# Chapter 16: Noise

## A. INTRODUCTION

This chapter considers the potential for the proposed actions to result in significant adverse noise impacts. As discussed in Chapter 1, "Project Description," the proposed actions would facilitate the construction of five new buildings with residential, retail and community facility use—as well as the potential construction of a mixed-use building with residential and replacement community facility use—within the rezoning area, a superblock bounded by West 132nd and 135th Streets and Lenox and Fifth Avenues in the Central Harlem neighborhood of Manhattan. Noise related to construction is assessed in Chapter 19, "Construction."

According to the guidelines established in the 2014 *City Environmental Quality Review* (*CEQR) Technical Manual*, an initial noise impact screening considers whether a proposed action would generate any mobile or stationary source noise, or be located in an area with high ambient noise levels. A noise analysis examines an action for its potential effects on sensitive noise receptors, and the effects on the interior noise levels of residential, office, and institutional uses.

In terms of mobile sources, the number of vehicle trips generated by the proposed actions would be lower than the threshold that would require any detailed analysis. Consequently, it is not expected that the proposed actions would generate sufficient traffic to have the potential to cause a significant noise impact (i.e., it would not result in a doubling of noise passenger car equivalents [Noise PCEs] which would be necessary to cause a 3 dBA increase in noise levels).

The effect of ambient noise (i.e., noise from vehicular traffic) is also addressed in the following section with respect to the level of building attenuation necessary to ensure that the proposed project's interior noise levels satisfy applicable interior noise criteria under City Environmental Quality Review (CEQR) requirements. Noise exposure and building attenuation are also considered for the projected and potential development sites within the rezoning area.

### PRINCIPAL CONCLUSIONS

The analysis finds that the proposed actions would not result in significant adverse noise impacts. The proposed project would not generate sufficient traffic to have the potential to cause a significant noise impact. The buildings' mechanical systems would be designed to meet all applicable noise regulations and to avoid producing levels that would result in significant increase in ambient noise levels. Therefore, the proposed actions would not result in any significant adverse noise impacts related to building mechanical equipment. The proposed buildings, when completed and occupied, would not have the potential to significantly affect noise levels within the nearby residences.

With regard to the interior noise environment of the proposed development, the proposed buildings would provide acoustically-rated windows and air conditioning as an alternate means of ventilation. The building façades, including these elements, would provide a composite window/wall attenuation such that interior noise levels would be less than CEQR guidelines of 45

dBA for residential and community facility spaces, and less than 50 dBA for office uses. An (E) designation for noise would be mapped onto the proposed development site and the projected future development site to ensure the provision of such window/wall attenuation.

## 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 discernable 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 16-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (e.g., a library) are approximately 40 dBA; normal daily activity are levels between 50 dBA and 70 dBA; noisy conditions are levels above 70 dBA, and loud, intrusive, and deafening conditions are levels approaching 130 dBA.

**Table 16-1**
**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.

### SOUND LEVEL DESCRIPTORS

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 that fluctuates over extended periods have been developed. One way is to describe the fluctuating sound 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 by $L_{eq(24)}$), 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 descriptors to be used to satisfy applicable interior noise criteria. 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 NOISE CRITERIA

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 16-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The noise level specified for outdoor areas requiring serenity and quiet is 55 dBA $L_{10(1)}$.

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see **Table 16-3**). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for sensitive noise uses and interior noise levels of 50 dBA or lower for office uses and are determined based on exterior $L_{10(1)}$ noise levels.

## Table 16-2
## 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-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 $L^{y}_{dn}$ ($L_{dn}$ 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.

[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).

**Table 16-3**
**Required Attenuation Values to Achieve Acceptable Interior Noise Levels**

| | Marginally Unacceptable | | | | Clearly Unacceptable |
|---|---|---|---|---|---|
| Noise Level With Proposed Action | $70 < L_{10} \leq 73$ | $73 < L_{10} \leq 76$ | $76 < L_{10} \leq 78$ | $78 < L_{10} \leq 80$ | $80 < L_{10}$ |
| 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 residential dwellings. Commercial office uses would be 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

A total of 11 receptor locations within the rezoning area were selected for evaluation of noise attenuation requirements. These locations are detailed below in **Table 16-4** and shown in **Figure 16-1**.

