CATCH MIAMI – ACOUSTIC ANALYSIS & RECOMMENDATIONS

V1 – 4/12/2022

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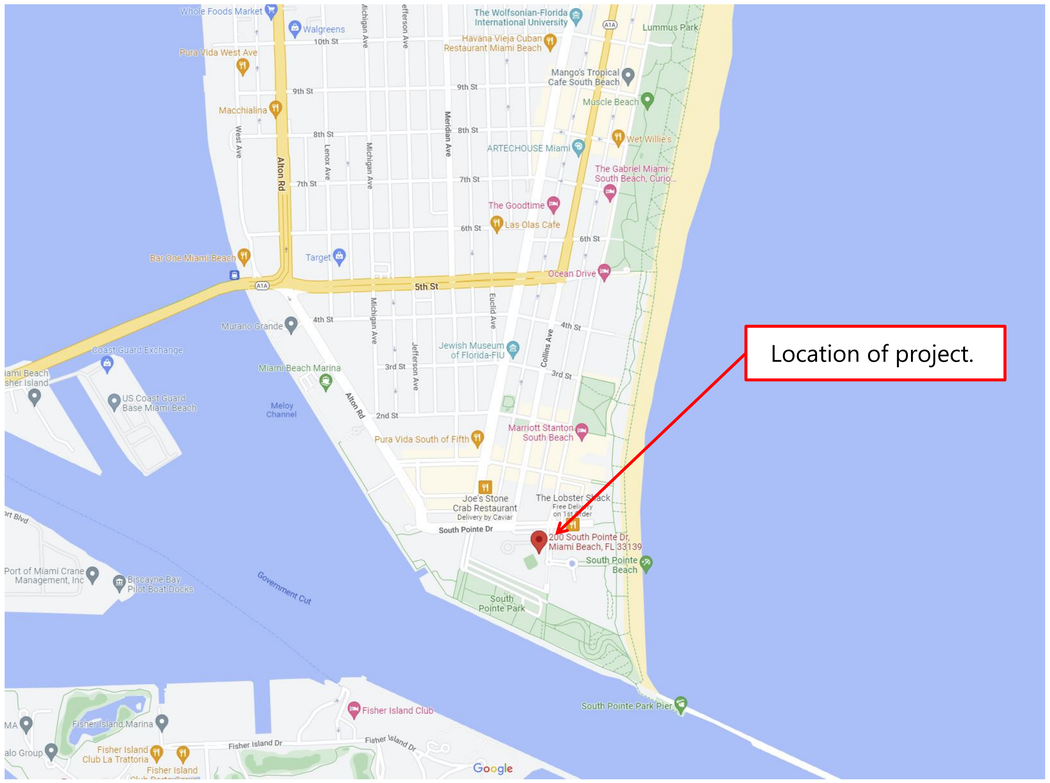
LOCATION OF PROJECT



PROJECT NAME:
CATCH MIAMI

PROJECT ADDRESS:
200 SOUTH POINTE DR.
MIAMI BEACH, FL 33139

DATE: 4/13/2022

AUTHOR: DAVE KOTCH

VERSION: 1

Criterion Acoustics
ARCHITECTURAL ACOUSTIC & SYSTEMS DESIGN
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SHEET SIZE: 11" X 17"

PAGE: 1

1. OVERVIEW AND SUMMARY OF MODEL

OVERVIEW

Criterion Acoustics was contracted to provide an acoustical analysis and study potential noise generated by a new rooftop restaurant for Catch located at 200 South Pointe Drive in Miami, FL. The rooftop will have low-level music playback (65dBA / 70dBC) consistent with all other outdoor Catch (New York, Los Angeles, Aspen) properties.

