Chapter 14: Noise

A. INTRODUCTION

This chapter assesses the potential for the Proposed Project to result in significant adverse noise impacts. The analysis determines whether the Proposed Project would result in increases in noise levels that could have a significant adverse impact on nearby sensitive receptors and also considers noise exposure at noise receptors introduced by the Proposed Project.

The co-Applicants, the New York City Educational Construction Fund (ECF) and 240 Nassau Street Holdings, LLC, are seeking zoning approvals, including zoning map and text amendments, a special permit, and other City and State approvals and potential future U.S. Department of Housing and Urban Development (HUD) actions (the "Proposed Actions"), to facilitate the construction of a proposed mixed-use development on Block 110, Lot 25 and Block 111, Lot 1 (the "Project Site") in Downtown Brooklyn, Community District (CD) 2. The proposed development would include four new buildings totaling approximately 1.7 million gross square feet (gsf), including public school facilities; residential, retail, and community facility space; cultural center space; and open space (the "Proposed Project").

The Proposed Actions include the transfer, reallocation, and lease of property among 240 Nassau Street Holdings, LLC, ECF, and the City of New York to allow for the Proposed Project and ECF financing and discretionary zoning approvals from the New York City Planning Commission (CPC) and New York City Council. A detailed description of the Proposed Project and the approvals needed to facilitate the Proposed Project is presented in Chapter 1, "Project Description."

The Proposed Project would occupy an approximately 80,000-square-foot (sf) portion of Blocks 110 and 111, bounded by Nassau Street to the north, Navy Street to the east, Concord Street to the south, and Golconda Playground, a public park maintained by the New York City Department of Parks and Recreation (NYC Parks) to the west. Elevated above a portion of Golconda Playground is the Brooklyn-Queens Expressway (BQE).

PRINCIPAL CONCLUSIONS

A noise assessment was undertaken to determine the levels of noise attenuation that may be needed to achieve interior noise levels within the new buildings on the Project Site that are acceptable and in accordance with the 2025 *City Environmental Quality Review (CEQR) Technical Manual* guidance. The Proposed Actions would not result in a significant adverse noise impact; however, window-wall attenuation would be required to address noise exposure at proposed buildings. Because the dominant noise source is traffic, the *CEQR Technical Manual* has noise attenuation values for buildings based on exterior $L_{10(1)}$ noise levels for the purposes of achieving interior noise levels of 45 dBA or lower for residential, classroom, or community facility uses and 50 dBA or lower for office, administrative, or laboratory uses. The With Action condition $L_{10(1)}$ noise levels were determined by adjusting the existing noise measurements to account for increases in traffic in the future with the Proposed Actions based on the Noise Passenger Car Equivalent (PCE) proportional analysis results, including the noise contribution from vehicular traffic on adjacent roadways, and by calculating the cumulative noise level in the future condition based on the future vehicular traffic noise on adjacent roadways as well as the proposed rooftop playground. No significant

increases in noise levels were predicted to occur at any noise-sensitive receptors as a result of the Proposed Actions.

Based on the projected noise levels for the With Action condition, up to 31 dBA window-wall attenuation would be required to achieve acceptable interior noise levels in the Project Site buildings per the *CEQR Technical Manual* noise exposure guidance. To ensure window-wall attenuation at the proposed buildings in the Project Site, an (E) Designation (E-921) for noise would be applied, specifying the required amount of window-wall attenuation. With implementation of the attenuation levels outlined later in this chapter in **Table 14-10**, the Project Site buildings would provide sufficient window-wall attenuation to achieve the *CEQR Technical Manual* interior noise level guidelines. Therefore, the identified significant adverse noise increases would not constitute a significant adverse noise impact, nor would predicted noise levels at any other receptors rise to the level of a significant adverse impact.

Noise exposure at newly introduced publicly accessible open space was determined to be greater than the threshold considered acceptable for "open space areas requiring serenity and quiet"; however, it is comparable to other typical New York City open space areas located near heavily trafficked roadways.

B. ACOUSTICAL FUNDAMENTALS

Sound is a fluctuation in air pressure. Sound pressure levels are measured in units called "decibels" (dB). The particular character of the sound that we hear is determined by the speed, or "frequency," at which the air pressure fluctuates, or "oscillates." Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 "Hertz" (Hz). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (e.g., a whistle) are more easily discernible and therefore more intrusive than many of the lower frequencies (e.g., diesel truck engine).

"A"-WEIGHTED SOUND LEVEL (DBA)

In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the descriptor of noise levels most often used for community noise. As shown in **Table 14-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as a library at 40 dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable.

Table 14-1
Noise Levels of Common Sources

Sound Source	SPL (dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60–70
Typical Suburban Area	50–60
Quiet Suburban Area at Night	40–50
Typical Rural Area at Night	30–40
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0

Source: 2025 *CEQR Technical Manual*.

NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

Because the sound pressure level unit of dBA describes a noise level at just one moment and since very few noises are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the "equivalent sound level," L_{eq}, can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates very little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus, the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}.

For purposes of analysis of the Proposed Project, the L_{eq} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation, and the L_{10} descriptor has been selected for noise exposure evaluation. The L_{10} descriptor is specified in the *CEQR Technical Manual* noise exposure guidelines when vehicular traffic is the dominant source of noise, as is the case at the Project Site.

