

Environmental Noise Assessment

214 W. Commercial Nightclub

City of Reno, Nevada

February 7, 2025

Project # 250114

Prepared for:

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The following is our review of noise associated with the proposed operation of a nightclub use at 214 W. Commercial Row in the City of Reno Nevada. The project is located on the south side of W. Commercial Row, just west of the Kwok's Bistro restaurant located at the intersection of W. Commercial Row and West Street. The project is adjacent to the Townsite Motel to the west. This noise review was prepared at the request of the City of Reno.

Saxelby Acoustics performed noise measurements and observations on the evening of Thursday, January 30th, 2025, from approximately 7:30 p.m. to 10:00 p.m. During this time, a temporary sound system¹ (**Figure 1**) was used to play typical nightclub music at average levels ranging between 109-113 dBC (92-95 dBA) at the DJ position. In our opinion, these are the maximum noise levels that we would expect in a nightclub. The project applicant indicated that these levels were higher than typical.

The following is a summary of our noise measurements and findings relative to the requests of the City of Reno.



FIGURE 1: TEMPORARY SOUND SYSTEM

¹ The system used for testing included two 12" QSC K12.2 powered speakers and three 18" subwoofers.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. However, as requested by the City, this report uses the C-weighted noise level which is more responsive for noise consisting of a strong low-frequency (bass) component.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dB sound is half as loud as an 80-dB sound, and twice as loud as a 60 dB sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn} , and shows very good correlation with community response to noise.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|-------------------|--|
| | --110-- | Rock Band |
| Jet Fly-over at 300 m (1,000 ft.) | --100-- | |
| Gas Lawn Mower at 1 m (3 ft.) | --90-- | |
| Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph) | --80-- | Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.) |
| Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.) | --70-- | Vacuum Cleaner at 3 m (10 ft.) |
| Commercial Area Heavy Traffic at 90 m (300 ft.) | --60-- | Normal Speech at 1 m (3 ft.) |
| Quiet Urban Daytime | --50-- | Large Business Office Dishwasher in Next Room |
| Quiet Urban Nighttime | --40-- | Theater, Large Conference Room (Background) |
| Quiet Suburban Nighttime | --30-- | Library |
| Quiet Rural Nighttime | --20-- | Bedroom at Night, Concert Hall (Background) |
| | --10-- | Broadcast/Recording Studio |
| Lowest Threshold of Human Hearing | --0-- | Lowest Threshold of Human Hearing |

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dB cannot be perceived;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5-dB is required before any noticeable change in human response would be expected; and
- A 10-dB change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

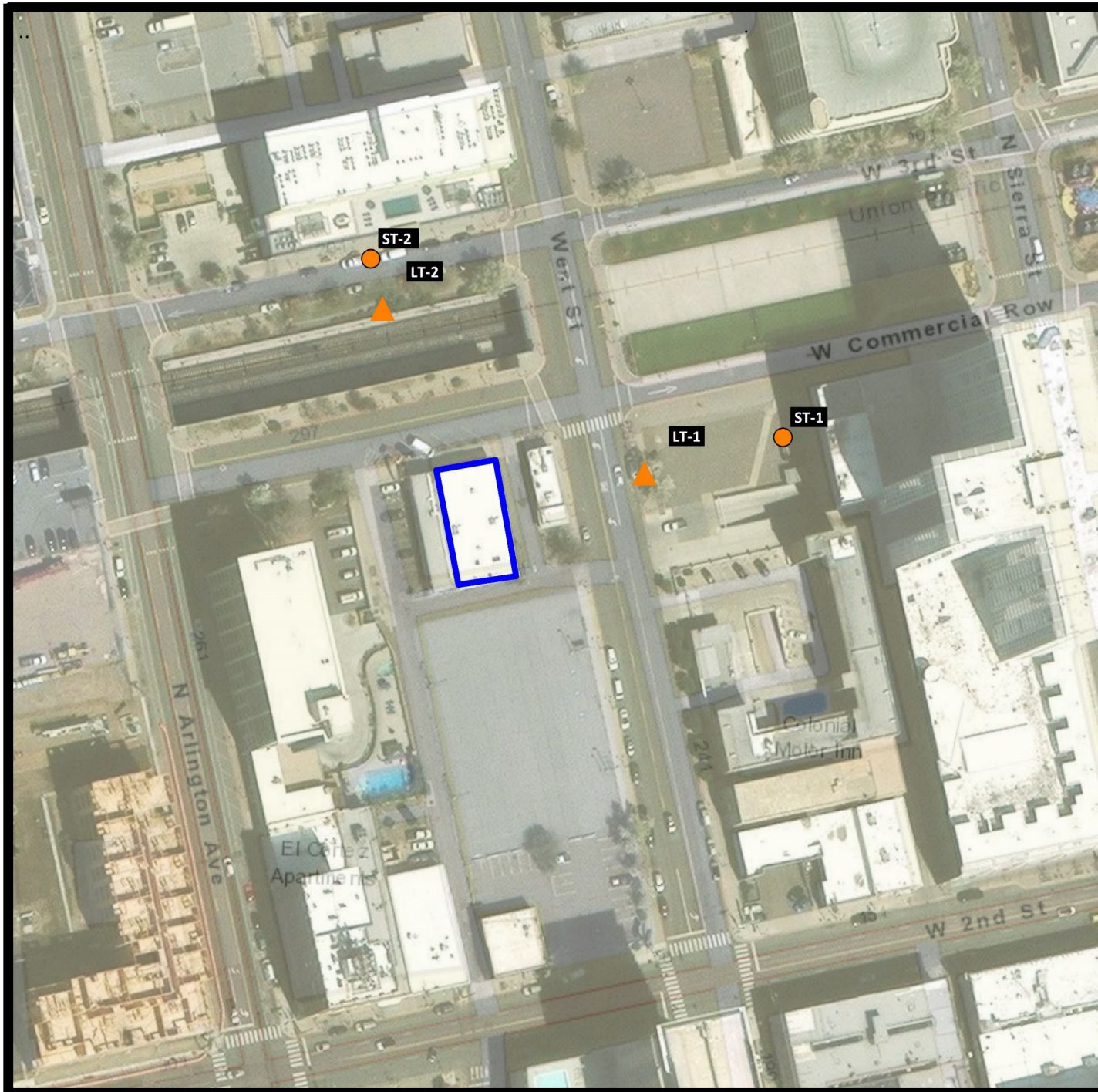
Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

NOISE MONITORING RESULTS

To quantify noise levels associated with amplified music, Saxelby Acoustics conducted a series of noise measurements inside of proposed nightclub and at several off-site locations. **Figure 2** shows the noise monitoring sites. A summary of the noise level measurement survey results is provided in **Figure 3**, in terms of the A-weighted and C-weighted noise descriptors.

Larson Davis Laboratories (LDL) Model 820 and 831 precision integrating sound level meters were used for the noise level measurement survey. The meters were calibrated before and after use with an LDL CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

It should be noted that the project is not a substantial generator of noise in terms of A-weighted sound levels. In the future, people at the exterior of the nightclub could generate noise due to speech. However, this is typically a lesser issue when compared to the potential of bass transfer to the exterior through the building envelope. **Figure 3C** shows the graph of interior versus exterior A-weighted sound levels. There is no correlation between interior A-weighted levels and measured exterior levels. Therefore, A-weighted levels are not discussed further in this report.



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Figure 2

Noise Measurement Sites

Legend



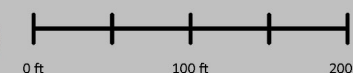
Project Site



Noise Measurement - Short Term



Noise Measurement Site - Long Term



Projection: UTM Zone 11 / WGS84 / meters
Rev. Date: 02/07/2025



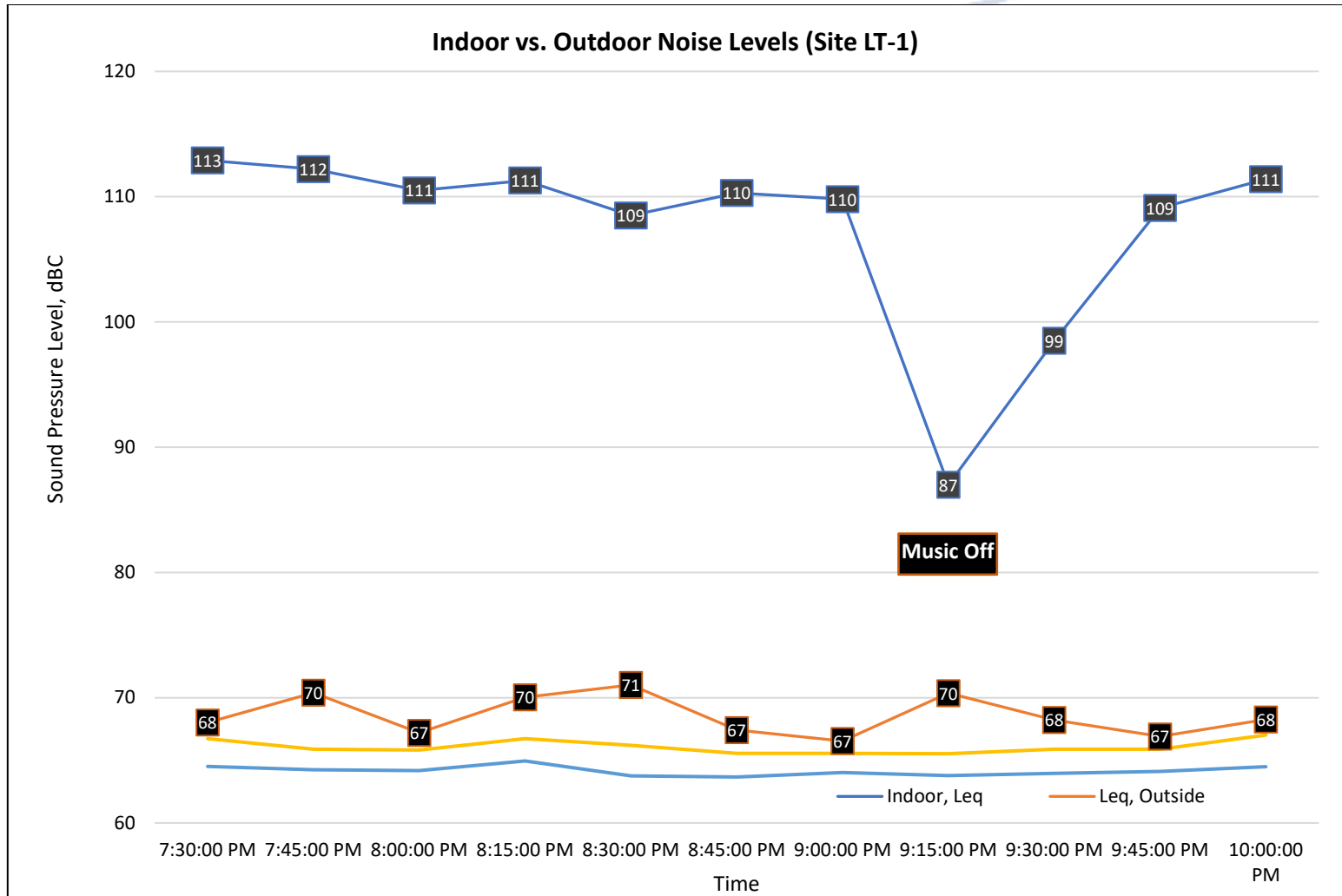


FIGURE 3A: SUMMARY OF NOISE MEASUREMENT DATA (LT-1, dBC)