**Table 16-4**
**Noise Receptor Locations**

| Noise Receptor | Location |
|---|---|
| 1 | West 135th Street near intersection of West 135th Street and Lenox Avenue |
| 2 | West 135th Street between Lenox Terrace Place and Fifth Avenue |
| 3 | West 135th Street near intersection of West 135th Street and Fifth Avenue |
| 4 | Fifth Avenue near intersection of Fifth Avenue and West 135th Street |
| 5 | Parking Lot behind Residential Buildings at 2186 Fifth Avenue and 10 W 135th Street |
| 6 | Fifth Avenue near intersection of Fifth Avenue and West 132nd Street |
| 7 | West 132nd Street near intersection of West 132nd Street and Fifth Avenue |
| 8 | West 132nd Street near intersection of West 132nd Street and Lenox Avenue |
| 9 | Lenox Avenue near intersection of Lenox Avenue and West 133rd Street |
| 10 | Parking Lot behind Residential Building at 470 Lenox Avenue |
| 11 | Lenox Avenue near intersection of Lenox Avenue and West 134th Street |

### NOISE MONITORING

At each receptor location, existing noise levels were determined by field measurements. Noise monitoring was performed on May 9 and 10, 2018. At all receptor locations, 20-minute spot noise level measurements were conducted during the weekday peak periods—AM (7:00 to 9:00 AM), midday (MD) (12:00 to 2:00 PM), and PM (4:30 to 6:30 PM).

### EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Type 2260 and 2270 Sound Level Meters (SLMs), two Brüel & Kjær Type 4189 ½ inch microphones, and two Brüel & Kjær Sound Level Type 4231 Calibrators. The Brüel & Kjær SLM is a Type 1 instrument according to ANSI Standard S1.4-1983 (R2006). The SLMs have a laboratory calibration date within one year of the date of the measurements, as is standard practice. At the receptor sites, the microphone was

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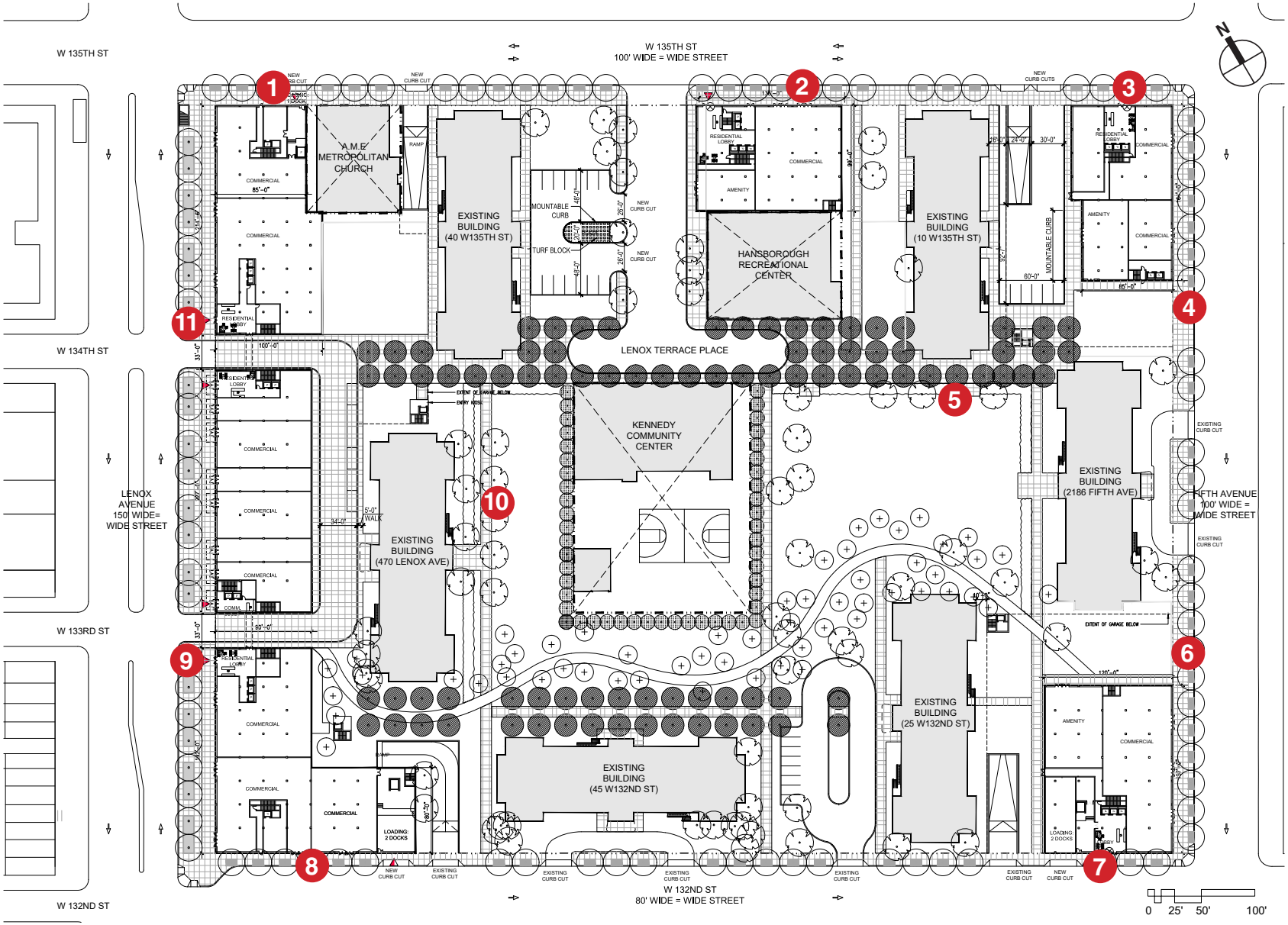


