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 on the projected and potential developments that could result from the Proposed Actions.

The analysis presented in Chapter 14, "Transportation," found that the Proposed Actions would not generate traffic volumes that would require a detailed traffic analysis. Consequently, the Proposed Actions would not have the potential to cause a significant noise impact (i.e., they would not result in a doubling of noise passenger car equivalents [Noise PCEs], which is necessary to cause a perceptible increase in noise levels [see **Appendix G**]). However, ambient noise levels adjacent to the development sites also must be examined to address any noise attenuation requirements, as found in the 2020 *City Environmental Quality Review (CEQR) Technical Manual*, for interior noise levels.

PRINCIPAL CONCLUSIONS

The Proposed Actions would not result in any significant adverse noise impacts at analyzed noise receptors. In addition, the building attenuation analysis determined that the projected and potential development sites would require up to 35 dBA window/wall attenuation to meet *CEQR Technical Manual* interior noise level requirements. For projected and potential development sites, the attenuation requirements would be included in an (E) Designation mapped in connection with the Proposed Actions.

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 (a whistle compared with a French horn, for example) 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 17-1**, 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.

Table 17-1
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. 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 L_{10} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines for city environmental impact review classification.

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 17-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 17-2
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 ----------	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
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; (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.

Table Notes:
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. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.
3 One may use FAA-approved L_{dn} contours supplied by the Port Authority, or the noise contours may be computed from the federally approved 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 (adopted policy 1983).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see **Table 17-3**). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential or community facility uses and 50 dBA or lower for commercial office uses, and are determined based on exterior $L_{10(1)}$ noise levels.

Table 17-3
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 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)$[B] dB(A)

Notes:
[A] The above composite window-wall attenuation values are for residential dwellings and community facility uses. Commercial office spaces would be 5 dB(A) 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 dB(A) increments for L_{10} values greater than 80 dBA.
Source: New York City Department of Environmental Protection.

