantly affected on this analysis day, and despite the long duration of incremental shadow, the extent would not be large for most of the affected period, and sunlit seating areas would be available in the DOT 3rd Avenue Plaza across Flatbush Avenue and Sixteen Sycamores Playground down the block for any users seeking sun on this winter analysis day. Therefore the use of the space would not be significantly affected.

On the March 21/September 21 analysis incremental shadow from the maximum zoning envelope would be cast on portions of the plaza from 11:35 AM to the end of the analysis day at 4:29 PM (see **Figures 6-21 to 6-24**). The incremental shadow would cover large areas at times during this affected period. The plaza would be completely in shadow caused by the maximum zoning

envelope for 5 minutes, from 12:30 PM to 12:35 PM, and then later in the afternoon for 1 hour and 14 minutes from 3:15 PM to 4:29 PM. The entire space would receive less than 4 hours of direct sun with the proposed project, whereas without the project the northern half of the plaza would receive 4 to 5 hours of direct sun. Given the long duration and at times large extent of incremental shadow, particularly in the late afternoon, the use and character of the space would likely be significantly altered. In addition the health of any trees or plantings in the northern half of the space could be significantly impacted by the new shadow.

Shadow from the maximum zoning envelope would affect the plaza on the May 6/August 6 analysis day from 11:55 AM to the end of the analysis day at 5:18 PM (see **Figures 6-26 to 6-29**). The incremental shadow would cover large areas at times during this affected period. The plaza would be completely in shadow for 55 minutes from 2:25 PM to 3:20 PM. With the proposed project, most of the plaza would receive less than 4 hours of sun, whereas without the proposed project the entire space would receive between 5 and 10 hours of sunlight. Given the long duration and at times large extent of incremental shadow, particularly in the middle to late afternoon, the use and character of the space would likely be significantly altered. In addition the health of any trees or plantings in the southern three-quarters of the space could be significantly impacted by the new shadow.

On the June 21 analysis day, incremental shadow from the maximum zoning envelope would fall on portions of the plaza from 12:15 PM to 5:55 PM (see **Figures 6-30 to 6-33**). The incremental shadow would cover large areas at times during this affected period. The plaza would be completely in shadow for 50 minutes from 2:00 PM to 2:50 PM. With the proposed project, an area in the southern portion of the space, representing about 20 percent of the total area of the space, would receive less than 4 hours of sun, whereas without the proposed project the entire space would receive between 6 and 11 hours of sun. Given the long duration and at times large extent of incremental shadow, particularly in the middle to late afternoon, the use and character of the space would likely be significantly altered. In addition the health of any trees or plantings in the southern 20 percent of the space could be significantly impacted by the new shadow.

230 ASHLAND PLACE PLAZA

This small residential plaza contains seating and planters.

On the December 21 analysis day, incremental shadow would pass across the space from 12:05 PM to 12:40 PM. This brief 35 duration of new shadow on the winter analysis day would not significantly affect any use of the bench and would not affect vegetation outside the growing season.

THEATRE FOR A NEW AUDIENCE

This medium-size plaza surrounding the theater has semi-circular benches and is entirely paved, with a few trees in tree pits. The plaza is already in shadow for the better part of every analysis day, with only small slivers of light in the earlier hours of the day and occasionally in the afternoon. The maximum zoning envelope would create new shadow on the plaza on two analysis days: from 1:20 PM to 2:30 PM on the March 21/September 21 analysis day, and from 12:40 PM to 1:30 PM on the May 6/August 6 analysis day.

Although incremental shadow from the maximum zoning envelope would eliminate the remaining sunlight in the plaza from 1:20 PM to 2:20 PM on the March 21/September 21 analysis day (see **Figures 6-22 and 6-23**) and from 12:55 PM to 1:20 PM on the May 6/August 6 analysis day (see **Figure 6-27**), the extent of the new shadow is limited to a small band relative to the overall plaza, which would be mostly in shadow from existing buildings at those times. The change in light and

shadow conditions would be minor compared to the No Action condition and incremental shadows would last for less than 1 hour. Therefore, the use of the plaza would not be significantly impacted.

FORT GREENE PARK

This large, well-used park is located approximately ½-mile northeast from the project site. The proposed building would cast a shadow on portions of the park on the December 21 analysis day.

Incremental shadow from the top of the maximum zoning envelope would enter the middle of the western edge of the park at 12:55 PM, (see **Figures 6-34 and 6-35**) on the December 21 analysis day. The shadow would pass across the park, moving east, and increasing in length to the end of the analysis day at 2:53 PM, when the shadow would reach the southeast corner of the park. The shadow is fairly narrow relative to the size of the park and would cover a single location in the park for only approximately 15 minutes at a time on its way through.

The incremental shadow would be brief in duration and would be small relative to the size of the park. Substantial sunlit areas would remain in the park during the affected periods and would not substantially alter the users' experience. The proposed project would therefore not result in adverse shadow impacts on Fort Greene Park.

No incremental shadow would fall on this resource on any other analysis day.

CUYLER GORE

This medium-size neighborhood park has ample seating and a children's playground in the center.

Incremental shadow would be cast on the park on the May 6/August 6 analysis from 4:35 PM to 5:18 PM. The park would not be completely in shadow at any point (see **Figures 6-36 and 6-37**).

The incremental shadow would be short in duration, would occur late in the day, would occur on only 1 of 4 analysis days, and sunlit areas of the park would remain throughout the affected period. Therefore the incremental shadow would not result in significant adverse impacts on the Cuyler Gore.

No incremental shadow would fall on this resource on any other analysis day.

BROOKLYN BEARS CARLTON AVENUE GARDEN

This community garden would receive only 15 minutes of incremental shadow on the May 6/August 6 analysis day, from 4:55 PM to 5:10 PM (see **Figure 6-36**). It would be completely in shadow for 7 minutes (from 4:55 PM to 5:02 PM). The shadow is short in duration and would not result in significant adverse impacts to the resource.

No incremental shadow would fall on this resource on any other analysis day.

BAM PARK

This park has been locked and unused for many years but will undergo renovations and be reopened by 2025.

A shadow would be cast on the park on the March 21/September 21 analysis day from 2:20 PM to 2:55 PM, and then again from 3:10 PM to 4:20 PM. Although the incremental shadow from the proposed project would eliminate the remaining sunlight in the plaza from 3:10 PM to 4:10 PM (see **Figure 6-38**), the extent of the new shadow is limited to a small area relative to the overall park, which would be mostly in existing shadow at that time. The change in light and shadow conditions would be minor compared to conditions without the proposed project. Therefore, the use of the park would not be significantly impacted on this analysis day.

On the May 6/August 6 analysis day the maximum zoning envelope would cast a shadow over the park from 1:50 PM to 2:55 PM (see **Figure 6-39**). Total duration of the incremental shadow would be limited to approximately 1 hour, but would eliminate all of the remaining sunlight to the park for only a few minutes around 2:20 PM. Sunlit areas would remain for the rest of the affected period, and therefore the proposed project would not cause significant adverse shadow impacts to this open space.

No incremental shadow would fall on this resource on any other analysis day.

FOWLER SQUARE

A shadow would be cast on the park on the March 21/September 21 analysis day from 3:25 PM to 3:50 PM, eliminating all the sunlight for 15 minutes between 3:30 PM and 3:45 PM.

A shadow would be cast on the park on the May 6/August 6 analysis day from 3:00 PM to 3:35 PM, eliminating all the sunlight for 15 minutes between 3:05 PM and 3:25 PM.

The brief duration of incremental shadow would not affect the paved surface and statue in this space.

SAINT NICHOLAS CATHEDRAL

This church has sunlight-sensitive features (i.e., stained glass) facing the maximum zoning envelope on its north and east façades. Incremental shadow would fall on the east façade on the March 21/September 21 analysis day from 8:10 AM to 8:45 AM (see **Figure 6-41**). The east façade would be completely in shadow due to project-generated shadow for 10 minutes, from 8:20 AM to 8:30 AM.

The shadow would affect the east façade only briefly on just one analysis day, would eliminate all the sunlight on the façade for only approximately 10 minutes, and would therefore not significantly impact the appreciation of the stained glass windows of this historic resource.

No incremental shadow would fall on this resource on any other analysis day.