C. NOISE STANDARDS AND CRITERIA

NEW YORK *CEQR TECHNICAL MANUAL* NOISE STANDARDS

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 14-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 14-2
Noise Exposure Guidelines for Use in City Environmental Impact Review

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
Outdoor area requiring serenity and quiet[2]		$L_{10} \leq 55$ dBA	DNL ≤ 60 dBA	**NA**	60 < DNL ≤ 65 dBA	**NA**	(i) 65 < DNL ≤ 75 dBA	**NA**	DNL > 75 dBA
Hospital, nursing home		$L_{10} \leq 55$ dBA		55 < L_{10} ≤ 65 dBA		65 < L_{10} ≤ 80 dBA		L_{10} > 80 dBA	
Residence, residential hotel, or motel	7 AM to 10 PM	$L_{10} \leq 65$ dBA		65 < L_{10} ≤ 70 dBA		70 < L_{10} ≤ 80 dBA		L_{10} > 80 dBA	
	10 PM to 7 AM	$L_{10} \leq 55$ dBA		55 < L_{10} ≤ 70 dBA		70 < L_{10} ≤ 80 dBA		L_{10} > 80 dBA	
School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, outpatient public health facility		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
Commercial or office		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10PM)	
Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Notes:
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more.
(ii) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards; the noise category for train noise is found by taking the L_{dn} value for such train noise to be an L_{dn} (L_{dn} contour) value.
[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.
[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks, or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
[3] One may use Federal Aviation Administration (FAA)-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the federally approved Integrated Noise Model (INM) Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).
Source: New York City Department of Environmental Protection (DEP) (adopted policy 1983).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see **Table 14-3**).

Table 14-3
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Vehicular Traffic	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Aircraft[A]	$65 < DNL \leq 68$	$68 < DNL \leq 71$	$71 < DNL \leq 73$	$73 < DNL \leq 75$	$75 < DNL$
Train	$65 < L_{dn} \leq 68$	$68 < L_{dn} \leq 71$	$71 < L_{dn} \leq 73$	$73 < L_{dn} \leq 75$	$75 < L_{dn}$
Attenuation[B]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	See note [C]

Notes:
[A] DNL descriptor based on average values of L_{dn} over a year period.
[B] The above composite window-wall attenuation values are for residential dwellings and community facility development. Commercial office spaces and meeting rooms would be 5 dBA less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
[C] The required attenuation value is the difference between L_{build} and $L_{interior}$, using the appropriate noise descriptor
Where:
L_{build} is the projected noise level under the build condition rounded up to the whole number and
$L_{interior}$ is the designed interior noise level (45 dBA for vehicular noise, 40 dBA for aircraft and train noise).
Source: DEP.

IMPACT SIGNIFICANCE CRITERIA

The determination of significant adverse noise impacts associated with noise in this analysis will be based on both absolute noise level limits and relative impact criteria. The proposed project will be subject to review as outlined in the *CEQR Technical Manual*, which states that "it is reasonable to consider 65 dBA $L_{eq(1)}$ as an absolute noise level that should not be significantly exceeded." Therefore, the determination of impacts first considers whether a projected noise increase would result in noise levels exceeding 65 dBA $L_{eq(1)}$. This study uses the following relative impact criteria to define a significant adverse noise impact as recommended in the *CEQR Technical Manual*:

- An increase of 5 dBA, or more, in With Action $L_{eq(1)}$ noise levels at sensitive receptors (including residences, play areas, parks, schools, libraries, and houses of worship) over those calculated for the No Action condition, if the No Action levels are less than 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 4 dBA, or more, in With Action $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No Action condition, if the No Action levels are 61 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 3 dBA, or more, in With Action $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No Action condition, if the No Action levels are greater than 62 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.

Since the receptors that will be included in the operational noise analysis are non-residential, the nighttime noise impact criteria would not be applicable.

D. EXISTING CONDITIONS

SELECTION OF NOISE RECEPTOR LOCATIONS

A total of five receptor locations in and around the Project Site were selected for measurements to determine existing noise levels, for the evaluation of future noise levels, and to determine noise attenuation requirements. The proposed noise receptor locations were selected based on the location of the Project Site and existing neighborhood characteristics (e.g., along major road corridors, adjacent to existing playgrounds, etc.). These receptors, due

to their proximity to the Project Site, provide an effective and conservative representation of existing ambient noise levels around the Project Site. Seven additional noise receptor locations (1a, 1b, 1c, 1d, 2a, 3a, and 3b) were also evaluated because each is proximate to a non-traffic noise source (i.e., the proposed rooftop playground and the existing Golconda playground) included in the Proposed Actions and represents a worst-case condition for evaluation of that noise source. These locations are detailed below in **Table 14-4** and shown in **Figure 14-1**.

Table 14-4
Noise Receptor Locations

Noise Receptor	Location
1	Nassau Street between Gold Street and Navy Street
1a[1]	Building 1 East Façade above 110 feet (line of sight to Building 2 rooftop playground)
1b[2]	Building 1 South Façade (adjacent to Golconda Playground)
1c[2]	Building 2 South Façade (adjacent to Golconda Playground)
1d[1]	Residences above 110 feet at 237 Nassau Street (line of sight to Building 2 rooftop playground)
2	Navy Street between Concord Street and Nassau Street
2a[1]	Building 3 above 110 feet (adjacent to Building 2 rooftop playground)
3	Concord Street between Gold Street and Navy Street
3a[2]	Building 4 West Façade (adjacent to Golconda Playground)
3b[2]	Building 4 North Façade (adjacent to Golconda Playground)
4	Gold Street between Concord Street and Nassau Street
5	Existing Building Rooftop South of Nassau Street with Line-of-Sight to Elevated BQE

