PARK AVENUE BROOKLYN REZONING
Chapter 11: Noise

A. INTRODUCTION

As described in **Chapter 1, "Project Description,"** the total RWCDS for the Proposed Actions would result in a total of 483 dwelling units (DUs), including 124 affordable units pursuant to the Applicant's proposed Mandatory Inclusionary Housing (MIH) Option 1, 244,088 gross square feet (gsf) of private school space, 80,155 gsf of local retail space, 11,590 gsf of medical office space, and 151 accessory parking spaces (the With-Action condition) on the 12 Projected Development Sites. Compared to No-Action conditions, the total RWCDS for the Proposed Actions would result in an incremental (net) increase of approximately 481 DUs, including 124 affordable units (assuming the Applicant's proposed Option 1), 201,838 gsf of private school space, 28,505 gsf of local retail space, and net decreases of approximately 40,250 gsf of medical office space, 17,969 gsf of office space, 11,400 gsf of warehouse space, 5,000 gsf of house of worship space, as well as a net decrease of 100 parking spaces.

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 noise exposure at noise receptors introduced by the Proposed Actions.

B. PRINCIPAL CONCLUSIONS

A noise assessment was undertaken to evaluate whether the total RWCDS for the Proposed Actions would result in a significant increase in noise levels at any existing noise-sensitive uses and to evaluate noise exposure at noise-sensitive uses newly introduced by the total RWCDS for the Proposed Actions in accordance with 2025 *City Environmental Quality Review (CEQR) Technical Manual* guidance. With-Action Condition noise levels were determined by adjusting measured existing noise levels to account for future increases in traffic with the total RWCDS for the Proposed Actions. During all time periods except for weekday PM and school PM, the With-Action Condition noise levels from project-generated traffic were determined to be within approximately 2 dBA of No-Action noise levels, which would be considered imperceptible and not significant according to *CEQR Technical Manual* impact criteria. During the weekday PM and school PM time periods, With-Action Condition noise levels from project-generated traffic would be no more than 3 dBA greater than No-Action levels at receptors along Walworth Street between Park Avenue and Myrtle Avenue, which would be considered a "just noticeable" change. While this would typically be considered a significant adverse impact according to the *CEQR Technical Manual* impact criteria, the total With-Action Condition $L_{10(1)}$ noise levels at these peak hours would remain below 70 dBA and, as any receptor building façade would be expected to provide a minimum of 25 dBA window/wall attenuation, interior noise levels at this receptor would be expected to remain below the acceptable threshold of 45 dBA for residential and community facility uses and 50 dBA for commercial offices at all times. Within the Project Area, the commercial office at 48 Spencer Street and the school at 84 Sandford Street were identified as having line of sight to proposed playgrounds introduced by the project. At these locations, the cumulative noise from the With-Action traffic and proposed playgrounds were considered. The With-Action Condition noise levels at 48 Spencer Street were determined to be within 2 dBA of

No-Action noise levels, which would be considered imperceptible and not significant according to *CEQR Technical Manual* impact criteria. The With-Action noise levels at 84 Sandford Street were determined to be up to approximately 5 dBA above the No-Action noise levels. While this would typically be considered a significant adverse impact according to the *CEQR Technical Manual* impact criteria, the façade of the building would provide 32 dBA of window/wall attenuation, resulting in interior noise levels remaining below the acceptable threshold of 45 dBA for classroom or community facility use. Consequently, the identified significant adverse noise increases would not constitute a significant adverse noise impact, nor would predicted noise levels at any other receptors rise to the level of a significant adverse impact.

Based on the projected noise levels, up to 31 dBA window/wall attenuation would be required to achieve acceptable interior noise levels per the *CEQR Technical Manual* noise exposure guideline at newly introduced residential and school uses. All residential dwelling units within the Special Mixed-Use District would require a minimum of 35 dBA window/wall attenuation per ZR Section 123-32 and no (E) Designation would be warranted for the residential portion of the Projected and Potential Development Sites. However, to ensure window/wall attenuation for community facility or commercial office uses at Projected and Potential Development Sites, which are noise sensitive uses not subject to ZR 123-32, an (E) designation (E-898) for noise would be applied, specifying the required amount of required window/wall attenuation. By meeting the design guidelines specified in ZR Section 123-32, the Noise (E) Designation, or equivalent mechanism, buildings 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 interior noise level guidelines of 50 dBA L_{10} for commercial office uses.