BAPTIST TEMPLE

Baptist Temple has stained glass windows (i.e., sunlight-sensitive features) on all four of its façades, lighting its main sanctuary space as well as other non-public areas of the building. The main sanctuary space was damaged by fire several years ago and is closed to the public; the congregation currently has its services in the basement of the building. It has not yet been determined whether this space will be renovated and re-opened, but currently there is no public access to this space. The assessment below considers the stained glass windows that would be visible to the public from the main sanctuary space.

On the December 21 analysis day new shadow from the maximum zoning envelope would fall on the sunlight-sensitive features of the resource from 8:51 AM to 10:20 AM on the south façade and from 9:25 AM to 12:00 PM on the east façade (see **Figures 6-42 to 6-44**). The total duration during which either the south or east façade windows would receive incremental shadow would be 3 hours and 9 minutes. There would never be a time when sunlight would be eliminated from all the windows sunlight-sensitive features would never be completely in shadow during the analysis period on this analysis day.

On the March 21/September 21 analysis day the sunlight-sensitive features would receive incremental shadow from the maximum zoning envelope from 9:15 AM to 10:55 AM on the south façade and from 8:10 AM to 9:30 AM and again from 9:55 AM to 12:00 PM on the east façade (see **Figures 6-45 to 6-47**). The total duration during which either the south or east façade windows

would receive incremental shadow would be 3 hours and 50 minutes. All the windows on both façades would be completely in shadow for much of the period between 8:10 AM and 10:10 AM.

The maximum zoning envelope would cast new shadow on the east façade windows of the Baptist Temple on the May 6 / August 6 analysis day from 6:27 AM to 6:55 AM, and from 8:00 AM to 11:50 AM. The south façade windows would receive incremental shadow from 9:45 AM to 11:05 AM. The total duration during which either the south or east façade windows would receive incremental shadow would be 4 hours 18 minutes (see **Figures 6-48 to 6-50**). All the windows on both façades would be completely in shadow for much of the period between 8:30 AM and 10:30 AM.

The maximum zoning envelope would cast new shadow on the east façade windows of the Baptist Temple on the June 21 analysis day from 6:10 AM to 7:40 AM, and from 7:50 AM to 11:55 AM. The south façade windows would receive incremental shadow from 10:20 AM to 11:20 AM. The total duration during which either the south or east façade windows would receive incremental shadow would be 5 hours 35 minutes (see **Figures 6-51 to 6-53**). All the windows on both façades would be completely in shadow for approximately 45 minutes, from 10:15 AM to 11:00 AM.

The windows of the Baptist Temple would receive long durations of incremental shadow during the morning in each season. However, sunlight would reach portions of the stained-glass windows of the church's main sanctuary space for the majority of each day. Further, the main sanctuary space into which the windows look has been fire-damaged for several years and is closed to the public. It has not yet been determined whether this space will be renovated and re-opened, but currently there is no public access to this space, and therefore the incremental shadow would not have an adverse impact.

HANSON PLACE SEVENTH-DAY ADVENTIST CHURCH

This church has sunlight-sensitive features (i.e., stained glass windows) facing the maximum zoning envelope on its east façade (facing South Portland Avenue) and north façade (facing Hanson Place).

The maximum zoning envelope would cast incremental shadow on the May 6/August 6 analysis day on the northeast corner of the church, shading a portion of a window on the north façade, and a portion of a window on the east façade from 4:55 PM to 5:18 PM (see **Figure 6-54**). The incremental shadow would eliminate the remaining sunlight from both façades for 13 minutes, from 5:05 PM to 5:18 PM. This limited extent and duration of new shadow would not significantly impact this historic resource.

On the June 21 analysis day new shadow would fall on one north façade window from 4:35 PM to 5:25 PM and one east façade window from 4:45 PM to 5:25 PM (see **Figure 6-55**). Those two windows were the only ones not already in existing/No Action condition shadow at this late hour and consequently the project-generated shadow would eliminate the remaining sunlight on the church windows from 4:40 PM to 5:25 PM. However, given the very small size of the incremental shadow, covering only portions of two windows, the limited duration of incremental shadow, and the late hour of the day in which they occur, this incremental shadow would not significantly affect this historic resource.

No incremental shadow would fall on this resource on any other analysis day.

WILLIAMSBURGH SAVINGS BANK

The first floor interior of the Williamsburgh Savings Bank, which is a New York City Landmark, is a New York City Interior Landmark. There are large windows lighting the former ground-floor

main banking hall; these windows have figurative metal panels affixed to their exterior, which create a stained glass effect on the interior of the building. The ground floor of the building is currently not open to the public, however, it can be rented for private events.

Incremental shadow would fall on the ground-floor windows on the west façade on the March 21/September 21 analysis day from 3:40 PM to 4:29 PM (see **Figure 6-56**). On the May 6/August 6 analysis day new shadow would fall on the ground-floor windows from 2:25 PM to 5:18 PM (see **Figures 6-57 and 6-58**) and on the June 21 analysis day from 2:10 PM to 6:01 PM (see **Figures 6-59 and 6-60**).

The incremental shadow would fall on portions of the windows but sunlight would continue to reach other portions. Therefore, the incremental shadow would not significantly impact the appreciation of these architectural features by potential private viewers in the interior of the ground floor hall. As noted above, the space is not accessible to the public. ✷

Chapter 7: Historic and Cultural Resources

A. INTRODUCTION

This chapter considers the potential of the proposed actions to affect architectural and archaeological resources. The proposed project involves the redevelopment of the project site with three new buildings, which would contain a replacement facility for the Khalil Gibran International Academy, a new public lower school, and residential, office, retail, and cultural community facility use. Based on the current design, two of the existing Khalil Gibran International Academy school buildings currently on the project site would be retained and adaptively reused as part of the proposed project. As discussed in Chapter 1, "Project Description," the Environmental Impact Statement (EIS) considers the potential effects of development within the maximum zoning envelope allowed under the special permit, which is larger than the proposed buildings. The maximum zoning envelope would encompass Building D and allow for its demolition, and could partially extend into the footprint of Building E (or cantilever over it). The analysis characterizes existing conditions, evaluates changes to historic and cultural resources that are expected to occur independent of the proposed actions, and identifies and addresses any potential impacts to historic and cultural resources associated with the proposed actions.

PRINCIPAL CONCLUSIONS

The proposed actions would result in significant adverse impacts associated with the demolition of historic buildings on the project site.

The existing Khalil Gibran International Academy—which has been determined by the New York City Landmarks Preservation Commission (LPC) to be eligible for New York City Landmark (NYCL) designation (but is not a NYCL or pending NYCL designation) as well as eligible for listing on the State and/or National Registers of Historic Places (S/NR)—is a complex of five connected buildings constructed at different times. The proposed project would entail the demolition of three of the five historic school buildings. Furthermore, the maximum zoning envelope would encompass the site of Building D and could partially extend into the existing footprint of Building E (or cantilever over it) and, depending on the final design needs of Building C, would allow for demolition of Building D. The demolition of the historic buildings on the project site with the proposed project as well as under the maximum zoning envelope would result in significant adverse impacts to historic resources.

B. METHODOLOGY

Consistent with the guidance of the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, in order to determine whether the proposed project could potentially affect architectural resources, this chapter considers whether the proposed project would result in a physical change to any resource, a physical change to the setting of any resource (such as context or visual prominence), and, if so, whether the change is likely to alter or eliminate the significant characteristics of the resource that make it important. More specifically, as set forth in the *CEQR Technical Manual*, potential impacts to architectural resources may include the following:

- Physical destruction, demolition, damage, alteration, or neglect of all or part of an historic property;
- Changes to an architectural resource that cause it to become a different visual entity;
- Isolation of the property from, or alteration of, its setting or visual relationships with the streetscape, including changes to the resource's visual prominence;
- Introduction of incompatible visual, audible, or atmospheric elements to a resource's setting;
- Replication of aspects of the resource so as to create a false historical appearance;
- Elimination or screening of publicly accessible views of the resource;
- Construction-related impacts, such as falling objects, vibration, dewatering, flooding, subsidence, or collapse; and
- Introduction of significant new shadows, or significant lengthening of the duration of existing shadows, over an historic landscape or on an historic structure (if the features that make the resource significant depend on sunlight) to the extent that the architectural details that distinguish that resource as significant are obscured.

The study area for archaeological resources is defined as the area where subsurface disturbance would occur. In a comment letter dated May 15, 2017, LPC has determined that the project site does not possess archaeological sensitivity (see **Appendix B**). As LPC has determined that the project site is not archaeologically sensitive, this chapter focuses on standing structures only.