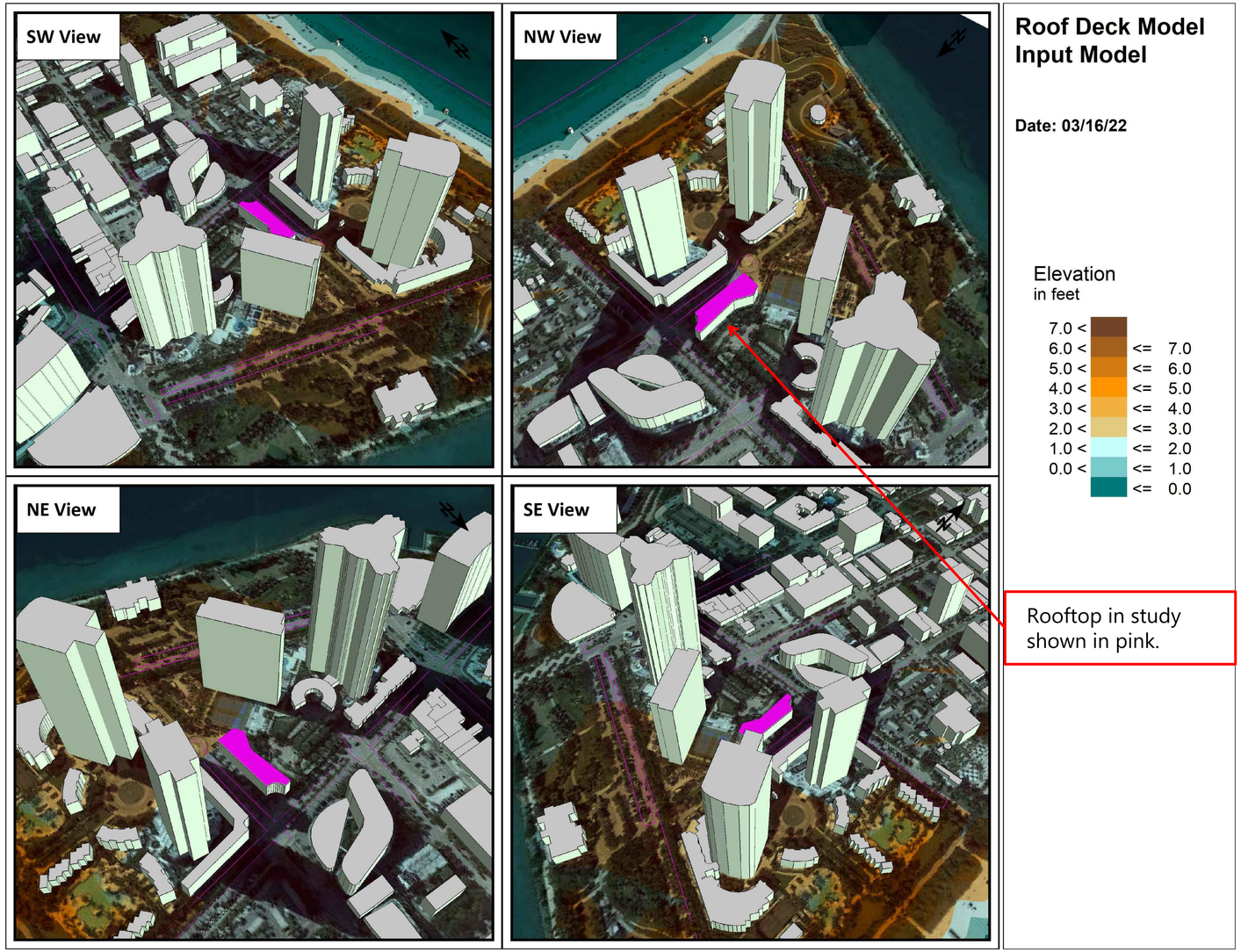
CONCLUSION: In order to reduce any potential adverse impacts from noise on the rooftop, the following solutions should render rooftop music to be **not** "plainly audible" from the following adjacent residential properties: Portofino Towers, South Pointe Tower, Continuum and One Ocean Condominium.

- Construct a noise barrier system (or large continuous planters) at the perimeter of the rooftop area to minimize horizontal airborne sound transmission (minimum of 5'-0" high).
- Plant dense shrubs in the planters.
- Provide an intelligent sound system design utilizing directional loudspeakers and cardioid subwoofers, which are small highly directional subwoofers, with all speakers down firing.
- Install a digital tamper-resistant sound level limiter on the system post calibration to ensure the sound level is never exceeded. **This limiter will only be accessible by corporate management and will have no local operational access.**
- Position large umbrellas and/or a retractable roof and/or awnings with acoustic vinyl lining, if necessary, to reduce sound transmission over the dining area.