C. ACOUSTICAL FUNDAMENTALS

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

“A”-Weighted Sound Level (dBA)

In order to establish a uniform noise measurement that simulates people’s perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or “dBA,” and it is the descriptor of noise levels most often used for community noise. As shown in **Table 11-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as a library at 40 dBA. For most people to

perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable.

TABLE 11-1
Noise Levels of Common Sources

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

Source: 2025 *CEQR Technical Manual*

Noise Descriptors Used in Impact Assessment

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

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

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

D. NOISE STANDARDS AND CRITERIA

Environmental Conditions for Buildings in MX Districts

The Proposed Actions would change the zoning in the Project Area to a Special Mixed-Use District (MX) that allows manufacturing and residential uses. Zoning Resolution (ZR) Section 123-32-Environmental Conditions requires that all new dwelling units (DUs) in Special Mixed-Use Districts be provided with a minimum of 35 dBA window-wall attenuation to maintain an interior noise level of 45 dBA or less. The 35 dBA window-wall attenuation is for a closed-window condition; consequently, a means of alternate ventilation that does not degrade the acoustical performance of the building façade is required for all residential developments. However, it is possible to review and alter the minimum attenuation requirements via a process overseen by the New York City Mayor's Office of Environmental Remediation (OER), which could be undertaken at a later time.

New York *CEQR Technical Manual* Noise Standards

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 11-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

TABLE 11-2
Noise Exposure Guidelines for Use in City Environmental Impact Review

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
Outdoor area requiring serenity and quiet[2]		$L_{10} \leq$ 55 dBA	---------- DNL ≤ 60 dBA ----------	**NA**	---------- 60 < DNL ≤ 65 dBA ----------	**NA**	[(i)] 65 < DNL ≤ 75 dBA	**NA**	---------- DNL > 75 dBA ----------
Hospital, nursing home		$L_{10} \leq$ 55 dBA		55 < $L_{10} \leq$ 65 dBA		65 < $L_{10} \leq$ 80 dBA		L_{10} > 80 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_{dn} (L_{dn} contour) value.
[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.
[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks, or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
[3] One may use Federal Aviation Administration (FAA)-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the federally approved Integrated Noise Model (INM) Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).
Source: New York City Department of Environmental Protection (DEP) (adopted policy 1983).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see **Table 11-3**).

TABLE 11-3
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Vehicular Traffic	70 < L10 ≤ 73	73 < L10 ≤ 76	76 < L10 ≤ 78	78 < L10 ≤ 80	80 < L10
Aircraft[A]	65 < DNL ≤ 68	68 < DNL ≤ 71	71 < DNL ≤ 73	73 < DNL ≤ 75	75 < DNL
Train	65 < Ldn ≤ 68	68 < Ldn ≤ 71	71 < Ldn ≤ 73	73 < Ldn ≤ 75	75 < Ldn
Attenuation[B]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	See note C

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

Impact Significance Criteria

The determination of significant adverse noise impacts in this analysis is informed by the use of both absolute noise level limits and relative impact criteria. According to the *CEQR Technical Manual*, for the purposes of determining a significant impact during daytime hours, it is reasonable to consider a L_{eq} noise level of 65 dBA as an absolute noise level that should not be significantly exceeded. Therefore, a significant noise impact would occur at a sensitive noise receptor (i.e., residences, play areas, parks, schools, libraries, and houses of worship) during daytime hours under the following circumstances:

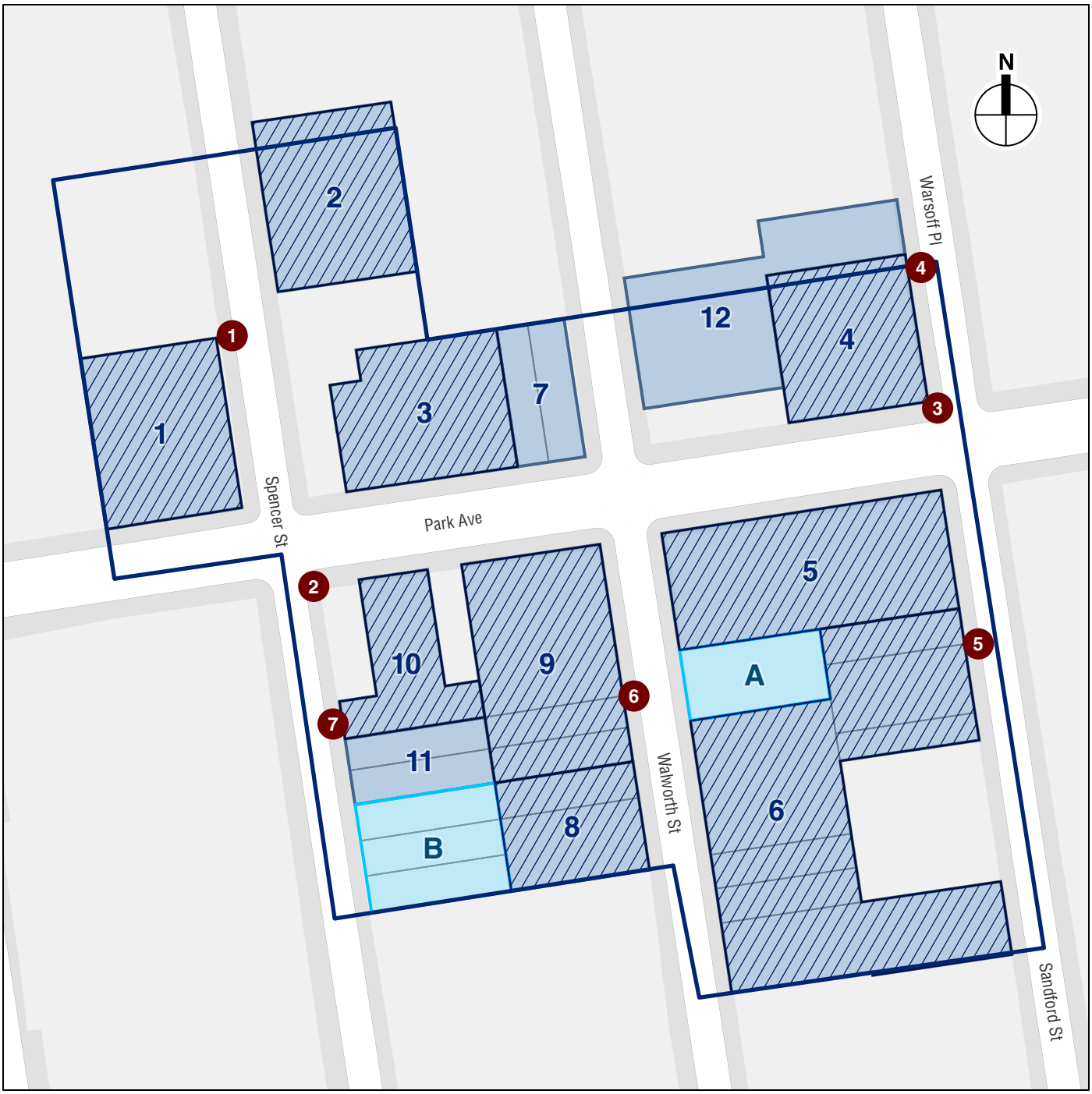
- A noise increase of 3 dBA or greater is predicted in the future as a result of the proposed action (the With-Action condition), when the future noise levels without the proposed action (the No-Action condition) is at 62 dBA or greater; or
- When the No-Action noise level is below 62 dBA, a predicted noise increase with the proposed action exceeds the difference between 65 dBA and the No-Action noise level. For example, if the No-Action noise level is 61 dBA, then the maximum noise increment with the proposed action would be 4 dBA, since an increase higher than 4 dBA would result in a noise level that exceeds the 65 dBA Leq significant impact threshold.
- Additionally, an increase of With-Action noise levels by 5 dBA over a No-Action noise level that is at or below 60 dBA would be considered significant.

E. EXISTING CONDITIONS

Selection of Noise Receptor Locations

A total of seven receptor locations in and around the Development Sites were selected for measurements to determine existing noise levels, for the evaluation of future noise levels with and without the Proposed Actions, and to determine noise attenuation requirements. The proposed noise receptor locations were selected based on the location of the Development Site and existing neighborhood characteristics (e.g., along major road corridors). These receptors, due to their proximity to the Development Site, provide an effective and conservative representation of existing ambient noise levels at the Development Site. These locations are detailed below in **Table 11-4** and shown in **Figure 11-1**.