To evaluate potential effects due to on-site construction activities, and also to account for visual or contextual impacts, the study area for architectural resources is defined as extending 400 feet from the project site (see **Figure 7-1**). As defined in the New York City Department of Buildings' (DOB) *Technical Policy and Procedure Notice (TPPN) #10/88,* adjacent construction is defined as any construction activity that would occur within 90 feet of an architectural resource.[1] Consistent with the guidance of the *CEQR Technical Manual*, designated architectural resources that were analyzed include NYCL, Interior Landmarks, Scenic Landmarks, and New York City Historic Districts (NYCHD); resources calendared for consideration as one of the above by LPC; resources listed on or formally determined eligible for inclusion on the S/NR, or contained within a district listed on or formally determined eligible for listing on the Registers; resources recommended by the New York State Board for listing on the Registers; and National Historic Landmarks (NHL).

C. EXISTING CONDITIONS

PROJECT SITE

As shown in **Figure 7-1**, the project site is the full block bounded by Schermerhorn Street to the north, Flatbush Avenue to the east, State Street to the south, and 3rd Avenue to the west (Block 174, Lots 1, 9, 13, 18, 23, and 24) in Downtown Brooklyn. The eastern side of the project site (Lots 9, 13, 18, 23, and 24) includes two three-story buildings fronting on Flatbush Avenue and State Street, one two-story building fronting on Flatbush Avenue, one one-story building fronting on Schermerhorn Street, and one five-story building at the corner of Flatbush Avenue and State Street. The five-story building at the corner of Flatbush Avenue and State Street formerly had a

[1] TPPN #10/88 was issued by DOB on June 6, 1988, to supplement Building Code regulations with regard to historic structures. TPPN #10/88 outlines procedures for the avoidance of damage to historic structures resulting from adjacent construction, defined as construction within a lateral distance of 90 feet from the historic resource.

Historic Resources Reference Map

Figure 7-1

ECF 80 FLATBUSH AVENUE

rounded bay front at that corner, as well as a cornice, both of which have been removed. These buildings have not been identified as potential architectural resources.

The western portion of the project site (Lot 1) is currently occupied by the Khalil Gibran International Academy. The five buildings on this portion of the site were constructed at different times, as described below. In its comment letter dated May 15, 2017, LPC stated that the building complex on Block 174, Lot 1 appears to be eligible for NYCL designation and for listing on the S/NR.

The oldest element of the former P.S. 15 complex is the three-story red brick structure at the southwest corner of the block (School Building 1, also referred to here as Building E), which has its primary façade on 3rd Avenue and was built circa 1860 (see Views 1 and 2 of **Figure 7-2**). It was designed by Samuel B. Leonard, Superintendent of Buildings and Repairs for the Board of Education. This structure has a triangular pediment above its center bay on the 3rd Avenue façade, narrow-arched windows at the center bay, and simple stone sills and lintels. Alterations to this structure over time include the replacement of its original dentilled cornice with a less detailed cornice (both façades), the replacement of the round window within the triangular pediment with a ventilation grill, and the recladding of the ground-floor metal building entrance that extends outward from the brick façade with corrugated metal. An addition to this structure was made circa 1869, a three-story structure facing 3rd Avenue (School Building 3). This structure continued the red brick cladding, simple stone window sills and lintels, and dentilled cornice of the original school, with rectangular windows at ground level, segmental arched windows at the second level, and narrow arched windows. One detail that is different from the original school is the simple brick detailing below each row of windows, and the band of corbelled arched brick below the cornice. Alterations to this structure over time include the replacement of the dentilled cornice, consistent with the alteration at the original school.

Circa 1898, the three-story structure at 362 Schermerhorn Street (School Building 2, also referred to here as Building D) was constructed, with a small rear addition to this structure added soon thereafter (School Building 4) (see View 3 of **Figure 7-3**). This structure was designed in the Rundbogenstil, a style related to the Romanesque Revival as expressed in contemporary German architecture emphasizing economy of material and workmanship. The building is brick, with minimal stone detailing; the narrow windows have segmental arches and drip molds at the first and second stories. The building is finished above the third story with a band of corbelled brick and a metal cornice. The small rear addition generally matches the style of this structure; however, the brick detailing above the third story is slightly different, and the metal cornice does not extend to the addition. The original finials above the metal cornice at the corners of the building have since been removed. Also ca. 1898, an existing three-story town house adjacent to the original school on State Street was added to the school complex (School Building 5). This structure—which dates to approximately 1855–1869—is clad in red brick with simple stone window sills and lintels. It also retains its detailed cornice.

This assembled complex has been home to many schools over time, including a girl's vocational/continuation school in the 1930s and the Metropolitan Corporate Academy in 1992. The interior of the buildings exhibit the multiple alterations that would be expected given its iterative development and many different school uses over time. The Khalil Gibran International Academy moved to this building complex in 2011.

The building complex on this portion of the site has been identified by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) as architecturally significant under National Register Criterion C, as an example of late 19th century institutional architecture in New York City, and under Criterion A, for its association with the growth of this Brooklyn neighborhood.

Lot 1, Former P.S. 15, view northeast from 3rd Avenue and State Street **1**

Lot 1, Former P.S. 15, view west on State Street **2**

Architectural Resources on Project Site

Lot 1, Former P.S. 15, view south from Schermerhorn Street and 3rd Avenue **3**

Baptist Temple, view southwest from Schermerhorn Street and 3rd Avenue **4**

Architectural Resources on Project Site
and in Study Area

STUDY AREA

There are 10 known architectural resources located within the study area. These resources are described below, listed in **Table 7-1,** and mapped on **Figure 7-1**. No potential architectural resources were identified within the study area.

Table 7-1
Architectural Resources on Project Site and in Study Area

Map No.	Block / Lot	Address	Name	S/NR	S/NR Eligible	NYCL	NYCL Eligible
Project Site							
1	174/1	362 Schermerhorn Street	P.S. 15 (former)		X[1]		X[1]
Study Area							
2	173/23	360 Schermerhorn Street	Baptist Temple	X			X[1]
3	180/7, 9-22	522-550 State Street	State Street Houses		X[4]		
4	N/A	N/A	Fort Greene Historic District and Boundary Expansion	X		X[5]	
5	N/A	N/A	BAM Historic District			X	
6	2111/15	30 Lafayette Avenue	Brooklyn Academy of Music	X[3]			
7	2111/1	1 Hanson Place	Williamsburgh Savings Bank	X[3]		X[2]	
8	N/A	—	Atlantic Avenue Control House (IRT)	X			
9	N/A	—	Atlantic Avenue Subway Station (IRT/BMT)	X			
10	2109/9	37-53 and 74-92 Rockwell Place	Pioneer Warehouses		X[4]		X
11	180/57 and 58	529-531 Atlantic Avenue	Atlantic Avenue Houses		X		

Notes:
[1] Determination of eligibility made in LPC comment letter dated May 15, 2017
[2] Interior and exterior
[3] Individually listed; also contributing within the Fort Greene Historic District Boundary Expansion (S/NR)
[4] Determinations of eligibility made previously by LPC
[5] Fort Greene Historic District NYCL boundaries differ from those of S/NR boundaries; NYCL district does not fall within study area. Brooklyn Academy of Music (BAM) Historic District falls wholly within Fort Greene Historic District Boundary Expansion (S/NR) borders

The Baptist Temple at 360 Schermerhorn Street (S/NR, NYCL-eligible) began in 1823 as the First Baptist Church of Brooklyn. In 1893, the congregation moved to its current location and built a new house of worshop on the site. That structure was reconstructed in 1917–1918 after a fire that destroyed the interior and roof. The architects for the original structure were Weary & Kramer; the architects for the reconstruction were Dodge & Morrison. The red brick, Romanesque Revival-style building has frontages on Schermerhorn Street and 3rd Avenue, deeply arched entrances on 3rd Avenue, and a tower at the corner of 3rd Avenue and Schermerhorn Street (see View 4 of **Figure 7-3**). Each façade has a gable front and stained glass windows. The building suffered another fire, in 2010, which severely damaged the interior.

The 15 three- and four-story residential buildings at 522-550 State Street, on the south side of the street between 3rd and 4th Avenues, appear to have been built sometime before 1885. These row houses are faced in red brick with stone details and brownstone; a few have decorative pediments over the doorframe (see Views 5 and 6 of **Figure 7-4**). The buildings were designed in the Italianate style. Most retain their cornices and stoops.

