Chapter 15: Noise

A. INTRODUCTION

This chapter assesses the potential for the Proposed Actions to result in significant adverse noise impacts. The analysis determines whether the Proposed Actions would result in increases in noise levels that could have a significant adverse impact on nearby sensitive receptors and also considers the effect of existing noise levels within the Project Area.

The noise analysis for the Proposed Actions examined the following: (1) whether there are any locations where there is the potential for the Proposed Actions to result in significant noise impacts, and (2) what level of building attenuation would be necessary to provide acceptable interior noise levels at newly introduced noise-sensitive uses under guidelines contained in the 2014 *City Environmental Quality Review (CEQR) Technical Manual*.

PRINCIPAL CONCLUSIONS

The analysis concludes that the traffic generated by the Proposed Actions would be expected to produce significant increases in noise levels on 41st Street between 1st and 2nd Avenues because of additional vehicular traffic utilizing the proposed parking garage at Building 21. These increases would constitute significant adverse impacts at a residential building (166 41st Street) along this block, which is the only sensitive noise receptor that would experience this significant increase in noise level. However, the absolute noise levels at this location with the Proposed Actions would be in the high 60s A-weighted decibels (dBA), which would be typical of areas near highly trafficked roadways in New York City and would be considered "marginally acceptable" according to *CEQR Technical Manual* noise exposure criteria.

Additionally, the building attenuation analysis determined that the buildings to be constructed pursuant to the Proposed Actions would require between 28 and 40 dBA window/wall attenuation to meet *CEQR Technical Manual* interior noise level requirements, based on projected exterior noise levels. The attenuation requirements would be included in Noise (E) Designations (E-527) mapped on the sites within the Project Area.

Furthermore, the analysis determined that the restrictions included in the New York City Department of Buildings (DOB) Building Code would ensure that demising partitions between newly introduced noise receptors associated with the Proposed Actions and Innovation Economy uses on the same lot would provide sufficient noise attenuation to result in acceptable interior noise levels at the newly introduced noise receptors.

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 (e.g., a whistle compared with a French horn) 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., the lower notes on the French horn).

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 15-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (e.g., a library) are approximately 40 dBA; normal daily activity levels are between 50 dBA and 70 dBA; noisy levels are above 70 dBA; and loud, intrusive, and deafening levels approach 130 dBA.

Table 15-1
Common Noise Levels

Sound Source	dBA
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	80–90
Busy city street, loud shout	80
Busy traffic intersection	70–80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas, or residential areas close to industry	50–60
Background noise in an office	50
Suburban areas with medium-density transportation	40–50
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note:
A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
Sources:
Cowan, James P. *Handbook of Environmental Acoustics,* Van Nostrand Reinhold, New York, 1994. Egan, M. David, *Architectural Acoustics*. McGraw-Hill Book Company, 1988.

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.

NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

Because the sound pressure level unit of dBA describes a noise level at just one moment and 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. The Day-Night Sound Level, L_{dn}, refers to a 24-hour average noise level with a 10 dB penalty applied to the noise levels during the hours between 10 PM and 7 AM, due to increases sensitivity to noise levels during these hours. 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 the Proposed Actions, the 1-hour L_{eq} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation, and the 1-hour L_{10} has been selected as the noise descriptor used to evaluate noise exposure at newly introduced noise receptors. These are the descriptors recommended by the *CEQR Technical Manual* for City environmental review.

C. NOISE STANDARDS AND CRITERIA

IMPACT DEFINITION

The determination of significant adverse noise impacts in this analysis is informed by the use of both absolute noise level limits and relative impact criteria. The *CEQR Technical Manual* 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 $L_{eq(1)}$. Where appropriate, this study also utilizes the following relative impact criteria to define a significant adverse noise impact, as recommended in the *CEQR Technical Manual*:

- If the No Action noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would be considered significant.
- If the No Action noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would be considered a significant increase.
- If the No Action noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10:00 PM and 7:00 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$.

NEW YORK CEQR TECHNICAL MANUAL NOISE STANDARDS

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 15-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 15-2
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	---------- Ldn ≤ 60 dBA ----------	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Hospital, nursing home		$L_{10} \leq 55$ dBA		55 < $L_{10} \leq 65$ dBA	---------- 60 < Ldn ≤ 65 dBA ----------	65 < $L_{10} \leq 80$ dBA	(i) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn	$L_{10} > 80$ dBA	---------- Ldn ≤ 75 dBA ----------
Residence, residential hotel, or motel	7 AM to 10 PM	$L_{10} \leq 65$ dBA		65 < $L_{10} \leq 70$ dBA		70 < $L_{10} \leq 80$ dBA		$L_{10} > 80$ dBA	
	10 PM to 7 AM	$L_{10} \leq 55$ dBA		55 < $L_{10} \leq 70$ dBA		70 < $L_{10} \leq 80$ 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–10 PM)	
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
[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 FAA-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey (PANYNJ), or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the PANYNY.
[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 (adopted policy 1983).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see **Table 15-3**). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for hotel guestroom or classroom uses and are determined based on exterior $L_{10(1)}$ noise levels.

Table 15-3
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Noise Level with Proposed Actions	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation[A]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	$36 + (L_{10}–80)$[B] dBA

Notes:
[A] The above composite window-wall attenuation values are for hotel or community facility uses. Commercial meeting rooms would require 5 dBA less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
[B] Required attenuation values increase by 1 dBA increments for L_{10} values greater than 80 dBA.
Source:
New York City Department of Environmental Protection

D. EXISTING NOISE LEVELS

SELECTION OF NOISE RECEPTOR LOCATIONS

A total of 12 receptor sites were selected for the noise analysis in the Project Area. These receptors, due to their proximity to the Project Area, provide an effective and conservative representation of existing ambient noise levels at the locations at which noise-sensitive land uses would be developed with the Proposed Actions.

Figure 15-1 shows the locations of the 12 noise receptor sites and **Table 15-4** lists the noise receptor site locations, and details which receptor represents each proposed building façade.