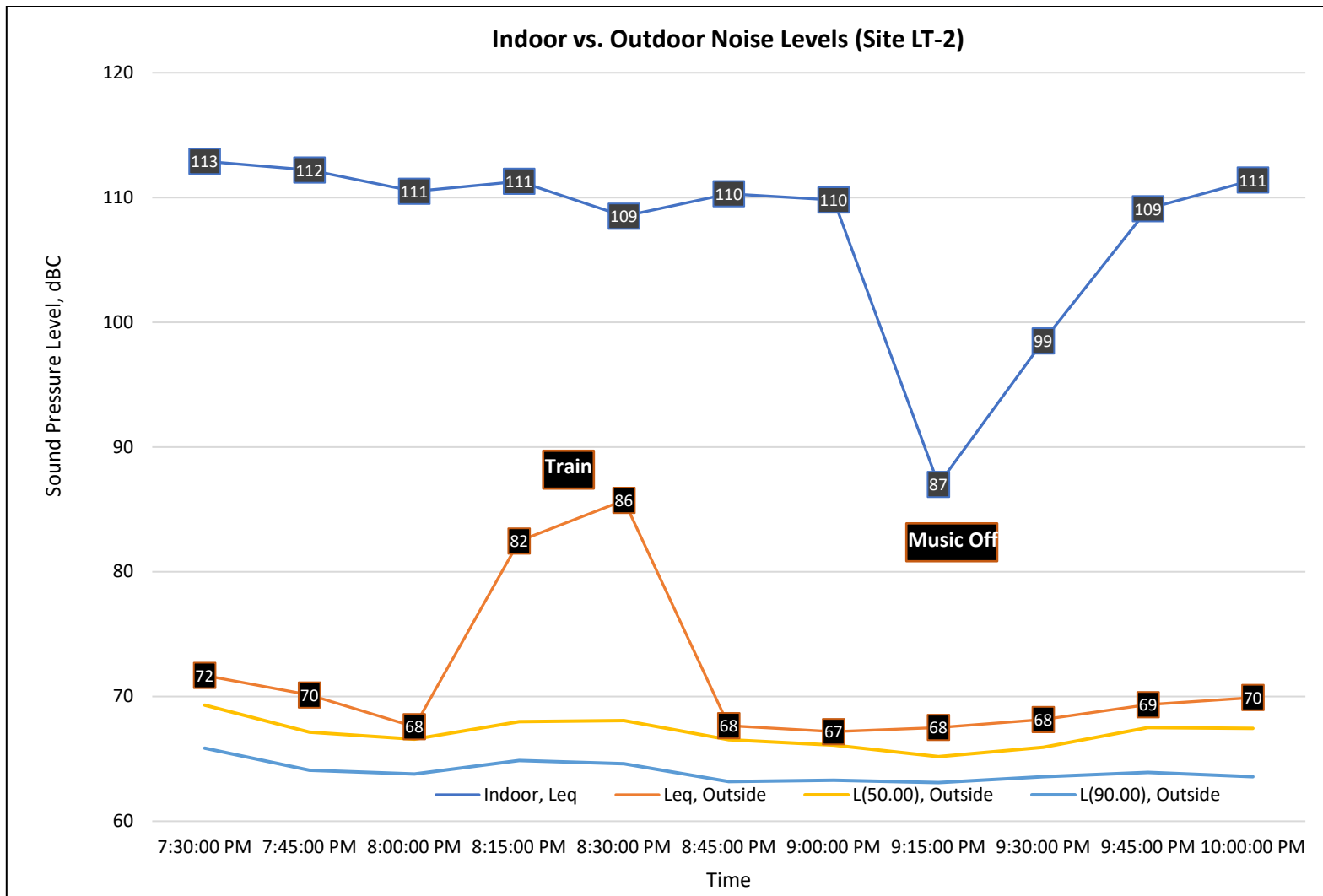


FIGURE 3B: SUMMARY OF NOISE MEASUREMENT DATA (LT-2, dBC)

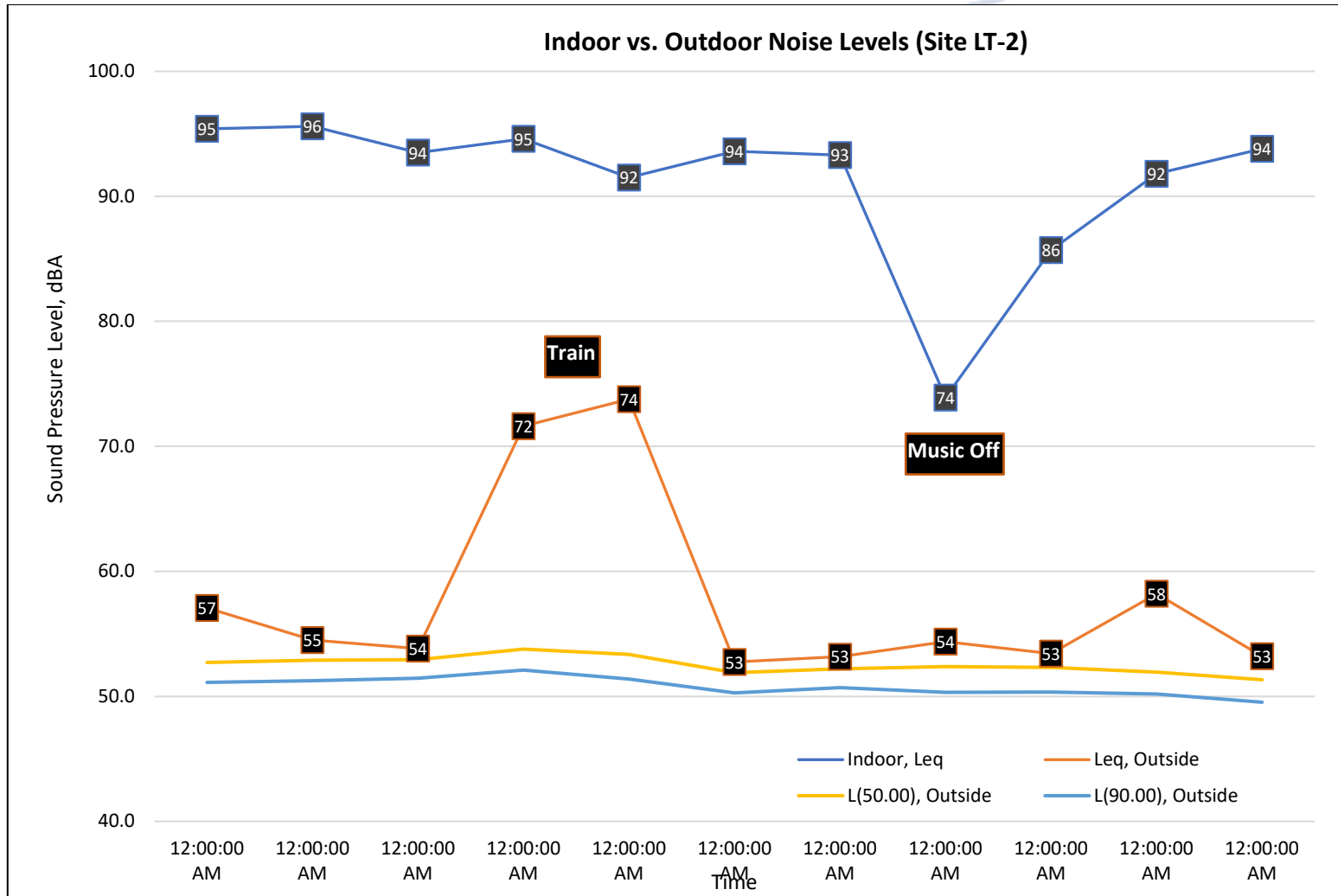


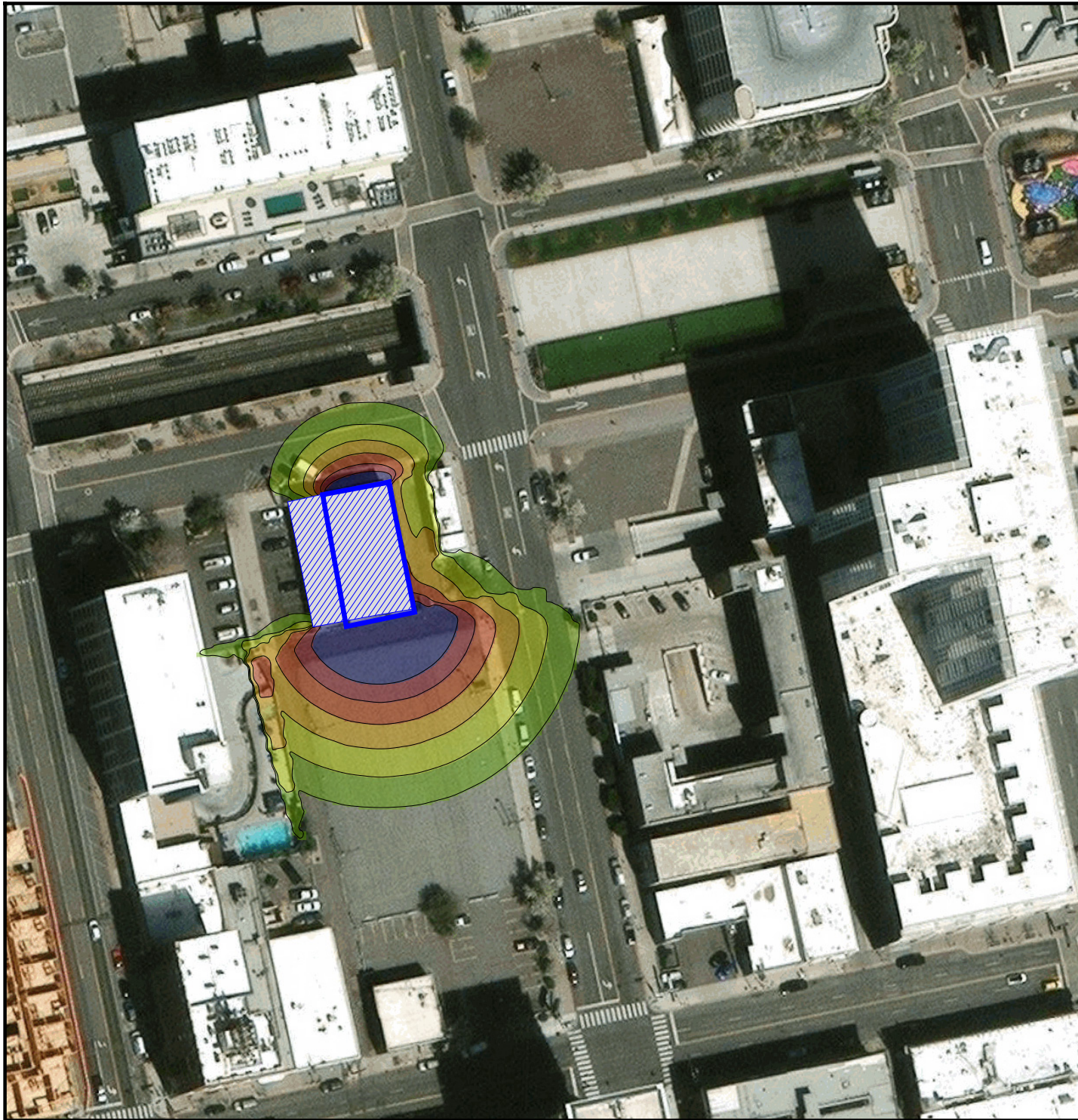
FIGURE 3C: SUMMARY OF NOISE MEASUREMENT DATA (LT-2, dBA)

REVIEW OF NOISE LEVELS

Based upon the **Figure 3** noise monitoring data, and on-site observations, exterior noise levels were found to range between approximately 67-72 dBC at sites LT-1 and LT-2 during the time that interior noise levels within the project building ranged between 109-113 dBC. However, based on site observations conducted at ST-1 and ST-2, noise from music was not the primary noise source. At ST-1, music was not audible above background noise levels. At ST-2, music was occasionally audible with maximum levels of around 65-67 dBC. The audible music at this location was observed to be coming through the two doors located on the north façade.

It should be noted that LT-2 experienced a period of elevated noise due to a train passage (82-86 dBC).