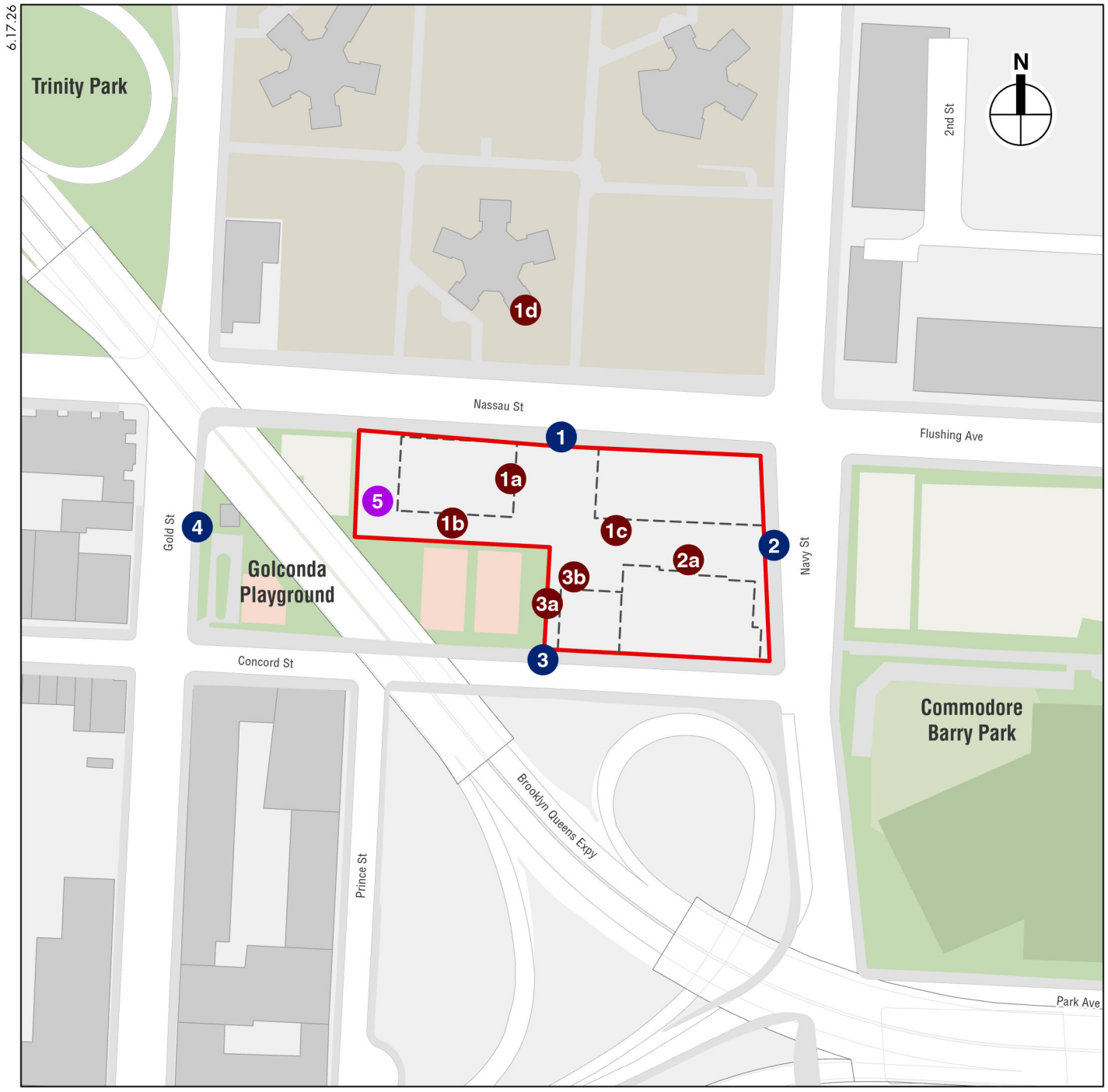
Notes:
[1] These receptors have line of sight to the proposed Build 2 rooftop playground above 110 feet elevation.
[2] These receptors have line of sight to the existing Golconda Playground.

NOISE MONITORING

At receptor locations 1 through 5, existing noise levels were determined by field measurements. Noise monitoring was conducted on March 31, 2026. At receptor locations 1 through 4, 20-minute spot noise measurements were conducted during the typical weekday AM (7:15 AM–9:15 AM), midday (MD) (12:00 PM–2:00 PM), Pre-PM (2:30–3:30 PM), and PM (4:00 PM–6:00 PM) peak hours to document at-grade noise levels due to traffic on adjacent roadways, and the microphones were mounted at a height of approximately five feet above grade on a tripod and approximately six feet or more away from any large sound-reflecting surface to avoid major interference with sound propagation. At receptor location 5, an unattended 24-hour measurement was conducted on the rooftop of 240 Nassau Street with line-of-sight to the elevated BQE.