2.11.26



Proposed Rezoning Area

Applicant-controlled sites

11 *Projected Development Sites*

A *Potential Development Sites*

1 *Noise Monitoring Locations*

0 200 FEET

Noise Monitoring Locations

PARK AVENUE BROOKLYN REZONING

Figure 11-1

TABLE 11-4
Noise Receptor Locations

Noise Receptor	Location
1	Spencer Street (North of Park Avenue)
2	At the intersection of Park Avenue and Spencer Street
3	At the intersection of Park Avenue and Warsoff Place/Sandford Street
4	Warsoff Place (North of Park Avenue)
5	Sandford Street (South of Park Avenue)
6	Walworth Street (South of Park Avenue)
7	Spencer Street (South of Park Avenue)

Noise Monitoring

At each receptor location, existing noise levels were determined by field measurements. Noise monitoring was conducted on March 20, March 26, March 27, April 6, April 9, May 28, and October 22, 2024 and on May 20, 2025. At receptor Locations 1 through 7, 20-minute spot noise measurements were conducted during the typical weekday AM (7:00 AM–9:00 AM), midday (11:30 AM–1:30 PM), PM (4:30 PM–6:30 PM), and Saturday midday (11:30 AM–1:30 PM) peak periods, approximately 5 feet above grade to document at-grade noise levels due to traffic on adjacent roadways. At receptor Locations 1 and 6, an additional 20-minute noise measurement was conducted during the School PM period (2:00 PM–4:00 PM) on a weekday. At all noise measurement locations, the microphones were mounted at a height of approximately five feet above grade on a tripod and approximately six feet or more away from any large sound-reflecting surface to avoid major interference with sound propagation.

Equipment Used During Noise Monitoring

Spot measurements at each receptor were performed using Brüel & Kjær Type 2250 and Nti Audio XL2 Sound Level Meters (SLMs), Brüel & Kjær Type 4189 and Nti Audio M2340 microphones, and Brüel & Kjær Type 4231 and Larson Davis CAL200 Sound Level Calibrators. The SLMs are Class 1 instruments according to ANSI Standard S1.4-1983 (R2006). The SLMs had laboratory calibration dates within the past one year at the time of use. The SLMs were calibrated before and after readings with a Sound Level Calibrators using the appropriate adaptor. The data were digitally recorded by the SLM and displayed at the end of the measurement period in units of dBA. Measured quantities included the L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. A windscreen was used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

Existing Noise Levels at Noise Receptor Locations

Measured Noise Levels

The results of the measurements of existing noise levels are summarized in **Table 11-5**. Roadway traffic was the dominant noise source for all receptor locations. In terms of *CEQR Technical Manual* criteria, noise levels measured at receptor Locations 1, 4, 5, 6, and 7 are in the “marginally acceptable” category and noise levels measured at receptor Locations 2 and 3 are in the “marginally unacceptable” category.

TABLE 11-5
Measured Noise Levels (in dBA)

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Spencer Street (North of Park Avenue)	AM	65.7	76.7	66.3	61.7	59.0
		MD	60.9	71.7	63.1	57.8	53.0
		School PM	66.1	76.3	68.3	62.2	58.4
		PM	63.4	75.0	66.6	57.2	52.7
		Sat	58.4	67.9	61.6	54.7	52.4
2	At the intersection of Park Avenue and Spencer Street	AM	66.8	76.0	69.8	63.0	57.3
		MD	69.4	80.9	70.8	63.1	58.1
		PM	66.4	76.6	68.4	62.3	58.1
		Sat	62.4	71.6	65.9	59.4	53.6
3	At the intersection of Park Avenue and Warsoff Place/Sandford Street	AM	71.4	83.7	73.0	66.4	59.3
		MD	67.3	76.8	69.4	63.8	59.2
		PM	69.3	79.8	71.3	64.7	58.5
		Sat	66.1	75.7	69.5	60.4	53.6
4	Warsoff Place (North of Park Avenue)	AM	65.7	74.8	67.6	63.0	58.7
		MD	64.0	71.5	67.6	61.8	55.6
		PM	65.7	77.1	67.4	58.4	51.6
		Sat	56.4	65.9	59.0	53.1	50.6
5	Sandford Street (South of Park Avenue)	AM	62.8	74.1	63.7	58.2	55.5
		MD	65.6	75.4	68.1	63.6	60.0
		PM	63.0	72.8	64.8	57.7	53.5
		Sat	56.7	65.7	58.7	54.8	52.6
6	Walworth Street (South of Park Avenue)	AM	61.4	71.2	64.5	57.9	53.5
		MD	63.6	70.1	64.7	60.5	59.2
		School PM	62.2	73.7	63.8	58.0	55.8
		PM	64.3	73.8	65.9	57.5	52.1
		Sat	57.4	66.5	61.5	52.4	49.7
7	Spencer Street (South of Park Avenue)	AM	66.1	77.7	67.7	61.2	57.4
		MD	62.3	72.8	64.5	57.7	53.6
		PM	61.2	69.5	63.9	58.8	57.2
		Sat	58.5	66.8	61.4	55.9	53.3

Note: Field measurements were performed by AKRF, Inc. on March 20, March 26, March 27, April 6, April 9, May 28, and October 22, 2024 and on May 20, 2025.