Base Map Source: Ken Smith Workshops

**1** *Noise Receptor Location*

**LENOX TERRACE**

Noise Receptor Locations

**Figure 16-1**

mounted on a tripod at a height of approximately 5 feet above the ground. The microphone was mounted away from any large reflecting surfaces that could affect the sound level measurements. The SLMs were calibrated before and after readings with a Brüel & Kjær Type 4231 Sound Level Calibrator. Measurements at the location were made on the A-scale (dBA). The data were digitally recorded by the SLMs and displayed at the end of the measurement period in units of dBA. Measured quantities included $L_{eq}$, $L_1$, $L_{10}$, $L_{50}$, and $L_{90}$. A windscreen was used during the sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

## NOISE MEASUREMENT RESULTS

The results of the peak-hour existing noise level measurements conducted at the rezoning area are summarized in **Table 16-5**.

**Table 16-5**
**Existing Noise Levels in dBA**

| Site | Location | Time Period | $L_{eq}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ |
|---|---|---|---|---|---|---|---|
| 1 | West 135th Street near intersection of West 135th Street and Lenox Avenue | AM | 69.5 | 78.3 | 72.1 | 66.6 | 63.6 |
| | | MD | 66.6 | 75.8 | 69.3 | 64.1 | 60.9 |
| | | PM | 70.6 | 80.9 | 72.7 | 67.7 | 65.0 |
| 2 | West 135th Street between Lenox Avenue and Fifth Avenue | AM | 67.9 | 76.3 | 70.6 | 65.1 | 60.7 |
| | | MD | 68.6 | 76.5 | 71.5 | 65.6 | 61.4 |
| | | PM | 66.6 | 75.0 | 69.2 | 64.8 | 61.8 |
| 3 | West 135th Street near intersection of West 135th Street and Fifth Avenue | AM | 70.5 | 78.1 | 73.8 | 68.3 | 64.6 |
| | | MD | 69.8 | 78.7 | 72.6 | 68.1 | 63.3 |
| | | PM | 70.2 | 79.7 | 72.3 | 67.4 | 63.9 |
| 4 | Fifth Avenue near intersection of Fifth Avenue and West 135th Street | AM | 67.3 | 77.1 | 69.9 | 64.5 | 60.7 |
| | | MD | 64.6 | 74.8 | 66.9 | 61.7 | 57.4 |
| | | PM | 67.4 | 79.4 | 68.4 | 63.7 | 59.1 |
| 5 | Parking Lot behind 2186 Fifth Avenue | AM | 58.2 | 64.9 | 60.8 | 56.6 | 54.3 |
| | | MD | 56.5 | 62.5 | 58.6 | 55.6 | 54.2 |
| | | PM | 60.3 | 67.3 | 64.1 | 57.0 | 54.2 |
| 6 | Fifth Avenue near intersection of Fifth Avenue and West 132nd Street | AM | 65.7 | 75.0 | 69.3 | 62.1 | 57.6 |
| | | MD | 65.2 | 75.8 | 68.1 | 60.4 | 55.6 |
| | | PM | 64.9 | 74.1 | 68.5 | 61.0 | 56.3 |
| 7 | West 132nd Street near intersection of West 132nd Street and Fifth Avenue | AM | 67.7 | 78.2 | 69.1 | 65.3 | 61.9 |
| | | MD | 64.8 | 75.5 | 67.9 | 60.2 | 56.5 |
| | | PM | 62.2 | 69.4 | 65.2 | 60.6 | 55.5 |
| 8 | West 132nd Street near intersection of West 132nd Street and Lenox Avenue | AM | 63.8 | 72.1 | 66.5 | 62.1 | 59.0 |
| | | MD | 62.4 | 67.6 | 64.1 | 61.5 | 60.4 |
| | | PM | 63.4 | 70.0 | 65.5 | 62.5 | 59.9 |
| 9 | Lenox Avenue near intersection of Lenox Avenue and West 133nd Street | AM | 67.3 | 75.1 | 70.4 | 65.6 | 60.2 |
| | | MD | 67.0 | 75.9 | 69.6 | 64.6 | 61.3 |
| | | PM | 67.5 | 76.4 | 69.1 | 65.0 | 62.2 |
| 10 | Parking Lot behind 470 Lenox Avenue | AM | 58.2 | 65.8 | 60.7 | 56.4 | 55.2 |
| | | MD | 56.8 | 63.4 | 58.0 | 56.1 | 55.4 |
| | | PM | 58.1 | 65.1 | 60.0 | 56.9 | 55.2 |
| 11 | Lenox Avenue near intersection of Lenox Avenue and West 134th Street | AM | 67.7 | 75.0 | 70.2 | 66.1 | 61.8 |
| | | MD | 67.2 | 75.5 | 70.0 | 65.1 | 62.2 |
| | | PM | 67.1 | 73.0 | 69.4 | 66.1 | 63.6 |