Based upon the **Appendix B** data, nighttime (10:00 p.m. to 7:00 a.m.) average noise levels were 67 dBC L_{eq} at site LT-1 and 70 dBC L_{eq} at site LT-2. Nighttime median (L_{50}) noise levels were found to be 65 dBC at both sites. Based on this finding, a noise limit of 65 dBC is considered appropriate to minimize the risk of annoyance to nearby noise-sensitive receptors. Assuming noise levels were limited to 65 dBC, this would result in an average noise level increase of no more than 3 dBC, an inaudible difference. Saxelby Acoustics mapped the predicted nightclub noise levels, assuming no modifications to the building exterior. The results of this analysis are shown on **Figure 4** for ground floor receivers and **Figure 5** for elevated receivers (above 3rd floor).



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


Figure 4

Existing - Ground Level
Leq, dB(C)

Noise Level, dB(A)

| | | |
|------|--|-------|
| 65 < | | <= 67 |
| 67 < | | <= 69 |
| 69 < | | <= 71 |
| 71 < | | <= 73 |
| 73 < | | <= 75 |
| 75 < | | |

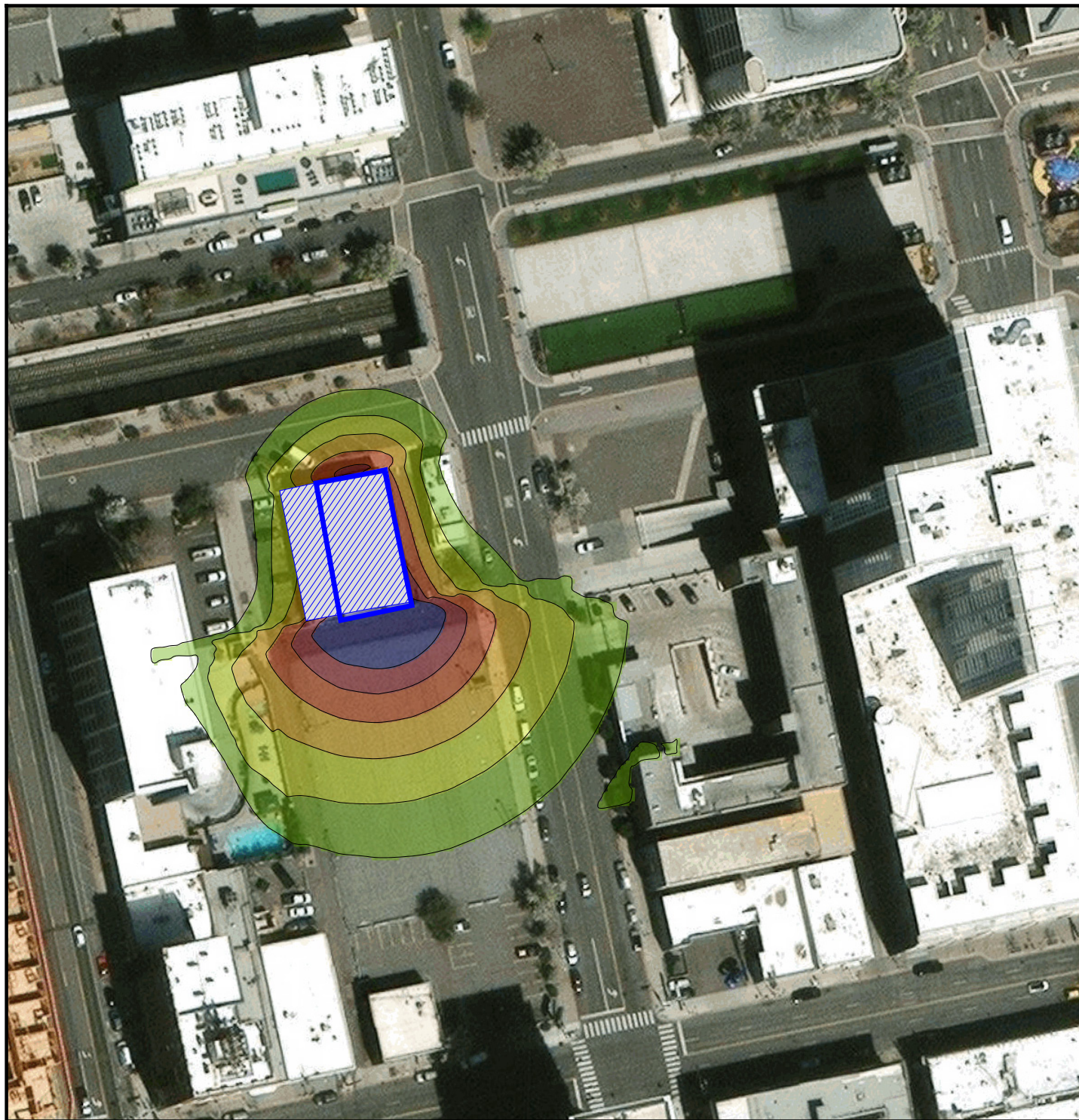
Legend

-  Project Building
-  Project Site
-  Sound Wall
-  Project Site

Scale 1:109

0 20 40 80 120 160 feet





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


Figure 5

Existing - Elevated Receptors
Leq, dB(C)

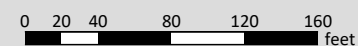
Noise Level, dB(A)

| | |
|------|-------|
| 65 < | <= 67 |
| 67 < | <= 69 |
| 69 < | <= 71 |
| 71 < | <= 73 |
| 73 < | <= 75 |
| 75 < | |

Legend

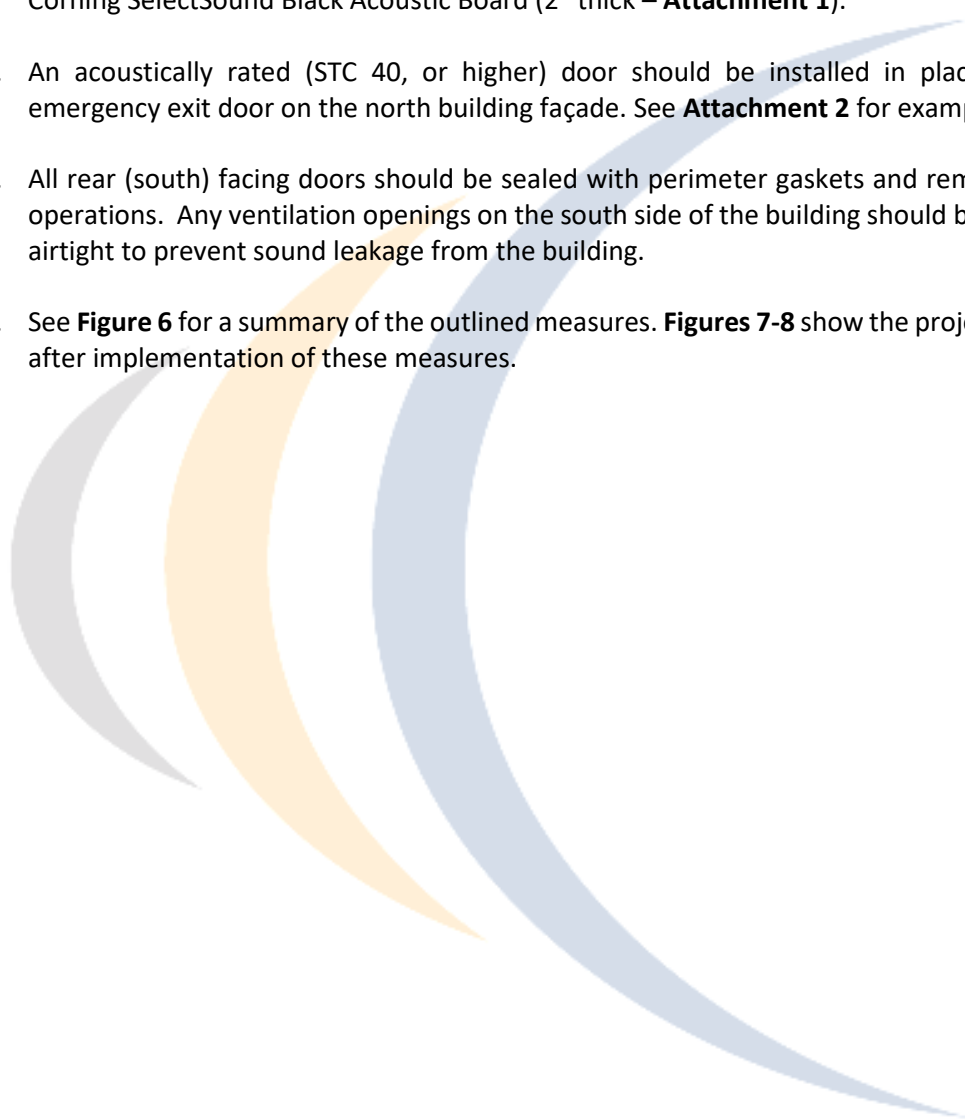
-  Project Building
-  Project Site
-  Sound Wall
-  Project Site

Scale 1:105



NOISE CONTROL MEASURES

We recommend the following measures to improve overall noise control of the facility:

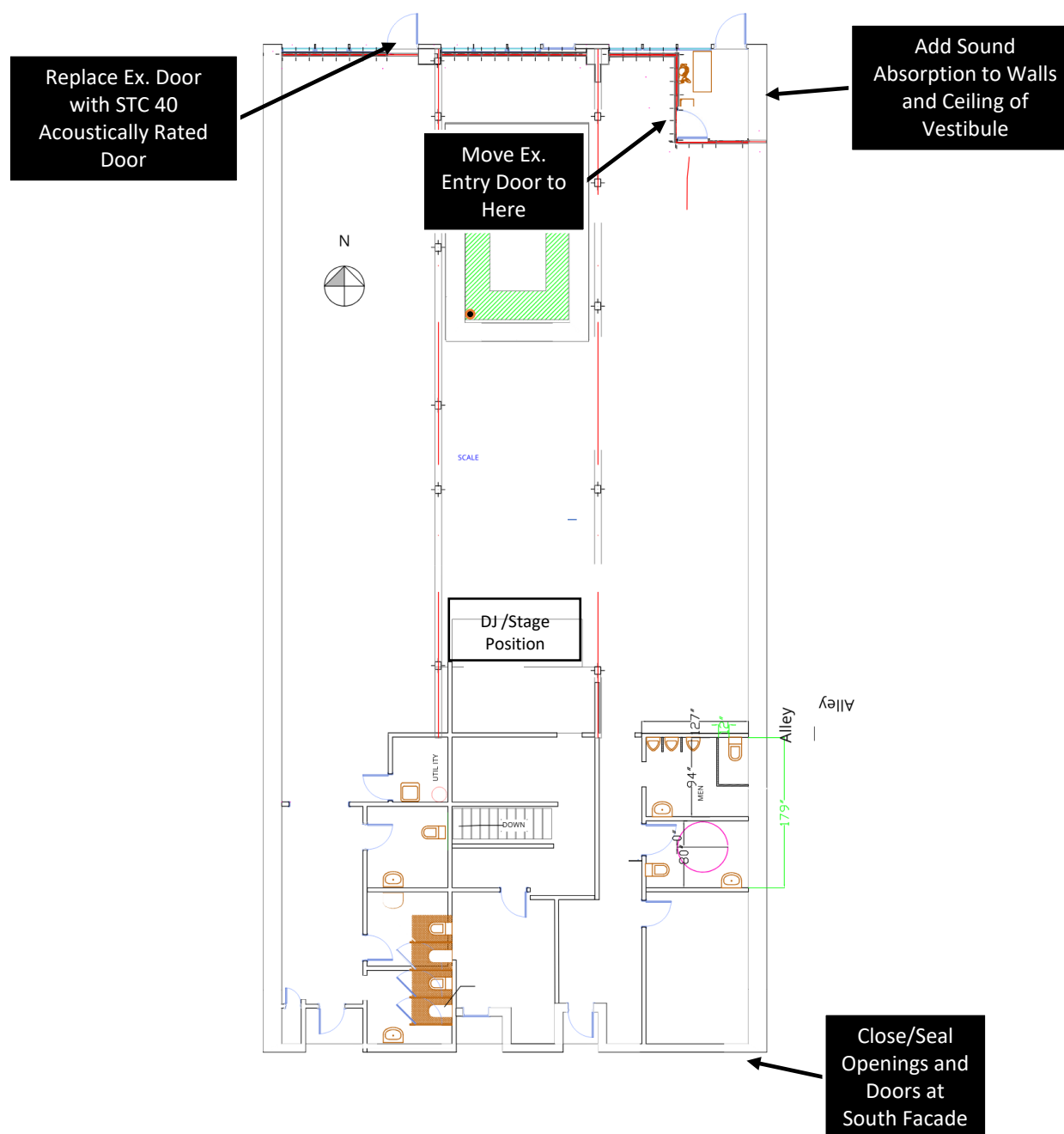
1. The Entry Vestibule should have the secondary (interior) door relocated to the west wall to create an acoustically baffled entry. The vestibule should be lined with 2" fiberglass board such as Owens Corning SelectSound Black Acoustic Board (2" thick – **Attachment 1**).
 2. An acoustically rated (STC 40, or higher) door should be installed in place of the existing emergency exit door on the north building façade. See **Attachment 2** for example door.
 3. All rear (south) facing doors should be sealed with perimeter gaskets and remain closed during operations. Any ventilation openings on the south side of the building should be closed or sealed airtight to prevent sound leakage from the building.
 4. See **Figure 6** for a summary of the outlined measures. **Figures 7-8** show the project noise contours after implementation of these measures.
- 