F. NOISE ANALYSIS METHODOLOGY

General Methodology

Future noise levels associated with vehicular traffic (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 for each of the receptor locations. 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), School PM, PM, and weekend midday peak hours at all receptor locations. The selected time periods are when the Proposed Actions would be expected to result in the maximum traffic generation (based on the traffic studies presented in **Chapter 8, "Transportation"**) and therefore result in the maximum potential for significant adverse noise impacts. The proportional modeling used for the noise analysis is described below.

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 condition and With-Action condition noise levels. Vehicular traffic volumes are converted into Noise PCE values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. Future noise levels are calculated using the following equation:

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

where:

F NL = Future Noise Level
E NL = Existing Noise Level
F PCE = Future Noise PCEs
E PCE = Existing Noise PCEs

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

Playground Noise

At noise receptors with direct line of sight to Projected Development Site 2, noise associated with proposed high school recreation/play areas was estimated using the High School playground boundary noise level and any applicable noise level reduction due to distance. At all other noise receptors with 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.

Table 11-6 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

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

both existing and proposed playgrounds, cumulative noise levels including contribution from traffic on adjacent roadways and playground noise is calculated.

TABLE 11-6
Playground Boundary Noise Leq(1) Noise Levels (dBA)

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

Source: 2025 *CEQR Technical Manual.*

G. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

Using the methodology previously described, No-Action condition noise levels were calculated at the seven mobile source noise analysis receptors for the 2031 analysis year. These No-Action values are shown in **Table 11-7**.

The predicted increases in $L_{eq(1)}$ noise levels for the No-Action condition would be up to approximately 4 dBA for all receptor Locations except receptor Locations 4 and 5. Noise level increases up to approximately 4 dBA would be considered just noticeable to noticeable.

Noise level increases up to 8 dBA were predicted to occur in the No-Action condition at receptor Locations 4 and 5. Changes of this magnitude would be considered noticeable. However, these increases were predicted to occur in the Saturday midday time period when existing traffic volumes and corresponding noise levels are extremely low and even a modest increase in traffic volumes results in the prediction of a large noise level increase due to the proportional modeling technique. Even with these relatively large noise level increases, the total levels during this time period would remain lower than those during weekday time periods.

In terms of CEQR noise exposure guidelines, No-Action noise levels at receptor Locations 1, 6, and 7 would be in the “marginally acceptable” category and No-Action noise levels at receptor Locations 2, 3, 4, and 5 would be in the “marginally unacceptable” category.

TABLE 11-7
2031 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	Spencer Street (North of Park Avenue)	AM	65.7	66.1	0.4	66.7
		MD	60.9	61.2	0.4	63.5
		School PM	66.1	66.6	0.5	68.8
		PM	63.4	63.9	0.5	67.1
		Sat	58.4	59.9	1.5	63.0
2	At the intersection of Park Avenue and Spencer Street	AM	66.8	67.2	0.4	70.2
		MD	69.4	69.9	0.6	71.4
		Sat	66.4	67.0	0.6	69.0
		PM	62.4	63.0	0.6	66.5
3	At the intersection of Park Avenue and Warsoff Place/Sandford Street	AM	71.4	72.3	0.9	73.9
		MD	67.3	68.6	1.3	70.7
		Sat	69.3	70.6	1.3	72.6
		PM	66.1	67.4	1.3	70.8
4	Warsoff Place (North of Park Avenue)	AM	65.7	69.6	3.9	71.5
		MD	64.0	68.3	4.3	71.9
		PM	65.7	69.2	3.5	70.9
		Sat	56.4	63.1	6.7	65.7
5	Sandford Street (South of Park Avenue)	AM	62.8	65.4	2.6	66.3
		MD	65.6	68.7	3.1	71.2
		PM	63.0	66.3	3.3	68.1
		Sat	56.7	64.7	8.0	66.7
6	Walworth Street (South of Park Avenue)	AM	61.4	62.7	1.3	65.8
		MD	63.6	64.5	0.9	65.6
		School PM	62.2	62.9	0.7	64.5
		PM	64.3	65.0	0.7	66.6
		Sat	57.4	60.9	3.5	65.0
7	Spencer Street (South of Park Avenue)	AM	66.1	66.5	0.4	68.1
		MD	62.3	62.8	0.5	65.0
		PM	61.2	61.8	0.6	64.5
		Sat	58.5	59.6	1.1	62.5

H. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

Using the methodology previously described, noise levels were calculated for each of the noise analysis receptors for the 2031 analysis year with the Proposed Actions. These With-Action values are shown in **Table 11-8** (the RWCDS associated with the Proposed Actions).