D. EXISTING NOISE LEVELS

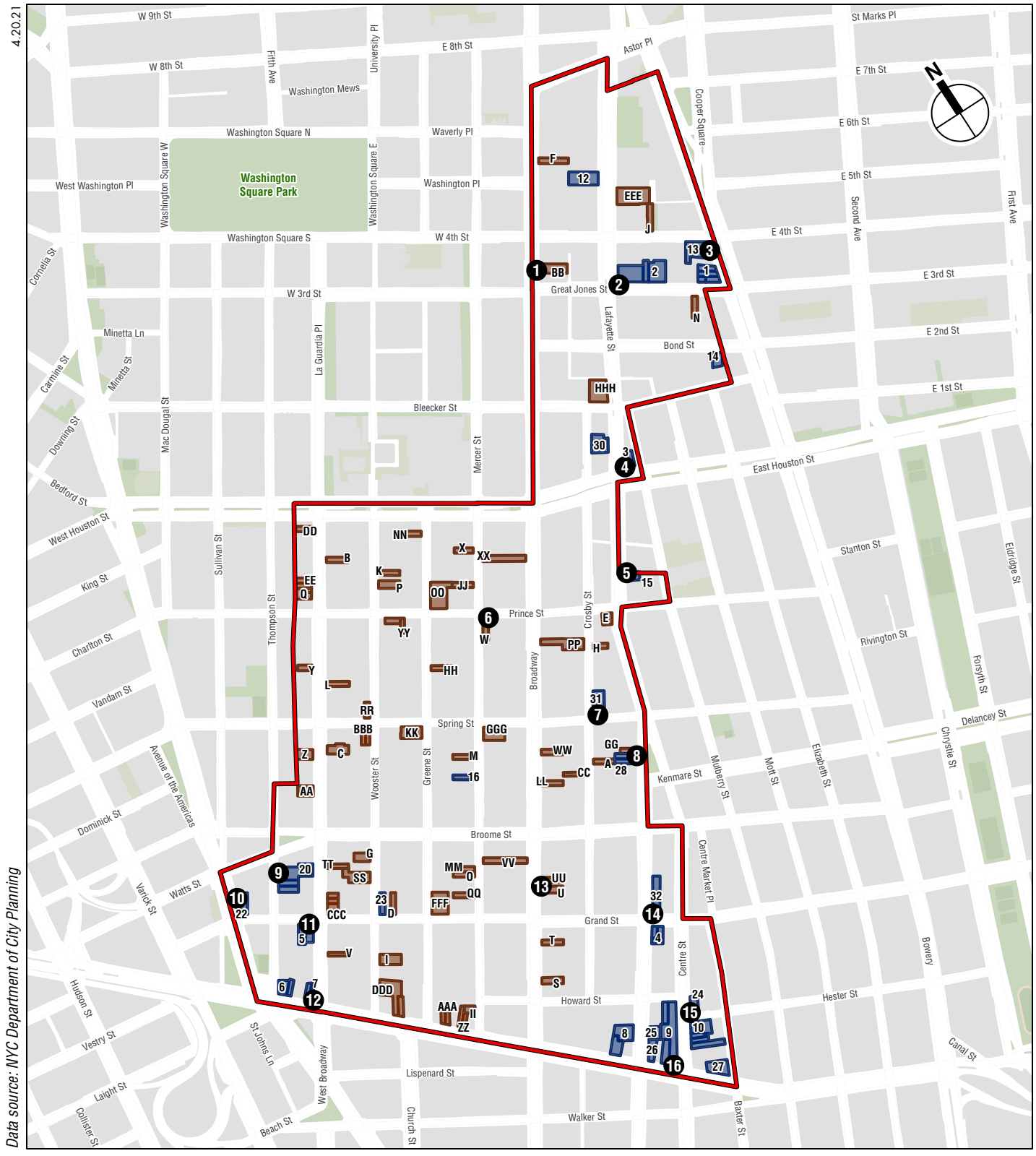
SELECTION OF NOISE RECEPTOR LOCATIONS

A total of 16 receptor locations within the Project Area were selected for evaluation of noise attenuation requirements. These locations are detailed below in **Table 17-4** and shown in **Figure 17-1**. The receptor locations were selected based on the following criteria: (1) locations near development sites; and (2) to provide comprehensive geographic coverage throughout the study area to get an accurate picture of the ambient noise environment. These receptors, due to their proximity to the development sites, provide an effective and conservative representation of existing ambient noise levels at the projected and potential development sites.

Table 17-4
Proposed Noise Measurement Locations

Site	Location
1	Broadway between West 3rd Street and West 4th Street
2	Great Jones Street and Lafayette Street Intersection
3	Bowery between West 3rd Street and West 4th Street
4	East Houston Street and Lafayette Street Intersection
5	Lafayette Street between East Houston Street and Prince Street
6	Prince Street and Mercer Street Intersection
7	Spring Street and Crosby Street Intersection
8	Lafayette Street between Spring Street and Broome Street
9	Thompson Street between Watts Street and Grand Street
10	Grand Street and 6th Avenue Intersection
11	Grand Street and West Broadway Intersection
12	Canal Street and West Broadway Intersection
13	Broadway between Broome Street and Grand Street
14	Grand Street and Lafayette Street Intersection
15	Hester Street and Centre Street Intersection
16	Canal Street and Centre Street Intersection

Note: Noise measurements were conducted for 20 minutes during typical weekday AM, midday, PM, and Saturday peak periods.



Noise Measurement Locations

SOHO/NOHO NEIGHBORHOOD PLAN

Figure 17-1

NOISE MONITORING

At each receptor location, existing noise levels were determined by field measurements. Noise monitoring was performed on March 3, 4, 6, 10, and 13, 2021. All measurements were performed during the weekday AM (7:00 AM—9:00 AM), midday (12:00 PM—2:00 PM), PM (4:00 PM—6:00 PM), and Saturday midday (12:00 PM—2:00 PM) peak periods. At all noise measurement locations the microphones were mounted at a height of approximately five feet above the ground surface on a tripod and approximately six feet or more away from any large sound-reflecting surfaces to avoid major interference with sound propagation.