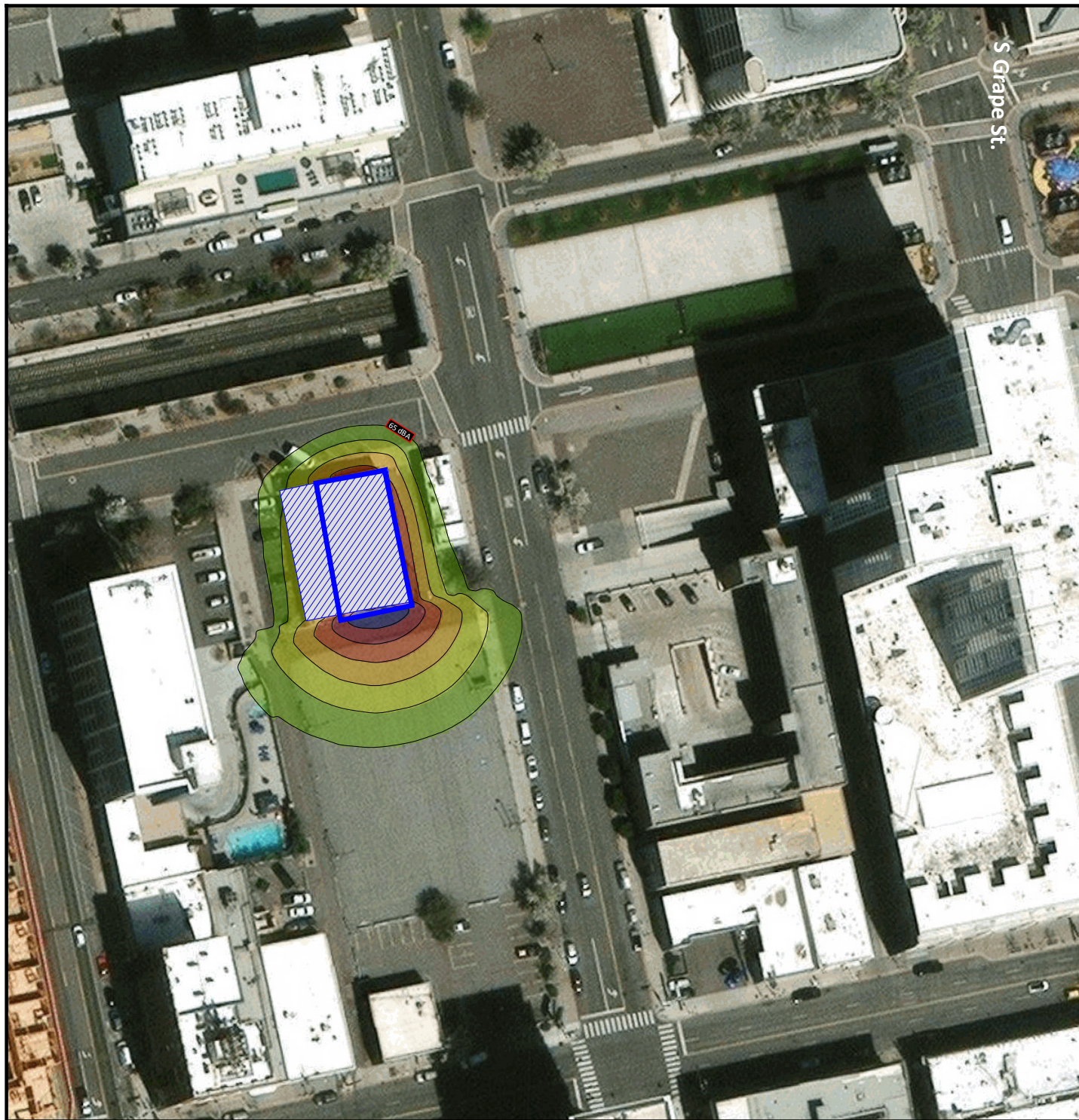
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Figure 6

Recommended Noise Control Measures





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City of Reno





Figure 7

With Noise Control - Elevated
Receptors Leq, dB(C)

Noise Level, dB(A)

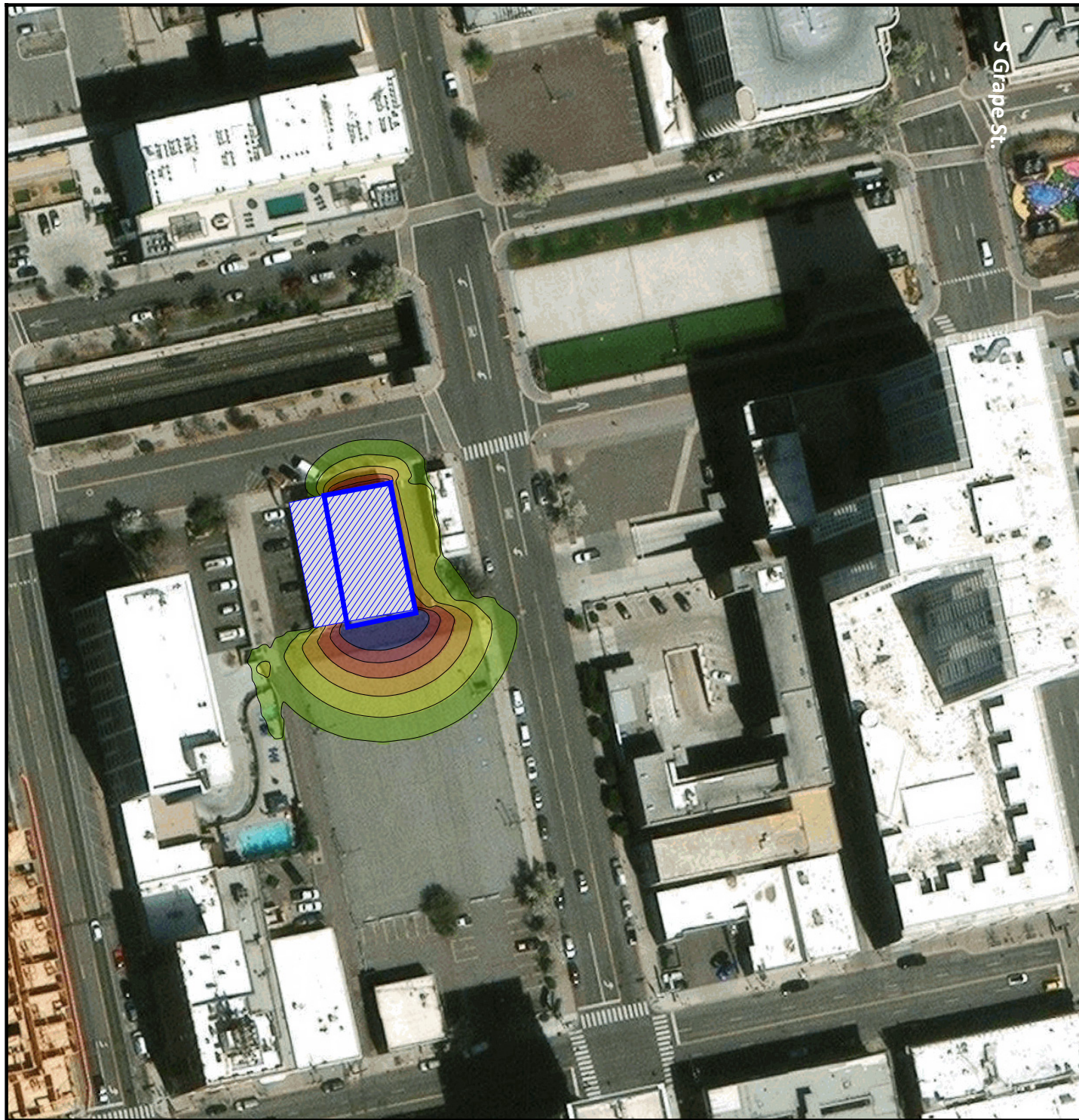
| | |
|------|-------|
| 65 < | <= 67 |
| 67 < | <= 69 |
| 69 < | <= 71 |
| 71 < | <= 73 |
| 73 < | <= 75 |
| 75 < | |

Legend

-  Project Building
-  Project Site
-  Sound Wall
-  Project Site

Scale 1:105





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


Figure 8

With Noise Control - Ground
Level Leq, dB(C)

Noise Level, dB(A)

| | | |
|------|--|-------|
| 65 < | | <= 67 |
| 67 < | | <= 69 |
| 69 < | | <= 71 |
| 71 < | | <= 73 |
| 73 < | | <= 75 |
| 75 < | | |

Legend

-  Project Building
-  Project Site
-  Sound Wall
-  Project Site

Scale 1:109

0 20 40 80 120 160 feet



CONCLUSIONS

The following improvements are recommended to minimize noise from exiting the facility during operations:

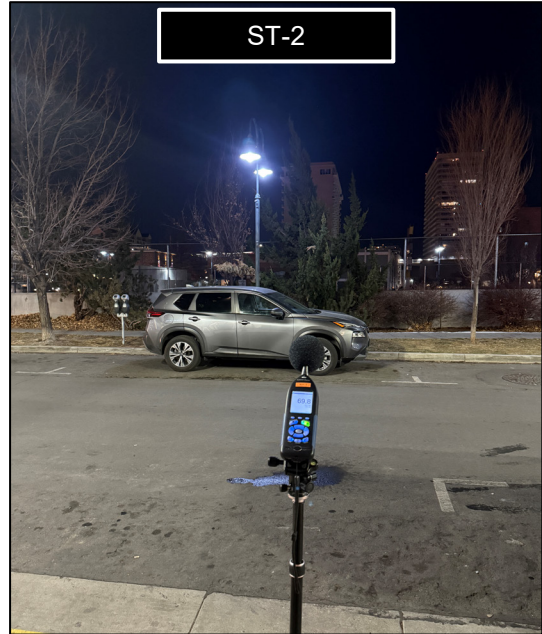
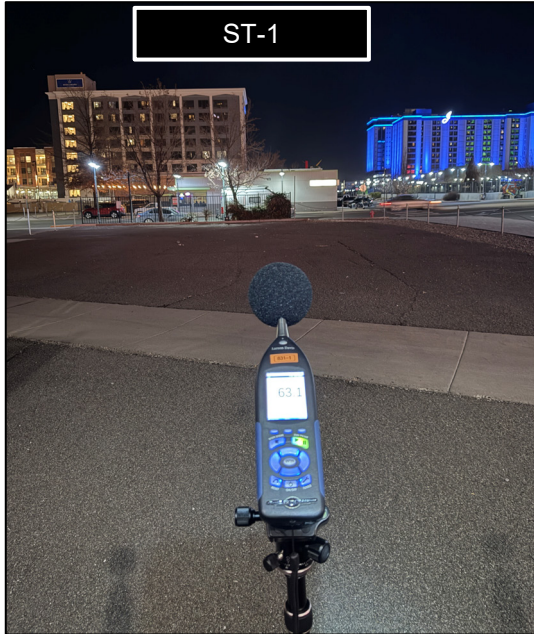
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Appendix A: Acoustical Terminology

