



ACOUSTICAL REVIEW & NOISE ATTENUATION PLAN

Date: 6 September 2022

To: Leif Steffenson

Apollo Garden LLC
2450 Hollywood Boulevard, Suite 105
Hollywood, FL 33020

From: Sam Shroyer, ASA INCE
Edward Dugger, FAIA ASA NCAC INCE

Re: **Noise Attenuation Plan**
1111 Lincoln Road, Fourth Floor
Miami Beach, FL 33139
ED+A 221417

Leif,

Edward Dugger + Associates (ED+A) has prepared the following Noise Attenuation Plan in conjunction with Apollo Garden LLC's request for a Conditional Use Permit for a Neighborhood Impact Establishment to include Outdoor Entertainment at the project, which is currently being constructed on the fourth floor of 1111 Lincoln Road.

ED+A has visited the project site, reviewed design materials—including audio system plans—and conducted long-term acoustical measurements to sample existing ambient sound levels in the area.

Outdoor Entertainment will be limited to a balcony on the east side of the building, overlooking Lenox Avenue. Music will be provided to this area via a group of small loudspeakers covering this area only and there will be no need to rely on the volume of interior speakers for sound to be evenly distributed throughout this area. The interior loudspeakers are also distributed in a manner so that they are not projecting sound outward toward the balcony. The exterior loudspeakers will be controlled independently from the interior loudspeakers. An impact rated NanoWall window/door system will separate the balcony from the interior space. This will allow the project to operate with Entertainment indoors during all business hours.

Please contact ED+A with any questions or comments.



INTRODUCTION

Sam Shroyer of ED+A visited the future site of the project on August 25 and September 2, 2022 to review existing architectural conditions, the site's location relative to other nearby uses, and to conduct long-term acoustical measurements to sample ambient sound levels on the exterior balcony. A review was conducted to determine whether the proposed project can operate in accordance with City of Miami Beach Code of Ordinances Section 46-152 ("the Ordinance") as required for Outdoor Entertainment pursuant to Section 142-333(a)(2) of the Ordinance. This document has been prepared to address "how noise will be controlled to meet the requirements of the noise ordinance," as required.

Project Location

The project is to be located in an existing interior space with an east-facing balcony on the fourth floor of 1111 Lincoln Road, which is primarily used as a parking facility. It occupies the westernmost portion of the Lincoln Road Mall high intensity commercial district (CD-3) between Lenox Avenue and Alton Road on the north side of Lincoln Road. The site is surrounded by other commercial uses in all directions. There are no residential properties within 100 ft of the establishment.

Nearby commercial uses include:

- Juvia (located within the same building)
- Hookah Bar at Aura
- Sexy Cow Steakhouse
- Lincoln Eatery (has Outdoor Entertainment)
- Chotto Matte (has Indoor Entertainment)
- Segafredo L'Originale (has bar and DJ)
- Mila (has Outdoor Entertainment)

Operations

The Applicant is proposing a small restaurant with a bar and lounge. Live entertainment—most often provided by DJ's—and mood lighting are crucial to creating the restaurant's distinct ambiance. The restaurant is mostly indoors but has an exterior balcony. Access to this area will be provided via a retractable NanoWall system. The Applicant is proposing the following hours of operation:

- Indoor Restaurant
 - Sunday – Thursday 11:00 a.m. – 2:00 a.m.
 - Friday – Saturday 11:00 a.m. – 5:00 a.m.
- Outdoor Entertainment
 - Sunday – Thursday 11:00 a.m. – 12:00 a.m.
 - Friday – Saturday 11:00 a.m. – 2:00 a.m.

1239 SE Indian Street, Suite 103, Stuart, Florida 34997
T: 772-286-8351 www.edplusa.com AA26000667



REVIEW

ED+A believes the exterior balcony to be suitable for outdoor entertainment due to its elevation, the considerable distance to residential uses, screening provided by structures to the north, west, and south, and its location within a cluster of large commercial buildings in the heavily trafficked Lincoln Road Mall.

Sound System Design

Prior to ED+A's involvement in this application, the Applicant and their project team had already included many, if not all, of the mitigatory actions that ED+A would suggest—including those that are nearly always dictated by the City of Miami Beach Planning Board within Conditional Use Permits involving entertainment. This can be said for not only the design of the audio system but also its management by senior level staff.