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Type 2250 and NTi Audio XL2 Sound Level Meters (SLMs), Brüel & Kjær Type 4189 and NTi Audio M2340 microphones, and Brüel & Kjær Type 4231 and Larson Davis CAL200 Sound Level Calibrators. The SLMs are Class 1 instruments according to ANSI Standard S1.4-1983 (R2006). The SLMs had laboratory calibration dates within the past one year at the time of use. The SLMs were calibrated before and after readings with a Sound Level Calibrators using the appropriate adaptor. The data were digitally recorded by the SLM and displayed at the end of the measurement period in units of dBA. Measured quantities included the L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. A windscreen was



NYC Educational Construction Fund

240 NASSAU STREET

Noise Receptor Locations

Figure 14-1

used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

EXISTING NOISE LEVELS AT NOISE RECEPTOR LOCATIONS

MEASURED NOISE LEVELS

The results of the measurements of existing noise levels are summarized in **Table 14-5**. Roadway traffic was the dominant noise source for all receptor locations. In terms of *CEQR Technical Manual* criteria, noise levels measured at receptors 1, 2, and 3 are categorized as "marginally acceptable," and noise levels measured at receptors 4 and 5 are categorized as "marginally unacceptable".

Table 14-5
Measured Noise Levels (in dBA)[1]

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Nassau Street between Gold Street and Navy Street	AM	62.8	71.3	65.1	61.2	58.8
		MD	63.5	71.6	65.8	61.6	58.4
		Pre-PM	63.4	71.5	66.0	61.6	58.7
		PM	66.9	78.3	66.4	61.4	58.7
2	Navy Street between Concord Street and Nassau Street	AM	65.6	74.9	67.9	62.5	59.5
		MD	66.2	77.5	67.4	61.7	58.7
		Pre-PM	65.1	74.4	68.2	62.2	58.8
		PM	67.1	77.7	69.2	63.2	60.0
3	Concord Street between Gold Street and Navy Street	AM	64.5	71.2	66.0	63.5	61.0
		MD	64.0	72.1	65.7	61.6	59.7
		Pre-PM	66.3	76.8	68.6	63.3	61.2
		PM	66.3	74.9	68.7	64.0	61.2
4	Gold Street between Concord Street and Nassau Street	AM	68.2	73.8	69.9	67.7	65.7
		MD	67.2	74.0	69.0	66.3	64.4
		Pre-PM	68.4	75.7	70.4	67.1	64.8
		PM	67.6	75.2	69.0	66.6	64.8
5[2]	Existing Building Rooftop South of Nassau Street with Line-of-Sight to Elevated BQE	AM	72.8	78.1	74.6	72.3	69.8
		MD	69.1	75.3	71.0	68.2	65.8
		Pre-PM	69.1	74.2	70.6	68.4	66.6
		PM	71.3	82.2	71.4	68.2	66.3

Notes:
[1] Field measurements were performed by AKRF, Inc. on March 31, 2026.
[2] 5 AM hour used to represent AM time period at site 5 since the maximum L_{10} level was measured during this hour.

E. NOISE ANALYSIS METHODOLOGY

GENERAL METHODOLOGY

Noise levels in the future both with and without the Proposed Actions were calculated, including changes in noise levels associated with vehicular traffic as well as stationary sources (i.e., playgrounds). Noise levels in the With Action condition were compared to noise levels in the No Action condition to determine the potential for significant adverse impacts at existing noise receptors. Additionally, total noise exposure at noise sensitive uses introduced

by the Proposed Actions (i.e., residential, community facility, commercial office, and open space uses) were compared to *CEQR Technical Manual* noise exposure criteria.

The noise analysis examined the weekday AM, midday, Pre-PM, and PM peak hours at all receptor locations. The selected time periods are when the Proposed Project would be expected to result in the maximum traffic generation (based on the traffic studies presented in Chapter 11, "Transportation") and therefore result in the maximum potential for significant adverse noise impacts.

PROPORTIONAL MODELING

Proportional modeling was used to calculate future noise levels associated with vehicular traffic (including in the No Action condition and the With Action condition). Proportional modeling is one of the techniques recommended in the *CEQR Technical Manual* for mobile source analysis.

Using this technique, the prediction of future noise levels where traffic is the dominant noise source is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine No Action condition and With Action condition noise levels. Vehicular traffic volumes are converted into Noise PCE values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. Future noise levels are calculated using the following equation:

$F\ NL - E\ NL = 10 * \log_{10} (F\ PCE / E\ PCE)$

where:

F NL = Future Noise Level

E NL = Existing Noise Level

F PCE = Future Noise PCEs

E PCE = Existing Noise PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in Noise PCEs. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

PLAYGROUND NOISE

The existing Golconda Playground and the proposed rooftop playground on Building 2 included in the Proposed Project would have the potential to contribute noise at receptors in and near the Project Site. Estimated play area noise levels projected at the adjacent building façade were used to determine a total level of noise exposure. **Table 14-6** shows measured maximum hourly playground boundary noise levels. These values are based upon

measurements made at a series of New York City school playgrounds for the New York City School Construction Authority (SCA).[1]

Table 14-6
Playground Boundary Noise $L_{eq(1)}$ Noise Levels (dBA)

Early Childhood	Elementary Schools	Intermediate Schools	High Schools
71.5	71.4	71.0	68.2
Source: 2025 *New York City Environmental Quality Review (CEQR) Technical Manual*.			

Geometric spreading and the consequent dissipation of sound energy with increasing distance from the playground decreases noise levels at varying distances from the playground boundary. Based upon measurements and acoustical principles, hourly noise levels are assumed to decrease by the following values at the specified distances from the playground boundary: 4.8 dBA at 20 feet, 6.8 dBA at 30 feet, and 9.1 dBA at 40 feet. For all distances between 40 and 300 feet, a 4.5-dBA drop-off per doubling of distances from the playground boundary is assumed.