The Fort Greene Historic District (S/NR, NYCL) is bounded roughly by Myrtle Avenue on the north, Vanderbilt Avenue on the east, Fulton Street on the south, and Fort Greene Place on the west. The S/NR-listed district expansion extends roughly to DeKalb Avenue on the north, South Oxford Street on the east, Hanson Place on the south, and Ashland Place on the east, and includes the BAM Historic District (described below). The historic district includes Fort Greene Park, but otherwise is virtually entirely composed of residential buildings. The row houses in the historic district are primarily three- to five-story brownstone and brick buildings designed in the Italianate, Second Empire, Anglo-Italianate, and neo-Greco styles. By far the most predominant style is the

522-550 State Street, view east **5**

522-550 State Street, view west **6**

Architectural Resources in Study Area

Italianate; building details include high stoops, arched doorways, floor-length parlor windows, and carved brackets supporting windows and cornices.

The BAM Historic District (NYCL) is roughly bounded by Lafayette Avenue, Fulton Street, Ashland Place, and State Street. As described above, the historic district falls wholly within the borders of the Fort Greene Historic District Boundary Expansion (S/NR) (described above). The majority of the buildings in the district are row houses dating from 1855 to 1859 (see View 7 of **Figure 7-5**). Most of the rowhouses are three or four stories in height, faced in brick or brownstone, and have Italianate features—high stoops, arched doorways, windows with bracketed lintels, and projecting bracketed cornices. Notable non-residential buildings within the historic district are the BAM, the Williamsburgh Savings Bank, and the Hanson Place Methodist Church.

The Brooklyn Academy of Music (S/NR) is located at 30 Lafayette Avenue, within the boundaries of the BAM Historic District and the Fort Greene Historic District Boundary Expansion. It was constructed in 1906 and designed by the noted theater architecture firm Herts & Tallant. The Italian Renaissance-inspired building is faced in textured, cream-colored brick with polychromatic terra-cotta detail, including entrances adorned with putti (i.e., figures of small cherubs) singing and playing musical instruments, inspired by the work of Renaissance master Luca della Robbia (see View 8 of **Figure 7-5**). A reproduction of the original cornice and a new marquee were installed in 2004.

The Williamsburgh Savings Bank (S/NR, NYCL interior and exterior) is located at 1 Hanson Place (see View 9 of **Figure 7-6**). The 512-foot-tall building was constructed in 1927, when the bank's trustees found it necessary to expand beyond their location in Williamsburg. Designed by the architectural firm of Halsey, McCormick & Helmer, the bank is Byzantine-styled with a series of setbacks rising to a four-faced illuminated clock and gilded copper dome. The base of the building is constructed of Indiana limestone and polished rainbow granite from Minnesota. The 63-foot-high main banking room, also a NYCL, is visually expressed on the exterior of the building. The setback portion of the building is introduced by another series of arched windows and is constructed of buff-colored brick with terra-cotta detailing. The various setbacks are accentuated by contrasting limestone trim, with the 13th and 26th floors set off by the use of round arches and a continuous terra-cotta band. The building has recently been converted to residential use, with the former main banking room now restricted to use for private events.

The Atlantic Avenue Control House (Interborough Rapid Transit [IRT]) (S/NR) was designed by Heins & LaFarge and built in 1908 (see View 10 of **Figure 7-6**). One story tall and constructed of buff-colored brick with limestone and terra-cotta trim, it served as an entrance to the subway station until 1971. The control house was dismantled in 2000 as part of the Long Island Rail Road (LIRR) Atlantic Avenue terminal and subway station renovation. It was reconstructed on its original site, on the triangular island located at the juncture of Flatbush Avenue and 4th Avenue, and serves as a skylight for the interior of the station.

The Atlantic Avenue subway station (IRT/Brooklyn–Manhattan Transit Corporation [BMT]) (S/NR) at Flatbush Avenue, also designed by Heins & LaFarge, opened in 1908. Distinguishing features of the station include the platform walls, clad in tiles, marble, terra-cotta, and mosaics. The platform walls include include mosaic and faience plaques of the initial A, surrounded by Dutch tulips (see View 11 of **Figure 7-7**). Also significant and at the western end of the LIRR terminal are the remains of a spur which connected the subways with the LIRR. The spur was designed by August Belmont, the German-Jewish banker who was the president of the IRT company and the subway's principal financier. The subway entrance within the Williamsburgh Savings Bank also includes original detailing and is considered significant. The BMT station was

Brooklyn Academy of Music Historic District / Fort Greene Historic District Boundary Expansion, view north on St. Felix Street from Hanson Place **7**

Brooklyn Academy of Music, view southeast from Ashland Place **8**

Architectural Resources in Study Area

Williamsburgh Savings Bank, view north from 4th Avenue **9**

Atlantic Avenue Control House, view northeast from 4th and Atlantic Avenues **10**

Architectural Resources in Study Area

Atlantic Avenue Subway Station **11**

Pioneer Warehouses, view south on Rockwell Place **12**

Architectural Resources in Study Area

opened in 1920, and is located beneath the block bounded by Flatbush Avenue, Fort Greene Place, and Hanson Place, aligned in a north-south direction.

The Pioneer Warehouses (NYCL-eligible, S/NR-eligible), 37-53 Flatbush Avenue and 74-92 Rockwell Place, were originally designed by J. Graham Glover in 1896. The original warehouses consisted of a two-story building at 41-43 Flatbush Avenue and a seven-story building at 78-84 Rockwell Place. Major additions to these structures took place in 1902, 1910, and 1914. The existing 10-story building likely dates from sometime after 1914 (see Views 12 and 13 of **Figures 7-7 and 7-8**). The warehouses have a classically inspired front façade of buff brick, concrete, and terra-cotta, with ornamental ironwork. The design incorporates prows of ships that project from the face of the building and lions' heads that ornament its base. The building has a central, two-story arched entrance that leads to a hemispherical shaped vestibule with a domed coffered ceiling. The Rockwell Place façade is primarily clad in red brick with two-story round-arched openings at street level. A red brick extension building at 74 Rockwell Place was designed by Walter H. Volckening and dates from 1931. The building was recently converted from self storage to office use.

529 and 531 Atlantic Avenue (S/NR-eligible) are two three-story row houses, part of a row of late 19th century brick buildings, set apart from their neighbors by intact Victorian-style wooden storefronts with display windows, stylized attenuated columns, wood panels, and bracketed cornices (see View 14 of **Figure 7-8**). The structures likely originally served as single-family row house dwellings. The three-bay buildings have segmental arch windows with simple brick arches, an Italianate-style bracketed cornice. They meet National Register Criterion C as rare survivors of historic commercial storefronts in Brooklyn.

D. FUTURE WITHOUT THE PROPOSED ACTIONS

The status of architectural resources could change over time, and it is possible that in the future without the proposed actions (the "No Action" condition), additional properties could be listed on the Registers. It is also possible that changes to architectural resources or to their settings could occur. It is also possible that some architectural resources in the study area could deteriorate or experience direct impacts through alteration or demolition, while others could be restored.

For architectural resources that are listed on the S/NR or that have been found eligible for listing, preservation is not mandated under Section 106 of the National Historic Preservation Act; however, federal agencies must attempt to avoid adverse effects on such resources from projects sponsored, assisted, or approved by federal agencies through a notice, review, and consultation process. Properties listed on the Registers are similarly protected against effects resulting from projects sponsored, assisted, or approved by State agencies under the State Historic Preservation Act. Private owners of properties eligible for, or even listed on, the Registers using private funds can alter or demolish their properties without such a review process. Privately owned properties that are NYCLs, in NYCHDs, or pending designation as NYCLs are protected under the New York City Landmarks Law, which requires LPC review and approval before any alteration or demolition can occur, regardless of whether the project is publicly or privately funded. Publicly owned resources are also subject to review by the LPC before the start of a project; however, the LPC's role in projects sponsored by other City or state agencies generally is advisory only.

