Appendix G: Construction Noise

To: New York City Department of City Planning

From: WSP, HMMH

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Subject: Atlantic Avenue Mixed-Use Plan – Construction Noise Methodology and Assumptions

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CONSTRUCTION NOISE & VIBRATION ANALYSIS METHODOLOGY

PROJECT STUDY AREA & DEVELOPMENT SITE ASSUMPTIONS

The purpose of this memorandum is to describe the noise analysis approach for the Atlantic Avenue Mixed-Use Plan (AAMUP) Environmental Impact Statement (EIS). A total of 70 development sites (54 projected and 16 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 54 projected development sites under the With Action condition would consist of residential, commercial, industrial, and community facility uses, as well as parking. This memorandum presents a summary of the methodology and assumptions to be used for the construction noise analysis of the Proposed Actions.

CONSTRUCTION NOISE & 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 AAMUP would last for more than two years. Therefore, a quantitative assessment of construction-related noise and vibration will be conducted. Construction-related noise and vibration 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 two development sites, for all construction phases. The selected development sites will consist of (1) Site 14, one of the largest projected development sites, and (2) Site 22, a relatively large projected development site to represent 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 14 would be used to evaluate impacts of Sites 15, 54, and 55 and analysis results of Site 22 would be used to evaluate Sites 6, 9, 10, 20, and 45.

Construction noise analyses for the proposed AAMUP EIS will be conducted in a manner that is consistent with the 2*021 CEQR Technical Manual* guidelines. The relevant procedures, analysis elements and assumptions applicable are as follows:

Receptor Sites and Existing Noise Levels

A noise-sensitive receptor is defined in Chapter 19, "Noise" Section 124 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 NYC DCP.

- Per discussion with NYC DCP during a meeting on January 8, 2024, no additional noise measurements conducted during off-peak, early AM, MD, or PM hours will be necessary. 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.

- In locations where noise measurements are not conducted, existing noise levels may be determined using SoundPLAN with existing baseline traffic volume data developed for the operational traffic assessment. If there are significant differences (beyond the difference of 3 dBA) between modeled noise level and measured existing noise level, calibration may be needed. Using this procedure will require NYC DCP approval.

Construction Noise Analysis and Impact Determination

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 objectional) 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.

Detailed Analysis

- At each of the two (2) 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 NYC 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 or the more updated reference levels from RCNM2.0.

- Construction schedule and reasonable equipment types and quantities to be used in the construction noise model will be provided by NYC 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. In addition, per discussion with NYC DCP during a January 8, 2024, meeting, receptors included within SoundPLAN will be placed every 50 feet in an evenly spaced grid, with a horizontal distance up to 200 feet and vertical height up to six stories (assuming ten feet per floor, equating to approximately 60 feet).

- The noise levels identified in the evaluation of the large and typical 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 two detailed analysis sites will be used to identify potential impacts from the other similar sites at

sensitive receptors using the distance rings described above. Construction noise levels at receptors in between distance rings (e.g., at 75 feet) will be calculated based on the predicted levels at the 50-foot increment distance rings assuming point source attenuation at a rate of 6 dB per distance doubling.

- Depending on how construction staging data are provided, any construction noise impacts will be reported based on a monthly or quarterly calendar period. Receptors expected to experience significant adverse impact will be identified. Duration of impact at receptors will be determined based on the construction schedule provided by NYC DCP.

Construction Vibration

- 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 AAMUP construction chapter.

Construction Noise and Vibration Study Documentation

The noise study findings will be documented in the AAMUP 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. SoundPLAN graphics will be included in the documentation depicting construction noise contours for the worst-case development quarter(s).