Table 15-4
Noise Receptor Locations

Noise Receptor Site	Location
1	41st Street, east of 1st Avenue, at grade
2	39th Street, east of 1st Avenue, at grade
3	36th Street, west of 3rd Avenue, at grade
4	33rd Street, east of 2nd Avenue, at grade
5	2nd Avenue between 33rd Street and 32nd Street, at grade
6	32nd Street, west of 3rd Avenue, at grade
A	1st Avenue between 41st Street and 39th Street, 10 feet above grade
B	33rd Street, west of Gowanus Expressway, third floor elevation overlooking Gowanus Expressway
B-1	33rd Street, west of 3rd Avenue, at grade
C	3rd Avenue between 33rd Street and 32nd Street, third floor elevation overlooking Gowanus Expressway
C-1	3rd Avenue between 33rd Street and 32nd Street, at grade
D	2nd Avenue between 33rd Street and 32nd Street, at grade

NOISE SURVEY PROCEDURES

Noise levels were measured at 12 locations in the study area in November 2017 and June 2018. The timing and duration of noise level measurements at each noise receptor site is shown in **Table 15-5**.

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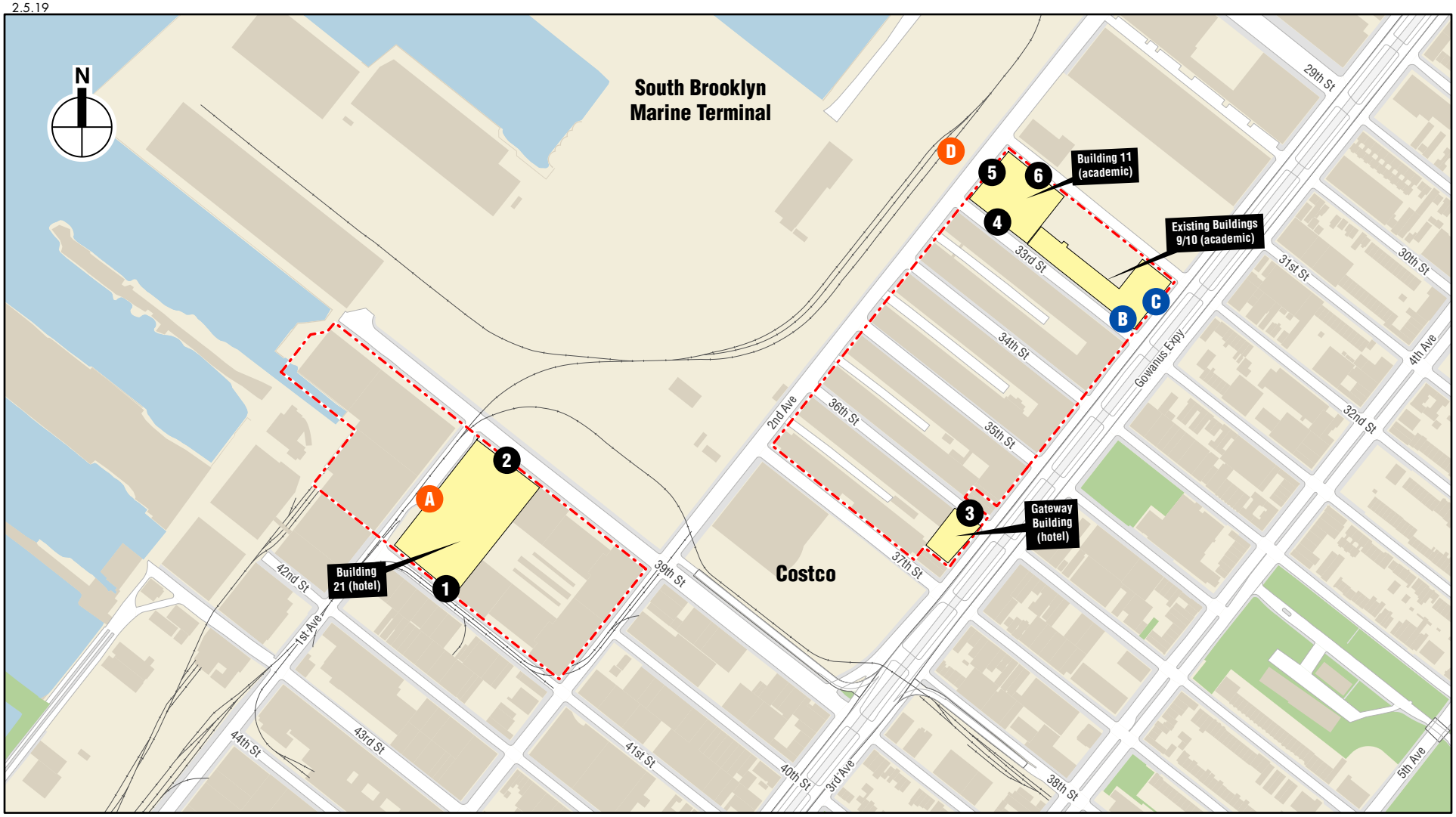


Project Area

Measurement Description

- *20-minute spot*
- *24-hour*
- *Elevated 24-hour and at-grade 1-hour*

INDUSTRY CITY

Noise Receptor Locations Map

Figure 15-1

Table 15-5
Noise Survey Timing and Duration

Noise Receptor Site	Measurement Duration/Time
1	20-minute Spot Measurements During Weekday AM, MD, and PM Peak Periods[1]
2	
3	
4	
5	
6	
A	Continuous 24-Hour Measurement
B	
B-1[2]	Single 1-Hour Measurement Simultaneous with Site B Continuous Measurement
C	Continuous 24-Hour Measurement
C-1[2]	Single 1-Hour Measurement Simultaneous with Site C Continuous Measurement
D	Continuous 24-Hour Measurement

Notes:
[1] The weekday AM peak period is 7:30 to 8:30 AM, the weekday midday peak period is 12:30 to 1:30 PM, and the weekday PM peak period is 5:00 to 6:00 PM.
[2] At these locations, the difference in noise level measured at grade simultaneously with the level measured at the elevated location was applied to the 24-hour measured noise levels at the elevated location to determine a 24-hour profile of at-grade noise levels.

Measurements were performed using Type 1 Sound Level Meter (SLM) instrument according to ANSI Standard S1.4-1983 (R2006). The SLMs had a laboratory calibration date within one year of the date of the measurements, as is standard practice. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

NOISE SURVEY RESULTS

The results of the noise measurement program are shown below in **Tables 15-6 through 15-12**.