All music will be reproduced via permanent loudspeakers installed indoors and on the exterior balcony. The system's digital signal processor (DSP) will be configured so that interior and exterior speakers are divided into separate "zones," that are controlled independently of the other. Both sets of loudspeakers could be described as small "distributed" audio systems, consisting of multiple small speakers to maintain even coverage and consistent sound levels throughout the restaurant. These systems allow the users to generate greater sound levels, but targeted to a specific area. The throw patterns of and coverage provided by the interior loudspeakers will minimize emanation out to the balcony when doors are open and music generated inside will not have to be relied upon to influence the sound environment on the balcony. Exterior speakers will be facing inward toward the interior area—not in the east, south, or north directions. Interior loudspeakers will also be facing inward, and have been selected so that the throw pattern of those facing the balcony is such that sound it generates will not emanate outside of the building. The implementation of indoor zone and outdoor zone controls will allow the restaurant to close the doors and maintain ambient music at lower sound levels outside while still creating a "livelier" atmosphere inside with music generated at greater sound levels. Audio signals will be routed, distributed, managed, and controlled using a digital signal processor (DSP). The DSP will allow for an internal sound level output "cap" that can be programmed and adjusted only by the system designer/installer via specialized software; this limit will be set to an appropriate level following the system installation. Sound level output may be adjusted below the limit via controls accessible by management and ownership only, not only to prevent any potentially excessive sound levels but also to ensure the "mood settings" associated with the restaurant's lighting system and is responsive to sound are being respected. Additionally, the selected DSP (Coda Audio LINUS12C 4-Channel DSP Amplifier with Loudspeaker Management) includes system management software that allows for continuous monitoring via measurement microphones; this establishes a record of the level of sound generated in the space and allows for quick and real-time adjustments, if deemed necessary.

ACOUSTICAL MEASUREMENTS

Sound levels were measured on the balcony over several days. The system began logging data August 24, 2022 through August 30, 2022. The measurement microphone was roughly 6 ft above the floor and was near enough to a wall surface for the measured sound levels to be affected by reflected sound, increasing measured levels by up to 3 dB (see Figure 1). The system was calibrated before its installation and prior to its removal from the site. Details specific to the measurement and calibration devices used for these measurements are included in Table 1.

A-weighted equivalent-continuous sound levels were measured in fifteen-minute and one-hour intervals. A-weighted percentile-exceeded sound levels (L_{A10} and L_{A90}) were also measured and evaluated for the same observation periods. A-weighted levels were assessed as the A-weighting network corresponds best with human sensitivity to sound for most community noise assessments, but C-weighted sound levels were also measured.

The measured one-hour sound levels were evaluated to characterize the existing sound environs at the measurement locations through calculation of day average sound levels (L_{Ad}), night average sound levels (L_{An}), and day-night average sound levels (L_{Adn} or DNL) for each day of the measurement period per ANSI S12.9 Part 4. The time intervals between midnight and 7:00 AM and 10:00 PM and midnight were considered night while the day period consisted of the time between 7:00 AM and 10:00 PM.

DNL is a metric developed by the Environmental Protection Agency (EPA) for the evaluation of community noise and it is also used by other federal agencies such as the Department of Housing and Urban Development (HUD) and Federal Aviation Administration (FAA). The American National Standards Institute (ANSI) also includes DNL criteria in the ANSI S12.9 series of standards detailing procedures for the measurement and assessment of environmental sound. DNL is essentially the time-average (L_{Aeq}) of sound measured over a twenty-four-hour period but with a 10 dB “penalty” applied to sound levels measured during the night period described previously. The 10 dB addition is meant to account for increased sensitivity to sound during these hours.