The New York City Building Code provides some measures of protection for all properties against accidental damage from adjacent construction by requiring that all buildings, lots, and service facilities adjacent to foundation and earthwork areas be protected and supported. A second protective measure, the DOB's TPPN #10/88, applies to NYCLs, properties within NYCHDs, and NR-listed properties. TPPN #10/88 supplements the standard building protections afforded by the

Pioneer Warehouses,
view southeast on Flatbush Avenue **13**

529-531 Atlantic Avenue, view northwest on Atlantic Avenue **14**

Architectural Resources in Study Area
Figure 7-8

New York City Building Code by requiring a monitoring program to reduce the likelihood of construction damage to adjacent NYCLs and NR-listed properties (within 90 feet) and to detect at an early stage the beginnings of damage so that construction procedures can be changed.

In the No Action condition, it is assumed that the public high school on the western portion of the site would remain in its existing facility, and the remainder of the project site would be redeveloped with a new 400-foot-tall building incorporating residential, community facility, and retail uses and enclosed parking. In addition, approximately 6,379 square feet (sf) of privately owned public space would be created at the southeast corner of the site, at the intersection of Flatbush Avenue and State Street.

In the No Action condition, the historic building complex on the western portion of the project site would not be renovated or restored. Construction in the No Action condition would not be within 90 feet of the Baptist Temple, but would occur within 90 feet of the historic building complex on the western portion of the project site, as well as the architectural resources on the south side of State Street (522-550 State Street), and thus could have the potential to directly (i.e., physically) affect architectural resources during construction activities. It is anticipated that such resources would be offered some protection through DOB controls governing the protection of adjacent properties from construction activities; however, the protections to avoid construction-related damage to historic structures under TPPN #10/88 would not be required for the historic buildings on the western portion of the project site and along the south side of State Street as these are not NYCLs and not listed on the S/NR.

Within the 400-foot study area, there is one development project expected to be completed by 2025: 15 Lafayette Avenue, which is currently under construction (see Chapter 1, "Project Description"). This development will include residential, retail, and community facility uses and is anticipated to be complete in 2017. Several large residential developments have been recently completed but not yet fully occupied, including 300 Ashland Place nearest the project site, and 333 Schermerhorn Street; these will continue leasing out space in the No Action condition.

The 15 Lafayette Avenue project is located within 90 feet of the BAM and the BAM Historic District/Fort Greene Historic District Boundary Expansion, and thus would could have the potential to directly (i.e., physically) affect architectural resources during construction activities. As described above, such resources would be offered some protection through DOB controls governing the protection of adjacent properties from construction activities.

E. FUTURE WITH THE PROPOSED ACTIONS

PROJECT SITE

The proposed project involves the redevelopment of the project site with a replacement facility for the Khalil Gibran International Academy, a new public lower school, and residential, office, retail, and cultural community facility space. The proposed project would be developed with multiple distinct buildings, including two towers approximately 560 feet and 986 feet in height.

As described in Chapter 1, "Project Description," the current design of the proposed project includes the development of three new buildings (Buildings A, B, and C) and the adaptive reuse of two of the historic buildings on the project site (School Building 1/Building E and School Building 2/Building D). The maximum zoning envelope associated with the requested special permit is larger than the proposed buildings, and the potential effects associated with the larger zoning envelope must be considered in the EIS. The maximum zoning envelope would encompass Building D and allow for its demolition, and could partially extend into the footprint of Building E.

As described above in "Existing Conditions," the western portion of the project site (Lot 1, School Buildings 1–5) is currently occupied by the Khalil Gibran International Academy, a complex of five connected buildings constructed at different times. The two primary buildings include the former P.S. 15 complex (built circa 1860) at the southwest corner of the block (School Building 1, also referred to here as Building E) and the three-story structure at 362 Schermerhorn Street (3rd Avenue and Schermerhorn Street), built ca. 1898 (School Building 2, also referred to here as Building D). An addition to the former PS 15 school building was constructed in 1869 along 3rd Avenue (School Building 3). A small rear addition to the building at 362 Schermerhorn Street was added along 3rd Avenue shortly after the structure's initial construction in 1869 (School Building 4). Also ca. 1898, an existing three-story town house adjacent to the original school on State Street was added to the school complex (School Building 5). In its comment letter dated May 15, 2017, LPC stated that the building complex on Block 174, Lot 1 appears to be eligible for NYCL designation and for listing on the S/NR.

The current design for the proposed project assumes that the two primary buildings on Lot 1 (School Building 1/Building E and School Building 2/Building D) would be retained and adaptively reused. The adjacent new construction may allow for passage into Buildings D and E at the ground, second or third floors. Any passage would be at interior, shared walls and through a fire-rated threshold, and would not be visible from street level. The proposed project, however, would entail the demolition of the town house (School Building 5) that was subsequently added to the school, and the connecting school buildings along 3rd Avenue (School Buildings 3 and 4). The town house was added to the school ca. 1898, but was not created or designed specifically for school use, and the connecting structures along 3rd Avenue match the design of the original school, but lack its more prominent details. Nevertheless, the demolition of School Buildings 3-5 would result in a significant adverse impact to historic resources

Furthermore, as shown in **Figure 7-9**, the maximum zoning envelope would encompass the site of School Building 2/Building D, the ca. 1898 school building fronting on Schermerhorn Street, and the connecting building on 3rd Avenue, and allow for their demolition, and could partially extend into the existing footprint of Building E (the original school structure at the southwest corner of the block), thus partially demolishing part of the building. Therefore, development allowed under the maximum zoning envelope would result in the demolition of School Building 2/Building D and the connecting building on 3rd Avenue, as well as the loss of a portion of School Building 1/Building E. These buildings encompass the two largest and most visually distinctive elements of the historic school complex on the project site. A portion of School Building 1/Building E, the original school structure at the southwestern corner of the project site, would be adaptively reused as retail space. Therefore, the proposed actions could have a significant adverse effect on the historic resources on the project site. Measures to mitigate this impact are being developed in consultation with LPC (see Chapter 19, "Mitigation").

To avoid inadvertent demolition and/or construction-related damage from ground-borne construction period vibrations, falling debris, collapse, etc., any historic buildings to be retained on the project site would be included in a Construction Protection Plan (CPP) for historic structures that would be prepared in coordination with LPC and implemented in consultation with a licensed professional engineer. The CPP would be prepared as set forth in Section 523 of the *CEQR Technical Manual* and in compliance with the procedures included in the DOB's TPPN #10/88 and LPC's *Guidelines for Construction Adjacent to a Historic Landmark* and *Protection Programs for Landmark Buildings*. Provisions of the 2014 New York City Building Code also provide protection measures for all properties against accidental damage from adjacent construction by requiring that all buildings, lots, and service facilities adjacent to foundation and earthwork areas be protected

Building D and Maximum Zoning Envelope

and supported. Further, Building Code Chapter 3309.4.4 requires that "historic structures that are contiguous to or within a lateral distance of 90 feet…from the edge of the lot where an excavation is occurring" be monitored during the course of excavation work. The CPP would be prepared and implemented prior to demolition and construction activities on the project site, and project-related demolition and construction activities would be monitored as specified in the CPP.

STUDY AREA

DIRECT IMPACTS

Using the *CEQR Technical Manual* direct impact criteria noted above, the proposed actions within the project site would not result in the replication of aspects of any of the architectural resources in the study area so as to cause a false historical appearance, or the introduction of significant new shadows or significant lengthening of the duration of existing shadows over historic landscapes or structures. Thus, there would be no physical changes to any of the architectural resources identified above.

The Baptist Temple on the west side of 3rd Avenue and the buildings on the south side of State Street (522-550 State Street) are located within 90 feet from the project site (see **Figure 7-1**). Therefore, to avoid inadvertent demolition and/or construction-related damage to these resources from ground-borne construction period vibrations, falling debris, collapse, etc., these buildings would be included in the CPP for historic structures that would be prepared in coordination with LPC.

INDIRECT IMPACTS

The proposed project would not replicate aspects of any architectural resource so as to create a false historical appearance, and would not isolate any architectural resource from its setting or visual relationship with the streetscape, or otherwise adversely alter a historic property's setting or visual prominence. As discussed in more detail in Chapter 8, "Urban Design and Visual Resources," in the future with the proposed actions (the "With Action" condition) views from the sidewalks adjacent to the project site would continue to include close views of the former Williamsburgh Savings Bank and the Baptist Temple. Along Schermerhorn Street, the upper portions of the former Williamsburgh Savings Bank, including its iconic clock, will continue to be visible from eastward views. Views toward this visual resource would be available to pedestrians from other vantage points along Schermerhorn Street as well. Views north along Flatbush Avenue and Fourth Avenue to the former Williamsburgh Savings Bank would remain. The proposed project would not block any views of the Baptist Temple, and its belfry would continue to be visible along 3rd Avenue and Lafayette Avenue and partially visible from Schermerhorn Street. At up to 560 feet and 986 feet respectively, the proposed towers would be taller than the buildings in the surrounding area, but there are many other existing and planned tall buildings in the surrounding area, particularly to the north along Flatbush Avenue and in Downtown Brooklyn. The proposed project would not eliminate or screen significant publicly accessible views of any architectural resource.