Table 15-6
Noise Survey Results Summary (in dBA)

Site	Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Along 41st Street between 1st and 2nd Ave	AM	62.5	73.6	65.9	57.4	55.3
		MD	61.5	72.9	61.2	57.8	55.4
		PM	57.5	68.4	59.8	53.5	51.4
2	Along 39th Street between 1st and 2nd Ave	AM	68.7	78.1	71.9	64.3	62.3
		MD	70.5	80.8	72.0	65.0	61.2
		PM	68.1	78.8	71.2	64.2	60.3
3	Along 36th Street between 2nd and 3rd Ave	AM	71.0	74.6	72.8	70.7	68.7
		MD	71.6	77.3	72.7	70.8	69.5
		PM	69.6	76.6	69.8	66.9	63.7
4	Along 33rd between 2nd and 3rd Ave	AM	69.7	81.7	71.5	63.5	60.9
		MD	63.8	73.6	66.1	60.5	59.2
		PM	65.9	76.6	69.1	61.0	59.3
5	2nd Ave between 32nd and 33rd Streets	AM	67.1	76.1	70.2	64.9	60.4
		MD	64.8	76.7	67.6	56.5	51.6
		PM	68.0	79.3	70.3	59.1	53.9
6	32nd Street between 2nd and 3rd Ave	AM	62.0	69.6	64.0	60.5	58.6
		MD	61.5	70.5	63.8	59.5	57.6
		PM	58.9	69.4	60.5	56.2	53.9
B-1	33rd Street, West of 3rd Avenue (at grade)	10:00 AM	75.7	80.2	77.3	75.1	73.5
C-1	3rd Avenue between 33rd Street and 32nd Street	11:00 AM	80.0	86.8	81.6	77.9	74.8

Note: Field measurements were conducted by AKRF on November 21, 2017.

Table 15-7
Location A – 24-hour Noise Survey Results Summary (in dBA)

Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12:00 AM	60.5	71.3	58.4	56.0	55.5
1:00 AM	60.1	72.7	57.9	56.0	55.6
2:00 AM	59.3	70.6	58.5	56.4	55.8
3:00 AM	62.0	74.9	60.7	56.9	56.1
4:00 AM	64.2	76.6	65.5	57.9	56.9
5:00 AM	63.3	74.1	67.0	58.1	57.0
6:00 AM	67.9	78.3	70.0	65.5	58.7
7:00 AM	67.2	78.6	70.0	62.0	59.0
8:00 AM	66.6	77.1	69.6	62.1	59.4
9:00 AM	67.1	76.9	70.4	62.7	58.9
10:00 AM	68.4	77.6	69.8	62.7	58.6
11:00 AM	68.1	78.3	72.0	62.8	57.8
12:00 PM	65.2	75.4	68.7	60.4	57.4
1:00 PM	65.9	76.5	69.1	60.2	57.0
2:00 PM	66.7	76.8	69.3	63.0	57.0
3:00 PM	67.5	78.7	69.7	61.6	56.9
4:00 PM	65.5	76.3	68.0	59.8	56.2
5:00 PM	65.6	76.6	66.6	59.1	55.8
6:00 PM	63.0	74.0	64.4	60.0	56.5
7:00 PM	63.6	74.1	65.2	59.8	57.2
8:00 PM	61.5	72.9	62.2	57.3	56.4
9:00 PM	63.3	76.5	63.2	57.0	56.3
10:00 PM	61.2	73.4	62.0	56.7	56.1
11:00 PM	62.0	73.5	62.0	57.0	56.1
Note: Field measurements were conducted by AKRF on November 21, 2017.					

Table 15-8
Location B – 24-hour Noise Survey Results Summary (in dBA)

Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12:00 AM	76.1	80.2	77.6	75.1	72.8
1:00 AM	74.5	79.2	76.8	73.9	71.6
2:00 AM	74.6	80.2	77.1	73.7	71.1
3:00 AM	74.8	80.4	77.3	73.9	71.2
4:00 AM	75.9	80.5	78.0	75.3	72.9
5:00 AM	76.5	81.1	78.5	76.0	73.8
6:00 AM	76.5	80.4	78.1	76.0	73.8
7:00 AM	76.7	81.5	78.3	76.2	74.6
8:00 AM	76.7	83.8	77.8	75.9	74.3
9:00 AM	76.2	80.3	77.8	75.8	74.0
10:00 AM	76.4	80.9	77.7	75.5	73.7
11:00 AM	76.2	81.3	77.7	75.4	73.6
12:00 PM	75.6	79.8	77.2	75.1	73.4
1:00 PM	76.0	79.7	77.3	75.6	74.4
2:00 PM	76.2	81.6	77.2	75.6	74.4
3:00 PM	76.0	80.8	77.3	75.4	73.6
4:00 PM	75.0	79.6	76.2	74.6	73.1
5:00 PM	73.3	78.9	74.6	72.6	70.6
6:00 PM	73.9	80.0	75.0	73.0	70.9
7:00 PM	74.6	79.7	75.9	74.1	71.8
8:00 PM	75.8	78.7	76.9	75.6	74.5
9:00 PM	75.7	78.5	76.9	75.4	74.2
10:00 PM	76.0	79.1	77.3	75.8	74.5
11:00 PM	76.3	79.7	77.7	76.0	74.4
Note: Field measurements were conducted by AKRF on November 21, 2017.					

Table 15-9
Location B-1 – 24-hour Noise Profile Summary (in dBA)

Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12:00 AM	75.4	79.5	77.1	74.7	72.6
1:00 AM	73.9	78.5	76.4	73.5	71.4
2:00 AM	73.9	79.6	76.6	73.2	70.9
3:00 AM	74.1	79.7	76.9	73.5	71.0
4:00 AM	75.2	79.9	77.5	74.9	72.7
5:00 AM	75.8	80.5	78.0	75.5	73.6
6:00 AM	75.8	79.8	77.7	75.6	73.7
7:00 AM	76.0	80.8	77.8	75.8	74.5
8:00 AM	76.0	83.1	77.4	75.5	74.1
9:00 AM	75.5	79.6	77.3	75.4	73.8
10:00 AM	75.7	80.2	77.3	75.1	73.5
11:00 AM	75.6	80.7	77.3	75.0	73.5
12:00 PM	74.9	79.2	76.7	74.6	73.3
1:00 PM	75.3	79.0	76.8	75.2	74.2
2:00 PM	75.5	80.9	76.8	75.2	74.3
3:00 PM	75.3	80.1	76.8	74.9	73.5
4:00 PM	74.3	79.0	75.7	74.2	73.0
5:00 PM	72.6	78.2	74.2	72.2	70.5
6:00 PM	73.2	79.4	74.5	72.6	70.7
7:00 PM	73.9	79.1	75.4	73.6	71.7
8:00 PM	75.1	78.0	76.5	75.2	74.3
9:00 PM	75.0	77.8	76.5	75.0	74.0
10:00 PM	75.3	78.4	76.8	75.4	74.3
11:00 PM	75.6	79.1	77.3	75.6	74.2

Note:
Profile based on the 24-hour elevated measurement at Location B and the one-hour at-grade measurement at Location B-1 conducted by AKRF on November 21, 2017.