Noise associated with the proposed rooftop playground in Building 2 was estimated using the Early Childhood playground boundary noise level (to conservatively represent children of any age using the play area) and the noise level reductions with distances as described above. At Golconda Playground, noise levels were estimated using the High School playground boundary noise level due to the nature of Golconda Playground (i.e., basketball courts and skate park rather than jungle gym or similar play equipment).

NOISE EXPOSURE AT NEWLY INTRODUCED OPEN SPACE

The Proposed Project would include new publicly accessible open space, which is expected to include both passive and active space, although it would not require serenity and quiet. The *CEQR Technical Manual* noise exposure guidelines specify a 55 dBA $L_{10(1)}$ noise level for outdoor areas requiring serenity and quiet. At each area of publicly accessible open space introduced by the Proposed Project, the With Action noise level as estimated based on the predicted level at the nearest noise receptor location, was compared to this threshold as well as being compared to noise levels in a number of existing open space areas that are located adjacent to roadways, including Brooklyn Bridge Park, Shore Road Park, Louis Valentino Jr. Park[2], and other urban open space areas.

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Using the methodology previously described, No Action condition noise levels were calculated for the 2033 analysis year. No Action values are shown in **Table 14-7**.

At all receptors, the maximum increase in $L_{eq(1)}$ noise levels for the No Action condition would be no greater than 3 dBA in any time period. Changes of this magnitude would be considered barely perceptible according to *CEQR Technical Manual* guidance.

[1] SCA Playground Noise Study, AKRF, Inc., October 23, 1992.

[2] See measured noise levels in Chapter 10, “Noise,” of *Citywide Ferry Service Final EIS* (CEQR# 15DME009Y).

Table 14-7
2033 No Action Condition Noise Levels (in dBA)

Receptor	Measurement Location	Time	Existing $L_{eq(1)}$	No Action $L_{eq(1)}$	Change	No Action $L_{10(1)}$
1[1]	Nassau Street between Gold Street and Navy Street	AM	62.8	63.0	0.2	65.3
		MD	63.5	63.6	0.1	65.9
		Pre-PM	63.4	63.6	0.2	66.2
		PM	66.9	67.1	0.2	66.5
2[2]	Navy Street between Concord Street and Nassau Street	AM	65.6	66.1	0.5	68.4
		MD	66.2	66.5	0.3	67.7
		Pre-PM	65.1	65.8	0.7	69.0
		PM	67.1	67.9	0.8	70.0
3[3]	Concord Street between Gold Street and Navy Street	AM	64.5	64.6	0.1	66.0
		MD	64.0	64.1	0.1	65.8
		Pre-PM	66.3	66.4	0.1	68.7
		PM	66.3	66.4	0.1	68.8
4	Gold Street between Concord Street and Nassau Street	AM	68.2	68.7	0.5	70.4
		MD	67.2	67.3	0.1	69.1
		Pre-PM	68.4	69.0	0.6	71.0
		PM	67.6	68.2	0.6	69.6
5[4]	Existing Building Rooftop South of Nassau Street with Line of Sight to Elevated BQE	AM	72.8	72.9	0.1	74.7
		MD	69.1	69.2	0.1	71.1
		Pre-PM	69.1	69.2	0.1	70.7
		PM	71.3	71.4	0.1	71.5

Notes:
[1] No Action noise levels at receptors locations 1a, 1b, 1c, and 1d would be identical to the noise levels at receptor location 1.
[2] No Action noise levels at receptors locations 2a would be identical to the noise levels at receptor location 2.
[3] No Action noise levels at receptors locations 3a and 3b would be identical to the noise levels at receptor location 3.
[4] The expected proportion of increase in vehicular traffic volumes during these time periods was determined based on guidance shown in Table 16-4 of the *CEQR Technical Manual*.

In terms of CEQR noise exposure guidelines, noise levels at receptors 1, 1a, 1b, 1c, 1d, 2, 2a, 3, 3a, and 3b would remain in the “marginally acceptable” category, and noise levels at receptors 4 and 5 would remain in the “marginally unacceptable" category.

G. THE FUTURE WITH THE PROPOSED ACTIONS

Using the methodology previously described, noise levels were calculated for each of the noise analysis receptors for the 2033 analysis year with the Proposed Actions. These With Action values are shown in **Table 14-8**.

Table 14-8
With Action Condition Noise Levels – Proposed Project (in dBA)

