TOMMY'S RESTAURANT (20032 VENTURA) NOISE IMPACT ANALYSIS

City of Los Angeles

June 19, 2023

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Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

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Project No. 19639

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EXECUTIVE SUMMARY

The project site is located at 20032 Ventura Boulevard in the Woodland Hills neighborhood of the City of Los Angeles, California. The project site is currently developed with an automotive service use.

The proposed project involves redevelopment of the project site and construction and operation of a new 1,300 square foot restaurant with drive through window. The project would provide 13 striped parking spaces within an on-site surface parking lot and an on-site drive-thru queuing capacity for nine vehicles.

Project Consistency with Applicable Standards

This report demonstrates that, with implementation of best management practices (BMPs), noise and vibration associated with construction and operation of the project will be in compliance with all applicable noise related ordinances in the Los Angeles Municipal Code (LAMC). The project impact is less than significant; no mitigation is required.

BMPs are provided in the Project Description and should be added to project plans and in contract specifications to minimize construction noise and vibration emanating from the proposed project.

Impacts in Light of the California Environmental Quality Act

a) The proposed project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. This impact is less than significant. No mitigation is required.

b) The proposed project would not generate excessive groundborne vibration or groundborne noise levels. This impact is less than significant. No mitigation is required.

c) The project is not located within the vicinity of a private airstrip or an airport land use plan. The nearest airport is approximately 4.89 miles northeast of the project site. The project would not expose people residing or working in the project area to excessive noise levels. No impact and no mitigation is required.

1. INTRODUCTION

This section describes the purpose of this study and the proposed project.

PURPOSE AND OBJECTIVES

This report analyzes potential noise and vibration impacts that would result from the development of the project. The analysis describes the existing noise environment in the vicinity of the project site, estimates future noise and vibration levels at surrounding sensitive land uses resulting from construction and operation of the project, and identifies the potential for significant impacts. Noise calculation worksheets and technical data used in this analysis are provided in the Appendices at the end of this report. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state, and local policies, including those of the City of Los Angeles, in the context of the California Environmental Quality Act (CEQA).

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with technical terms.

PROJECT LOCATION

The project site is located at 20032 Ventura Boulevard in the Woodland Hills neighborhood of the City of Los Angeles, California. The project site is currently developed with an automotive service use. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves redevelopment of the project site and construction and operation of a new 1,300 square foot restaurant with drive through window. The project would provide 13 striped parking spaces within an on-site surface parking lot and an on-site drive-thru queuing capacity for nine vehicles. Figure 2 illustrates the project site plan.

The following best management practices (BMPs) will be provided on project plans and in contract specifications to minimize construction noise and vibration emanating from the proposed project:

Overall

BMP 1: Project construction activities and/or project deliveries will not occur between the hours of 7:00 PM and 7:00 AM Monday through Friday and 6:00 PM and 8:00 AM on Saturday.

Demolition

BMP 2: At least one of the following BMPs will be utilized during the operation of concrete saws and similar equipment:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Surround the concrete saws and other similar equipment with at least 8-foot-high solid barriers that can be made of 1-inch plywood or sound blankets during use. The goal is to achieve at least 12 dB of reduction in the noise level. The barrier must be reach to the ground and be without any holes or cracks.

BMP 3: At least one of the following BMPs will be utilized during the operation of rubber-tired dozers, tractors, loaders, and backhoes:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 12 dB).

Site Preparation

BMP 4: At least one of the following BMPs will be utilized during the operation of graders, tractors, loaders, and backhoes:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 9 dB).

Grading

BMP 5: At least one of the following BMPs will be utilized during the operation of rubber-tired dozers, graders, tractors, loaders, and backhoes:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 10 dB).

Building Construction

BMP 6: At least one of the following BMPs will be utilized during the operation of tractors, loaders, and backhoes:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 11 dB).

BMP 7: At least one of the following BMPs will be utilized during the operation of cranes:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 11 dB).

Paving

BMP 8: At least one of the following BMPs will be utilized during the operation of cement and mortar mixers and similar equipment:

- Use an alternative piece of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Surround the cement and mortar mixers and other similar equipment with at least 8-foot-high solid barriers that can be made of 1-inch plywood or sound blankets during use. The

goal is to provide at least 10 dB in noise reduction. The barrier must be reach to the ground and be without any holes or cracks.