Table 15-10
Location C – 24-hour Noise Survey Results Summary (in dBA)

Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12:00 AM	81.7	86.2	83.4	80.7	77.1
1:00 AM	79.5	85.1	82.3	78.7	74.2
2:00 AM	79.3	85.5	82.4	78.1	73.2
3:00 AM	79.4	86.0	82.5	78.1	73.2
4:00 AM	80.9	86.6	83.3	80.0	76.5
5:00 AM	81.7	87.0	84.0	81.0	77.9
6:00 AM	81.9	85.8	83.9	81.6	78.4
7:00 AM	82.1	86.3	83.7	81.6	79.4
8:00 AM	81.8	86.5	83.4	81.4	79.3
9:00 AM	81.3	85.5	83.1	80.9	78.1
10:00 AM	81.3	85.3	82.8	80.3	77.5
11:00 AM	80.9	85.9	82.8	80.3	77.8
12:00 PM	80.5	84.9	82.2	80.1	77.6
1:00 PM	80.8	84.4	82.4	80.5	78.8
2:00 PM	81.0	85.4	82.1	80.6	79.1
3:00 PM	80.7	85.1	82.5	80.3	78.1
4:00 PM	80.2	84.8	81.4	79.7	77.9
5:00 PM	77.2	83.6	79.0	76.4	73.1
6:00 PM	77.3	82.6	79.2	76.5	72.9
7:00 PM	78.2	83.2	80.4	77.7	73.5
8:00 PM	80.7	83.7	82.0	80.5	79.1
9:00 PM	80.7	83.9	82.2	80.5	78.8
10:00 PM	81.4	84.9	82.8	81.2	79.5
11:00 PM	81.7	85.0	83.3	81.5	79.4

Note: Field measurements were conducted by AKRF on November 21, 2017.

Table 15-11
Location C-1 – 24-hour Noise Profile Summary (in dBA)

Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{min}	L_{max}
12:00 AM	80.8	87.1	82.2	78.3	74.1	70.5	108.6
1:00 AM	78.6	86.0	81.1	76.3	71.2	68.0	94.9
2:00 AM	78.4	86.4	81.2	75.7	70.2	66.3	95.8
3:00 AM	78.5	86.9	81.3	75.7	70.2	64.9	94.7
4:00 AM	80.0	87.5	82.1	77.6	73.5	67.9	98.4
5:00 AM	80.8	87.9	82.8	78.6	74.9	69.1	98.4
6:00 AM	81.0	86.7	82.7	79.2	75.4	71.6	97.8
7:00 AM	81.2	87.2	82.5	79.2	76.4	73.7	106.2
8:00 AM	80.9	87.4	82.2	79.0	76.3	71.6	98.3
9:00 AM	80.4	86.4	81.9	78.5	75.1	70.4	97.6
10:00 AM	80.4	86.2	81.6	77.9	74.5	72.3	108.3
11:00 AM	80.0	86.8	81.6	77.9	74.8	69.4	103.1
12:00 PM	79.6	85.8	81.0	77.7	74.6	73.3	102.3
1:00 PM	79.9	85.3	81.2	78.1	75.8	74.4	95.7
2:00 PM	80.1	86.3	80.9	78.2	76.1	76.3	100.7
3:00 PM	79.8	86.0	81.3	77.9	75.1	71.7	95.9
4:00 PM	79.3	85.7	80.2	77.3	74.9	75.1	101.8
5:00 PM	76.3	84.5	77.8	74.0	70.1	66.4	97.3
6:00 PM	76.4	83.5	78.0	74.1	69.9	64.0	101.0
7:00 PM	77.3	84.1	79.2	75.3	70.5	65.9	97.9
8:00 PM	79.8	84.6	80.8	78.1	76.1	75.9	97.5
9:00 PM	79.8	84.8	81.0	78.1	75.8	74.9	94.9
10:00 PM	80.5	85.8	81.6	78.8	76.5	76.3	96.2
11:00 PM	80.8	85.9	82.1	79.1	76.4	68.8	94.7

Note: Field measurements were conducted by AKRF on November 21, 2017.

Table 15-12
Location D – 24-hour Noise Survey Summary

Start Time	Leq	L1	L10	L50	L90	Lmin	Lmax
4:00 PM	60.9	72.3	62.9	56.0	52.5	49.8	78.5
5:00 PM	60.4	71.3	62.5	55.9	53.2	50.9	81.3
6:00 PM	59.5	69.6	60.8	54.8	52.9	50.4	82.5
7:00 PM	58.8	69.4	59.5	53.1	51.4	49.8	82.8
8:00 PM	56.6	68.1	58.5	52.5	50.9	49.5	73.7
9:00 PM	54.8	65.5	55.8	51.8	50.3	48.6	72.6
10:00 PM	53.3	61.8	54.0	51.9	50.6	49.2	72.6
11:00 PM	53.2	60.7	53.7	51.4	50.1	48.5	74.7
12:00 AM	53.3	63.4	53.1	50.6	48.9	46.9	73.3
1:00 AM	52.0	60.8	52.0	49.7	48.3	46.6	72.0
2:00 AM	55.4	64.6	57.5	50.8	48.6	46.4	78.3
3:00 AM	52.3	60.1	53.1	50.8	49.3	47.4	70.8
4:00 AM	53.6	62.3	54.5	51.8	50.0	48.3	70.6
5:00 AM	57.7	67.2	57.8	52.8	51.1	49.0	82.5
6:00 AM	60.0	69.7	62.7	56.4	52.2	49.9	82.0
7:00 AM	61.6	70.1	64.1	59.5	57.2	53.9	75.6
8:00 AM	68.5	74.7	65.2	60.2	58.1	55.7	96.9
9:00 AM	62.7	72.5	64.8	59.2	57.0	54.0	83.9
10:00 AM	60.1	68.4	61.3	56.4	54.3	52.8	86.5
11:00 AM	60.0	70.9	62.4	56.1	52.7	49.4	76.8
12:00 PM	58.4	68.8	60.3	55.4	52.3	50.1	77.3
1:00 PM	59.6	69.8	61.1	56.6	54.4	51.9	80.6
2:00 PM	61.0	70.9	62.8	57.8	54.5	49.4	80.7
3:00 PM	57.9	67.9	61.0	54.0	51.0	49.4	76.3