The maximum increase in $L_{eq(1)}$ noise levels for the With-Action condition would be less than 3 dBA at all noise analysis receptors during all time periods with the exception of the School PM and PM time periods at Receptor Location 6. Changes of this magnitude would be considered imperceptible to "just noticeable." At these locations, increments below 3 dBA would be considered not significant according to *CEQR Technical Manual* noise impact criteria.

As shown in **Table 11-8**, during the weekday School PM and PM time periods, predicted noise level increments at Receptor Location 6 would be up to 3.0 dBA, which would be considered a "just noticeable" change and would typically be considered a significant adverse impact according to *CEQR Technical manual* impact criteria. However, at Receptor Location 6, the maximum predicted With-Action $L_{10(1)}$ values would be approximately 69.6 dBA, i.e., in the "marginally acceptable" range according to *CEQR Technical Manual* noise exposure guidance. With standard

building façade construction, these residences would be expected to provide at least approximately 25 dBA window/wall attenuation. As such, interior noise levels at the future residences and schools represented by this receptor would be less than the 45 dBA threshold considered acceptable for residential use, and the predicted noise level increments would not rise to the level of a significant adverse impact.

In terms of CEQR noise exposure guidelines, With-Action noise levels at receptor Locations 1, 6, and 7 would be in the "marginally acceptable" category and With-Action noise levels at receptor Locations 2, 3, 4, and 5 would be in the "marginally unacceptable" category.

TABLE 11-8
With-Action Condition Noise Levels – the RWCDS Associated with the Proposed Actions (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	Spencer Street (North of Park Avenue)	AM	66.1	66.4	0.3	67.0
		MD	61.2	61.3	0.1	63.6
		School PM	66.6	67.2	0.6	69.4
		PM	63.9	64.5	0.6	67.7
		Sat MD	59.9	60.8	0.9	63.9
2	At the intersection of Park Avenue and Spencer Street	AM	67.2	67.8	0.6	70.8
		MD	69.9	70.1	0.2	71.6
		PM	67.0	68.0	1.0	70.0
		Sat MD	63.0	63.4	0.4	66.9
3	At the intersection of Park Avenue and Warsoff Place/Sandford Street	AM	72.3	73.0	0.7	74.6
		MD	68.6	68.8	0.2	70.9
		PM	70.6	71.7	1.1	73.7
		Sat MD	67.4	67.7	0.3	71.1
4	Warsoff Place (North of Park Avenue)	AM	69.6	71.2	1.6	73.1
		MD	68.3	69.0	0.7	72.6
		PM	69.2	70.8	1.6	72.5
		Sat MD	63.1	63.9	0.8	66.5
5	Sandford Street (South of Park Avenue)	AM	65.4	66.5	1.1	67.4
		MD	68.7	69.1	0.4	71.6
		PM	66.3	68.0	1.7	69.8
		Sat MD	64.7	64.7	0.0	66.7
6	Walworth Street (South of Park Avenue)	AM	62.7	64.4	1.7	67.5
		MD	64.5	64.7	0.2	65.8
		School PM	62.9	65.9	3.0	67.5
		PM	65.0	68.0	3.0	69.6
		Sat MD	60.9	61.4	0.5	65.5
7	Spencer Street (South of Park Avenue)	AM	66.5	67.7	1.2	69.3
		MD	62.8	63.1	0.3	65.3
		PM	61.8	63.9	2.1	66.6
		Sat MD	59.6	61.8	2.2	64.7

Playground Noise

Development on Projected Development Sites 2, 6, and 8 will include rooftop recreation spaces associated with the proposed schools at those sites, which would constitute stationary sources of noise. The nearest existing noise receptors with direct line of sight to any proposed rooftop recreational spaces are the commercial office building at 48 Spencer Street located approximately 51 feet away from Projected Development Site 2 and the existing school at 84 Sandford Street, which will be directly adjacent to Projected Development Site 6 (i.e., the proposed expansion of this existing receptor).