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using one Brüel & Kjær Type 2260 Sound Level Meter (SLM), two Brüel & Kjær Type 2250 SLMs, two Brüel & Kjær Type 2270 SLMs, five Brüel & Kjær Type 4189 1/2-inch microphones, and four Brüel & Kjær Type 4231 Sound Level Calibrators. The Brüel & Kjær SLMs are Class 1 instruments according to ANSI Standard S1.4-2014. The SLMs have a laboratory calibration date within the past one year at the time of use. The SLMs were calibrated before and after readings with either a Brüel & Kjær Type 4231 Sound Level Calibrator using the appropriate adaptor. The data were digitally recorded by the SLMs 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}. Windscreens were used during all measurements. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2020.

EXISTING NOISE LEVELS AT NOISE RECEPTOR LOCATIONS

MEASURED NOISE LEVELS

The results of the measurements of existing noise levels are summarized in **Table 17-5**. Roadway traffic was the dominant noise source for all receptor locations, with some contribution from nearby subway trains. Generally, noise levels are moderate, and reflect the level of activity present on the adjacent roadways and subway rail lines.

In terms of *CEQR Technical Manual* criteria, receptor locations 6, 7, and 8 are categorized as "marginally acceptable," and receptor locations 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, and 16 are categorized as "marginally unacceptable."

Table 17-5
Existing Noise Levels (in dBA)

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Broadway between West 3rd Street and West 4th Street	AM	70.1	78.9	73.4	67.9	60.7
		MD	71.7	79.8	74.6	69.6	63.6
		PM	70.0	77.8	72.6	68.2	62.9
		SAT	68.9	78.2	71.1	66.6	61.3
2	Great Jones Street and Lafayette Street Intersection	AM	67.2	78.2	70.3	63.5	57.1
		MD	68.3	77.5	70.0	66.5	60.7
		PM	65.2	72.8	68.7	62.9	58.3
		SAT	63.7	71.2	65.8	62.1	58.7
3	Bowery between West 3rd Street and West 4th Street	AM	70.6	80.0	73.3	67.7	61.4
		MD	71.3	83.3	72.8	67.0	60.1
		PM	69.8	77.5	72.2	66.0	60.8
		SAT	68.5	77.4	71.8	66.2	59.4

Table 17-5 (cont'd)
Existing Noise Levels (in dBA)