Note: Field measurements were conducted by AKRF from June 20 to 21, 2018.

In terms of *CEQR Technical Manual* noise exposure guidelines, Site 6 is in the "acceptable" category, Sites 1 and D are in the "marginally acceptable" category, Sites 2, 3, 4, 5, A, B, and B-1 are in the "marginally unacceptable" category, and Sites C and C-1 are in the "clearly unacceptable" category.

STATIONARY NOISE SOURCE—32ND STREET TRANSFORMERS

The Project Area includes existing electrical transformers along 32nd Street between 2nd Avenue and 3rd Avenue. As is typical for transformers of this type, the transformers produce acoustical energy primarily at a specific frequency (in the present case, at the 125 Hz octave band), resulting in noise with a tonal character. Noise levels resulting from the transformers were measured at a location immediately adjacent to the transformers and are shown in **Figure 15-2**. The measured noise level adjacent to the transformer shows a slight peak at the 125 Hz ⅓-octave band, which indicates that the transformer was the dominant noise source for the measurement. However, comparing the transformer noise to the noise level measured at Site 6, also on 32nd Street, shows that the level of noise from the transformer is only marginally greater than the ambient level. At the façades of noise-sensitive uses included in the Proposed Project, which are much further from the transformer than the transformer noise measurement point, the level of transformer noise would be substantially less than ambient noise (i.e., noise from vehicular traffic, aircraft overflights, etc.) and would not appreciably contribute to total noise levels.

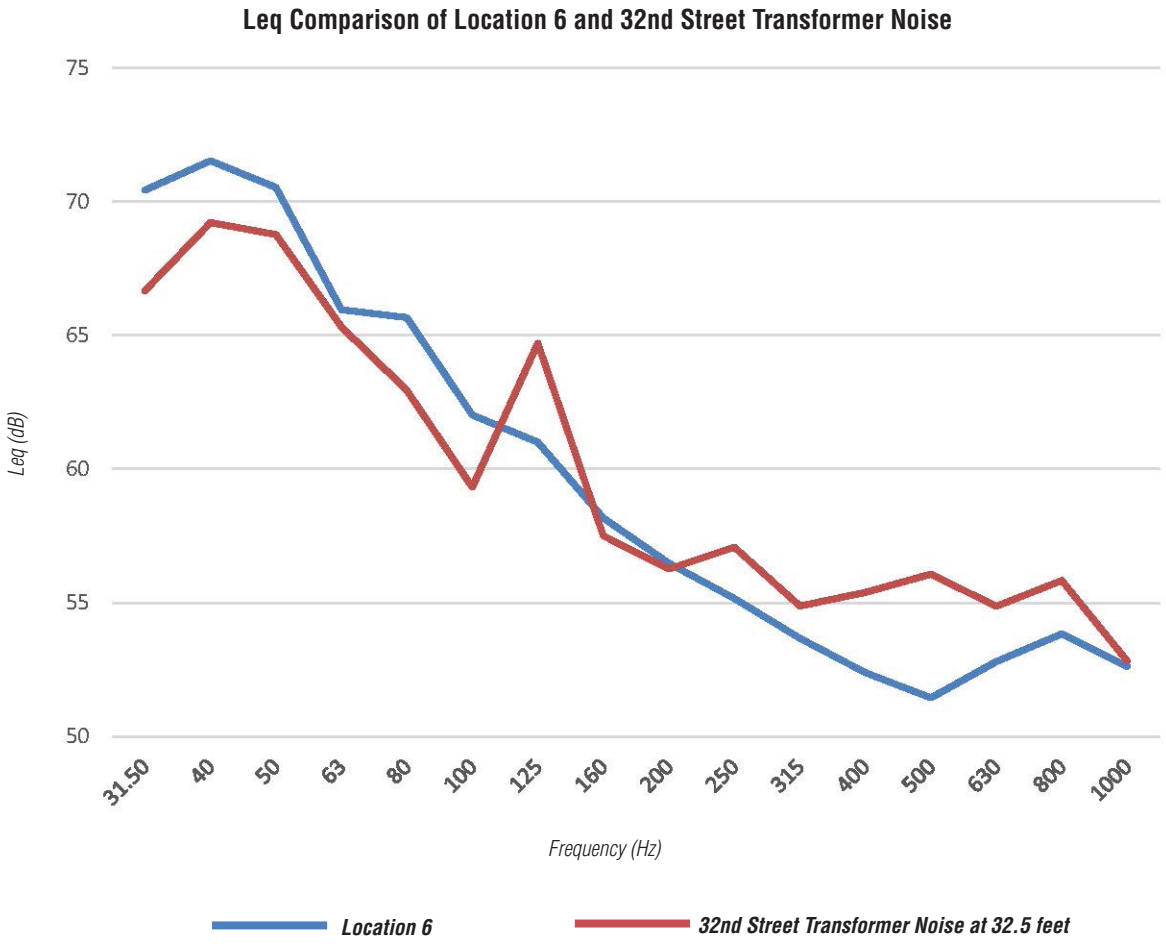
E. NOISE PREDICTION METHODOLOGY

GENERAL METHODOLOGY

Future noise levels, including in the future without the Proposed Actions (the No Action condition) and the future with the Proposed Actions (the With Action condition), were calculated using a proportional modeling technique. The proportional modeling technique is an analysis methodology recommended for analysis purposes in the *CEQR Technical Manual*. The noise analysis examined the weekday AM, midday, and PM peak hours at all receptor locations. The selected peak hours are when the Proposed Actions would be expected to produce 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. The proportional modeling used for the noise analysis is described below. At locations of existing or No Action receptors, the projected increases in noise levels were compared to applicable CEQR noise impact criteria.