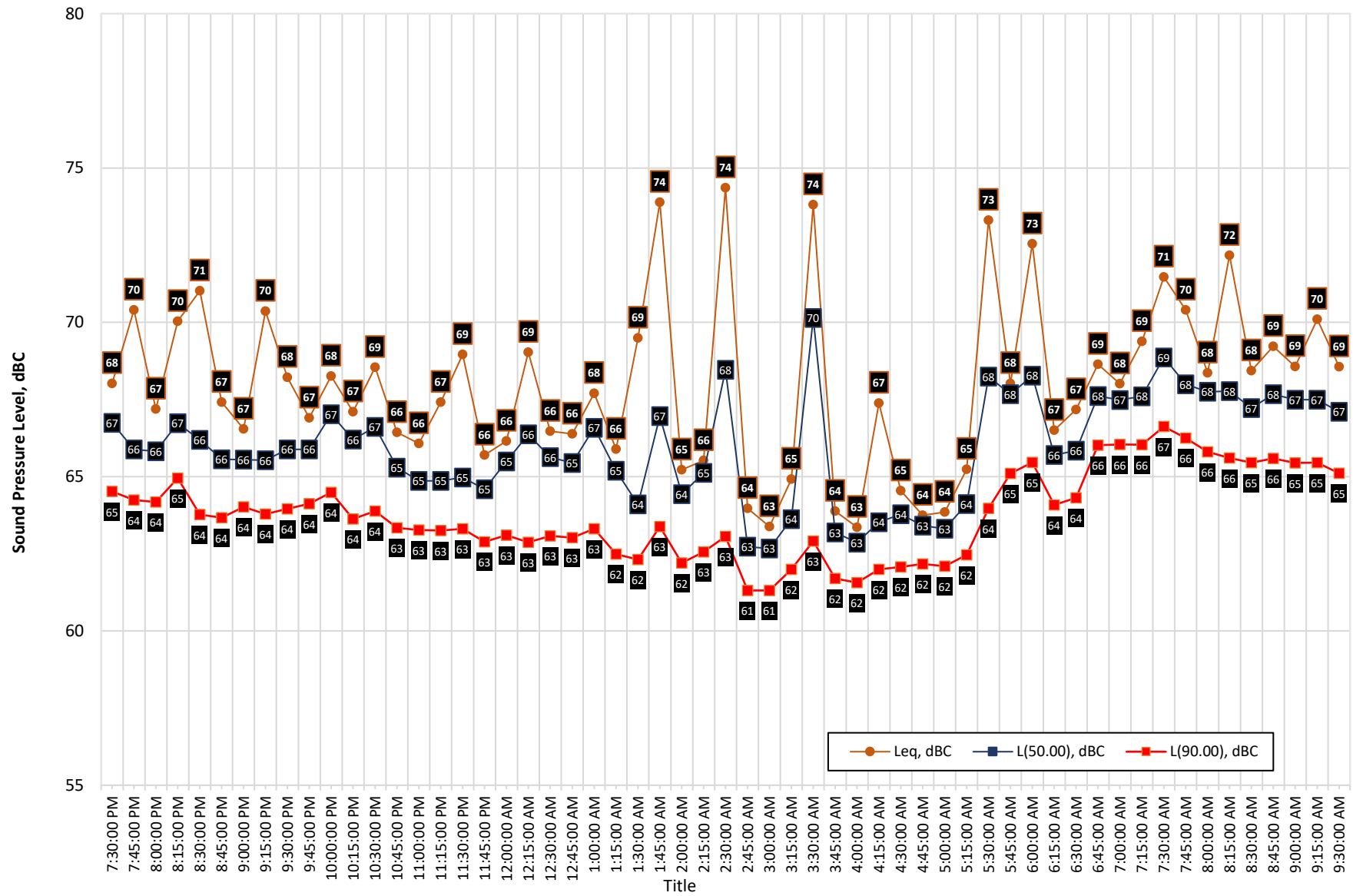
| | |
|-----------------------------|--|
| Acoustics | The science of sound. |
| Ambient Noise | The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study. |
| ASTC | Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic. |
| Attenuation | The reduction of an acoustic signal. |
| A-Weighting | A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. |
| Decibel or dB | Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. |
| CNEL | Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA. |
| DNL | See definition of Ldn. |
| IIC | Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic. |
| Frequency | The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz). |
| Ldn | Day/Night Average Sound Level. Similar to CNEL but with no evening weighting. |
| Leq | Equivalent or energy-averaged sound level. |
| Lmax | The highest root-mean-square (RMS) sound level measured over a given period of time. |
| L(n) | The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period. |
| Loudness | A subjective term for the sensation of the magnitude of sound. |
| NIC | Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation. |
| NNIC | Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation. |
| Noise | Unwanted sound. |
| NISR | Normalized Impact Sound Rating. Similar to IIC but includes a correction for room reverberation. |
| NRC | Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption. |
| RT60 | The time it takes reverberant sound to decay by 60 dB once the source has been removed. |
| Sabin | The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin. |
| SEL | Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event. |
| SPC | Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room. |
| STC | Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic. |
| Threshold of Hearing | The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing. |
| Threshold of Pain | Approximately 120 dB above the threshold of hearing. |
| Impulsive | Sound of short duration, usually less than one second, with an abrupt onset and rapid decay. |
| Simple Tone | Any sound which can be judged as audible as a single pitch or set of single pitches. |

Appendix B

Noise Monitoring Data



LT-1 (East) Measured Noise Levels



Interval data

Translated: 03-Feb-2025 13:20:21

Translated File: C:\Users\Tech 2\Desktop\SLM Data Mike\250114 214 W Commercial Nightclub\820-8.SLMDL