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
4	East Houston Street and Lafayette Street Intersection	AM	70.5	78.9	74.1	67.4	61.5
		MD	71.1	82.7	73.1	66.5	60.8
		PM	72.3	83.4	74.5	68.9	63.7
		SAT	71.3	81.4	74.3	67.6	62.2
5	Lafayette Street between East Houston Street and Prince Street	AM	68.2	76.4	70.4	59.8	56.4
		MD	64.5	73.4	68.1	61.2	57.1
		PM	67.3	75.6	70.4	65.0	60.1
		SAT	63.1	69.9	66.6	60.9	56.8
6	Prince Street and Mercer Street Intersection	AM	64.5	73.3	67.5	62.6	58.4
		MD	66.1	76.3	68.0	62.6	60.4
		PM	64.4	71.2	67.2	62.9	60.4
		SAT	63.8	70.6	66.7	62.0	59.3
7	Spring Street and Crosby Street Intersection	AM	65.4	73.3	68.9	62.8	60.1
		MD	64.9	74.3	67.7	62.4	58.9
		PM	66.5	75.4	69.0	64.5	60.9
		SAT	64.4	71.3	67.1	62.9	59.9
8	Lafayette Street between Spring Street and Broome Street	AM	65.8	73.5	68.8	63.0	59.6
		MD	65.1	74.5	67.6	62.9	60.2
		PM	66.4	75.7	67.7	63.7	61.3
		SAT	64.6	69.6	65.6	62.0	59.7
9	Thompson Street between Watts Street and Grand Street	AM	69.5	77.8	74.2	63.2	59.1
		MD	69.6	78.5	73.3	65.9	59.5
		PM	66.9	78.4	64.9	62.4	61.1
		SAT	67.8	76.0	72.1	62.7	58.4
10	Grand Street and 6th Avenue Intersection	AM	71.7	82.6	74.8	66.6	61.9
		MD	70.0	78.4	73.5	66.9	61.9
		PM	72.1	82.6	74.7	68.1	61.1
		SAT	69.2	79.5	72.6	64.9	59.9
11	Grand Street and West Broadway Intersection	AM	67.3	77.6	70.4	62.6	58.5
		MD	65.5	75.0	68.3	62.3	58.6
		PM	63.0	70.8	66.4	60.0	57.3
		SAT	66.3	72.9	68.1	65.4	60.0
12	Canal Street and West Broadway Intersection	AM	75.7	85.5	78.9	72.1	65.9
		MD	73.7	83.1	76.9	70.5	63.3
		PM	69.3	79.7	71.3	66.0	63.1
		SAT	71.9	81.3	74.3	67.8	62.1
13	Broadway between Broome Street and Grand Street	AM	70.5	79.5	74.4	66.7	59.4
		MD	70.6	79.7	74.3	67.5	60.5
		PM	70.9	79.1	74.8	68.3	61.2
		SAT	71.4	81.0	73.7	66.6	60.3
14	Grand Street and Lafayette Street Intersection	AM	68.2	78.5	71.1	63.9	59.5
		MD	67.5	76.3	70.3	64.4	61.0
		PM	66.1	74.6	68.9	63.7	59.2
		SAT	64.4	72.6	66.4	61.8	58.0
15	Hester Street and Centre Street Intersection	AM	69.9	80.1	72.7	64.4	58.3
		MD	66.4	75.1	69.4	63.0	57.8
		PM	67.5	77.2	71.0	62.2	57.9
		SAT	66.2	77.7	67.1	62.6	59.9
16	Canal Street and Centre Street Intersection	AM	75.7	85.7	79.4	71.8	65.9
		MD	74.3	84.1	78.2	70.8	64.7
		PM	71.0	79.6	74.7	68.1	62.5
		SAT	72.9	81.3	74.3	68.8	63.0

Note: Field measurements were performed by AKRF, Inc. on March 3, 4, 6, 10, and 13, 2021

E. NOISE PREDICTION METHODOLOGY

In terms of mobile sources, the number of vehicle trips generated by the Proposed Project would be lower than the threshold that would require any detailed traffic analysis. Consequently, the Proposed Actions would not generate sufficient traffic to have the potential to cause a significant noise impact (i.e., it would not result in a doubling of Noise PCEs, which would be necessary to cause a 3 dBA increase in noise levels) and further assessment is not warranted. However, noise levels in the future with the Proposed Actions were adjusted to account for expected increases in the level of vehicular traffic on roadways adjacent to each receptor location. The expected proportion of increase in vehicular traffic volumes was determined based on guidance shown in Table 16-4 of the *CEQR Technical Manual*. The amount of noise level increase associated with the projected traffic volume increases was calculated using a proportional modeling technique, which was used as a tool to estimate changes in noise levels. 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 (MD), PM, and Saturday midday peak hours at all receptor locations.

Additionally, at each of the noise receptor locations that has a direct line of sight to a playground, noise associated with any nearby playground was estimated using the Early Childhood playground boundary noise level (to conservatively represent children of any age using the playground) and any applicable noise level reduction due to distance. The estimated playground noise level at each site was combined with the maximum projected traffic noise level at the site to determine a total projected noise exposure upon which to base noise attenuation requirements.

Table 17-6 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] The noise associated with nearby playgrounds was estimated using the Early Childhood playground boundary noise level to conservatively represent children of any age using the playground. Playground L_{10} noise levels are assumed to be 3 dBA greater than projected L_{eq} values or the difference between the measured L_{eq} and L_{10} values, whichever is most conservative. At receptors with line-of-sight to both existing and proposed playgrounds, cumulative noise levels including contribution from traffic on adjacent roadways and playground noise is calculated.

Table 17-6
Playground Boundary Noise $L_{eq(1)}$ Noise Levels (in dBA)

Early Childhood	Elementary Schools	Intermediate Schools	High Schools
71.5	71.4	71.0	68.2

Source: 2020 *CEQR Technical Manual*.