The proposed new buildings on the project site would not introduce incompatible visual, audible, or atmospheric elements to a study area resource's setting. The proposed school, residential, office, retail, and cultural community facility uses of the development are comparable with the use of many of the historic and modern buildings in the study area.

The proposed project also would not result in the introduction of significant new shadows, or significant lengthening of the duration of existing shadows, over an historic landscape or on an historic structure (if the features that make the resource significant depend on sunlight), to the

extent that the architectural details that distinguish that resource as significant are obscured. As discussed in more detail in Chapter 6, "Shadows," two of the four historic resources with sunlight-sensitive features in the study area would receive less than 1 hour of new shadow on the analysis days. Despite the fairly long durations of incremental shadow to the windows of the Baptist Temple during the morning in each season, sunlight would continue to reach portions of the stained glass windows throughout the affected period except for 15 minutes in the late spring and summer months, and except for 5 minutes on the March 21/September 21 analysis day. Incremental shadow would fall on portions of the windows of the Williamsburgh Savings Bank former banking hall, but sunlight would continue to reach other portions of the windows. Additionally, the ground floor of the Williamsburgh Savings Bank is currently not open to the public but can be rented for private events.

In summary, the proposed project would not be anticipated to have any significant adverse impacts on historic and cultural resources in the study area. ✷

Chapter 8: Urban Design and Visual Resources

A. INTRODUCTION

This chapter considers the potential for the proposed project to result in significant adverse impacts to urban design and visual resources. The co-applicants are seeking a rezoning and other actions (the "proposed actions") to allow the construction of a mixed-use development, which includes a replacement facility for an existing high school and a new lower school, as well as residential, office, retail, and cultural community facility uses. Based on the current design, two of the existing Khalil Gibran International Academy buildings currently on the project site would be retained and adaptively reused in the proposed development. The proposed project is located on Block 174, Lots 1, 9, 13, 18, 23, and 24 in Downtown Brooklyn (the "project site"). As discussed in Chapter 1, "Project Description," the Environmental Impact Statement (EIS) considers the potential effects of development within the maximum zoning envelope allowed under the special permit, which is larger than the proposed buildings. The maximum zoning envelope would encompass School Building 2/Building D and allow for its demolition, and could partially extend into the footprint of School Building 1/Building E, or cantilever over it.

As defined in the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, urban design is the totality of components that may affect a pedestrian's experience of public space. A visual resource can include views of the waterfront, public parks, landmark structures or districts, otherwise distinct buildings, and natural resources.

The proposed project would make noticeable alterations to the project site and the streetscape of the surrounding area by constructing five buildings on the project site ranging in height from approximately 62 feet to 986 feet as compared to the future without the proposed actions (the "No Action" condition), in which an as-of-right mixed-use building approximately 400 feet (including the bulkhead) in height that complies with the current zoning regulations would be developed. Therefore, the following detailed urban design and visual resources analysis has been prepared in consideration of the characteristics identified above for the No Action condition and future with the proposed actions (the "With Action" condition) for the 2025 build year.

PRINCIPAL CONCLUSIONS

The proposed actions would not result in any significant adverse impacts to urban design or visual resources in the primary or secondary study areas.

The proposed actions would result in the development of the project site with three new buildings, including two mixed-use towers and new public school facilities (Buildings A, B, and C), and as currently designed, the adaptive reuse of two of the existing school buildings (School Building 2/Building D and School Building 1/Building E). The proposed project would generate new activity, redevelop an underutilized site, and support the development of Downtown Brooklyn as a commercial and cultural hub. The new educational facilities would support the residential growth that has occurred in Downtown Brooklyn and surrounding neighborhoods and the retail space would provide an amenity for residents.

The maximum zoning envelope would encompass the site of historic School Building 2/Building D and allow for its demolition, and could partially extend into the existing footprint of historic School Building 1/Building E (or cantilever over it); however, if a new building is constructed to the maximum zoning envelope, a portion of School Building 1/Building E could be retained and adaptively reused since development allowed under the maximum zoning envelope could cantilever above or extend into the existing volume of this historic structure. Although the proposed actions would allow for new mixed-use buildings constructed to greater heights and densities than currently permitted as-of-right, the analysis below finds that the proposed project's towers would be compatible with the heights of existing and planned buildings in the primary and secondary study areas, compared to the No Action condition. Building C would be taller than any other building in the primary and secondary study areas; however, there are other tower developments within these areas, in close proximity to low-scale structures, and Building C would be shorter than the planned 1,071-foot-tall tower at 9 DeKalb Avenue, which similarly will be constructed immediately adjacent to a low-scale historic resource (the Dime Savings Bank). The bulk of the new buildings would be oriented along Flatbush and 3rd Avenues, in keeping with other large developments in the primary study area. With the bulk of the proposed project's massing fronting onto Flatbush and 3rd Avenues, and lower volumes for the proposed school structure along State Street, the proposed project would not adversely affect the urban design characteristics of the lower-scale buildings along State Street. The proposed project would establish a pedestrian-friendly streetwall along State Street, with entrances, recessed and projecting façade elements, and new landscaping breaking up the façade and adding visual interest.

The proposed project would not result in substantial changes to the built environment of a historic district, or eliminate any publicly accessible view corridors compared to the No Action condition. Under the current design of the proposed project, views of the former Williamsburgh Savings Bank, a visual resource within the study area, would be retained along existing view corridors. Under the maximum zoning envelope, views of the former Williamsburgh Savings Bank along Schermerhorn Street would be obstructed by the buildings on the project site; however, views of the building along other view corridors, including along Atlantic, Flatbush, and 4th Avenues, would remain available.

The proposed buildings would be consistent with buildings in the primary and secondary study area in materials, design, and use, including older buildings like the 42-story (approximately 512-foot-tall) former Williamsburgh Savings Bank, and newer buildings, including the approximately 73-story story (approximately 1,071-foot-tall) building at 9 DeKalb Avenue, the 56-story (approximately 610-foot-tall) glass- and masonry-clad mixed-use building at 333 Schermerhorn Street, the 51-story (approximately 568-foot-tall) glass- and masonry-clad mixed-use building at 250 Ashland Place, the 44-story (approximately 484-foot-tall) glass- and stone-clad building at 66 Rockwell Place, the 37-story (approximately 370-foot-tall) glass- and metal-clad mixed-use building at 80 DeKalb Avenue, the 32-story (approximately 364-foot-tall) mixed-use glass- and metal-clad building at 300 Ashland Place, and the 30-story (approximately 310-foot-tall) mixed-use glass- and concrete-clad building at 230 Ashland Place.

The proposed project's mix of educational, office, retail, residential, and cultural community facility uses would be in keeping with existing uses found throughout the primary study area. Compared with the No Action condition, the proposed project would include commercial office space, which would bring more people to the area and increase foot traffic. The proposed project would include active ground-floor design elements that would enliven the streetscape of the primary study area. These project components would enhance the pedestrian experience at the

project site and in the surrounding neighborhood. Overall, the proposed project would not result in any significant adverse impacts on urban design and visual resources.

B. METHODOLOGY

According to the guidance of the *CEQR Technical Manual*, a preliminary assessment of urban design and visual resources is appropriate when there is the potential for a pedestrian to observe, from the street level, a physical alteration beyond that allowed by existing zoning. Examples include projects that permit the modification of yard, height, and setback requirements, and projects that result in an increase in built floor area beyond what would be allowed "as-of-right" or in the No Action condition.

As described in detail in Chapter 1, "Project Description," the proposed project would require several discretionary approvals including zoning map and text changes that would allow for a greater floor area ratio (FAR) and provide for special height, setback, and ground-floor regulations. Therefore, as the proposed project would result in physical alterations beyond those allowed by existing zoning, it would meet the threshold for a preliminary assessment of urban design and visual resources.