SLM: 820A0995

Firmware Rev.: 1.634 13Mar2002

Software: SlmUtility v2.01

Saxelby Acoustics, LLC

915 Highland Pointe Dr STE 25

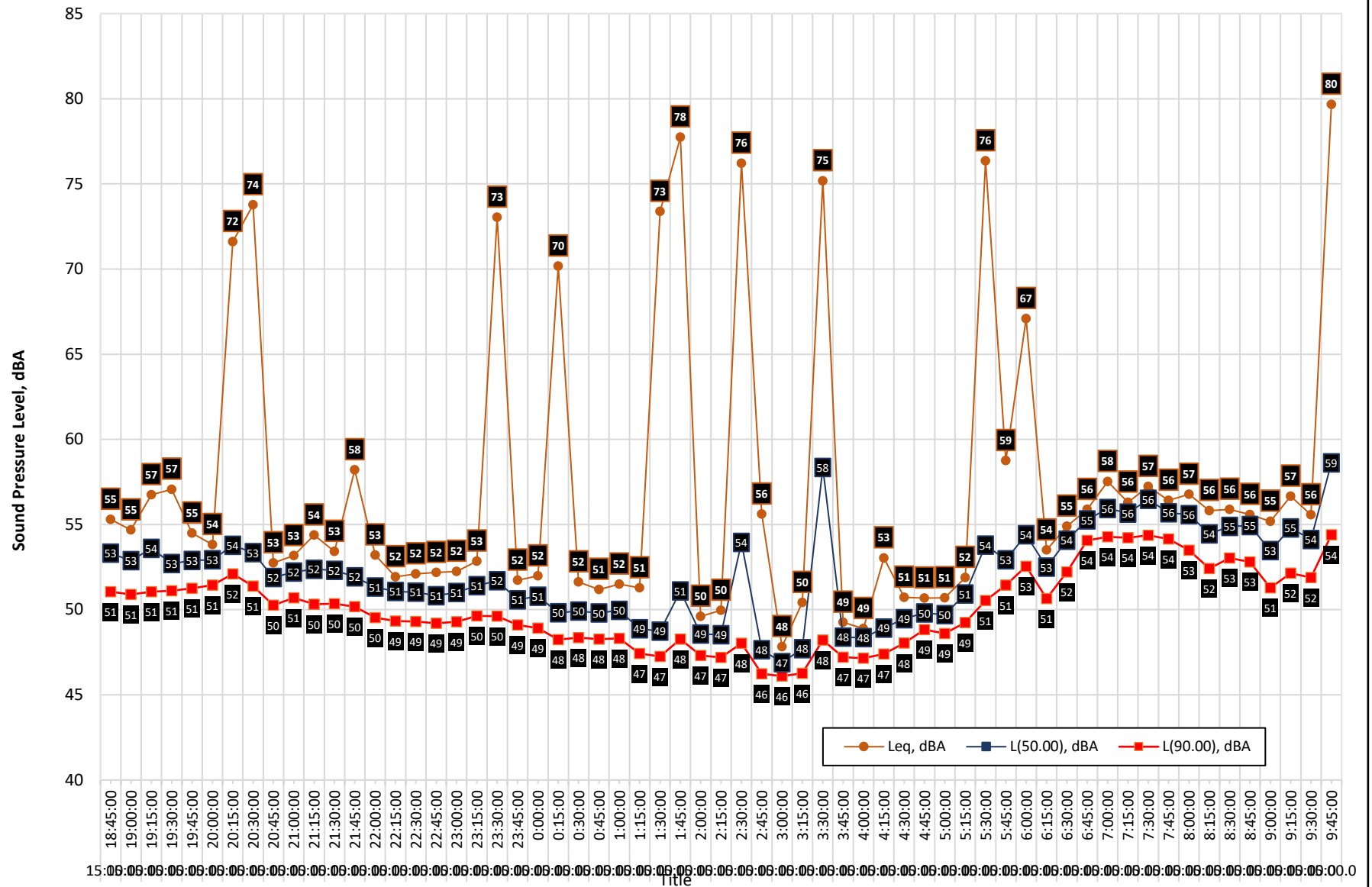
(916) 760-8821

820-8

| Rec # | Date | Duration | Time | Leq, dBC | 820-8 LT-1 (to East) | | |
|-------|-----------|----------|-------------|----------|----------------------|---------------|---------------|
| | | | | | Lmax, dBC | L(50.00), dBC | L(90.00), dBC |
| 2 | 30Jan2025 | 0 | 7:30:00 PM | 68 | 79 | 67 | 65 |
| 3 | 30Jan2025 | 0 | 7:45:00 PM | 70 | 91 | 66 | 64 |
| 4 | 30Jan2025 | 0 | 8:00:00 PM | 67 | 91 | 66 | 64 |
| 5 | 30Jan2025 | 0 | 8:15:00 PM | 70 | 86 | 67 | 65 |
| 6 | 30Jan2025 | 0 | 8:30:00 PM | 71 | 88 | 66 | 64 |
| 7 | 30Jan2025 | 0 | 8:45:00 PM | 67 | 83 | 66 | 64 |
| 8 | 30Jan2025 | 0 | 9:00:00 PM | 67 | 83 | 66 | 64 |
| 9 | 30Jan2025 | 0 | 9:15:00 PM | 70 | 88 | 66 | 64 |
| 10 | 30Jan2025 | 0 | 9:30:00 PM | 68 | 87 | 66 | 64 |
| 11 | 30Jan2025 | 0 | 9:45:00 PM | 67 | 83 | 66 | 64 |
| 12 | 30Jan2025 | 0 | 10:00:00 PM | 68 | 81 | 67 | 64 |
| 13 | 30Jan2025 | 0 | 10:15:00 PM | 67 | 81 | 66 | 64 |
| 14 | 30Jan2025 | 0 | 10:30:00 PM | 69 | 82 | 67 | 64 |
| 15 | 30Jan2025 | 0 | 10:45:00 PM | 66 | 81 | 65 | 63 |
| 16 | 30Jan2025 | 0 | 11:00:00 PM | 66 | 78 | 65 | 63 |
| 17 | 30Jan2025 | 0 | 11:15:00 PM | 67 | 87 | 65 | 63 |
| 18 | 30Jan2025 | 0 | 11:30:00 PM | 69 | 83 | 65 | 63 |
| 19 | 30Jan2025 | 0 | 11:45:00 PM | 66 | 82 | 65 | 63 |
| 20 | 31Jan2025 | 0 | 12:00:00 AM | 66 | 74 | 65 | 63 |
| 21 | 31Jan2025 | 0 | 12:15:00 AM | 69 | 88 | 66 | 63 |
| 22 | 31Jan2025 | 0 | 12:30:00 AM | 66 | 77 | 66 | 63 |
| 23 | 31Jan2025 | 0 | 12:45:00 AM | 66 | 86 | 65 | 63 |
| 24 | 31Jan2025 | 0 | 1:00:00 AM | 68 | 81 | 67 | 63 |
| 25 | 31Jan2025 | 0 | 1:15:00 AM | 66 | 73 | 65 | 62 |
| 26 | 31Jan2025 | 0 | 1:30:00 AM | 69 | 87 | 64 | 62 |
| 27 | 31Jan2025 | 0 | 1:45:00 AM | 74 | 91 | 67 | 63 |
| 28 | 31Jan2025 | 0 | 2:00:00 AM | 65 | 76 | 64 | 62 |
| 29 | 31Jan2025 | 0 | 2:15:00 AM | 66 | 76 | 65 | 63 |
| 30 | 31Jan2025 | 0 | 2:30:00 AM | 74 | 86 | 68 | 63 |
| 31 | 31Jan2025 | 0 | 2:45:00 AM | 64 | 82 | 63 | 61 |

| | | | | | | | |
|----|-----------|---|------------|-----------|-----------|-----------|-----------|
| 32 | 31Jan2025 | 0 | 3:00:00 AM | 63 | 82 | 63 | 61 |
| 33 | 31Jan2025 | 0 | 3:15:00 AM | 65 | 75 | 64 | 62 |
| 34 | 31Jan2025 | 0 | 3:30:00 AM | 74 | 88 | 70 | 63 |
| 35 | 31Jan2025 | 0 | 3:45:00 AM | 64 | 76 | 63 | 62 |
| 36 | 31Jan2025 | 0 | 4:00:00 AM | 63 | 74 | 63 | 62 |
| 37 | 31Jan2025 | 0 | 4:15:00 AM | 67 | 91 | 64 | 62 |
| 38 | 31Jan2025 | 0 | 4:30:00 AM | 65 | 75 | 64 | 62 |
| 39 | 31Jan2025 | 0 | 4:45:00 AM | 64 | 72 | 63 | 62 |
| 40 | 31Jan2025 | 0 | 5:00:00 AM | 64 | 72 | 63 | 62 |
| 41 | 31Jan2025 | 0 | 5:15:00 AM | 65 | 80 | 64 | 62 |
| 42 | 31Jan2025 | 0 | 5:30:00 AM | 73 | 88 | 68 | 64 |
| 43 | 31Jan2025 | 0 | 5:45:00 AM | 68 | 79 | 68 | 65 |
| 44 | 31Jan2025 | 0 | 6:00:00 AM | 73 | 96 | 68 | 65 |
| 45 | 31Jan2025 | 0 | 6:15:00 AM | 67 | 83 | 66 | 64 |
| 46 | 31Jan2025 | 0 | 6:30:00 AM | 67 | 82 | 66 | 64 |
| 47 | 31Jan2025 | 0 | 6:45:00 AM | 69 | 82 | 68 | 66 |
| 48 | 31Jan2025 | 0 | 7:00:00 AM | 68 | 75 | 67 | 66 |
| 49 | 31Jan2025 | 0 | 7:15:00 AM | 69 | 84 | 68 | 66 |
| 50 | 31Jan2025 | 0 | 7:30:00 AM | 71 | 89 | 69 | 67 |
| 51 | 31Jan2025 | 0 | 7:45:00 AM | 70 | 90 | 68 | 66 |
| 52 | 31Jan2025 | 0 | 8:00:00 AM | 68 | 77 | 68 | 66 |
| 53 | 31Jan2025 | 0 | 8:15:00 AM | 72 | 92 | 68 | 66 |
| 54 | 31Jan2025 | 0 | 8:30:00 AM | 68 | 85 | 67 | 65 |
| 55 | 31Jan2025 | 0 | 8:45:00 AM | 69 | 89 | 68 | 66 |
| 56 | 31Jan2025 | 0 | 9:00:00 AM | 69 | 82 | 67 | 65 |
| 57 | 31Jan2025 | 0 | 9:15:00 AM | 70 | 87 | 67 | 65 |
| 58 | 31Jan2025 | 0 | 9:30:00 AM | 69 | 82 | 67 | 65 |
| 59 | 31Jan2025 | 0 | 9:45:00 AM | 77 | 90 | 71 | 67 |
| | | | | 67 | 81 | 65 | 63 |

LT-2 (North) Measured Noise Levels



Interval data

Translated: 03-Feb-2025 13:35:24

Translated File: C:\Users\Tech 2\Desktop\SLM Data Mike\250114 214 W Commercial Nightclub\820-1.SLMD

SLM: 820A1220

Firmware Rev.: 1.634 13Mar2002

Software: SlmUtility v2.01

Saxelby Acoustics

915 Highland Pointe Dr Ste 25

Roseville, CA 95678

820-1 Intv

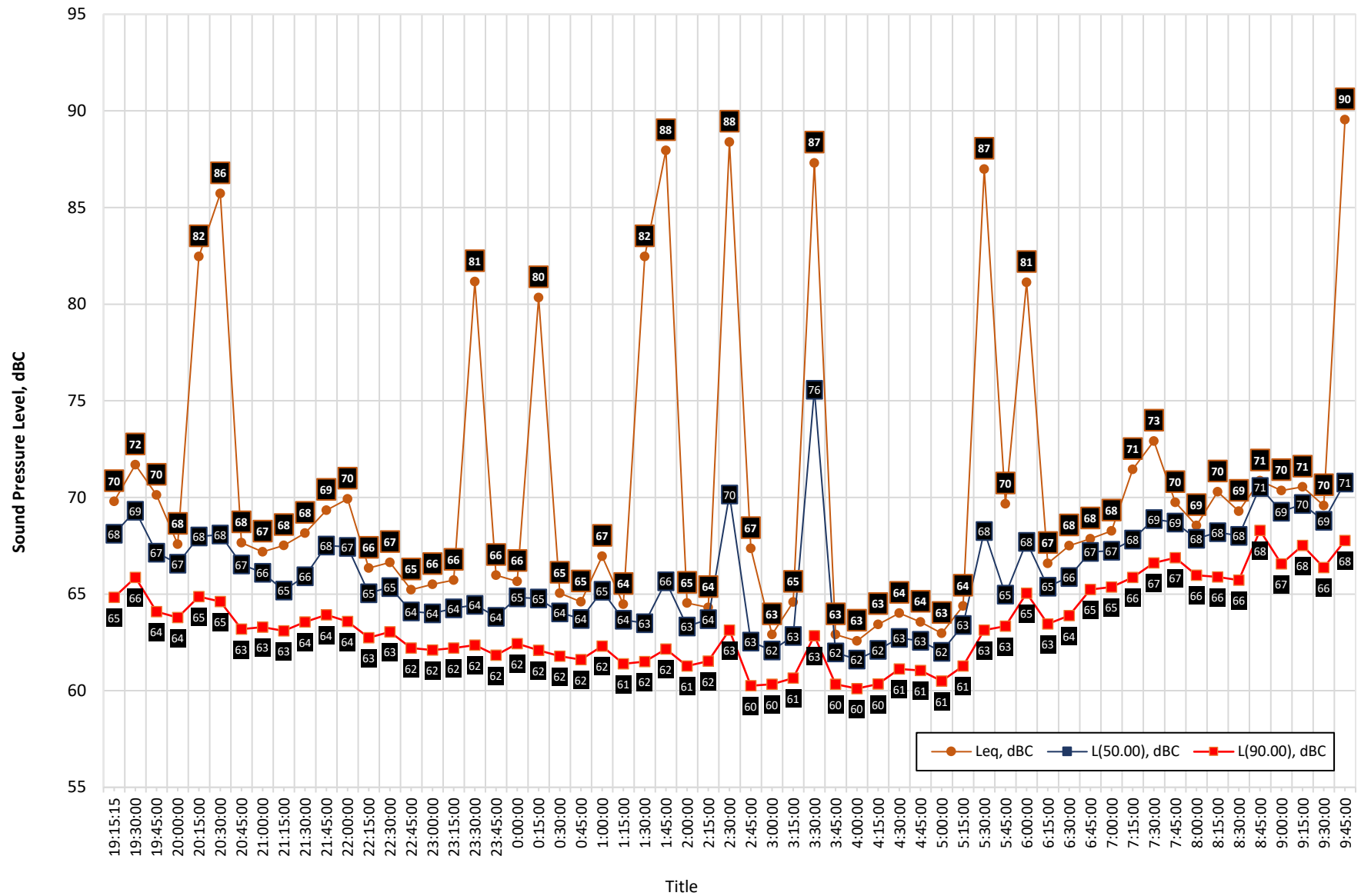
dBA

820-1 LT-2 (to North)

| Rec # | Date | Duration | Time | Leq, dBA | Lmax, dBA | L(50.00), dBA | L(90.00), dBA |
|-------|-----------|----------|----------|----------|-----------|---------------|---------------|
| 2 | 30Jan2025 | 15:00.0 | 18:45:00 | 55 | 75 | 53 | 51 |
| 3 | 30Jan2025 | 15:00.0 | 19:00:00 | 55 | 72 | 53 | 51 |
| 4 | 30Jan2025 | 15:00.0 | 19:15:00 | 57 | 77 | 54 | 51 |
| 5 | 30Jan2025 | 15:00.0 | 19:30:00 | 57 | 82 | 53 | 51 |
| 6 | 30Jan2025 | 15:00.0 | 19:45:00 | 55 | 72 | 53 | 51 |
| 7 | 30Jan2025 | 15:00.0 | 20:00:00 | 54 | 66 | 53 | 51 |
| 8 | 30Jan2025 | 15:00.0 | 20:15:00 | 72 | 88 | 54 | 52 |
| 9 | 30Jan2025 | 15:00.0 | 20:30:00 | 74 | 91 | 53 | 51 |
| 10 | 30Jan2025 | 15:00.0 | 20:45:00 | 53 | 64 | 52 | 50 |
| 11 | 30Jan2025 | 15:00.0 | 21:00:00 | 53 | 67 | 52 | 51 |
| 12 | 30Jan2025 | 15:00.0 | 21:15:00 | 54 | 72 | 52 | 50 |
| 13 | 30Jan2025 | 15:00.0 | 21:30:00 | 53 | 70 | 52 | 50 |
| 14 | 30Jan2025 | 15:00.0 | 21:45:00 | 58 | 82 | 52 | 50 |
| 15 | 30Jan2025 | 15:00.0 | 22:00:00 | 53 | 73 | 51 | 50 |
| 16 | 30Jan2025 | 15:00.0 | 22:15:00 | 52 | 70 | 51 | 49 |
| 17 | 30Jan2025 | 15:00.0 | 22:30:00 | 52 | 64 | 51 | 49 |
| 18 | 30Jan2025 | 15:00.0 | 22:45:00 | 52 | 63 | 51 | 49 |
| 19 | 30Jan2025 | 15:00.0 | 23:00:00 | 52 | 62 | 51 | 49 |
| 20 | 30Jan2025 | 15:00.0 | 23:15:00 | 53 | 65 | 51 | 50 |
| 21 | 30Jan2025 | 15:00.0 | 23:30:00 | 73 | 90 | 52 | 50 |
| 22 | 30Jan2025 | 15:00.0 | 23:45:00 | 52 | 62 | 51 | 49 |
| 23 | 31Jan2025 | 15:00.0 | 0:00:00 | 52 | 64 | 51 | 49 |
| 24 | 31Jan2025 | 15:00.0 | 0:15:00 | 70 | 94 | 50 | 48 |
| 25 | 31Jan2025 | 15:00.0 | 0:30:00 | 52 | 68 | 50 | 48 |
| 26 | 31Jan2025 | 15:00.0 | 0:45:00 | 51 | 67 | 50 | 48 |
| 27 | 31Jan2025 | 15:00.0 | 1:00:00 | 52 | 64 | 50 | 48 |
| 28 | 31Jan2025 | 15:00.0 | 1:15:00 | 51 | 68 | 49 | 47 |
| 29 | 31Jan2025 | 15:00.0 | 1:30:00 | 73 | 91 | 49 | 47 |
| 30 | 31Jan2025 | 15:00.0 | 1:45:00 | 78 | 98 | 51 | 48 |
| 31 | 31Jan2025 | 15:00.0 | 2:00:00 | 50 | 64 | 49 | 47 |