Additionally, Projected Development Site 5 would have direct line of site and be immediately adjacent to the proposed rooftop recreation space at Projected Development Site 6, and Projected Development Sites 9 and 11 would have direct line of site and be immediately adjacent to the proposed rooftop recreation space at Projected Development Site 8.

Using the playground noise methodology described above, noise levels with the play areas were calculated at the receptors mentioned above. The results of the calculated noise levels are shown in **Table 11-9**. The maximum predicted increase in $L_{eq(1)}$ noise level compared to No-Action levels would be less than 2 dBA at all locations other than 84 Sandford Street, which would be considered imperceptible and not significant according to CEQR noise impact criteria.

At 84 Sandford Street, the maximum predicted increase in $L_{eq(1)}$ noise level compared to No-Action levels would be 5 dBA greater than the No-Action levels. In 2010, an application was filed to the Board of Standards and Appeals (BSA) to permit the legalization of a use group 3 community facility within an M1-1 zoning district as part of the Central UTA EAS (08BSA093K). Based on the supporting 2010 noise analysis report conducted by Sandstone Environmental Associates, Inc., the building façade at 84 Sandford Street is expected to have incorporated double-glazed windows, which provide approximately 32 dBA window/wall attenuation, as well as an alternate means of ventilation (AMV). With these measures, interior noise levels during playground use would still be less than 45 dBA (i.e., the threshold considered acceptable for residential and community facility uses according to the *CEQR Technical Manual)*. Therefore, while the change in noise levels would be noticeable, interior noise levels would remain below the acceptable 45 dBA threshold, and consequently, the project-generated noise at 84 Sandford Street would not rise to the level of a significant adverse noise impact. The 2010 noise analysis report is included in **Appendix D.**

TABLE 11-9
Noise Levels due to School Playgrounds (dBA)

Receptor Location	Governing Noise Receptor Site(s)	Time	No-Action $L_{eq(1)}$	Traffic-Only With-Action $L_{eq(1)}$	Play Area $L_{eq(1)}$	Total With-Action $L_{eq(1)}$	Change	Total L_{10}
48 Spencer Street (commercial office)	1	AM	66.1	66.4	57.5	66.9	0.8	69.9
		MD	61.2	61.3	57.5	62.8	1.6	65.8
		School PM	66.6	67.2	57.5	67.6	1.0	70.6
		PM	63.9	64.5	57.5	65.3	1.4	68.5
84 Sandford Street (school)	5	AM	65.4	66.5	68.1	70.4	5.0	73.4
		MD	68.7	69.1	68.1	71.7	3.0	74.7
		PM	66.3	68.0	68.1	71.1	4.8	74.1
Projected Development Sites 5, 9, and 11 and Potential Development Sites A and B	6	AM	62.7	64.4	71.3	72.1	N/A	75.2
		MD	64.5	64.7	71.3	72.1	N/A	75.1
		School PM	62.9	65.9	71.3	72.4	N/A	75.5
		PM	65.0	68.0	71.3	72.9	N/A	75.9

I. NOISE ATTENUATION MEASURES

As shown in **Table 11-3**, the *CEQR Technical Manual* has set noise attenuation values for buildings based on exterior noise levels in order to maintain acceptable interior noise levels for residential, hotel guestroom, community facility, and commercial office uses. Additionally, ZR 123-32 would require 35 dBA window/wall attenuation for all residential dwelling units in the project area.

Table 11-10 shows the minimum window/wall attenuation necessary to meet the *CEQR Technical Manual* requirements for internal noise levels at each of the noise measurement locations and the additional noise receptor locations representing noise receptors newly introduced by the Proposed Actions. The projected future $L_{10(1)}$ noise levels include the noise contribution from vehicular traffic on adjacent roadways as well as playground noise for locations with line of sight to rooftop recreation areas.

As shown in **Table 11-10,** up to 31 dBA window/wall attenuation would be required to provide acceptable interior noise levels per Table 19-3 of the *CEQR Technical Manual* for residential, hotel guestroom, community facility, and commercial office use.

The proposed special mixed-use (MX) zoning district would be subject to ZR Section 123-32, which would require a minimum of 35 dBA window/wall attenuation and an alternate means of ventilation to maintain an interior noise level of 45 dBA or less for a closed-window condition for all residential dwelling units (DUs). As the noise analysis shows noise levels less than 80 dBA, the requirement for 35 dBA specified by ZR Section 123-32 would be sufficient to ensure acceptable interior noise levels, and residential DUs would not require a noise (E) designation. However, as ZR Section 123-32 only applies to residential DUs, community facility and commercial office uses would require a noise (E) designation.