A comparative sound level chart has been included for reference purposes (see Figure 2).

| Table 1. Measurement Equipment | | | |
|--------------------------------|------------------------------|---------------|------------------------|
| Manufacturer | Model | Serial Number | Laboratory Calibration |
| Brüel and Kjær | Type 2250-L Analyzer | 3008039 | April 12, 2022 |
| Brüel and Kjær | Type 4952 Outdoor Microphone | 3077206 | April 28, 2022 |
| Brüel and Kjær | Type 4231 Sound Calibrator | 2394124 | August 23, 2021 |



Figure 1. Measurement microphone on balcony

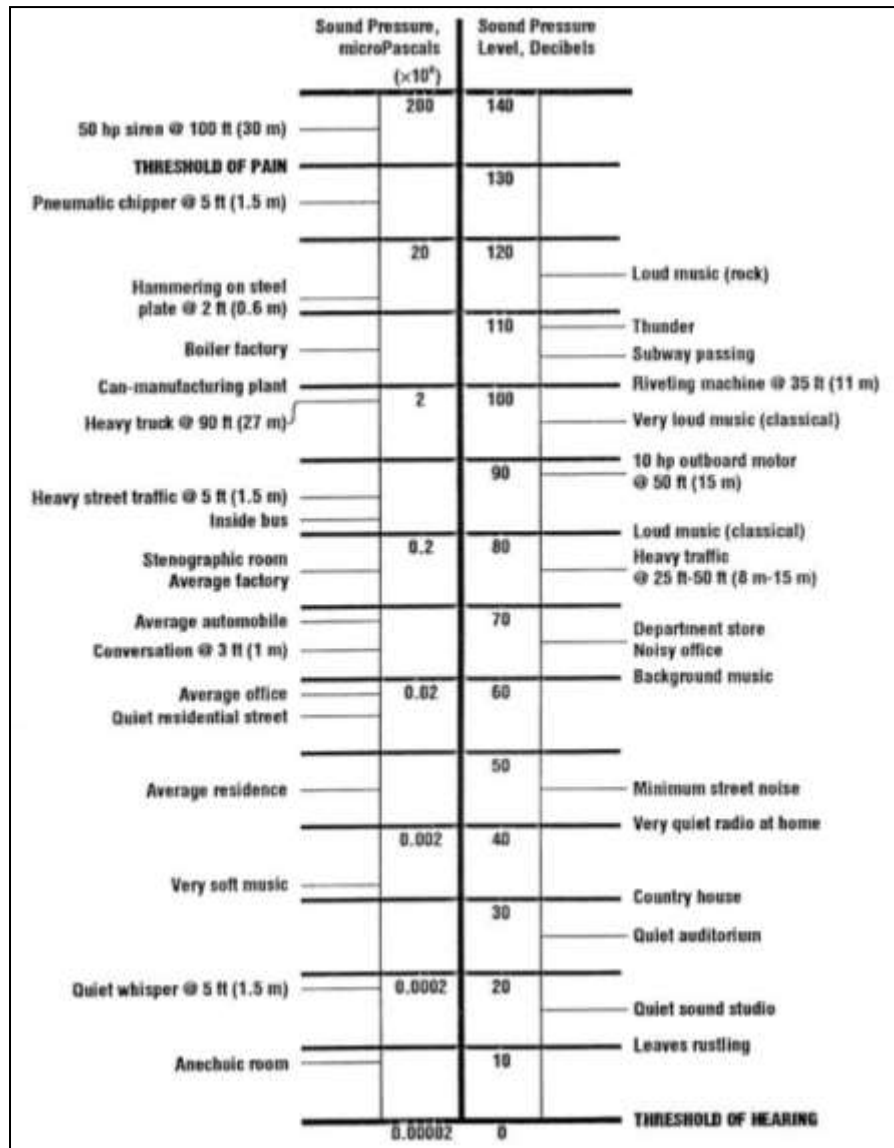


Figure 2. Decibel level comparison chart.

* Reprinted from *Acoustics and Noise Control Handbook for Architects and Builders*, by L. K. Irvine and R. L. Richards, 1998, Malabar, FL: Krieger Publishing Company. Copyright by L.K. Irvine and R.L. Richards



Results

One-hour L_{Aeq} have been compiled with total L_{Aeq} , L_{Ad} , L_{An} and DNL calculated for each day in Table 2. One-hour L_{Aeq} logged over the entire measurement period are also plotted in Figure 3. Fifteen-minute L_{Aeq} logged over each day of the measurement period are plotted in Figures 4 through 10.