SUMMARY OF MODEL

- The environmental acoustic model was created with the software package SoundPLAN (Version 8.2). SoundPLAN is widely accepted in the industry for environmental noise modeling.
- When conducting acoustical modeling there is often variation. +/- 3 to 5dB is not uncommon and this is a consideration with this type of predictive modeling.
- Reflections from the surrounding buildings and structures are accounted for in the model.
- The sound system and crowd noise were adjusted to be 65dBA on the roof deck. This sound level was based on measured data in NYC.

GRAPHIC INPUT OF MODEL



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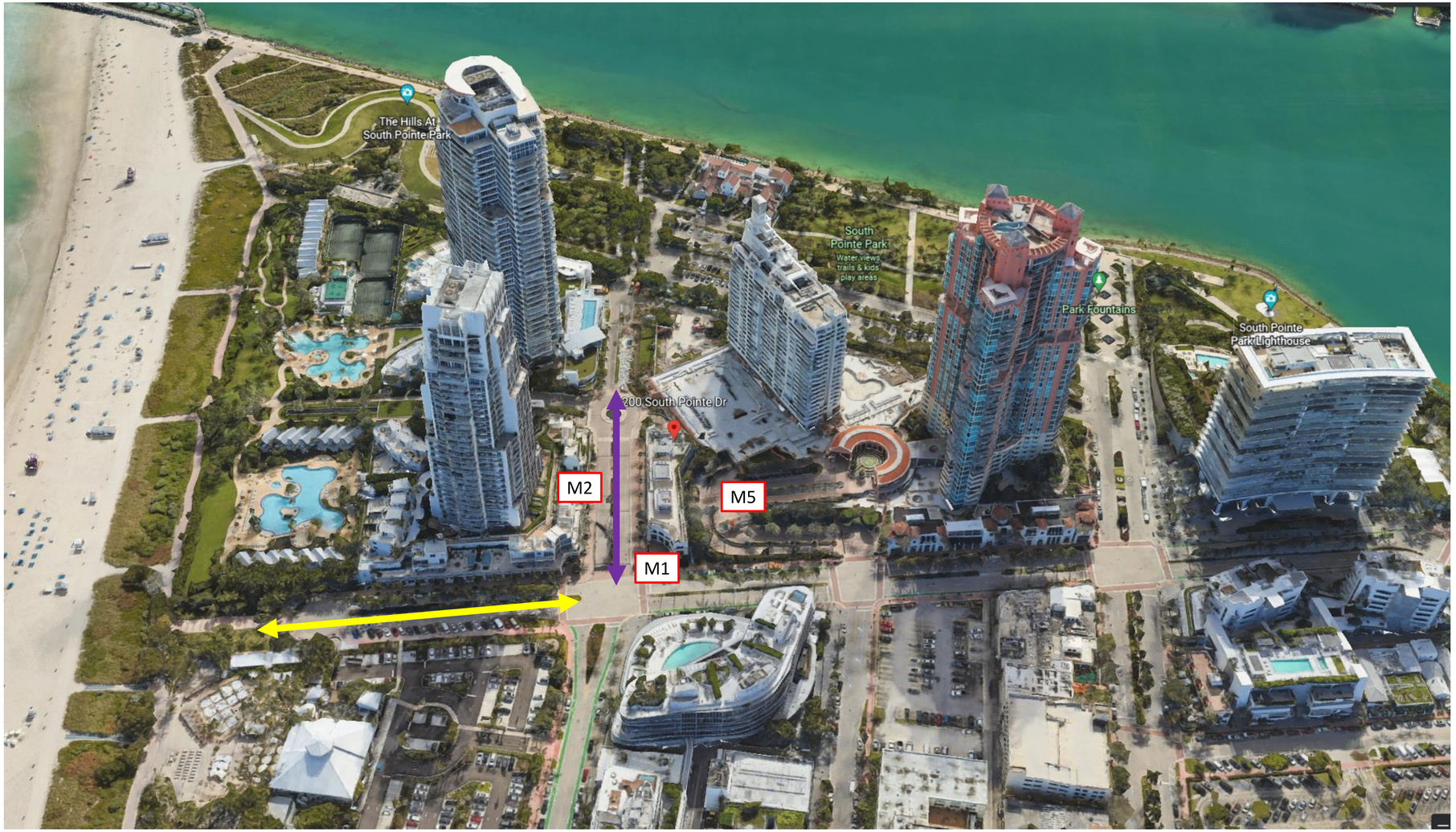
2. MEASURED SOUND LEVELS – AMBIENT NOISE