Receptor	Time	No Action $L_{eq(1)}$	Traffic-Only With Action $L_{eq(1)}$	Playground $L_{eq(1)}$	Total With Action $L_{eq(1)}$	Change	Total With Action $L_{10(1)}$
1	AM	63.0	63.7	N/A	63.7	0.7	66.0
	MD	63.6	63.9	N/A	63.9	0.3	66.2
	Pre-PM	63.6	64.2	N/A	64.2	0.6	66.8
	PM	67.1	67.7	N/A	67.7	0.6	67.1
1a[1]	AM	63.0	63.7	57.3	64.6	N/A	67.6
	MD	63.6	63.9	57.3	64.8	N/A	67.8
	Pre-PM	63.6	64.2	57.3	65.0	N/A	68.0
	PM	67.1	67.7	57.3	68.1	N/A	71.1
1b[1]	AM	63.0	63.7	62.1	66.0	N/A	69.0
	MD	63.6	63.9	62.1	66.1	N/A	69.1
	Pre-PM	63.6	64.2	62.1	66.3	N/A	69.3
	PM	67.1	67.7	62.1	68.8	N/A	71.8
1c[1]	AM	63.0	63.7	54.2	64.2	N/A	67.2
	MD	63.6	63.9	54.2	64.3	N/A	67.3
	Pre-PM	63.6	64.2	54.2	64.6	N/A	67.6
	PM	67.1	67.7	54.2	67.9	N/A	70.9
1d	AM	63.0	63.7	52.8	64.0	1.0	67.0
	MD	63.6	63.9	52.8	64.2	0.6	67.2
	Pre-PM	63.6	64.2	52.8	64.5	0.9	67.5
	PM	67.1	67.7	52.8	67.8	0.7	70.8
2	AM	66.1	66.5	N/A	66.5	0.4	68.8
	MD	66.5	66.8	N/A	66.8	0.3	68.0
	Pre-PM	65.8	66.2	N/A	66.2	0.4	69.4
	PM	67.9	68.3	N/A	68.3	0.4	70.4
2a[1]	AM	66.1	66.5	61.3	67.7	N/A	70.7
	MD	66.5	66.8	61.3	67.9	N/A	70.9
	Pre-PM	65.8	66.2	61.3	67.4	N/A	70.6
	PM	67.9	68.3	61.3	69.1	N/A	72.1
3	AM	64.6	66.0	N/A	66.0	1.4	67.4
	MD	64.1	65.6	N/A	65.6	1.5	67.3
	Pre-PM	66.4	67.0	N/A	67.0	0.6	69.3
	PM	66.4	67.0	N/A	67.0	0.6	69.4
3a[1]	AM	64.6	66.0	55.0	66.3	N/A	69.3
	MD	64.1	65.6	55.0	66.0	N/A	69.0
	Pre-PM	66.4	67.0	55.0	67.3	N/A	70.3
	PM	66.4	67.0	55.0	67.3	N/A	70.3
3b[1]	AM	64.6	66.0	58.8	66.8	N/A	69.8
	MD	64.1	65.6	58.8	66.4	N/A	69.4
	Pre-PM	66.4	67.0	58.8	67.6	N/A	70.6
	PM	66.4	67.0	58.8	67.6	N/A	70.6
4	AM	68.7	69.2	N/A	69.2	0.5	70.9
	MD	67.3	67.8	N/A	67.8	0.5	69.6
	Pre-PM	69.0	69.5	N/A	69.5	0.5	71.5
	PM	68.2	68.7	N/A	68.7	0.5	70.1
5[2]	AM	72.9	72.9	N/A	72.9	0.0	74.7
	MD	69.2	69.2	N/A	69.2	0.0	71.1
	Pre-PM	69.2	69.2	N/A	69.2	0.0	70.7
	PM	71.4	71.4	N/A	71.4	0.0	71.5

Table 14-8
With Action Condition Noise Levels – Proposed Project (in dBA)

Receptor	Time	No Action $L_{eq(1)}$	Traffic-Only With Action $L_{eq(1)}$	Playground $L_{eq(1)}$	Total With Action $L_{eq(1)}$	Change	Total With Action $L_{10(1)}$
Notes:							
[1] Receptors 1a, 1b, 1c, 2a, 3a, and 3b were included only for building attenuation analysis as they do not represent any existing noise-sensitive uses.							
[2] The expected proportion of increase in vehicular traffic volumes was determined based on guidance shown in Table 16-4 of the *CEQR Technical Manual*.							

Receptors at future buildings represent noise-sensitive uses that only exist in the future with the Proposed Actions. Since they would not exist in the No Action condition, there is no incremental change in noise levels between the No Action and With Action conditions; rather, they are included to determine the maximum level of noise exposure in the future with the Proposed Actions. As such, they are discussed further in the "Noise Attenuation Measures" and "Noise Exposure at Newly Introduced Open Space" sections below.

At all receptors, the maximum increase in $L_{eq(1)}$ noise levels with the Proposed Actions would be no greater than 3 dBA in any time period. Changes of this magnitude would be considered imperceptible and not significant according to *CEQR Technical Manual* noise impact criteria.

In terms of CEQR noise exposure guidelines, noise levels at receptors 1 and 3 would remain in the "marginally acceptable" category, noise levels at receptors 4 and 5 would remain in the "marginally unacceptable" category, and noise levels at receptors 1a, 1b, 1c, 1d, 2, 2a, 3a, and 3b would change from "marginally acceptable" to "marginally unacceptable".