Ambient sound levels measured on the rooftop were roughly 65 dBA on a consistent basis. Ambient sound levels at lower elevations would be expected to be similar if not greater due to increased proximity to traffic and activity at the Lincoln Road Mall to the south. C-weighted ambient sound levels were in the range of 72 to 78 dBC.

| Table 2. One-Hour L_{Aeq} , Daily L_{Aeq} , L_{An} , L_{Ad} , and DNL August 24, 2022 – September 2, 2022 | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Interval | Wed, 24-Aug | Thu, 25-Aug | Fri, 26-Aug | Sat, 27-Aug | Sun, 28-Aug | Mon, 29-Aug | Tue, 30-Aug |
| L 0000 | | 64 | 64 | 65 | 64 | 64 | 63 |
| L 0100 | | 63 | 65 | 64 | 63 | 63 | 62 |
| L 0200 | | 63 | 63 | 63 | 63 | 63 | 62 |
| L 0300 | | 63 | 63 | 63 | 62 | 63 | 62 |
| L 0400 | | 63 | 63 | 64 | 63 | 64 | 62 |
| L 0500 | | 63 | 64 | 63 | 63 | 64 | 63 |
| L 0600 | | 64 | 64 | 64 | 64 | 64 | 64 |
| L 0700 | | 64 | 68 | 64 | 64 | 63 | 66 |
| L 0800 | | 65 | 69 | 64 | 64 | 64 | 68 |
| L 0900 | | 66 | 66 | 65 | 65 | 66 | 64 |
| L 1000 | | 65 | 65 | 66 | 64 | 64 | 66 |
| L 1100 | | 66 | 66 | 65 | 64 | 65 | 66 |
| L 1200 | | 66 | 66 | 67 | 65 | 64 | 65 |
| L 1300 | | 66 | 65 | 65 | 66 | 64 | 69 |
| L 1400 | | 65 | 65 | 66 | 66 | 65 | 65 |
| L 1500 | | 65 | 65 | 65 | 65 | 65 | 65 |
| L 1600 | | 65 | 65 | 65 | 65 | 65 | 66 |
| L 1700 | | 65 | 65 | 65 | 65 | 64 | 65 |
| L 1800 | | 66 | 65 | 66 | 65 | 65 | 65 |
| L 1900 | | 67 | 65 | 66 | 65 | 65 | 65 |
| L 2000 | | 65 | 65 | 66 | 65 | 65 | 65 |
| L 2100 | 66 | 65 | 66 | 66 | 66 | 67 | 64 |
| L 2200 | 65 | 66 | 67 | 67 | 65 | 65 | 64 |
| L 2300 | 64 | 64 | 66 | 65 | 64 | 64 | 64 |
| L_{Aeq} | 65 | 65 | 66 | 65 | 65 | 64 | 65 |
| L_{Ad} | 66 | 65 | 66 | 65 | 65 | 65 | 66 |
| L_{An} | 65 | 64 | 65 | 64 | 63 | 64 | 63 |
| DNL | 73 | 71 | 71 | 71 | 70 | 70 | 70 |