DESCRIPTION

- The graphic indicates the location of the measurements and *Table 1 – South Pointe Ambient Noise Measurements* provides the measured levels.
- These measurements were performed by David Molho during the evening of Friday March 10, 2022.
- During the measurements normal activities were occurring.
- The measurements were performed with a B&K 2250 meter with the windscreen on. They were logged for the duration of the measurement as indicated in Table 1.
- See appendix sheet for definitions and terms.

Table 1 - South Pointe Ambient Noise Measurements

Measurement	Start Time	Stop Time	Elapsed Time	LAeq [dB]	LCeq [dB]	LA90.0 [dB]	Notes
M1	3/10/2022 23:09	3/10/2022 23:40	0:30:06	64.96	76.34	52.18	
M2	3/10/2022 23:41	3/11/2022 0:05	0:23:25	52.93	66.04	49.29	
⟷	3/11/2022 0:06	3/11/2022 0:11	0:05:52	57.13	65.45	50.9	Walking back and forth on Continuum
⟷	3/11/2022 0:12	3/11/2022 0:16	0:04:33	65.86	70.6	57.87	Walking back and forth on South Pointe Drive
M5	3/11/2022 0:20	3/11/2022 0:50	0:30:20	54.48	66.94	50.05	

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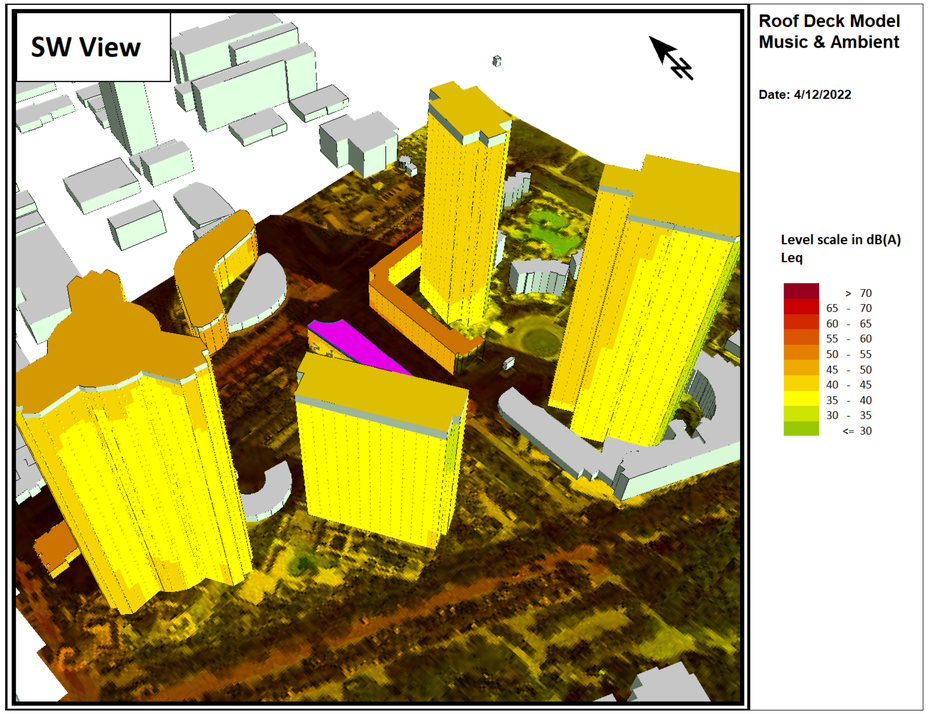
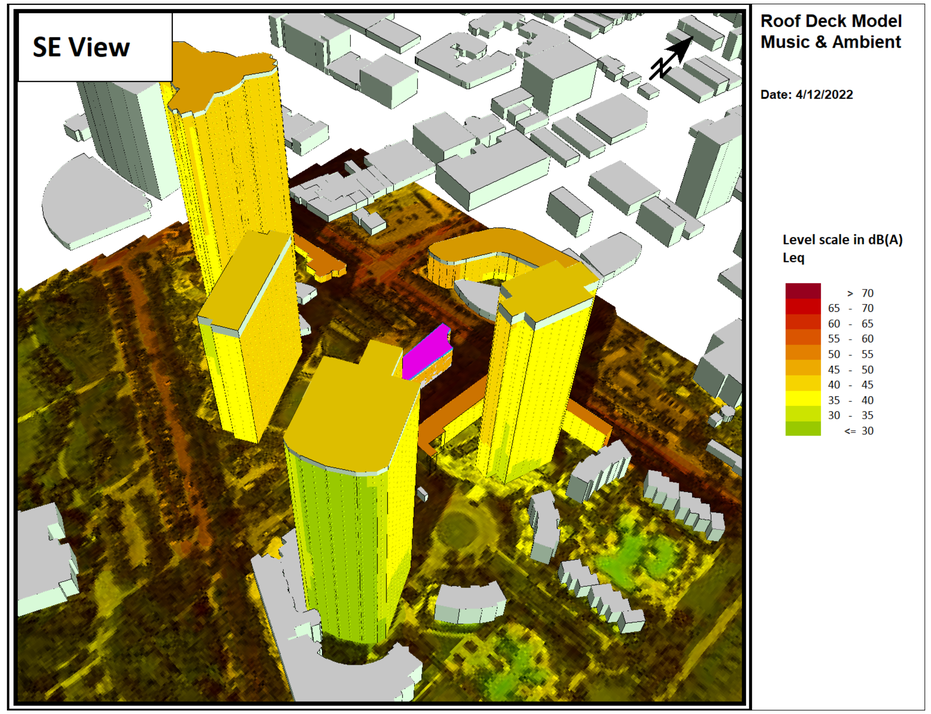
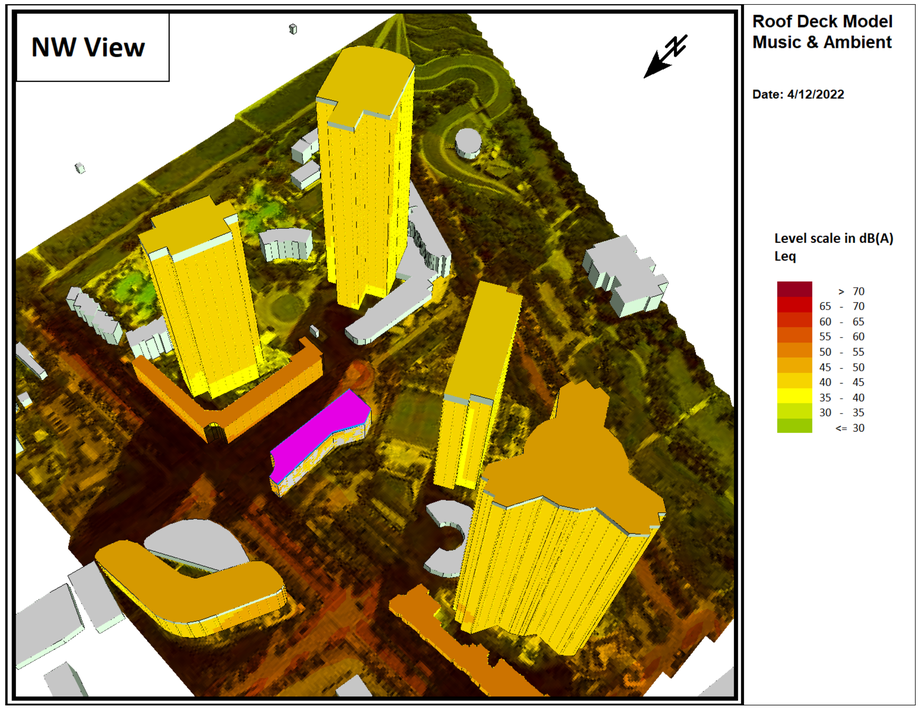
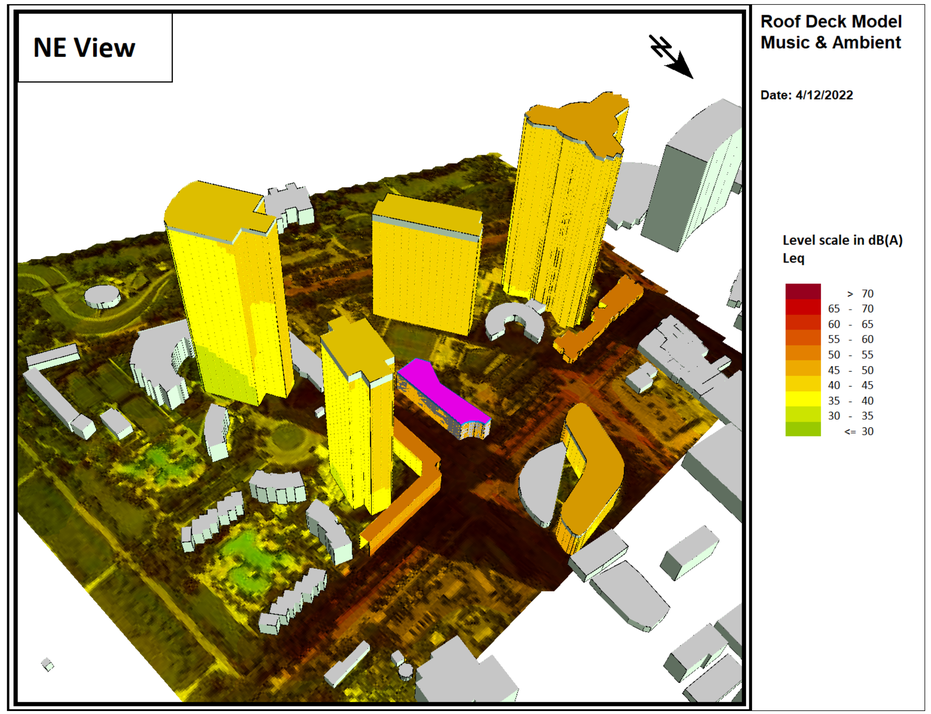
3. MODELED SOUND LEVELS – MUSIC & CROWD DINING NOISE