**Note:** Noise measurements were performed by AKRF, Inc. on May 9 and May 10, 2018.

At all of the receptor sites, vehicular traffic was the dominant noise source. Measured levels are moderate and reflect the level of vehicular activity on the adjacent roadways. In terms of the CEQR criteria, the existing noise levels at sites 5 and 10 are categorized as "acceptable," existing noise levels at sites 4, 6, 7, and 8 are categorized as "marginally acceptable," and existing noise levels at sites 1, 2, 3, 9, and 11 are categorized as "marginally unacceptable."

## E. NOISE PREDICTION METHODOLOGY

### GENERAL METHODOLOGY

Future noise levels, including in the No Action scenario and the future with the proposed actions (the "With Action" scenario), were calculated using a proportional modeling technique, which was used as a screening 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, 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 13, "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, projected future noise levels were compared to CEQR noise exposure criteria to determine minimum required window/wall attenuation.

Even though noise associated with existing public playgrounds (i.e., Howard Bennett Playground and Abraham Lincoln Playground) were included in measurements of existing noise levels as described above, to be conservative, the maximum noise level contribution from each playground was calculated at adjacent receptors using data collected in measurements made at a series of New York City school playgrounds for the SCA.[1] The playground noise levels in the With Action condition were used to determine the necessary building attenuation to ensure acceptable interior noise levels at proposed buildings that would have a line of sight to the playgrounds.

#### *PROPORTIONAL MODELING*

Proportional modeling was used to determine noise levels in the future No Action and With Action conditions. 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:

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

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 dBA.

*SCHOOL PLAYGROUND NOISE*

**Table 16-6** shows maximum hourly playground boundary noise levels based upon measurements made at a series of New York City school playgrounds for the SCA. [2]

**Table 16-6**
**Reference 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:** SCA Playground Noise Study, AKRF, Inc., October 23, 1992. | | | |

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 were 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 was assumed.

To provide a conservative analysis of playground noise, the existing playgrounds were conservatively assumed to have early childhood school use. Consequently, the maximum playground boundary noise emission level of 71.5 dBA was used for the noise analysis of these play areas.

## F. FUTURE WITHOUT THE PROPOSED PROJECT

Using the methodology previously described, No Action condition noise levels were calculated at the three mobile source noise analysis receptors for the 2026 analysis year. These No Action condition values are shown in **Table 16-7**.