Figure 3. One-Hour Sound Levels
August 24, 2022 - September 1, 2022

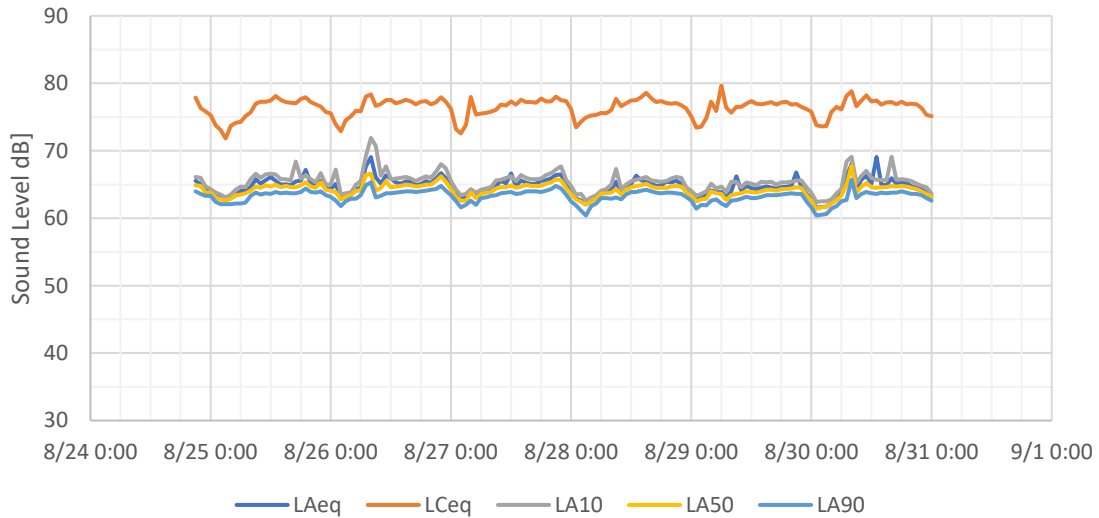


Figure X. Fifteen-Minute Sound Levels
August 24, 2022

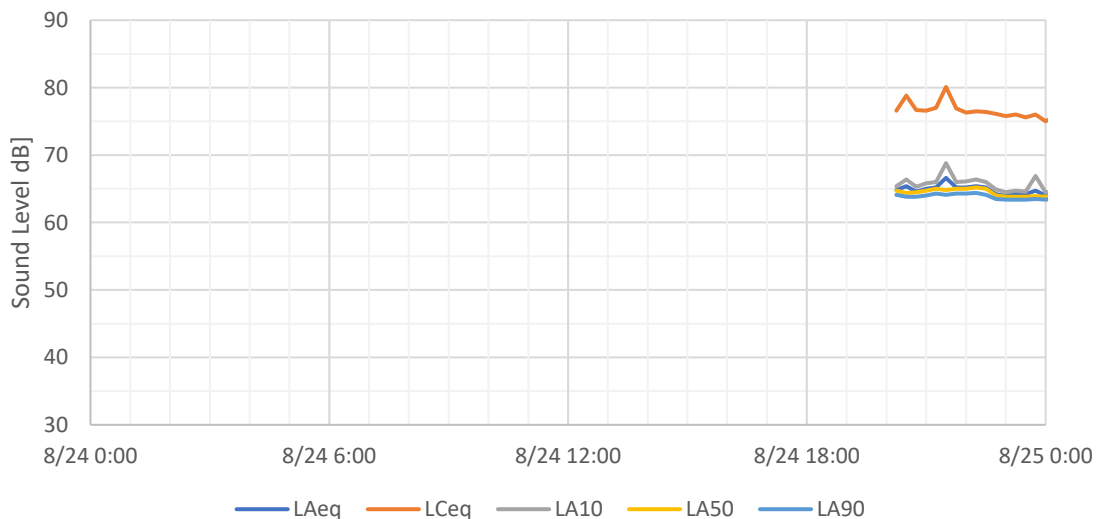


Figure X. Fifteen-Minute Sound Levels