H. NOISE ATTENUATION MEASURES

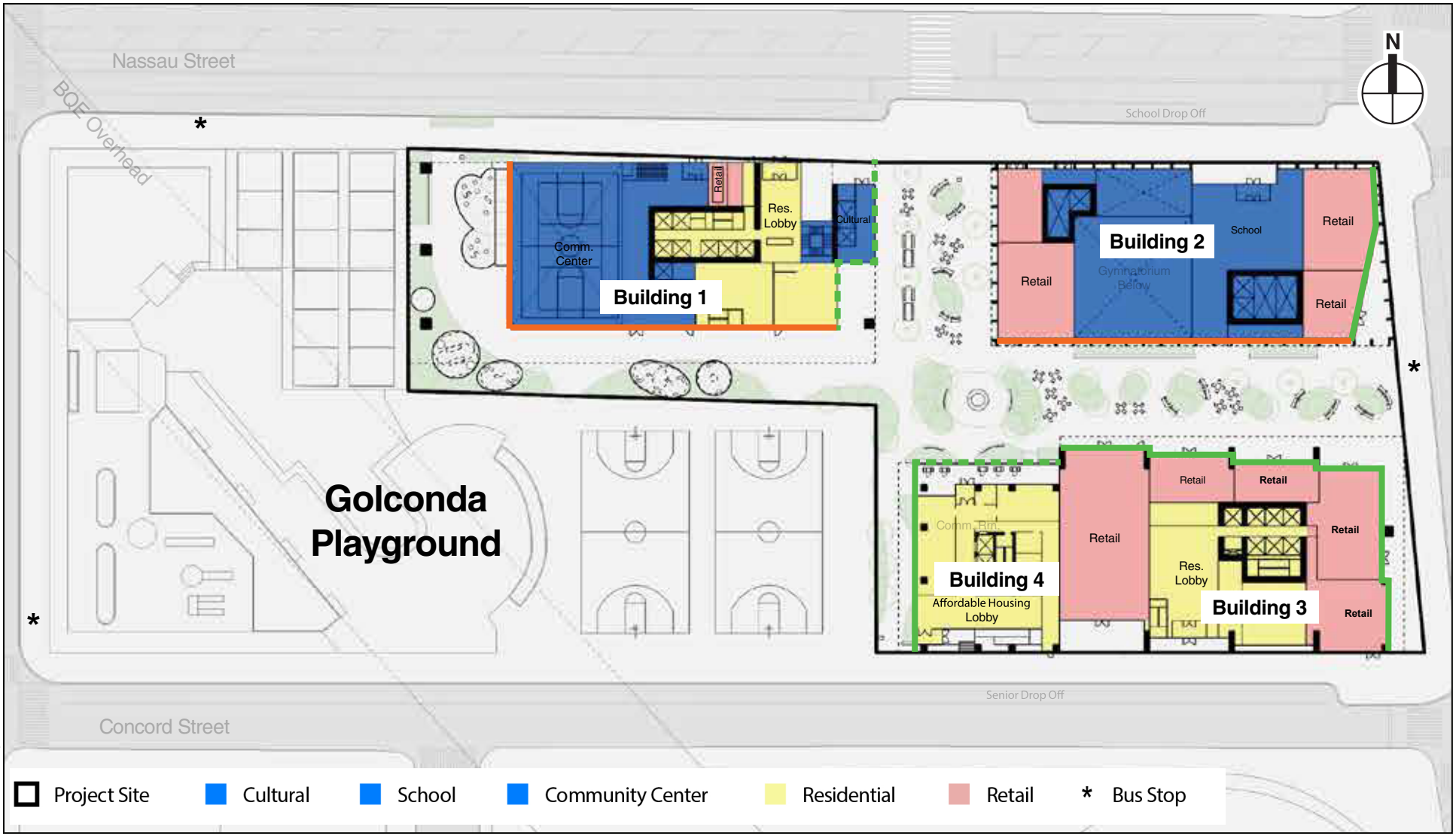
As shown in **Table 14-3**, the *CEQR Technical Manual* has set noise attenuation values for buildings based on exterior noise levels.

Table 14-9 shows the minimum window-wall attenuation necessary to meet the *CEQR Technical Manual* requirements for internal noise levels at each of the noise analysis locations and the additional noise receptor locations representing noise receptors newly introduced by the Proposed Actions. The projected future $L_{10(1)}$ noise levels include the noise contribution from vehicular traffic on adjacent roadways and noise associated with playgrounds.

Based on the values shown in **Table 14-9**, required attenuation levels to provide an interior noise level of 45 dBA for residential, classroom, or community facility uses and 50 dBA for office, administrative, or laboratory uses were determined for the Proposed Project. These values are shown in **Table 14-10** and **Figure 14-2**.

Normally, a building façade is composed of the wall, glazing, and any vents or louvers for HVAC systems in various ratios of area. Buildings proposed to be located within the Project Site would be designed to provide composite window-wall attenuation greater than or equal to the attenuation requirements listed in **Table 14-10**.

3.16.26



Source: Alloy

31 dBA Attenuation Required

28 dBA Attenuation Required

28 dBA Attenuation Required Only Above 110 Feet

NOTE: Attenuation values are shown for residential, classroom, and community facility uses; retail/commercial/administrative/laboratory/gymnasium/cafeteria uses would require 5 dBA less attenuation

For Illustrative Purposes Only

NYC Educational Construction Fund

240 NASSAU STREET

Building Attenuation Requirements

Figure 14-2

Table 14-9
Required Attenuation at Noise Measurement Locations (in dBA)

Receptor	Location	Highest With Action $L_{10(1)}$ Value	Minimum Required Attenuation[1]
1	Nassau Street between Gold Street and Navy Street	67.1	N/A[2]
1a	Building 1 East Façade above 110 feet (adjacent to Building 2 rooftop playground)	71.1	28
1b	Building 1 South Façade (adjacent to Golconda Playground)	71.8	28
1c	Building 2 South Façade (adjacent to Golconda Playground)	70.9	28
2	Navy Street between Concord Street and Nassau Street	70.4	28
2a	Building 3 above 110 feet (adjacent to Building 2 rooftop playground)	72.1	28
3	Concord Street between Gold Street and Navy Street	69.4	N/A[2]
3a	Building 4 West Façade (adjacent to Golconda Playground)	70.3	28
3b	Building 4 North Façade (adjacent to Golconda Playground)	70.6	28
4	Gold Street between Concord Street and Nassau Street	71.5	28
5	Existing Building Rooftop South of Nassau Street with Line-of-Sight to Elevated BQE	74.7	31

Note:
[1] Attenuation values are shown for residential, classroom, and community facility uses; retail/ commercial/administrative/laboratory/gymnasium/cafeteria uses would require 5 dBA less attenuation.
[2] "N/A" indicates that the highest calculated L_{10} is below 70 dBA. The *CEQR Technical Manual* does not specify minimum attenuation guidance for exterior $L_{10(1)}$ values below this level.