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

**Table 16-7**
**2026 No Action Condition Noise Levels (in dBA)**

| Receptor | Measurement Location | Time | Existing $L_{eq(1)}$ | No Action $L_{eq(1)}$ | $L_{eq(1)}$ Change | No Action $L_{10(1)}$ |
|---|---|---|---|---|---|---|
| 1 | West 135th Street near intersection of West 135th Street and Lenox Avenue | AM | 69.5 | 69.6 | 0.1 | 72.2 |
| | | MD | 66.6 | 66.7 | 0.1 | 69.4 |
| | | PM | 70.6 | 70.7 | 0.1 | 72.8 |
| 2 | West 135th Street between Lenox Avenue and Fifth Avenue | AM | 67.9 | 68.0 | 0.1 | 70.7 |
| | | MD | 68.6 | 68.7 | 0.1 | 71.6 |
| | | PM | 66.6 | 66.7 | 0.1 | 69.3 |
| 3 | West 135th Street near intersection of West 135th Street and Fifth Avenue | AM | 70.5 | 70.6 | 0.1 | 73.9 |
| | | MD | 69.8 | 69.9 | 0.1 | 72.7 |
| | | PM | 70.2 | 70.3 | 0.1 | 72.4 |
| 4 | Fifth Avenue near intersection of Fifth Avenue and West 135th Street | AM | 67.3 | 67.5 | 0.3 | 70.2 |
| | | MD | 64.6 | 65.0 | 0.4 | 67.3 |
| | | PM | 67.4 | 67.9 | 0.5 | 68.9 |
| 5 | Parking Lot behind 2186 Fifth Avenue | AM | 58.2 | 58.7 | 0.3 | 61.1 |
| | | MD | 56.5 | 57.3 | 0.4 | 59.0 |
| | | PM | 60.3 | 61.1 | 0.5 | 64.6 |
| 6 | Fifth Avenue near intersection of Fifth Avenue and West 132nd Street | AM | 65.7 | 66.0 | 0.3 | 69.6 |
| | | MD | 65.2 | 65.6 | 0.4 | 68.5 |
| | | PM | 64.9 | 65.3 | 0.4 | 69.0 |
| 7 | West 132nd Street near intersection of West 132nd Street and Fifth Avenue | AM | 67.7 | 67.7 | 0.0 | 69.2 |
| | | MD | 64.8 | 64.9 | 0.2 | 68.0 |
| | | PM | 62.2 | 62.2 | 0.1 | 65.2 |
| 8 | West 132nd Street near intersection of West 132nd Street and Lenox Avenue | AM | 63.8 | 63.9 | 0.1 | 66.5 |
| | | MD | 62.4 | 62.5 | 0.1 | 64.2 |
| | | PM | 63.4 | 63.5 | 0.1 | 65.6 |
| 9 | Lenox Avenue near intersection of Lenox Avenue and West 133nd Street | AM | 67.3 | 67.6 | 0.3 | 70.7 |
| | | MD | 67.0 | 67.5 | 0.5 | 70.1 |
| | | PM | 67.5 | 67.8 | 0.3 | 69.5 |
| 10 | Parking Lot behind 470 Lenox Avenue | AM | 58.2 | 58.6 | 0.3 | 61.0 |
| | | MD | 56.8 | 57.6 | 0.5 | 58.5 |
| | | PM | 58.1 | 58.7 | 0.3 | 60.4 |
| 11 | Lenox Avenue near intersection of Lenox Avenue and West 134th Street | AM | 67.7 | 68.0 | 0.3 | 70.6 |
| | | MD | 67.2 | 67.6 | 0.4 | 70.5 |
| | | PM | 67.1 | 67.4 | 0.3 | 69.7 |

**Note:** Noise levels at all receptor Sites were calculated using proportional modeling.

In 2026, the maximum increase in $L_{eq(1)}$ noise levels for the No Action condition would be 0.5 dBA. 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 sites 5 and 10 are categorized as "acceptable," existing noise levels at sites 6, 7, and 8 are categorized as "marginally acceptable," and existing noise levels at sites 1, 2, 3, 4, 9, and 11 are categorized as "marginally unacceptable."

# G. FUTURE WITH THE PROPOSED PROJECT

## TRAFFIC NOISE/PROPORTIONAL MODEL

Using the methodology previously described, With Action condition noise levels due to mobile source noise were calculated at all eleven noise analysis receptors for the 2026 analysis year. The With Action condition noise levels for each receptor site are shown in **Table 16-8**.