BMP 9: At least one of the following BMPs will be utilized during the operation of pavers, rollers, tractors, loaders and backhoes:

- Use alternative pieces of equipment that does not exceed a noise level of 75 dB at a distance of 50 feet; or
- Install a muffler that lowers full operational power to 75 dB or less (a reduction of 10 dB).

Vibration

BMP 10: During all phases of construction, the use of vibratory rollers and any equipment with higher vibratory levels, will be avoided within 26 feet of existing off-site structures.

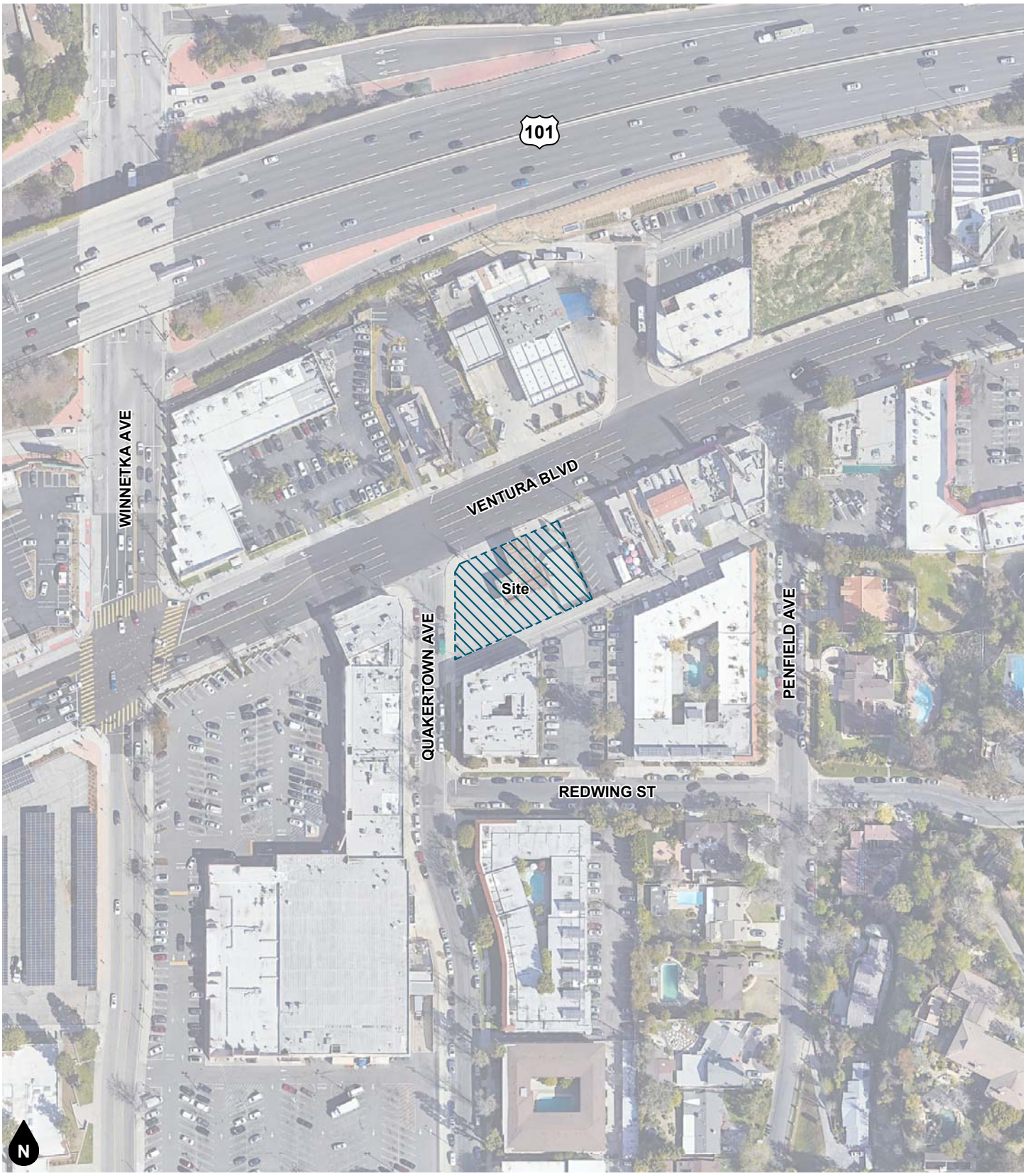


Figure 1
Project Location Map

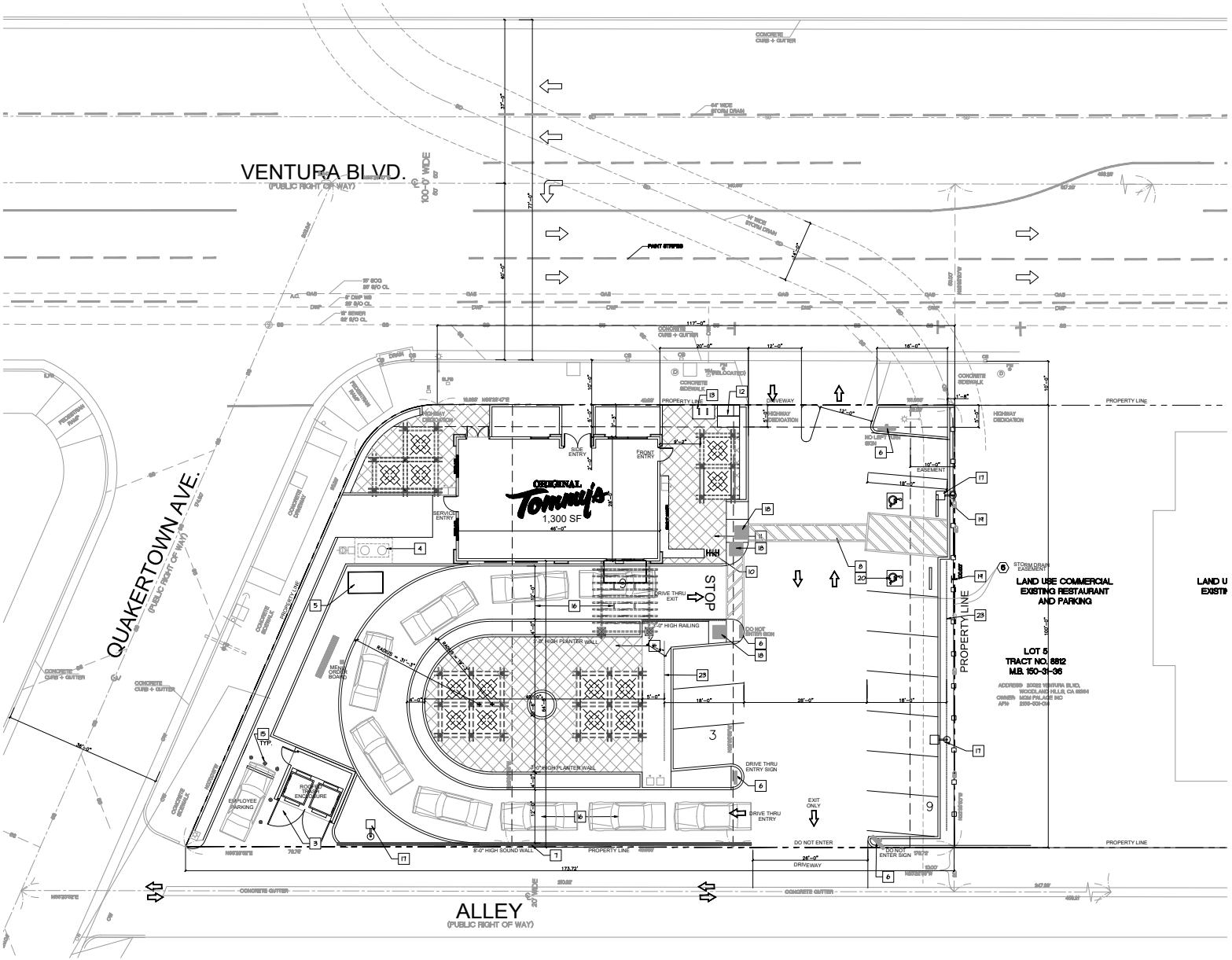


Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

This section provides an overview of key noise and vibration concepts.