Table 14-10
Minimum Required Building Attenuation (in dBA)

Building	Façade	Elevation	Governing Noise Receptor Site	Maximum With Action $L_{10(1)}$	Minimum Attenuation Requirement[1]
Building 1	North Façade Along Nassau Street	All	1	67.1	N/A[2]
	East Façade facing block interior	Below 110 ft	1	67.1	N/A[2]
	East Façade along block interior (line of sight to proposed rooftop playground)	Above 110 ft	1a	71.1	28
	South Façade along block interior (adjacent to Golconda Playground)[3]	All	5	74.7	31
	West Façade (line of sight to Brooklyn Queens Expressway)	All	5	74.7	31
Building 2	North Façade along Nassau Street	All	1	67.1	N/A[2]
	East Façade along Navy Street	All	2	70.4	28
	South Façade facing block interior[3]	All	5	74.7	31
	West Façade facing block interior	All	1	67.1	N/A[2]
Building 3	North Façade facing block interior	Below 110 ft	2	70.4	28
	North Façade facing block interior (line of sight to proposed rooftop playground)	Above 100 ft	2a	72.1	28
	East Façade along Navy Street	All	2	70.4	28
	South Façade along Concord Street	All	3	69.4	N/A[2]
	West Façade facing block interior	All	3	69.4	N/A[2]
Building 4	North Façade facing block interior	Below 110 ft	3	69.4	N/A[2]
	North Façade facing block interior (line of sight to proposed rooftop playground)	Above 110 ft	3b	70.6	28
	East Façade facing block interior	All	3	69.4	N/A[2]
	South Façade along Concord Street	All	3	69.4	N/A[2]
	West Façade (adjacent to Golconda Playground)	All	3a	70.3	28

Notes:
[1] Attenuation values are shown for residential, classroom, and community facility uses; retail/commercial/administrative/laboratory/gymnasium/ cafeteria uses would require 5 dBA less attenuation.
[2] "N/A" indicates that the highest calculated L_{10} is below 70 dBA. The *CEQR Technical Manual* does not specify minimum attenuation guidance for exterior $L_{10(1)}$ values below this level.
[3] Due to line of sight to the BQE at upper elevations, these locations were conservatively represented by receptor 5.

To ensure attenuation at the projected development sites within the Proposed Project, an (E) Designation (E-921) for noise would be applied, specifying the required amount of required window-wall attenuation. The text of the (E) Designation would be as follows:

To ensure an acceptable interior noise environment, the building façade(s) of the new buildings within the Project Site shown in **Table 14-10** must provide minimum composite building façade attenuation as shown in **Table 14-10** in order to maintain an acceptable interior noise level not greater than the thresholds specified for residential, classroom, or community facility as illustrated in the Environmental Impact Statement (EIS). To maintain a closed-window condition in these areas, and alternate means of ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.

By adhering to the window-wall attenuation requirement described above, development under the Proposed Actions would provide sufficient attenuation to achieve acceptable interior noise levels according to *CEQR Technical Manual* interior noise level guidelines. Therefore, the Proposed Actions would not result in any significant adverse noise impacts.

I. NOISE EXPOSURE AT NEWLY INTRODUCED OPEN SPACE

The Proposed Project would include new publicly accessible open space, which is expected to be primarily passive space, although it would not require serenity and quiet. In the With Action condition, predicted noise levels at the proposed open space would be in the low 70s dBA, which would be above the 55 dBA $L_{10(1)}$ noise level recommended for outdoor areas in the *CEQR Technical Manual* noise exposure guidelines (see **Table 14-2**). As the existing $L_{10(1)}$ noise levels at these locations are above 55 dBA, there are no practical and feasible mitigation measures that could be implemented to reduce noise levels to below the 55 dBA $L_{10(1)}$ guideline on the proposed new open space. Although noise levels in these areas would be above the guideline noise levels, they would be comparable to noise levels in a number of existing open space areas that are located adjacent to roadways, such as Brooklyn Bridge Park, Shore Road Park, Louis Valentino Jr. Park,[3] and other urban open space areas. The guidelines are a worthwhile goal for outdoor areas requiring serenity and quiet, such as passive open spaces. However, due to the mix of recreational activity and activity on the surrounding streets present at most New York City open space areas and parks, a relatively low noise level is often not achieved. Further, the new publicly accessible open space would not require serenity and quiet. Therefore, the future projected noise levels would not constitute a significant adverse noise impact to the proposed open space on the Project Site.

J. MECHANICAL EQUIPMENT

It is assumed that the building mechanical systems (i.e., HVAC systems) associated with the Proposed Actions would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code and the New York City Department of Buildings Code) and avoid producing levels that would result in any significant increase in ambient noise levels. Therefore, the Proposed Actions would not result in any significant adverse noise impacts related to building mechanical equipment. ✷

[3] See measured noise levels in Chapter 10, "Noise," of *Citywide Ferry Service Final EIS* (CEQR# 15DME009Y).