**Table 16-8**
**2026 With Action Condition Noise Levels (in dBA)**

| Receptor | Measurement Location | Time | No Action $L_{eq(1)}$ | With Action $L_{eq(1)}$ | $L_{eq(1)}$ Change | With Action $L_{10(1)}$ |
|---|---|---|---|---|---|---|
| 1 | West 135th Street near intersection of West 135th Street and Lenox Avenue | AM | 69.6 | 69.8 | 0.2 | 72.4 |
| | | MD | 66.7 | 66.8 | 0.1 | 69.5 |
| | | PM | 70.7 | 70.8 | 0.1 | 72.9 |
| 2 | West 135th Street between Lenox Avenue and Fifth Avenue | AM | 68.0 | 68.1 | 0.1 | 70.8 |
| | | MD | 68.7 | 68.8 | 0.1 | 71.7 |
| | | PM | 66.7 | 66.8 | 0.1 | 69.4 |
| 3 | West 135th Street near intersection of West 135th Street and Fifth Avenue | AM | 70.6 | 70.7 | 0.1 | 74.0 |
| | | MD | 69.9 | 70.0 | 0.1 | 72.8 |
| | | PM | 70.3 | 70.4 | 0.1 | 72.5 |
| 4 | Fifth Avenue near intersection of Fifth Avenue and West 135th Street | AM | 67.5 | 67.7 | 0.2 | 70.4 |
| | | MD | 65.0 | 65.1 | 0.1 | 67.4 |
| | | PM | 67.9 | 68.0 | 0.1 | 69.0 |
| 5 | Parking Lot behind 2186 Fifth Avenue | AM | 58.7 | 58.9 | 0.2 | 61.3 |
| | | MD | 57.3 | 57.4 | 0.1 | 59.1 |
| | | PM | 61.1 | 61.2 | 0.1 | 64.7 |
| 6 | Fifth Avenue near intersection of Fifth Avenue and West 132nd Street | AM | 66.0 | 66.2 | 0.2 | 69.8 |
| | | MD | 65.6 | 65.7 | 0.1 | 68.6 |
| | | PM | 65.3 | 65.4 | 0.1 | 69.1 |
| 7 | West 132nd Street near intersection of West 132nd Street and Fifth Avenue | AM | 67.7 | 68.8 | 1.1 | 70.3 |
| | | MD | 64.9 | 65.6 | 0.7 | 68.7 |
| | | PM | 62.2 | 62.6 | 0.4 | 65.6 |
| 8 | West 132nd Street near intersection of West 132nd Street and Lenox Avenue | AM | 63.9 | 65.0 | 1.1 | 67.6 |
| | | MD | 62.5 | 63.2 | 0.7 | 64.9 |
| | | PM | 63.5 | 63.9 | 0.4 | 66.0 |
| 9 | Lenox Avenue near intersection of Lenox Avenue and West 133nd Street | AM | 67.6 | 67.7 | 0.1 | 70.8 |
| | | MD | 67.5 | 67.6 | 0.1 | 70.2 |
| | | PM | 67.8 | 67.8 | 0.0 | 69.5 |
| 10 | Parking Lot behind 470 Lenox Avenue | AM | 58.6 | 58.7 | 0.1 | 61.1 |
| | | MD | 57.6 | 57.7 | 0.1 | 58.6 |
| | | PM | 58.7 | 58.7 | 0.0 | 60.4 |
| 11 | Lenox Avenue near intersection of Lenox Avenue and West 134th Street | AM | 68.0 | 68.1 | 0.1 | 70.7 |
| | | MD | 67.6 | 67.7 | 0.1 | 70.6 |
| | | PM | 67.4 | 67.5 | 0.1 | 69.8 |

In 2026, the maximum increase in $L_{eq(1)}$ noise levels for the With Action condition would be 1.1 dBA. 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 sites 5 and 10 are categorized as “acceptable,” existing noise levels at sites 6 and 8

are categorized as "marginally acceptable," and existing noise levels at sites 1, 2, 3, 4, 7, 9, and 11 are categorized as "marginally unacceptable."

### SCHOOL PLAYGROUND CONTRIBUTION

Receptors 2, 3, and 4 have a line of sight to either Howard Bennett Playground, Abraham Lincoln Playground, or both. While playground noise would have been included in the existing noise level measurement program, maximum playground noise has been projected to these locations to represent a worst case condition of noise exposure according to the methodology described above. The total noise levels with maximum playground noise contribution are shown in **Table 16-9**.