August 25, 2022

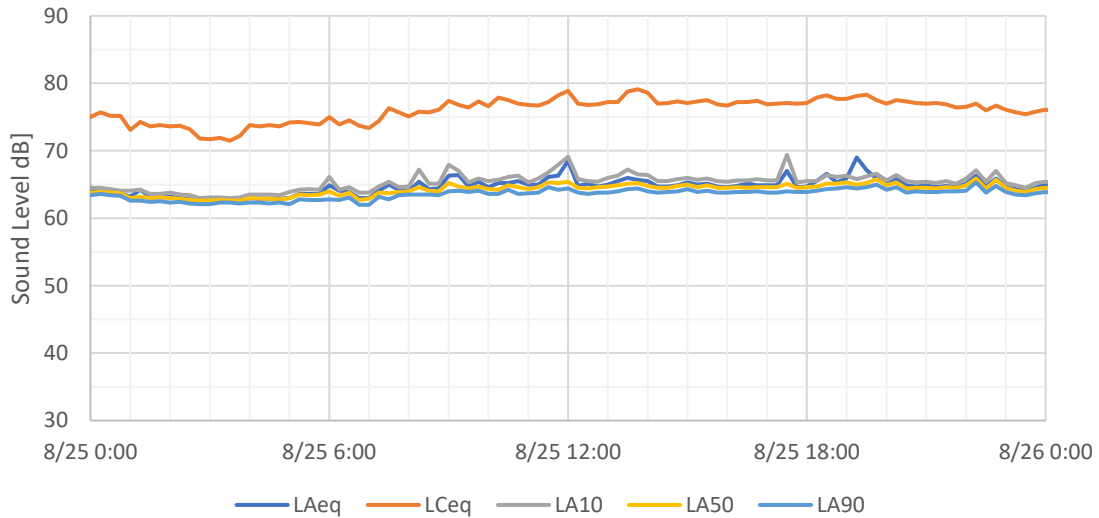


Figure X. Fifteen-Minute Sound Levels
August 26, 2022

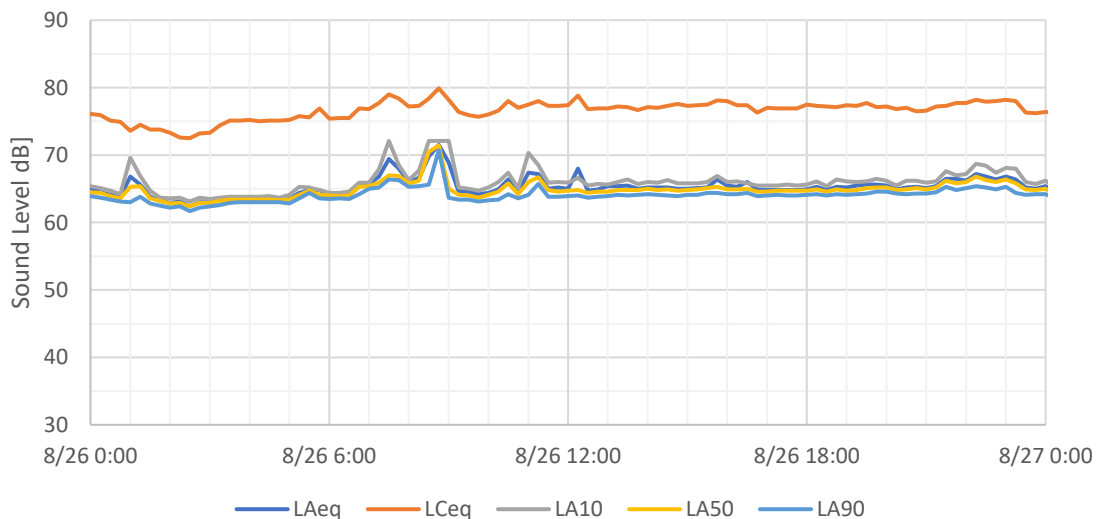


Figure X. Fifteen-Minute Sound Levels
August 27, 2022

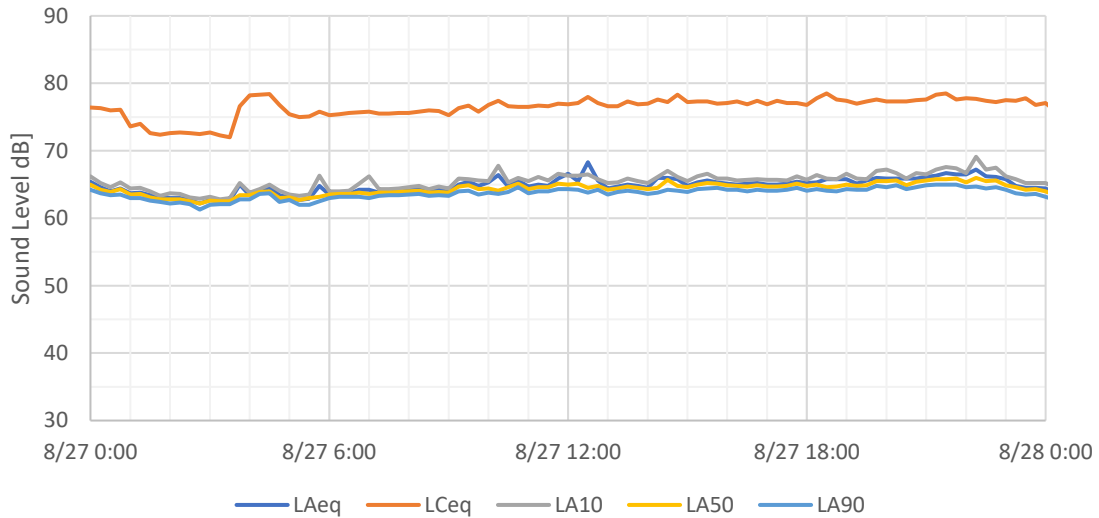