F. NOISE ATTENUATION MEASURES

The *CEQR Technical Manual* has set noise attenuation requirements for buildings based on exterior $L_{10(1)}$ noise levels. Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential or community facility uses and 50 dBA or lower for commercial office uses.

Table 17-7 shows the minimum window/wall attenuation necessary to meet *CEQR Technical Manual* requirements for internal noise levels at each of the noise measurement locations. The

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

$L_{10(1)}$ noise levels in **Table 17-7** were determined by adjusting the existing noise measurements to account for background traffic growth between the Existing Condition and With Action condition according to the Noise PCE screening analysis results. The projected future $L_{10(1)}$ noise levels include the noise contribution from vehicular traffic on adjacent roadways.

Table 17-7
Required Attenuation at Noise Measurement Locations (in dBA)

Receptor	Location	Highest With Action $L_{10(1)}$ Value[1]	Minimum Required Attenuation[2]
1	Broadway between West 3rd Street and West 4th Street	74.7	31
2	Great Jones Street and Lafayette Street Intersection	70.4	28
3	Bowery between West 3rd Street and West 4th Street	73.4	31
4	East Houston Street and Lafayette Street Intersection	74.6	31
5	Lafayette Street between East Houston Street and Prince Street	70.5	28
6	Prince Street and Mercer Street Intersection	68.1	N/A
7	Spring Street and Crosby Street Intersection	69.1	N/A
8	Lafayette Street between Spring Street and Broome Street	68.9	N/A
9	Thompson Street between Watts Street and Grand Street	74.3	31
10	Grand Street and 6th Avenue Intersection	74.9	31
11	Grand Street and West Broadway Intersection	70.5	28
12	Canal Street and West Broadway Intersection	79.0	35
13	Broadway between Broome Street and Grand Street	74.8	31
14	Grand Street and Lafayette Street Intersection	71.2	28
15	Hester Street and Centre Street Intersection	72.8	28
16	Canal Street and Centre Street Intersection	79.5	35

Notes:
1 Future noise levels adjusted for expected increases in background traffic in the With-Action condition.
2 Attenuation values are shown for residential or community facility uses; commercial office uses would require 5 dBA less attenuation.
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.

Based on the values shown in **Table 17-7**, required attenuation levels were determined for all development sites. These values are shown in **Table 17-8**.

Table 17-8
Required Attenuation at Development Sites (in dBA)

Development Site	Block(s)	Lot(s)	Façade(s)	Representative Receptor	Required Attenuation[1]
Projected Development Sites					
1	531	41, 42, 43, 44	West, North/South (greater than 50 feet from Bowery)	2	28
			East, North/South (within 50 feet of Bowery)	3	31
2	531	17, 52, 56	All	2	28
3	522	41, 43	All	4	31
4	234	9, 11	All	14	28
5	227	20, 22	All	11	28
6	227	6, 7	All	12	35[3]
7	227	1, 2	All	12	35
8	209	21, 26	North, East/West (greater than 50 feet from Canal Street)	14	28
			South, East/West (within 50 feet of Canal Street)	16	35

Table 17-8 (cont'd)
Required Attenuation at Development Sites (in dBA)