At locations of noise receptors that the Proposed Actions would introduce (i.e., proposed future hotel and academic uses), projected future noise levels were compared to CEQR noise exposure criteria to determine minimum required window/wall attenuation. In addition to the projected traffic noise levels in the With Action condition, the projected noise levels at these newly introduced receptors accounted for the contribution of stationary noise sources as well, including Innovation Economy uses within the same building as the newly introduced receptors, or on nearby buildings.

Retail uses to be included in the With Action condition do not constitute newly introduced noise receptors. Retail uses are not as noise-sensitive as places where people sleep (e.g., hotel) or hold lectures/classes (e.g., academic use), and retail use currently exists and thrives within the Industry City complex. Based on the existing retail uses and the limited noise-sensitivity of retail, the retail uses allowed by the Proposed Actions were not considered newly introduced noise receptors.



Transformer Noise Measurement Graph

Figure 15-2

PROPORTIONAL MODELING

Proportional modeling was used to determine locations with the potential for having significant noise impacts. 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 scenario and With Action scenario noise levels. Vehicular traffic volumes are converted into Noise Passenger Car Equivalent (Noise PCE) values, for which one medium-duty truck (i.e., having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, one heavy-duty truck (i.e., having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (i.e., 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, e.g., assumes 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.

FAÇADE NOISE ATTENUATION REQUIREMENTS

Of the expected land uses that are included in the Proposed Project, the proposed academic and hotel uses constitute newly introduced noise-sensitive receptors. As shown in **Table 15-3**, the *CEQR Technical Manual* has set noise attenuation quantities for buildings based on exterior $L_{10(1)}$ noise levels to maintain acceptable interior noise levels. The acceptable interior noise level thresholds for the Environmental Impact Statement (EIS) noise analysis is 45 dBA or lower for hotel guestroom or classroom uses.

Minimum façade noise attenuation ratings were established for each of the newly introduced noise receptors as outlined above based on projected $L_{10(1)}$ noise levels in the With Action condition. The projected future $L_{10(1)}$ noise levels comprise a combination of vehicular traffic noise, railway noise (for Sites A and 2, which are in proximity to the 39th Street Rail line), and stationary source noise from the surrounding Innovation Economy uses. The measured noise levels, as described above, include existing condition vehicular traffic and railway noise. The increase in vehicular traffic noise levels in the future with the Proposed Actions will be accounted for by adjusting the measured noise levels, using the proportionality equation described in section 332.1 of the *CEQR Technical Manual*. The contribution of stationary noise sources at surrounding areas was accounted for by adding the maximum noise levels allowable under the New York City Zoning Resolution (ZR) Section 42-213 (i.e., property-line noise level performance standards for

manufacturing-zoned districts). Specifically, the maximum allowable noise emission for an M3 district, as shown in **Table 15-13**, was added to the maximum With Action noise level at each receptor to determine the maximum expected $L_{10(1)}$ noise level at each receptor. The projected $L_{10(1)}$ noise levels in the future with the Proposed Actions were applied to the standards shown in **Table 15-3** to establish building façade noise attenuation requirements at the newly introduced noise receptors.

Table 15-13
City of New York Noise Performance Standards for M3 Manufacturing District

Old Octave Bands		Current Octave Bands	
Octave Band (Hz)	**M3 District (dB)**	**Octave Band (Hz)**	**M3 District (dB)**
20 to 75	80	63	79
75 to 150	75	125	74
150 to 300	70	250	69
300 to 600	64	500	63
600 to 1,200	58	1,000	57
1,200 to 2,400	53	2,000	52
2,400 to 4,800	49	4,000	48
Above 4,800	46	8,000	45
		A-weighted Total	65.7

Note:
The Performance Standards are specified in "old" octave bands. These bands are no longer used, and instrumentation is no longer available to measure per these specifications. The American National Standards Institute (ANSI) has promulgated a standard on the conversion of old octave bands to the current preferred values (and vice versa), to allow measurement and assessment.
Source:
City of New York Performance Standards for Manufacturing Districts Section 42-213

INNOVATION ECONOMY DEMISING PARTITION NOISE ATTENUATION REQUIREMENTS

For the condition in which a newly introduced noise-sensitive use (i.e., hotel or academic) would exist on the same lot with Innovation Economy use, the two uses would be separated by a demising partition, which is required by DOB Building Code to provide at least 50 dBA noise attenuation. Noise levels were measured at an existing representative Innovation Economy use, and based on the measured level and the code-required demising wall noise attenuation, maximum noise levels were projected for a noise-sensitive space adjacent to an Innovation Economy use. As with the analysis of façade noise attenuation described above, acceptable interior noise level thresholds for the EIS noise analysis are 45 dBA or lower for hotel guestroom or classroom uses. The Proposed Project includes only one instance in the With Action condition in which a noise-sensitive use and Innovation Economy use would exist on a single lot together, which would be the Hotel and Innovation Economy uses at Building 21. Building 21 would be a newly constructed building and the design of its demising partitions between the two uses would be required to provide the minimum noise attenuation established by the analysis described above.

The $L_{eq(1)}$ noise level descriptor was used to evaluate the Innovation Economy-generated noise within one lot, because it includes all acoustical energy incident during a measurement.

NOISE SURVEY PROCEDURES AND RESULTS

The Fodera Bass Guitar workshop was selected as the representative Innovation Economy use to establish worst-case interior noise levels for existing and future Innovation Economy uses. Noise levels in the workshop include woodworking machinery (e.g., saws, routing machines, sanders, etc.) as well as ventilation equipment. The measured noise levels, shown in **Table 15-14**, serve as a conservative representation of the types of light manufacturing and industrial work that make up expected Innovation Economy uses.

Table 15-14
Measured Sound Pressure Levels at the Fodera Guitar Workshop (dBA)

Description	L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{min}	L_{max}
Ambient Workshop Noise (includes routers, saws, sanders, and ventilation equipment)	90.1	96.3	93.6	89.3	82.1	78.9	96.5

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Using the methodology previously described, No Action condition noise levels were calculated at the 12 noise receptors for the 2027 analysis year. These No Action condition values are shown in **Table 15-15**.