DESCRIPTION

- The graphic indicates the projected sound levels on the adjacent buildings based on the pink rooftop operating at 65dBA.
- The area source was then further reduced based on the transmission loss of the vinyl limp mass sewn into an awning and/or umbrellas.

- THERE IS NO PRECDICTED INCREASE IN LEVELS.

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4. APPENDIX

Ambient Noise:

Ambient noise includes all sounds present in an environment. The ambient noise level may be measured at any moment, but it will vary widely with time, e.g., with the coming and going of trucks, cars, aircraft, sirens, etc.

Decibel (dB):

A unit of the intensity of sound. The decibel (abbreviated dB) is a relational measure, expressing the relative intensity of the described sound to a reference sound. The decibel is a logarithmic measure, specifically 10 times the logarithm of the ratio of two voltages, currents, or sound pressures. Decibels are a logarithmic scale, so every 3dB increase is a doubling of sound pressure and subjectively it requires 10dB for a perceived doubling of loudness. See Figure A for a chart illustrating comparative dB & SPL values.

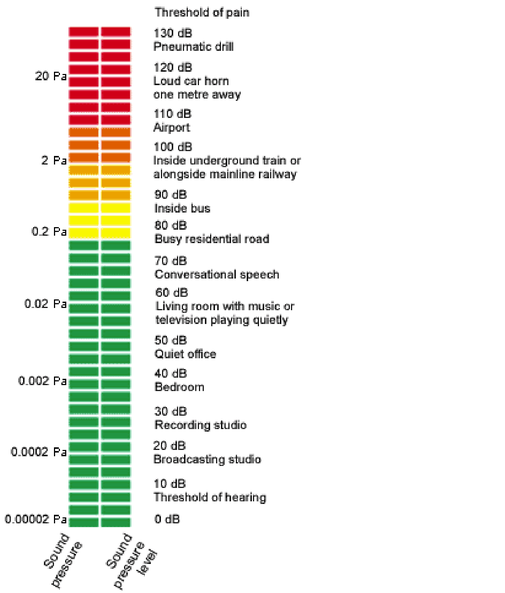

Figure A – Chart illustrating comparative dB & SPL values.