The *CEQR Technical Manual* guidelines state that if the preliminary assessment shows that changes to the pedestrian environment are sufficiently significant to require greater explanation and further study, then a detailed analysis is appropriate. Examples include projects that would potentially obstruct view corridors, compete with icons in the skyline, or make substantial alterations to the streetscape of a neighborhood by noticeably changing the scale of buildings. Detailed analyses also are generally appropriate for area-wide rezonings that include an increase in permitted floor area or changes in height and setback requirements, general large-scale developments, or projects that would result in substantial changes to the built environment of a historic district or components of a historic building that contribute to the resource's historic significance. Conditions that merit consideration for further analysis of visual resources include when the project partially or totally blocks a view corridor or a natural or built visual resource and that resource is rare in the area or considered a defining feature of the neighborhood; or when the project changes urban design features so that the context of a natural or built visual resource is altered (i.e., if the project alters the street grid so that the approach to the resource changes; if the project changes the scale of surrounding buildings so that the context changes; or if the project removes lawns or other open areas that serve as a setting for the resource).

The proposed actions would facilitate the development of a new, mixed-use development that would be taller than that allowed under the current zoning and would introduce changes that would make noticeable alterations to the project site and the streetscape of the surrounding area as compared to the No Action condition. Therefore, the proposed project would meet the threshold for a detailed assessment of urban design and visual resources. This analysis is provided below.

In accordance with the *CEQR Technical Manual*, this analysis considers the effects of the proposed project on the experience of a pedestrian in the primary and secondary study areas. The assessment focuses on those project elements that have the potential to alter the built environment, or urban design, of the project site, which is collectively formed by the following components:

- *Streets*. For many neighborhoods, streets are the primary component of public space. The arrangement and orientation of streets define the location and flow of activity in an area, set street views, and create the blocks on which buildings and open spaces are organized. The apportionment of street space between cars, bicycles, transit, and sidewalks and the careful design

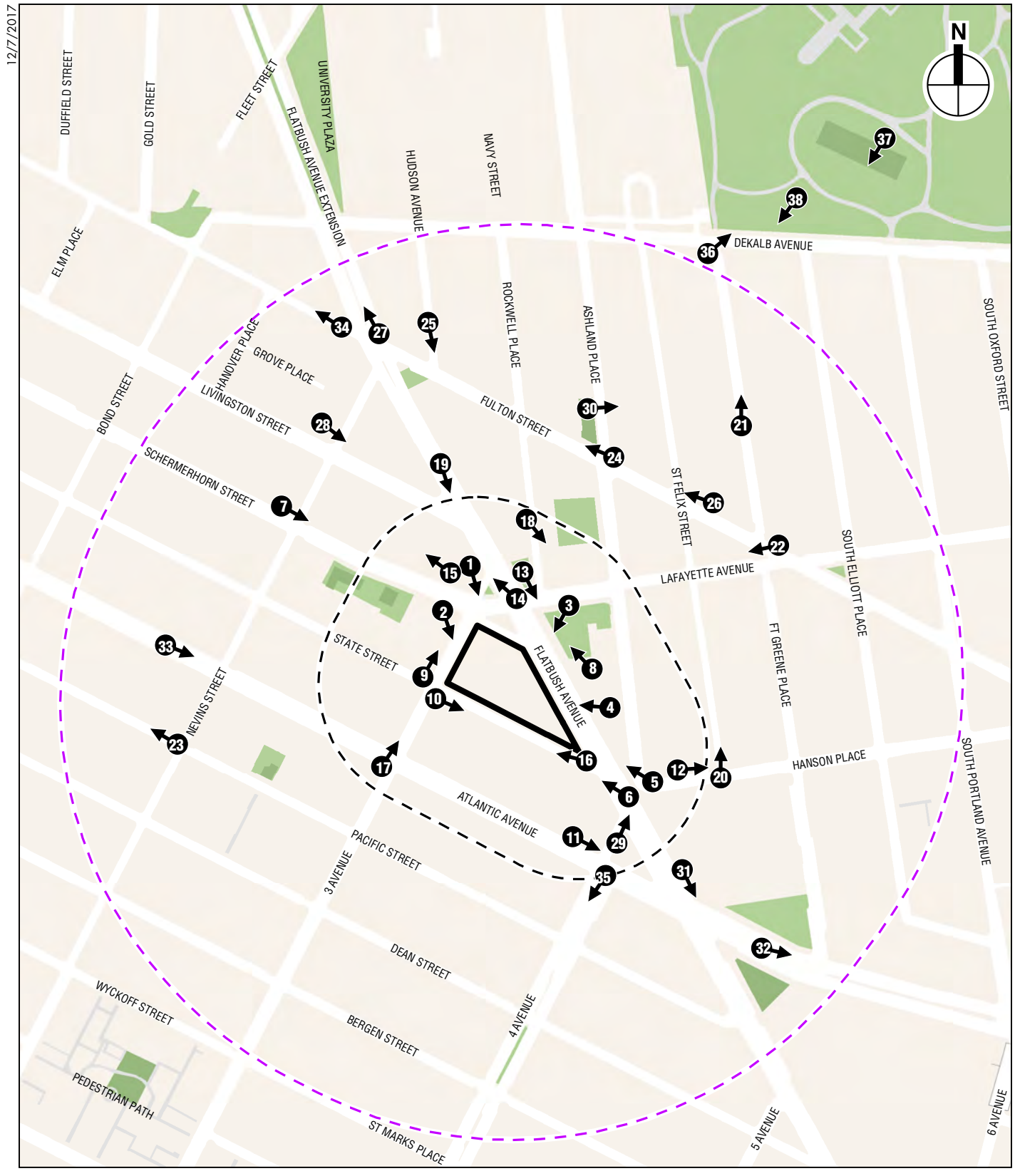
of street furniture, grade, materials used, and permanent fixtures, including plantings, street lights, fire hydrants, curb cuts, or newsstands are critical to making a successful streetscape.

- *Buildings*. Buildings support streets. A building's street walls form the most common backdrop in the City for public space. A building's size, shape, setbacks, lot coverage, and placement on the zoning lot and block; the orientation of active uses; and pedestrian and vehicular entrances all play major roles in the vitality of the streetscape. The public realm also extends to building façades and rooftops, offering more opportunity to enrich the visual character of an area.
- *Open Space*. Open space includes public and private areas such as parks, yards, cemeteries, parking lots, and privately owned public spaces.
- *Natural Features*. Natural features include vegetation and geologic, topographic, and aquatic features. Rock outcroppings, steep slopes or varied ground elevation, beaches, or wetlands may help define the overall visual character of an area.
- *View Corridors and Visual Resources*. A visual resource is the connection from the public realm to significant natural or built features, including important view corridors, views of the waterfront, public parks, landmark structures or districts, otherwise distinct buildings or groups of buildings, or natural resources.
- *Wind*. Channelized wind pressure from between tall buildings and downwashed wind pressure from parallel tall buildings may cause winds that affect pedestrian comfort and safety.

This analysis considers the urban design characteristics and visual resources of the project site, primary study area, and secondary study area (see **Figures 8-1 and 8-2**). The primary study area is the area within a 400-foot radius of the project site. Within the primary study area, the proposed actions would be most likely to influence land use patterns and the built environment. The secondary study area extends a ¼-mile from the boundary of the project site. The project site and primary study area are discussed in detail for the existing conditions, No Action condition, and With Action condition; the secondary study area is discussed more generally. For visual resources and view corridors, views to the project site from more distant locations, including Fort Greene Park, were also considered. The view corridor analysis focuses on those corridors that could experience the greatest change to the pedestrian experience, in consultation with the New York City Educational Construction Fund (ECF) and the New York City Department of City Planning (DCP).

The following analysis addresses each of these characteristics for existing conditions and the future without and with the proposed actions for the 2025 build year.

The *CEQR Technical Manual* recommends an analysis of pedestrian wind conditions for projects involving the construction of multiple, tall buildings at or in close proximity to waterfront sites, which may result in an exacerbation of wind conditions due to "channelization" or "downwash" effects that may affect pedestrian comfort and safety. Factors to be considered in determining whether such a study should be conducted include locations that could experience high-wind conditions, such as a site's location relative to the waterfront. Further consideration may include size, and orientation of the proposed buildings; the number of proposed buildings to be constructed; and the site plan and surrounding pedestrian context of the proposed project. As the project site is not located near the waterfront or in an area likely to experience high winds, an analysis of wind conditions and its effect on pedestrian level safety is not warranted under CEQR.