**Table 16-9**
**Noise Levels due to the Playgrounds (in dBA)**

| Receptor | Time Period | With Action Traffic $L_{eq}$ | Howard Bennett Playground $L_{eq}$ | Abraham Lincoln Playground $L_{eq}$ | Total $L_{eq}$ | Total $L_{10}$ |
|---|---|---|---|---|---|---|
| 2 | AM | 68.1 | 61.0 | N/A[1] | 68.9 | 71.6 |
| | MD | 68.8 | 61.0 | N/A[1] | 69.5 | 72.4 |
| | PM | 66.8 | 61.0 | N/A[1] | 67.8 | 70.4 |
| 3 | AM | 70.7 | 57.5 | 60.1 | 71.2 | 74.5 |
| | MD | 70.0 | 57.5 | 60.1 | 70.6 | 73.4 |
| | PM | 70.4 | 57.5 | 60.1 | 71.0 | 73.1 |
| 4 | AM | 67.7 | N/A[1] | 61.0 | 68.5 | 71.2 |
| | MD | 65.1 | N/A[1] | 61.0 | 66.5 | 68.8 |
| | PM | 68.0 | N/A[1] | 61.0 | 68.8 | 69.8 |

**Note:** [1] "N/A" indicates the associated receptor site does not have line of sight to the playground.

## H. NOISE ATTENUATION MEASURES

As shown in **Table 16-3**, 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 residential uses and interior noise levels of 50 dBA or lower for commercial office uses. The results of the building attenuation analysis are summarized in **Table 16-10**.

To implement the attenuation requirements at the proposed development site and projected future development site, an (E) designation for noise 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, future development at Block 1730, Lots 1, 7, 16, 19, 33, 40, 52, 65, 68, and 75 must provide minimum attenuation as shown in Table 16-10 to ensure 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, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is 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 is composed of the wall, glazing, and any vents or louvers for HVAC systems in various ratios of area. Buildings on the proposed development site would be designed to provide a composite window/wall attenuation greater than or equal to the requirements listed in **Table 16-10**.

**Table 16-10**
**CEQR Building Attenuation Requirements in dBA**

| Location | Façade(s) | Receptor Site | Maximum $L_{10}$ | Attenuation Required[2] |
|---|---|---|---|---|
| Proposed Building NW (Block 1730 Lot 68) | North, East | 1 | 72.9 | 28 |
| | South, West | 11 | 70.7 | 28 |
| Proposed Building SW (Block 1730 Lots 1, 7) | North, West | 9 | 70.8 | 28 |
| | South, East | 8 | 67.6 | N/A[3] |
| Proposed Building NE (Block 1730 Lot 40) | North, West | 3 | 74.5[1] | 31 |
| | South, East | 4 | 71.2[1] | 28 |
| Proposed Building N (Block 1730 Lot 52) | All | 2 | 72.4[1] | 28 |
| Proposed Building SE (Block 1730 Lot 33) | North, East | 6 | 69.8 | N/A[3] |
| | South, West | 7 | 70.3 | 28 |
| ~~Proposed Midrise Central Podium (Block 1730 Lots 68, 75)~~ | ~~North, South, West~~ | ~~9, 11~~ | ~~70.8~~ | ~~28~~ |
| | ~~East~~ | ~~1~~ | ~~72.9~~ | ~~28~~ |
| Projected Future Development Site (Block 1730 Lot 65) | All | 1 | 72.9 | 28 |
| Potential Development Site (Block 1730 Lots 16, 19) | All | 5 | 64.7 | N/A[3] |

**Notes:**
(1) Maximum $L_{10}$ values with the associated receptor sites include existing playground noise projection.
(2) Attenuation values are shown for residential, educational, and child care uses; commercial office uses would require 5 dBA less attenuation. No required attenuation for lobbies, parking garages, mechanical equipment rooms, stairwells, corridors, or storage areas.
(3) "N/A" indicates that the highest measured $L_{10}$ is below 70 dBA. The *CEQR Technical Manual* does not specify minimum attenuation guidance for exterior $L_{10}$ values below this level.

By adhering to the design guidelines specified in the Noise (E) Designation described above, building façades 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.

## I. MECHANICAL SYSTEMS

The building mechanical systems (i.e., heating, ventilation, and air conditioning systems) 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 to avoid producing levels that would result in any significant increase in ambient noise levels. ✷