| | | | | | | | |
|---------------|-----------|---------|---------|----|-----|----|----|
| 32 | 31Jan2025 | 15:00.0 | 2:15:00 | 50 | 63 | 49 | 47 |
| 33 | 31Jan2025 | 15:00.0 | 2:30:00 | 76 | 92 | 54 | 48 |
| 34 | 31Jan2025 | 15:00.0 | 2:45:00 | 56 | 85 | 48 | 46 |
| 35 | 31Jan2025 | 15:00.0 | 3:00:00 | 48 | 62 | 47 | 46 |
| 36 | 31Jan2025 | 15:00.0 | 3:15:00 | 50 | 65 | 48 | 46 |
| 37 | 31Jan2025 | 15:00.0 | 3:30:00 | 75 | 95 | 58 | 48 |
| 38 | 31Jan2025 | 15:00.0 | 3:45:00 | 49 | 63 | 48 | 47 |
| 39 | 31Jan2025 | 15:00.0 | 4:00:00 | 49 | 64 | 48 | 47 |
| 40 | 31Jan2025 | 15:00.0 | 4:15:00 | 53 | 75 | 49 | 47 |
| 41 | 31Jan2025 | 15:00.0 | 4:30:00 | 51 | 66 | 49 | 48 |
| 42 | 31Jan2025 | 15:00.0 | 4:45:00 | 51 | 63 | 50 | 49 |
| 43 | 31Jan2025 | 15:00.0 | 5:00:00 | 51 | 66 | 50 | 49 |
| 44 | 31Jan2025 | 15:00.0 | 5:15:00 | 52 | 66 | 51 | 49 |
| 45 | 31Jan2025 | 15:00.0 | 5:30:00 | 76 | 93 | 54 | 51 |
| 46 | 31Jan2025 | 15:00.0 | 5:45:00 | 59 | 86 | 53 | 51 |
| 47 | 31Jan2025 | 15:00.0 | 6:00:00 | 67 | 92 | 54 | 53 |
| 48 | 31Jan2025 | 15:00.0 | 6:15:00 | 54 | 70 | 53 | 51 |
| 49 | 31Jan2025 | 15:00.0 | 6:30:00 | 55 | 70 | 54 | 52 |
| 50 | 31Jan2025 | 15:00.0 | 6:45:00 | 56 | 70 | 55 | 54 |
| 51 | 31Jan2025 | 15:00.0 | 7:00:00 | 58 | 73 | 56 | 54 |
| 52 | 31Jan2025 | 15:00.0 | 7:15:00 | 56 | 72 | 56 | 54 |
| 53 | 31Jan2025 | 15:00.0 | 7:30:00 | 57 | 72 | 56 | 54 |
| 54 | 31Jan2025 | 15:00.0 | 7:45:00 | 56 | 69 | 56 | 54 |
| 55 | 31Jan2025 | 15:00.0 | 8:00:00 | 57 | 72 | 56 | 53 |
| 56 | 31Jan2025 | 15:00.0 | 8:15:00 | 56 | 70 | 54 | 52 |
| 57 | 31Jan2025 | 15:00.0 | 8:30:00 | 56 | 67 | 55 | 53 |
| 58 | 31Jan2025 | 15:00.0 | 8:45:00 | 56 | 70 | 55 | 53 |
| 59 | 31Jan2025 | 15:00.0 | 9:00:00 | 55 | 72 | 53 | 51 |
| 60 | 31Jan2025 | 15:00.0 | 9:15:00 | 57 | 67 | 55 | 52 |
| 61 | 31Jan2025 | 15:00.0 | 9:30:00 | 56 | 70 | 54 | 52 |
| 62 | 31Jan2025 | 15:00.0 | 9:45:00 | 80 | 105 | 59 | 54 |
| Night Average | | | | 57 | 73 | 51 | 49 |

LT-2 (North) Measured Noise Levels



Interval data

Translated: 03-Feb-2025 13:26:39

Translated File: C:\Users\Tech 2\Desktop\SLM Data Mike\250114 214 W Commercial Nightclub\820-3.SLMDL

SLM: 820A0818

Firmware Rev.: 1.500 18Sep1998

Software: SlmUtility v2.01

Saxelby Acoustics

915 Highland Drive

Roseville, CA

820-3 Intv

820-3 (LT-2 to North)

| Rec # | Date | Duration | Time | Leq, dBC | Lmax, dBC | L(50.00), dBC | L(90.00), dBC |
|-------|-----------|----------|----------|----------|-----------|---------------|---------------|
| 1 | 30Jan2025 | 14:44.0 | 19:15:15 | 70 | 93 | 68 | 65 |
| 2 | 30Jan2025 | 15:00.0 | 19:30:00 | 72 | 87 | 69 | 66 |
| 3 | 30Jan2025 | 15:00.0 | 19:45:00 | 70 | 92 | 67 | 64 |
| 4 | 30Jan2025 | 15:00.0 | 20:00:00 | 68 | 79 | 67 | 64 |
| 5 | 30Jan2025 | 15:00.0 | 20:15:00 | 82 | 101 | 68 | 65 |
| 6 | 30Jan2025 | 15:00.0 | 20:30:00 | 86 | 105 | 68 | 65 |
| 7 | 30Jan2025 | 15:00.0 | 20:45:00 | 68 | 78 | 67 | 63 |
| 8 | 30Jan2025 | 15:00.0 | 21:00:00 | 67 | 81 | 66 | 63 |
| 9 | 30Jan2025 | 15:00.0 | 21:15:00 | 68 | 87 | 65 | 63 |
| 10 | 30Jan2025 | 15:00.0 | 21:30:00 | 68 | 88 | 66 | 64 |
| 11 | 30Jan2025 | 15:00.0 | 21:45:00 | 69 | 89 | 68 | 64 |
| 12 | 30Jan2025 | 15:00.0 | 22:00:00 | 70 | 91 | 67 | 64 |
| 13 | 30Jan2025 | 15:00.0 | 22:15:00 | 66 | 91 | 65 | 63 |
| 14 | 30Jan2025 | 15:00.0 | 22:30:00 | 67 | 80 | 65 | 63 |
| 15 | 30Jan2025 | 15:00.0 | 22:45:00 | 65 | 84 | 64 | 62 |
| 16 | 30Jan2025 | 15:00.0 | 23:00:00 | 66 | 82 | 64 | 62 |
| 17 | 30Jan2025 | 15:00.0 | 23:15:00 | 66 | 80 | 64 | 62 |
| 18 | 30Jan2025 | 15:00.0 | 23:30:00 | 81 | 98 | 64 | 62 |
| 19 | 30Jan2025 | 15:00.0 | 23:45:00 | 66 | 87 | 64 | 62 |
| 20 | 31Jan2025 | 15:00.0 | 0:00:00 | 66 | 78 | 65 | 62 |
| 21 | 31Jan2025 | 15:00.0 | 0:15:00 | 80 | 105 | 65 | 62 |
| 22 | 31Jan2025 | 15:00.0 | 0:30:00 | 65 | 88 | 64 | 62 |
| 23 | 31Jan2025 | 15:00.0 | 0:45:00 | 65 | 77 | 64 | 62 |
| 24 | 31Jan2025 | 15:00.0 | 1:00:00 | 67 | 82 | 65 | 62 |
| 25 | 31Jan2025 | 15:00.0 | 1:15:00 | 64 | 77 | 64 | 61 |
| 26 | 31Jan2025 | 15:00.0 | 1:30:00 | 82 | 103 | 63 | 62 |
| 27 | 31Jan2025 | 15:00.0 | 1:45:00 | 88 | 109 | 66 | 62 |
| 28 | 31Jan2025 | 15:00.0 | 2:00:00 | 65 | 84 | 63 | 61 |
| 29 | 31Jan2025 | 15:00.0 | 2:15:00 | 64 | 76 | 64 | 62 |
| 30 | 31Jan2025 | 15:00.0 | 2:30:00 | 88 | 102 | 70 | 63 |

| | | | | | | | |
|---------------|-----------|---------|----------|----|-----|----|----|
| 31 | 31Jan2025 | 15:00.0 | 2:45:00 | 67 | 93 | 63 | 60 |
| 32 | 31Jan2025 | 15:00.0 | 3:00:00 | 63 | 77 | 62 | 60 |
| 33 | 31Jan2025 | 15:00.0 | 3:15:00 | 65 | 80 | 63 | 61 |
| 34 | 31Jan2025 | 15:00.0 | 3:30:00 | 87 | 105 | 76 | 63 |
| 35 | 31Jan2025 | 15:00.0 | 3:45:00 | 63 | 78 | 62 | 60 |
| 36 | 31Jan2025 | 15:00.0 | 4:00:00 | 63 | 76 | 62 | 60 |
| 37 | 31Jan2025 | 15:00.0 | 4:15:00 | 63 | 81 | 62 | 60 |
| 38 | 31Jan2025 | 15:00.0 | 4:30:00 | 64 | 82 | 63 | 61 |
| 39 | 31Jan2025 | 15:00.0 | 4:45:00 | 64 | 78 | 63 | 61 |
| 40 | 31Jan2025 | 15:00.0 | 5:00:00 | 63 | 82 | 62 | 61 |
| 41 | 31Jan2025 | 15:00.0 | 5:15:00 | 64 | 74 | 63 | 61 |
| 42 | 31Jan2025 | 15:00.0 | 5:30:00 | 87 | 108 | 68 | 63 |
| 43 | 31Jan2025 | 15:00.0 | 5:45:00 | 70 | 96 | 65 | 63 |
| 44 | 31Jan2025 | 15:00.0 | 6:00:00 | 81 | 109 | 68 | 65 |
| 45 | 31Jan2025 | 15:00.0 | 6:15:00 | 67 | 80 | 65 | 63 |
| 46 | 31Jan2025 | 15:00.0 | 6:30:00 | 68 | 81 | 66 | 64 |
| 47 | 31Jan2025 | 15:00.0 | 6:45:00 | 68 | 80 | 67 | 65 |
| 48 | 31Jan2025 | 15:00.0 | 7:00:00 | 68 | 82 | 67 | 65 |
| 49 | 31Jan2025 | 15:00.0 | 7:15:00 | 71 | 93 | 68 | 66 |
| 50 | 31Jan2025 | 15:00.0 | 7:30:00 | 73 | 97 | 69 | 67 |
| 51 | 31Jan2025 | 15:00.0 | 7:45:00 | 70 | 86 | 69 | 67 |
| 52 | 31Jan2025 | 15:00.0 | 8:00:00 | 69 | 79 | 68 | 66 |
| 53 | 31Jan2025 | 15:00.0 | 8:15:00 | 70 | 86 | 68 | 66 |
| 54 | 31Jan2025 | 15:00.0 | 8:30:00 | 69 | 81 | 68 | 66 |
| 55 | 31Jan2025 | 15:00.0 | 8:45:00 | 71 | 82 | 71 | 68 |
| 56 | 31Jan2025 | 15:00.0 | 9:00:00 | 70 | 85 | 69 | 67 |
| 57 | 31Jan2025 | 15:00.0 | 9:15:00 | 71 | 81 | 70 | 68 |
| 58 | 31Jan2025 | 15:00.0 | 9:30:00 | 70 | 77 | 69 | 66 |
| 59 | 31Jan2025 | 15:00.0 | 9:45:00 | 90 | 110 | 71 | 68 |
| 60 | 31Jan2025 | 01:54.4 | 10:00:00 | 75 | 98 | 70 | 68 |
| Night Average | | | | 70 | 87 | 65 | 62 |