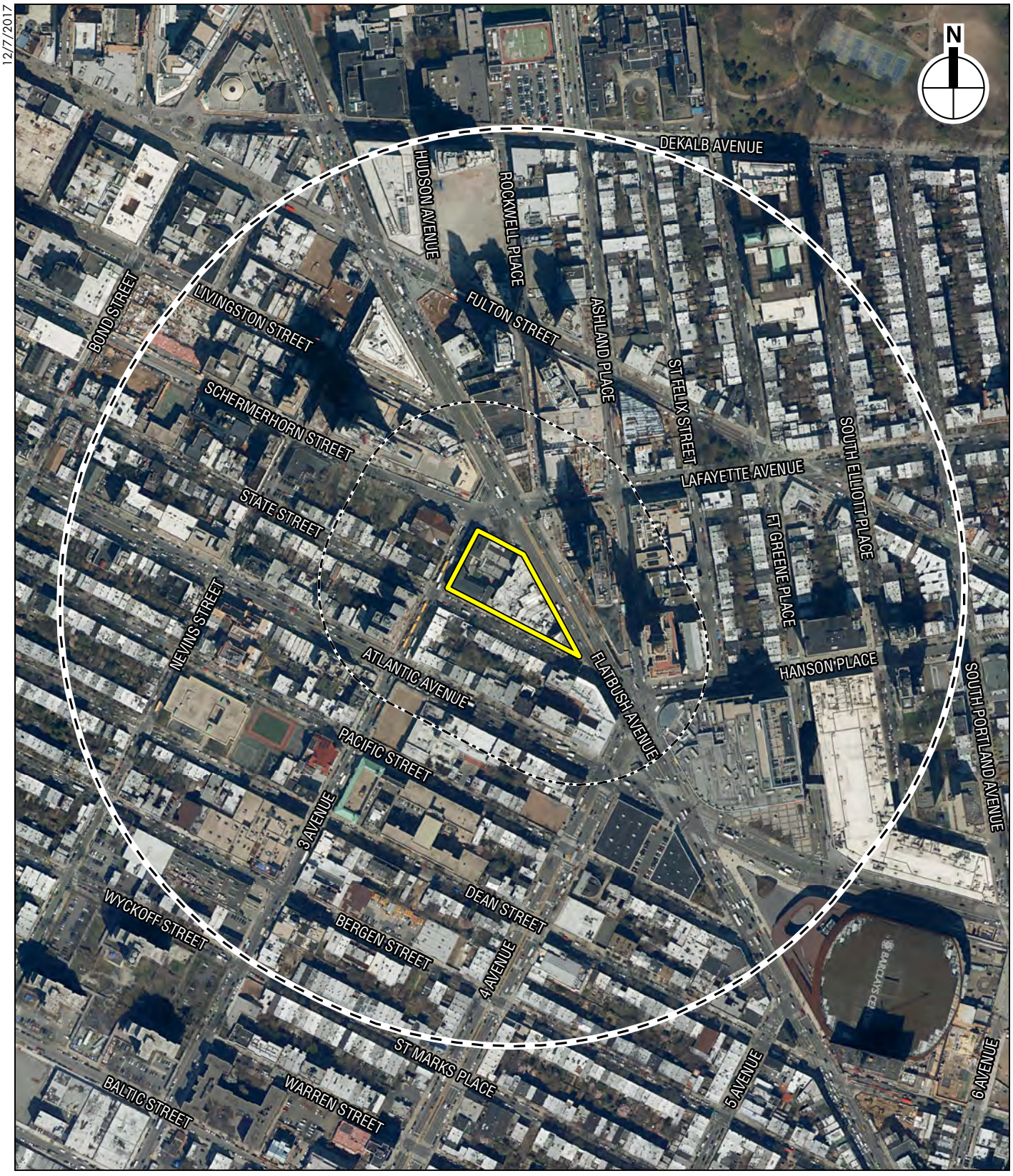


Urban Design and Visual Resources Reference Map

Figure 8-1

ECF 80 FLATBUSH AVENUE

12/7/2017



Project Site

Primary Study Area (400-foot boundary)

Secondary Study Area (1/4-mile boundary)

0 1,000 FEET

ECF 80 FLATBUSH AVENUE

Aerial
Figure 8-2

C. EXISTING CONDITIONS

PROJECT SITE

URBAN DESIGN

The project site comprises the full block bounded by Schermerhorn Street to the north, Flatbush Avenue to the east, State Street to the south, and 3rd Avenue to the west (Block 174, Lots 1, 9, 13, 18, 23, and 24). Lot 1 contains the Khalil Gibran International Academy, a public school with five buildings that each rise three stories (approximately 62-foot-tall) and are brick clad (see Chapter 7, "Historic and Cultural Resources"). The building at the corner of Schermerhorn Street and 3rd Avenue (School Building 2, also referred to here as Building D) has a raised central entrance along Schermerhorn Street (see **Figure 8-3**, photo 1). It is set back from the sidewalk by a decorative metal fence. The building has a corbelled roofline and decorative cornice on its Schermerhorn Street and 3rd Avenue façades, and a dormer window centered on the Schermerhorn Street façade. Along 3rd Avenue this portion of the building has no entrance. A narrow rear addition to this building (School Building 4) faces 3rd Avenue. At the corner of 3rd Avenue and State Street is the oldest portion of the structure (School Building 1, also referred to here as Building E), which is set back from 3rd Avenue and enclosed by a decorative metal fence. School Building 1/Building E has a primary central entrance on 3rd Avenue accessed by a ramp and a secondary entry at the north end of the façade (see **Figure 8-3**, photo 2). On State Street, School Building 1/Building E has tall window openings with double-hung windows .On State Street, the building has a projecting metal entry with paired doors at the east end of the building and a single entry at the west end. An addition to this structure (School Building 3) faces 3rd Avenue, is brick-clad, and is six bays wide. A three-story row house (School Building 5), which was later added to the school, is located to the east of School Building 1 on State Street.

Lot 9 fronts onto Schermerhorn Street and contains a one-story (approximately 14-foot-tall) commercial building with five storefronts (see **Figure 8-4**, photo 3). Three of the storefronts are occupied by a pawn shop with large plate-glass windows with a projecting awning and signage above. The western-most storefront is occupied by a non-profit organization.

Lot 13 contains a three-story (approximately 40-foot-tall) brick commercial building with frontages on Flatbush Avenue and State Street (see **Figure 8-4**). Along both streets, the building rises without setbacks or adornments. Along Flatbush Avenue, there is an entrance at the northwest end of the building to the ground-floor retail space. A raised, double glass-door entrance at the south end of the Flatbush Avenue façade is accessed via steps and a ramp that extends along the façade. On State Street, the building has two sets of double metal doors at the east and west end of the building.

Lot 18 contains a three-story (approximately 40-foot-tall) commercial building clad in brick, stucco, and terra-cotta with frontages on Flatbush Avenue and State Street (see **Figure 8-5**, photo 5). Along both streets, the building is built out to the sidewalk. The Flatbush Avenue façade has little adornment with one recessed entry with double-glass doors at the south end of the building. The State Street façade has two double-metal door entrances at the east and west end of the façade with decorative stone surrounds and decorative brick work on the second and third floors.

Lot 23 contains a two-story (approximately 26-foot-tall) brick-clad commercial building with frontage along Flatbush Avenue. The building has two single, metal door entrances with rolling security gates on the ground floor and three window bays on the second (see **Figure 8-5**, photo 5).

372 Schermerhorn Street, located on Lot 1 is a brick building with a decorative cornice. View from Schermerhorn Street and 3rd Avenue facing southeast. **1**

475 State Street has frontages on 3rd Avenue and State Street. The building's triangular pediment can be seen along 3rd Avenue throughout the primary study area. View from 3rd Avenue near Schermerhorn Street facing southeast. **2**

Existing Conditions—Project Site

Lot 9 fronts onto Schermerhorn Street and contains a one-story building with storefronts. The three-story building on Lot 13 is seen on the left. View from Flatbush Avenue facing west. **3**

Lot 13 contains a three-story brick building with frontages on Flatbush Avenue and State Street. View from Flatbush Avenue facing northwest. The recently completed building at 333 Schermerhorn Street and the buildings of Downtown Brooklyn can be seen in the background. **4**

Existing Conditions—Project Site and Primary Study Area

Accessibility Report

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