In 2027, the maximum increase in $L_{eq(1)}$ at any of the noise receptor locations would be 3.4 dBA. Changes of this magnitude would be considered just noticeable.

In terms of *CEQR Technical Manual* noise exposure guidelines, Site 6 would remain in the "acceptable" category, Sites 1 and D would remain in the "marginally acceptable" category, Sites 2, 3, 4, 5, A, B, and B-1 would remain in the "marginally unacceptable" category, and Sites C and C-1 are would remain the "clearly unacceptable" category.

Table 15-15
2027 No Action Condition Noise Levels (in dBA)

Noise Receptor Site	Time	Existing $L_{eq(1)}$	No Action $L_{eq(1)}$	$L_{eq(1)}$ Change	No Action $L_{10(1)}$
1	AM	62.5	63.2	0.7	66.6
	MD	61.5	62.7	1.2	62.4
	PM	57.5	58.3	0.8	60.6
2	AM	68.7	71.8	3.1	75.0
	MD	70.5	72.7	2.2	74.2
	PM	68.1	70.7	2.6	73.8
3	AM	71.0	71.4	0.4	73.2
	MD	71.6	73.0	1.4	74.1
	PM	69.6	70.4	0.8	70.6
4	AM	69.7	70.0	0.3	71.8
	MD	63.8	64.2	0.4	66.5
	PM	65.9	66.1	0.2	69.3
5	AM	67.1	67.3	0.2	70.4
	MD	64.8	65.0	0.2	67.8
	PM	68.0	68.3	0.3	70.6
6	AM	62.0	62.2	0.2	64.2
	MD	61.5	61.9	0.4	64.2
	PM	58.9	59.3	0.4	60.9
A	AM	66.6	69.3	2.7	72.3
	MD	68.1	70.7	2.6	74.6
	PM	65.6	69.0	3.4	70.0
B	AM	76.5	76.8	0.3	78.8
	MD	76.2	76.6	0.4	78.1
	PM	76.0	e	0.2	77.5
B-1	AM	75.8	76.1	0.3	78.3
	MD	75.6	76.0	0.4	77.7
	PM	75.3	75.5	0.2	77.0
C	AM	e	82.4	0.7	84.7
	MD	80.9	82.2	1.3	84.1
	PM	80.7	81.1	0.4	82.9
C-1	AM	80.8	81.2	0.4	83.2
	MD	80.0	80.6	0.6	82.2
	PM	79.8	80.3	0.5	81.8
D	AM	68.5	68.7	0.2	65.4
	MD	58.4	58.8	0.4	61.5
	PM	60.4	60.8	0.4	62.9

G. THE FUTURE WITH THE PROPOSED ACTIONS

MOBILE SOURCE NOISE

Using the methodology previously described, With Action condition noise levels due to mobile source noise were calculated at the 12 noise analysis receptors for the 2027 analysis year. The With Action condition mobile source noise levels for each receptor site are shown in **Table 15-16**.

Table 15-16
2027 With Action Condition Mobile Source Noise Levels (in dBA)

Noise Receptor Site	Time	No Action $L_{eq(1)}$	With Action $L_{eq(1)}$	$L_{eq(1)}$ Change	With Action $L_{10(1)}$
1	AM	63.2	65.4	2.2	68.8
	MD	62.7	64.8	2.1	64.5
	PM	58.3	64.9	6.6*	67.2
2	AM	71.8	72.3	0.5	75.5
	MD	72.7	74.5	1.8	76.0
	PM	70.7	72.4	1.7	75.5
3	AM	71.4	71.7	0.3	73.5
	MD	73.0	73.7	0.7	74.8
	PM	70.4	70.8	0.4	71.0
4	AM	70.0	67.8	-2.2	69.6
	MD	64.2	64.5	0.3	66.8
	PM	66.1	67.8	1.7	71.0
5	AM	67.3	66.7	-0.6	69.8
	MD	65.0	65.3	0.3	68.1
	PM	68.3	68.7	0.4	71.0
6	AM	62.2	62.7	0.5	64.7
	MD	61.9	63.0	1.1	65.3
	PM	59.3	61.8	2.5	63.4
A	AM	69.3	69.9	0.6	72.9
	MD	70.7	72.0	1.3	75.9
	PM	69.0	70.7	1.7	71.7
B	AM	76.8	74.6	-2.2	76.6
	MD	76.6	76.9	0.3	78.4
	PM	76.2	77.9	1.7	79.2
B-1	AM	76.1	73.7	-2.4	75.9
	MD	76.0	76.2	0.2	77.9
	PM	75.5	77.5	2.0	79.0
C	AM	82.4	82.4	0.0	84.7
	MD	82.2	82.2	0.0	84.1
	PM	81.1	81.1	0.0	82.9
C-1	AM	81.2	81.3	0.1	83.3
	MD	80.6	81.0	0.4	82.6
	PM	80.3	80.6	0.3	82.1
D	AM	68.7	69.2	0.5	65.9
	MD	58.8	59.9	1.1	62.6
	PM	60.8	63.3	2.5	65.4

Note: Exceedances of CEQR noise impact criteria are marked with an asterisk ("*").

In 2027, the maximum increase in $L_{eq(1)}$ noise levels at receptors 2 through 6, A, B, B-1, C, C-1, and D for the With Action condition compared to the No Action condition would be 2.5 dBA. Noise level increases of this magnitude would be considered "just noticeable" and not significant according to CEQR noise impact criteria.

At Site 1 on 41st Street between 1st and 2nd Avenues, noise levels in the With Action condition would be up to 6.6 dBA greater than those in the No Action condition. This receptor represents an existing residential building, located at 166 41st Street, on the south side of the street between 1st

and 2nd Avenues. The predicted noise level increases would be considered noticeable and would constitute a significant adverse impact at this residential building according to CEQR noise impact criteria. The predicted increases in noise level along 41st Street would occur because of additional vehicular traffic utilizing the proposed parking garage at Building 21. The increase in noise level would be noticeable and significant according to CEQR noise impact criteria.

