APPENDIX F:
CONSTRUCTION NOISE ANALYSIS METHODOLOGY MEMORANDUM

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TECHNICAL MEMORANDUM

To:	Glen Price New York City Department of City Planning 120 Broadway 30th Floor New York, NY 10271
From:	Dayna Bowen, Tara Cruz
Date:	January 7, 2025
Subject:	Midtown South Mixed-Use Study: Construction Noise & Vibration Assessment Methodology and Assumptions
Reference:	HMMH Project Number 23-0258A.002

1. Construction Noise and Vibration Analysis Methodology and Assumptions

The purpose of this memorandum is to describe the construction-related noise and vibration analysis approach for the preparation of the Midtown South Mixed-Use (MSMX) Study Environmental Impact Statement (EIS). A total of 68 development sites (61 projected and 7 potential) have been identified in the plan's project area. Under the reasonable worst case development scenario (RWCDS) for the Proposed Actions, by the analysis year 2034, the total development expected to occur on the 61 projected development sites under the With Action condition would consist of residential, retail, and community facility uses. This memorandum presents a summary of the methodology and assumptions to be used for the construction noise and vibration analyses of the Proposed Actions.

2. Construction Noise and Reasonable Worst Case Development Scenario (RWCDS)

Construction noise is regulated by the requirements of the New York City Noise Control Code (also known as Local Law 113). These requirements mandate that the construction equipment and construction related motor vehicles meet specified noise emission standards, that construction activities be limited to weekdays between the hours of 7 AM and 6 PM, and that construction materials be managed and transported in such a manner as not to create unnecessary noise and annoyance to people living in the nearby community.

It is anticipated that construction of the Projected Development Sites made possible by the proposed MSMX Study would last for more than two years. Therefore, a quantitative assessment of construction-related noise will be conducted. Construction-related noise would result from the operation of stationary on-site construction equipment as well as construction-generated vehicle trips (i.e., worker trips and material, equipment, and truck haul trips) on the surrounding roadways. It is assumed that the construction analysis will be based on the reasonable worst case development scenario (RWCDS) for the conceptual schedule of construction activities and phases, which will be provided by the New York City Department of City Planning (DCP). Detailed construction noise modeling analysis will be performed for four development sites, for all construction phases. The selected development sites will consist of (1) Site 49, the largest projected development site, (2) Site 52, larger projected development sites, (3) Site 46, average development sites, and (4) Site 35, smaller development sites to represent all remaining sites with construction durations close to 24 months. The analyzed typical development sites will be used to represent construction noise from all projected development sites of similar size – analysis results of Site 49 will only be used to evaluate

impacts at noise sensitive sites surrounding Site 49 since it is the largest site, and no other development sites are of comparable size. Analysis results of Site 52 will be used to evaluate impacts of Sites 3, 33, 40, and 48, analysis results of Site 46 will be used to evaluate impacts of Sites 19, 32, 47, and 53, and analysis results of Site 35 will be used to evaluate impacts of sites 7, 15, 16, 18, 25, 31, 36, 41, 42, 43, 51, 55, and 62.

Construction noise analyses for the proposed MSMX Study EIS will be conducted in a manner that is consistent with the 2021 CEQR Technical Manual guidelines. The relevant procedures, analysis elements and assumptions applicable are as follows:

2.1 Receptor Sites and Existing Noise Levels

A noise-sensitive receptor is defined in Chapter 19, "Noise" Section 114 of the 2021 CEQR Technical Manual and includes indoor receptors such as residences, hotels, health care facilities, nursing homes, schools, houses of worship, court houses, public meeting facilities, museums, libraries, theaters, etc. Outdoor sensitive receptors include outdoor areas of residences, parks, outdoor theaters, zoos, golf courses, etc.

- Existing noise levels at a number of representative sensitive sites in proximity to the construction zones will be determined via an ambient noise monitoring survey collected for the operational noise analysis. The number of selected sites will be determined after a review of project development plans, land uses nearby and in consultation with DCP.

- The peak hour AM and/or MD noise measurements conducted for the operational noise assessment will suffice for characterizing the existing conditions and evaluating potential construction noise impacts.

2.2 Construction Noise Analysis and Impact Determination

2.2.1 Impact Assessment Criteria

- DCP has adopted a set of construction noise impact criteria for land use applications under the CEQR process. The determination of significant adverse construction noise impact is based on the intensity and duration. Significant adverse construction-related noise impacts are considered if: 1) a noise level increment of 15 dBA or more (which is considered objectionable) occurs for a prolonged period of 12 months or more, or 2) a noise level increment of 20 dBA or more (which is considered very objectionable) occurs for a prolonged period of 3 months or more.