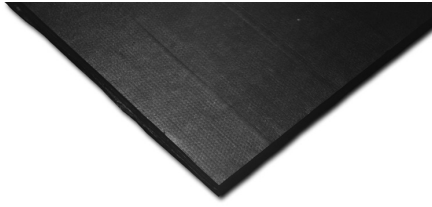
Attachment 1: Sound Absorption Panels



INNOVATIONS FOR LIVING™

SelectSound™ Black Acoustic Board

Product Data Sheet



Superior Acoustical Performance

SelectSound Black acoustic board provides excellent acoustical performance for multiplex theaters, sound studios and performing arts centers. Depending on specified thickness, SelectSound Black acoustic board absorbs up to 100% of the sound striking its surface.

SelectSound Black acoustic board helps provide the highest quality audio reproduction by reducing sound reverberation within spaces. Sound transfer from space to space is also noticeably reduced.

Durable Material Composition

SelectSound Black acoustic board is dimensionally stable and will not shrink or warp. The board's resilient composition resists job-site damage. When necessary, the durable black mat facing may be cleaned by vacuuming. SelectSound Black acoustic board, composed of inorganic glass fibers, will not rot or mildew and is noncorrosive to steel, copper and aluminum.

Fast, High Quality Installation

Lightweight and resilient, SelectSound Black acoustic board is easy to handle, fabricate and install. Both stick pins and

Typical Physical Properties

| Property | Test Method | Value |
|--|--|---|
| Compressive Strength (minimum) at 10% deformation at 25% deformation | ASTM C 165 | 25 lb./ft. ² (1,197 Pa) 90 lb./ft. ² (4,309 Pa) |
| Water Vapor Sorption (by weight) | ASTM C 1104 | <3% by weight at 120°F (49°C), 95% R.H. |
| Fungi Resistance | ASTM C 1338 | Meets Requirement |
| Nominal Density | ASTM C 303 | 3.0 pcf (48 kg/m ³) |
| Corrosiveness | ASTM C 665 Corrosiveness Test | Will not cause corrosion greater than that caused by sterile cotton on aluminum or steel ¹ |
| Surface Burning Characteristics Flame Spread Smoke Developed | ASTM E 84 CAN/ULC-S102 ² | 25 ² 50 |

¹When wet, coated surfaces in contact with galvanized steel may cause discoloration of the sheet metal.

²The surface burning characteristics of these products have been determined in accordance with UL 723 and CAN/ULC-S102-M. These standards should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

adhesives can be used to secure boards to drywall, concrete block or precast concrete.

Size Availability

SelectSound Black acoustic board is available in 48" x 96" size. It can also be pre-cut in custom sizes to improve productivity and speed installation.

Black Core with Dark Black Finish Surface

SelectSound Black acoustic board has a gray/black fiber glass core with a black mat finish that provides low light reflectivity. The black surface is ideal for eliminating screen light reflections and preventing insulation from showing through most surface treatments.

Design Considerations

Acoustical performance of interior surfaces can generally be improved by increasing acoustical material thickness. SelectSound Black acoustic board can be specified for use in conjunction with other Owens Corning

acoustical materials to provide additional performance.

Owens Corning also manufactures SelectSound Black acoustic blanket. This roll product is ideal for use behind fabric on theater walls, in sound studios and performing arts centers.

Applicable Standards

The noise reduction coefficients of SelectSound Black acoustic board were derived from tests conducted in accordance with ASTM C 423 on a Type A mounting.

Installation Procedure

SelectSound Black acoustic board can be installed on drywall, concrete block or precast concrete using impaling pins or appropriate adhesives.

When installing insulation with adhesive, follow adhesive manufacturer's recommendations for surface preparation and pattern.



INNOVATIONS FOR LIVING™

SelectSound™ Black Acoustic Board

Product Data Sheet

When using impaling pins, follow the pin manufacturer's recommendations for surface preparation, location and amount of pins. Pin length should be selected to ensure tight fit. Where subject to physical contact, protect pin tips.

Keep product dry during shipping, storage and installation.

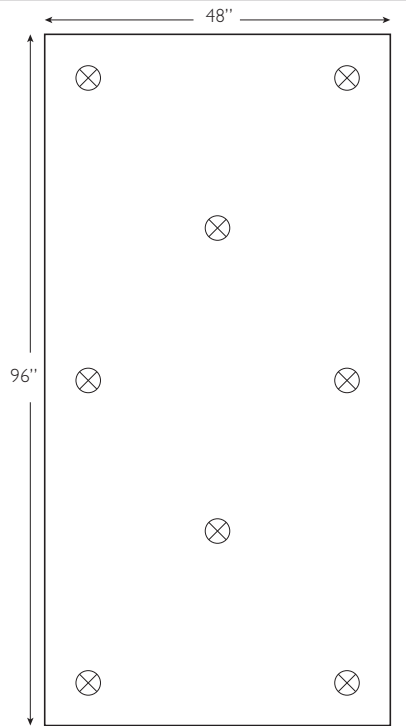
Acoustical Performance

Mounting A

| Product Type and Thickness | Density | | Octave Band Frequencies, Hz. | | | | | | | Thermal Resistance ¹ R-Value (hr•ft ² •°F)/Btu |
|----------------------------|---------|-------------------|------------------------------|------|------|------|------|------|------|--|
| | pcf | kg/m ³ | 125 | 250 | 500 | 1000 | 2000 | 4000 | NRC | |
| 1" Mat Faced | 3.0 | 48 | 0.06 | 0.25 | 0.62 | 0.91 | 0.99 | 0.98 | 0.70 | 4.3 |
| 2" Mat Faced | 3.0 | 48 | 0.18 | 0.71 | 1.12 | 1.12 | 1.03 | 1.02 | 1.00 | 8.6 |

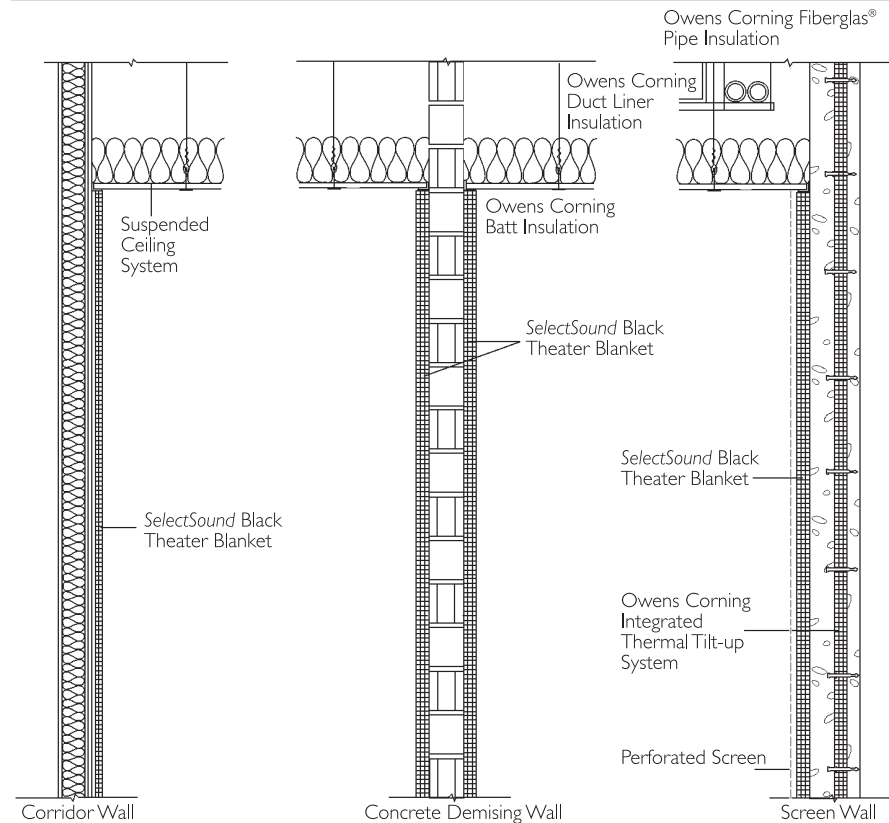
¹Derived from test conducted in accordance with ASTM C 423. Type A mounting (material placed against a solid backing such as a block wall.)

Suggested Fastener Locations



Fasteners should be a minimum of 3" from edge.

Conceptual Details



For CSI type sample specification, please contact your local Owens Corning representative.



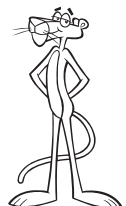
INNOVATIONS FOR LIVING™

OWENS CORNING INSULATING SYSTEMS, LLC

ONE OWENS CORNING PARKWAY
TOLEDO, OHIO 43659

1-800-GET-PINK™
www.owenscorning.com

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Attachment 2: Acoustical Door Information

OVERLY QUICK SHIP ACOUSTICAL DOOR DATA SHEET



DESCRIPTION

For over 50 years, Overly Acoustical Doors have been the preferred choice for architectural acoustical door and window systems with superior design, testing, and manufacturing techniques.

Typical applications for sound-rated doors include recording and broadcast studios, government and military SCIF rooms, theaters, home theaters, large test cells, and educational distance learning classrooms.

Overly door pricing listed on acousticalsolutions.com includes door, split frame, 4-7/8" ASA strike prep for cylindrical, mortise locks, or mortise panic locks, hinges, threshold, acoustical seals, and fire rating (must specify when ordering). Pricing does not include lockset, closer, or vision light.

Overly STC 50 model 5012016 is offered for a 10-day quick ship. Please see the Quick Ship Acoustic Metal Door Order Sheet for details and limitations.

FEATURES

- Sizes: 3' x 7', 3' x 8', 4' x 7', 4' x 8'
- STC 50 Flush Door (No Vision Light)
- Carbon Steel with Overly Standard Prime Finish
- MCL-500 Cam-Lift Hinges, as Cast
- Single Magnetic Frame Gaskets
- Super "H" Door Bottom
- Reese S105A 1/2" High Threshold
- 2-Piece Split Frame Design
- Von Duprin EPT Prep with Filler Plate
- Conduit from EPT to Lock or Tail End of Panic Device
- Bolt-in Frame Anchorage for Masonry or Drywall
- Surface-mounted Closer Reinforcement & Mounting Brackets
- 4-7/8" ASA Strike Preparation for Cylindrical, Mortise, or Mortise Panic Locks

APPLICATIONS

- Production Studios
- Classrooms
- Office Spaces
- Government Facilities

| SOUND TRANSMISSION LOSS IN dB AT FREQUENCY/HERTZ | | | | | | |
|--|--------|--------|---------|---------|---------|------|
| 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | STC* |
| 32 | 41 | 48 | 52 | 53 | 52 | 50 |

*Sound Transmission Class