Development Site	Block(s)	Lot(s)	Façade(s)	Representative Receptor	Required Attenuation[1]
Projected Development Sites (continued)					
9	208	13, 19, 20	North, East/West (greater than 50 feet from Canal Street)	15	28
			South, East/West (within 50 feet of Canal Street)	16	35
10	207	5, 6, 7, 8, 10	All	15	28
12	545	48	All	2	28
13	531	37	All	3	31
14	529	35	All	2	28
15	510	33	All	5	28
16	485	28	All	6	N/A[2]
20	476	56, 57, 73	North, West	9	31
			South, East	11	28
22	476	1	All	10	31
23	475	61	All	11	28
24	235	29	All	15	28
25	208	4	All	14	28
26	208	1	All	16	35
27	207	20	All	16	35
28	482	27, 28	All	8	N/A[2]
30	522	28	All	4	31
31	496	40	All	7	N/A[2]
32	472	28	All	14	28
Potential Development Sites					
A	482	9	All	7	N/A[2]
B	515	7	All	11	28
C	487	18	All	11	28
D	475	59	All	11	28
E	496	18	All	6	N/A[2]
F	545	14	All	1	31
G	475	19	All	6	N/A[2]
H	496	9	All	7	N/A[2]
I	229	15	All	6	N/A[2]
J	544	72	All	2	28
K	514	4	All	6	N/A[2]
L	501	3	All	11	28
M	485	24	All	6	N/A[2]
N	530	31	All	2	28
O	474	7501	All	6	N/A[2]
P	514	1	All	6	N/A[2]
Q	516	36, 37	All	11	28
S	232	3	All	13	31
T	232	10	All	13	31
U	473	5	All	13	31
V	228	111	All	11	28
W	498	1	All	6	N/A[2]
X	513	25	All	6	N/A[2]
Y	502	31	All	11	28
Z	488	23	All	11	28
AA	488	30	All	11	28
BB	531	3	All	1	31
CC	483	29	All	7	N/A[2]
DD	516	25	North, East, West	4	31
			South	11	28
EE	516	34, 35	All	11	28
GG	482	26	All	8	N/A[2]
HH	499	6	All	6	N/A[2]

Table 17-8 (cont'd)
Required Attenuation at Development Sites (in dBA)

Development Site	Block(s)	Lot(s)	Façade(s)	Representative Receptor	Required Attenuation[1]
Potential Development Sites (continued)					
II	230	44	All	6	N/A[2]
JJ	513	33	All	6	N/A[2]
KK	486	17	All	7	N/A[2]
LL	483	8	All	13	31
MM	474	14	All	6	N/A[2]
NN	514	24	All	6	N/A[2]
OO	513	39	All	6	N/A[2]
PP	497	15	East	7	N/A[2]
			North, South, West	13	31
QQ	474	19	All	6	N/A[2]
RR	501	32	All	7	N/A[2]
SS	475	22	All	6	N/A[2]
TT	475	9	All	11	28
UU	473	7	All	13	31
VV	474	32	West	6	N/A[2]
			North, South, East	13	31
WW	483	14	All	13	31
XX	512	17	West	6	N/A[2]
			North, South, East	13	31
YY	500	16, 17	All	6	N/A[2]
ZZ	230	3, 4	All	12	35
AAA	230	7, 8	All	12	35
BBB	487	28, 29	All	7	N/A[2]
CCC	475	1, 3, 4	All	11	28
DDD	229	4, 5	North, West/East (greater than 50 feet from Canal Street)	6	N/A[2]
			South, East/West (within 50 feet of Canal Street),	12	35
EEE	544	5	All	2	28
FFF	474	26	All	11	28
GGG	484	3	All	7	N/A[2]
HHH	529	69	All	2	28

Notes:
1 Attenuation values are shown for residential or community facility uses; commercial office 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} values below this level.
3 Attenuation requirement based on cumulative noise level prediction including contribution from traffic on adjacent roadways and projected playground noise.

To implement the attenuation requirements at Projected and Potential Development Sites **(Table 17-8)**, an (E) Designation for noise (E-619) would be applied specifying the appropriate amount of 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 future development on the Blocks and Lots shown in Table 17-8 must provide minimum composite building façade attenuation as shown in Table 17-8, in order to maintain an interior L_{10} noise level not greater than 45 dBA for residential and community facility uses or not greater than 50 dBA for commercial office uses. To maintain a closed-window condition in these areas, an 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.**

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 is composed of the wall, glazing, and any vents or louvers for heating, ventilation, and air conditioning (HVAC) systems in various ratios of area. Buildings proposed to be located on the (E) designated sites would be designed to provide composite window/wall attenuation greater than or equal to the attenuation requirements listed in **Table 17-8**.

By adhering to the design guidelines specified in the Noise (E) Designations described above, buildings to be developed as a result of the Proposed Actions would provide sufficient attenuation to achieve the *CEQR Technical Manual* interior noise level guidelines of 45 dBA L_{10} for residential or community facility uses and 50 dBA L_{10} for commercial office uses.

G. 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 Department of 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. ✷