- For projects or components of projects that are anticipated to have a duration of less than 24 months, no quantitative noise analysis will be required. These sites will be addressed qualitatively in the construction chapter.

2.2.2 Detailed Analysis

- At each of the four (4) analyzed projected development sites, construction noise levels will be determined for each major construction phase (i.e., demolition, excavation and foundation work, superstructure work, curtain wall, interior fit-out work, etc.). Each "projected" development site will be assessed as representative based on duration, intensity, and sensitive receptor proximity and/or line of sight to the construction site.

- Noise from construction activities will be determined using the SoundPLAN model. This model is approved by DCP and is considered a state-of-the-art analytic tool for determining noise exposure from various types of transportation and construction noise generating activities. SoundPLAN is a three-dimensional, ray-tracing model in which noise sources can be modeled as point, line and/or area source components. The model can account for distance attenuation, elevation differences, ground absorption, building shielding, and noise reduction achieved by sound barriers and enclosures. The resultant noise levels can be predicted at any number of receptor locations of interest. Reference sound levels for construction equipment can be input to SoundPLAN using values shown in CEQR Technical Manual Table 22-1. These values will be used unless there are pieces of equipment for which no sound levels are available in Table 22-1. In that case, DCP will be consulted for best available reference sound levels and usage factors prior to conducting modeling.

- Construction schedule and reasonable equipment types and quantities to be used in the construction noise model will be provided by DCP. Construction phasing and equipment will be consistent across all projected development sites.

- Two analyses of mobile sources of construction will be completed:

  a) Construction-generated vehicles (workers and trucks) arriving to the site prior to the start of the day and leaving the site after hours will be converted to CEQR noise Passenger Car Equivalent (PCE) values and compared to No Action noise PCEs.

  b) The second mobile source assessment will be performed for the construction-generated truck trips using the Traffic Noise Model version 2.5 (TNM2.5) module included in SoundPLAN.

- Noise receptors will include both existing noise-sensitive land uses and Projected development sites facilitated by the proposed actions regardless of their conceptual construction schedules. Receptors would be representative of both ground level and elevated locations on each floor. Receptors representative of existing noise-sensitive land use will be placed at the facades of each floor, and hypothetical receptors will be modeled every 50 feet in an evenly spaced grid, with a horizontal distance up to 100 feet and vertical height up to ten stories (assuming ten feet per floor, equating to approximately 100 feet). In addition, hypothetical receptors will also be placed at a horizontal distance of 5 or 10 feet from the construction sites and a vertical height up to 10 stories.

- Existing topography and buildings will be modeled to account for terrain effects and shielding.

- The noise levels identified in the evaluation of the construction sites will be used to approximate any impacts due to noise levels generated at other construction sites with similar characteristics. Characteristics to be considered include building size, building height, and sensitive receptor proximity and line of sight to the construction site. The extent of impacts predicted from the four detailed analysis sites will be used to identify potential impacts from the other similar sites at sensitive receptors using the maximum distance to objectionable or very objectionable noise increases based on existing noise levels and construction noise levels from the detailed modeling analyses and receptor grid described above. Construction noise levels will be predicted at receptors, and noise contours will be generated in SoundPLAN.

- Receptors expected to experience significant adverse impact will be identified graphically. Duration of impact at receptors will be determined based on the construction schedule provided by DCP.

3. Construction Vibration Analysis

- Vibration levels associated with construction activities will be determined and assessed for human annoyance and potential structural building damage using the Federal Transit Administration (FTA) general assessment methodology and impact guidelines contained in the 2018 FTA Transit Noise and Vibration Manual.

- Receptor sites of greatest concern are buildings closest to the project development site construction boundary. In general, properties greater than 300 feet do not experience elevated vibration levels unless significant pile driving is expected. Construction schedule, phasing, activity, and equipment data will be utilized for the assessment.

- The vibration analysis and impact assessment findings will be incorporated into the MSMX Study EIS construction chapter.

4. Construction Noise and Vibration Analysis Documentation

The construction noise and vibration analysis findings will be documented in the MSMX EIS construction chapter. Summary tables of ambient noise levels at the representative receptor sites and illustrations depicting these locations will be provided. Summary tables of the detailed construction noise analysis findings will be provided with predicted construction noise levels and duration of impact for each receptor. Distance to human annoyance and structural damage criteria will be used to identify receptors that may be impacted by construction-related vibrations. Construction vibration levels will be identified for impacted receptors in a summary table. Graphics will illustrate receptors with potential to experience human annoyance and structures that could potentially be damaged by construction-induced vibrations.