A-Weighting:

The A-contour filters out a significant amount of the bass in order to approximate the way humans hear at the 40 phon level. It is useful for eliminating inaudible low frequencies and is commonly used at SPLs below 70 dB. Sound pressure level values obtained using this weighting are referred to as A-weighted sound pressure levels and are signified by the identifier dBA. See Figure B for a visual comparison of weighting curves.

C-Weighting:

The C-contour is nearly flat, with only a slight reduction at the high and low frequencies. It approximates the way humans hear at very high sound levels and is commonly used for SPLs above 70 dB. Sound pressure level values obtained using this weighting are referred to as C-weighted sound pressure levels and are signified by the identifier dBC. See Figure B for a visual comparison of weighting curves.

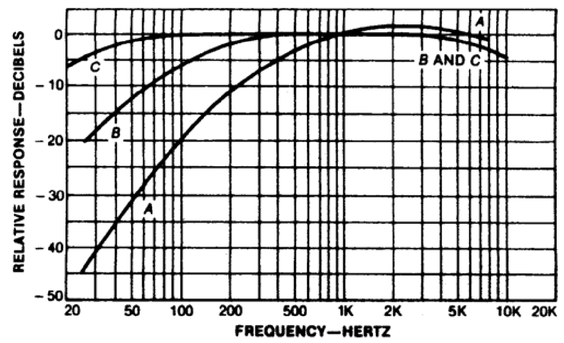

Figure B – A visual comparison of weighting curves.

L_n:

L_n values are statistical noise levels (sometimes called percentiles) used to assess noise levels (sound pressure levels) from fluctuating noise sources over time. Any statistical value between 0.01% and 99.99% may be calculated where 'n' is the percent exceeded noise level over a timed measurement period (T). For example, a sample of fluctuating noise levels taken once a second every second for an hour gives us 3600 samples. These samples can give us some helpful statistics: if we add all the samples together and divide by 3600 (T) then we will get the average or L50% value of the noise over the hour. And if we do the same and all the samples together that exceeded a pre-determined noise level (e.g. 65dB(A)), then divide by total time (T) then we reach the n-Percent Exceeded Level, L_n.

L_{EQ}:

Equivalent continuous sound level. The steady level which would produce the same sound energy over the test period as the specified time-varying sound. This figure is useful for studying long-term trends in environmental noise.

L_{MAX}:

Highest, or loudest, Sound Pressure Level (in dBA, dBC, or dBZ) measured during the test period.

L_{MIN}:

Lowest, or quietest, Sound Pressure Level (in dBA, dBC, or dBZ) measured during the test period.

L_{10}:

L_{10} is the level exceeded for 10% of the time. For 10% of the time, the sound or noise has a sound pressure level above L_{10}. For the rest of the time, the sound or noise has a sound pressure level at or below L_{10}. These higher sound pressure levels are probably due to sporadic or intermittent events. L_{10} is often used when assessing traffic noise and in planning applications: L_{10} is the level exceeded for 10% of the time and takes account of any annoying peaks in noise.

L_{50}:

L_{50} is the level exceeded for 50% of the time. It is statistically the mid-point of the noise readings. It represents the median of the fluctuating noise levels.

L_{90}:

L_{90} is the level exceeded for 90% of the time. For 90% of the time, the noise level is above this level. It is generally considered to be representing the background or ambient level of a noise environment. L_{90} is often used to quantify the background noise levels in assessments of noise pollution and nuisance noise from industrial sources.

Perceived Loudness of Sound:

The threshold of perception of the human ear is approximately three decibels and a five-decibel change is considered to be clearly noticeable. This is primarily due to the logarithmic measuring metric typically associated with decibels. See Chart 1 for perceived change in decibel levels.

Chart 1 - Perceived Change in Decibel Levels

Change in sound level	Perceived change to the human ear
± 1dB	Not perceptible
± 3dB	Threshold of perception
± 5dB	Clearly noticeable
±10dB	Twice (or half) as Loud
± 20dB	Fourfold (4x) change

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