The minimum required attenuation at the Projected and Potential Development Sites are shown in **Table 11-11** and **Figure 11-2**.

3.11.26



Proposed Rezoning Area

Applicant-controlled sites

11 *Projected Development Sites*

A *Potential Development Sites*

Building Attenuation Required

N/A

28 dBA

31 dBA

0 200 FEET

Notes: Commercial office uses would require attenuation 5 dBA less. Pursuant to ZR 123-32, all residential dwelling units within the proposed Special MX zoning district must provide a minimum window-wall attenuation level of 35 dBA.

Required Building Noise Attenuation

TABLE 11-10
CEQR-Required Attenuation at Noise Measurement Locations (in dBA)

Receptor	Location	Highest Traffic-Only With-Action $L_{10(1)}$ Value	Highest With-Action $L_{10(1)}$ Value Including Playground Noise[1]	Minimum Required Attenuation[2]
1	Spencer Street (North of Park Avenue)	69.4	70.6	N/A to 28
2	At the intersection of Park Avenue and Spencer Street	71.6	N/A	28
3	At the intersection of Park Avenue and Warsoff Place/Sandford Street	74.6	N/A	31
4	Warsoff Place (North of Park Avenue)	73.1	N/A	31
5	Sandford Street (South of Park Avenue)	71.6	74.7	28 to 31
6	Walworth Street (South of Park Avenue)	69.6	75.9	N/A to 31
7	Spencer Street (South of Park Avenue)	69.3	N/A	N/A

Note:
[1] Includes the cumulative effect of the With-Action traffic noise at the associated noise measurement location and playground noise estimated based on the shortest distance between a noise-sensitive receptor governed by the measurement location to the nearest playground.
[2] Attenuation values are shown for community facility uses; commercial office uses would require 5 dBA less attenuation. All residential dwelling units would require 35 dBA attenuation per ZR-123-32.

TABLE 11-11
Minimum Required Attenuation at the Projected and Potential Development Sites (in dBA)

Development Sites	Block(s)	Lot(s)	Representative Receptor Location	Required Attenuation[2,3]
Projected Development Sites				
1	1715	3	1 and 2	28
2	1716	3	1	N/A
3	1716	61	2	28
4	1717	60	3 and 4	31
5	1736	1	3, 5, and 6[1]	31
6	1736	10, 18, 61, 62, and 63	5 and 6	28
7	1716	59 and 60	1 and 2	28
8	1735	13 and 14	6	N/A
9	1735	5, 11, and 12	2 and 6[1]	28, 31 facing Site 8 play area
10	1735	3	2 and 7	28
11	1735	61 and 62	6[1] and 7	N/A, 31 facing Site 8 play area
12	1717	2	1 and 4	31
Potential Development Sites				
A	1736	68	6[1]	28, 31 facing Site 6 play area
B	1735	59 (p/o)	6[1] and 7	N/A, 31 facing Site 8 play area

Notes:
[1] These receptors represent the cumulative noise from the With-Action traffic and proposed playgrounds.
[2] Attenuation values are shown for community facility uses; commercial office uses would require 5 dBA less attenuation. All residential dwelling units or hotel guestrooms would require 35 dBA attenuation per ZR-123-32.
[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 $L_{10(1)}$ values below this level.

To ensure attenuation at the Projected and Potential Development Sites, an (E) Designation (E-898) for noise would be applied, specifying the required amount of required window/wall attenuation. The text of the (E) Designation would be as follows:

> **To ensure an acceptable interior noise environment, the building façade(s) of future projected and potential development sites must provide minimum composite building façade attenuation as shown in Table 11-11 and Figure 11-2 of the EIS, in order to maintain an acceptable interior noise level not greater than the thresholds specified for community facility uses and/or commercial office uses as illustrated in the EIS. To maintain a closed-window condition in these areas, and alternate means of ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.**

By adhering to the requirements specified in ZR 123-32 and the (E) Designation described above, buildings to be developed on the Projected and Potential Development Sites as a result of the Proposed Actions would provide sufficient attenuation to achieve acceptable interior noise levels according to the *CEQR Technical Manual* guidelines for residential and community facility uses.

J. MECHANICAL EQUIPMENT

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