In terms of *CEQR Technical Manual* noise exposure guidelines, Site 6 would change from the "acceptable" to the "marginally acceptable" category, Sites 1 and D would remain in the "marginally acceptable" category, Sites 2, 3, 4, 5, A, B, and B-1 would remain in the "marginally unacceptable" category, and Sites C and C-1 are would remain the "clearly unacceptable" category.

As mitigation for this potential noise impact, upon construction of Building 21, the Applicant would offer air conditioning units to residences (approximately 2 dwelling units) of the affected building that do not currently have this alternative means of ventilation. With such measures and the building's existing insulated glass windows, the building façade would provide approximately 25 dBA window/wall attenuation, resulting in interior noise levels less than 45 dBA, which would be considered acceptable according to CEQR noise exposure guidelines. This proposed mitigation is described in Chapter 20, "Mitigation."

H. NOISE EXPOSURE AT NEWLY INTRODUCED NOISE RECEPTORS

WINDOW/WALL ATTENUATION ANALYSIS RESULTS

As shown in **Table 15-3**, the *CEQR Technical Manual* has set noise attenuation quantities for buildings based on exterior $L_{10(1)}$ noise levels in order to maintain interior noise levels of 45 dBA or lower for hotel guestroom and classroom uses. The results of the building attenuation analysis are summarized in **Table 15-17**.

Table 15-17
Building Attenuation Requirements (in dBA)

Building	Block/Lot	Façade	Elevation	Associated Noise Receptor	Maximum With Action Mobile Source L_{10}	Maximum L_{10} with Innovation Economy Noise Level Contribution	Minimum Required Attenuation[1]
Building 9 (academic use)[2]	679/1	South	All	4	71.0	72.1	28
		North	All	6	65.3	68.5	N/A[3]
Building 10 (academic use)		East	20 or more feet above grade	C	84.7	84.8	41
			Less than 20 feet above grade	C-1	83.3	83.4	40
		West	All	4	71.0	72.1	28
		North, South	20 or more feet above grade	B	79.2	79.4	35
			Less than 20 feet above grade	B-1	79.0	79.2	35
Building 11 (academic use)		South, East	All	4	71.0	72.1	28
		North	All	6	65.3	68.5	N/A[3]
		West	All	5, D	71.0	72.1	28
Building 21 (hotel use)	706/20, 101	West	All	A	75.9	76.3	33
		South	All	1	68.8	70.5	28
		North, East	All	2	76.0	76.4	33
Gateway Building (hotel use)	695/37–43	East	20 or more feet above grade	C	84.7	84.8	41
			Less than 20 feet above grade	C-1	83.3	83.4	40
		North, West, South	All	3	74.8	75.3	31

Notes:
[1] Attenuation values are shown for hotel guestroom or academic classroom uses.
[2] No attenuation requirement is specified for the east and west façades of Building 9, because there are no east or west-facing façades or windows on this building.
[3] 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} values below this level.

To implement the attenuation requirements shown in **Table 15-17**, an (E) Designation for noise (E-527) would be applied to the individual sites specifying a requirement for the appropriate amount of window/wall attenuation and an alternate means of ventilation. The text for the (E) Designation for window/wall attenuation of 40 dBA or less would be as follows:

> **To ensure an acceptable interior noise environment, future development must provide minimum composite building façade attenuation as shown in Table 15-17 to ensure an interior L_{10} noise level not greater than 45 dBA for hotel guestroom or community facility uses or 50 dBA for commercial uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation include, but are not limited to, central air conditioning.**

The text of the Noise (E) Designation for window/wall attenuation greater than 40 dBA would be as follows:

> **To ensure an acceptable interior noise environment, future development must provide minimum composite building façade attenuation as shown in Table 15-17 to ensure an interior L_{10} noise level not greater than 45 dBA for hotel guestroom or community facility uses or 50 dBA for commercial uses. To achieve up to 41 dBA of building attenuation, special design features that go beyond the normal double glazed windows are necessary and may include using specially designed windows (i.e., windows with small sizes, windows with air gaps, windows with thicker glazing, etc.), and additional building attenuation. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation include, but are not limited to, central air conditioning.**

The attenuation of a composite structure is a function of the attenuation provided by each of its component parts and how much of the area is made up of each part. Normally, a building façade consists of wall, glazing, and any vents or louvers associated with the building mechanical systems in various ratios of area. The proposed design for the building includes acoustically rated windows and central air conditioning as an alternate means of ventilation. The proposed building's façades, including these elements, would be designed to provide a composite window/wall attenuation greater than or equal to those listed above in **Table 15-17**, along with an alternative means of ventilation in all habitable rooms of the residential units. By adhering to the design specifications included in the Noise (E) Designation (E-527), the proposed buildings would provide sufficient attenuation to achieve the CEQR interior $L_{10(1)}$ noise level guideline of 45 dBA or lower for hotel guestroom or academic classroom uses, which would be considered acceptable according to CEQR interior noise level guidelines.

INTERIOR/DEMISING PARTITION ATTENUATION ANALYSIS RESULTS

Building 21 is the only new construction that would co-locate one of the noise sensitive uses, academic and/or hotel use, with Innovation Economy uses within the same building. The newly introduced academic and/or hotel use within Buildings 9 and 11 would be located on the same tax lot as Innovation Economy use. Consequently, these buildings would have the potential to experience noise from Innovation Economy use not restricted by the zoning code noise performance standards. These newly introduced noise receptors would be separated from Innovation Economy use by demising partitions. An analysis was conducted to determine whether Innovation Economy would result in noise exposure at these uses that would exceed *CEQR Technical Manual* guidelines, and if so, what provisions would be required to ensure sufficient demising partition noise attenuation to avoid such noise exposure.

As shown in **Table 15-14**, the maximum measured L_{10} noise level within the representative Innovation Economy space was 93.6 dBA. The DOB Building Code (2014) requires demising partitions to achieve a Sound Transmission Class (STC) of 50, which would represent approximately 50 dBA of attenuation. With this level of code-minimum attenuation, noise exposure in an adjacent noise-sensitive space would be less than 45 dBA, and would consequently be considered acceptable for any of the proposed uses included in the Proposed Actions.

I. MECHANICAL EQUIPMENT

It is assumed that the building mechanical systems (i.e., HVAC systems) would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code, the New York City Buildings Code) and to 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. ✷