Figure X. Fifteen-Minute Sound Levels
August 28, 2022

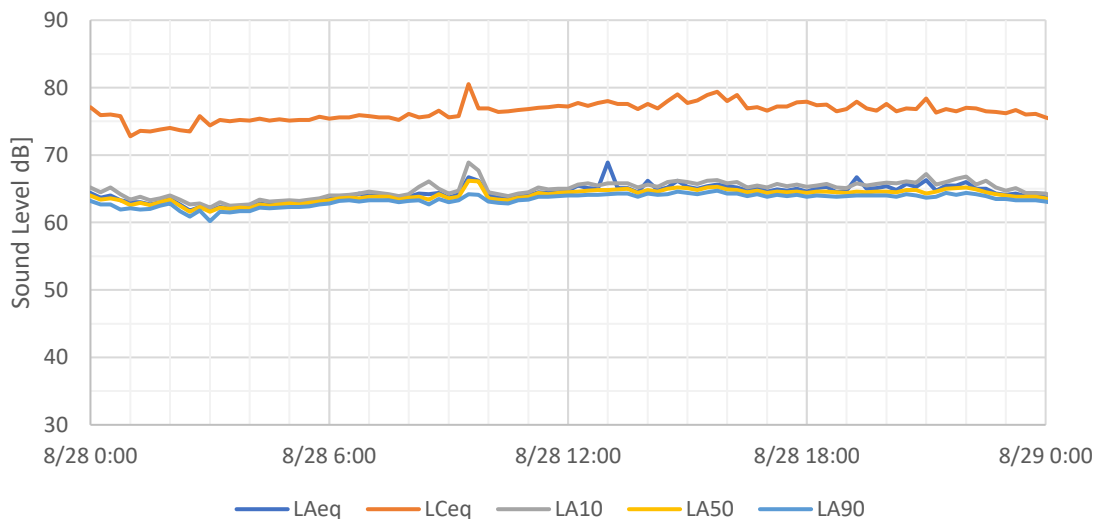


Figure X. Fifteen-Minute Sound Levels
August 29, 2022

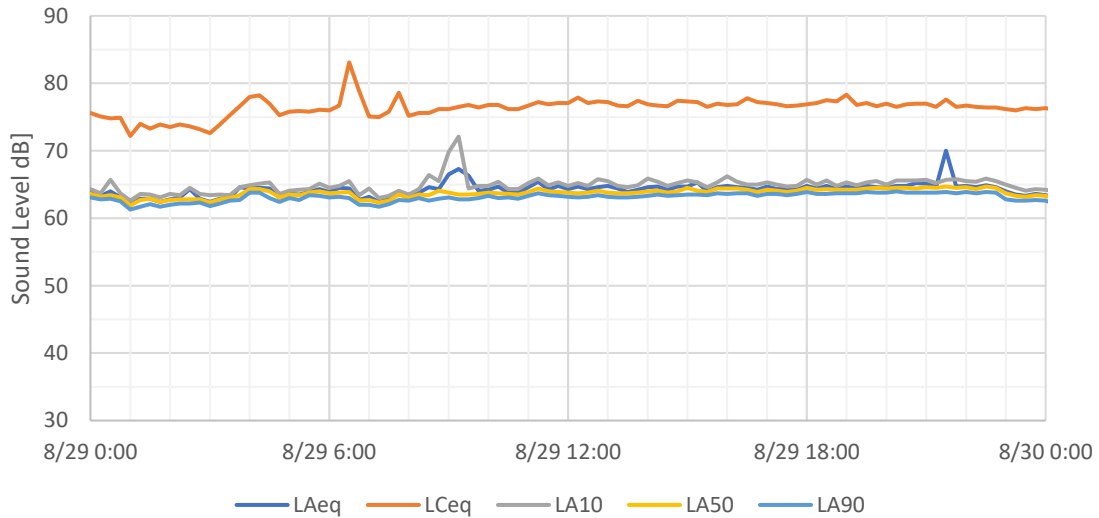


Figure X. Fifteen-Minute Sound Levels
August 30, 2022