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 3 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

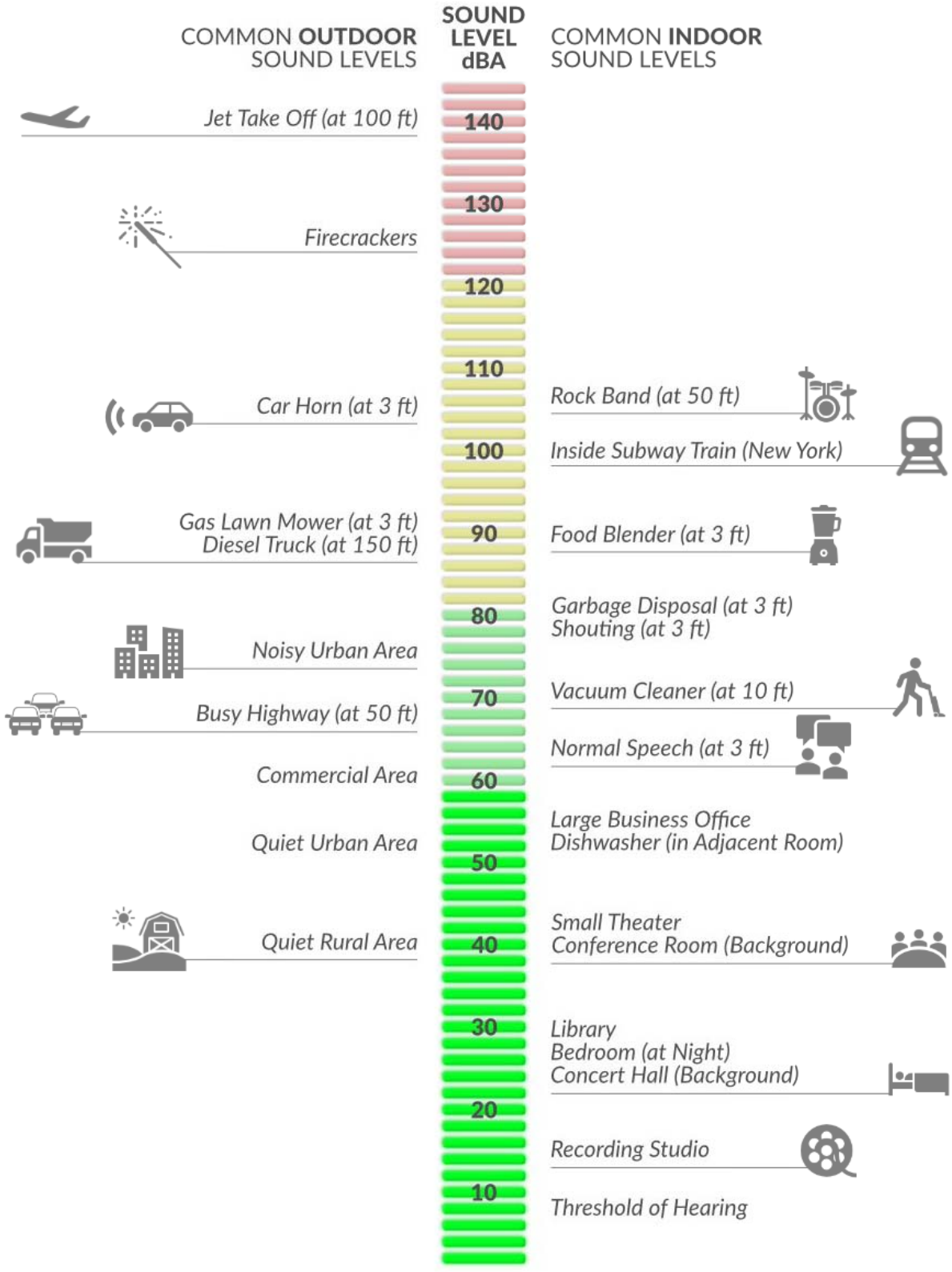
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves.

Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

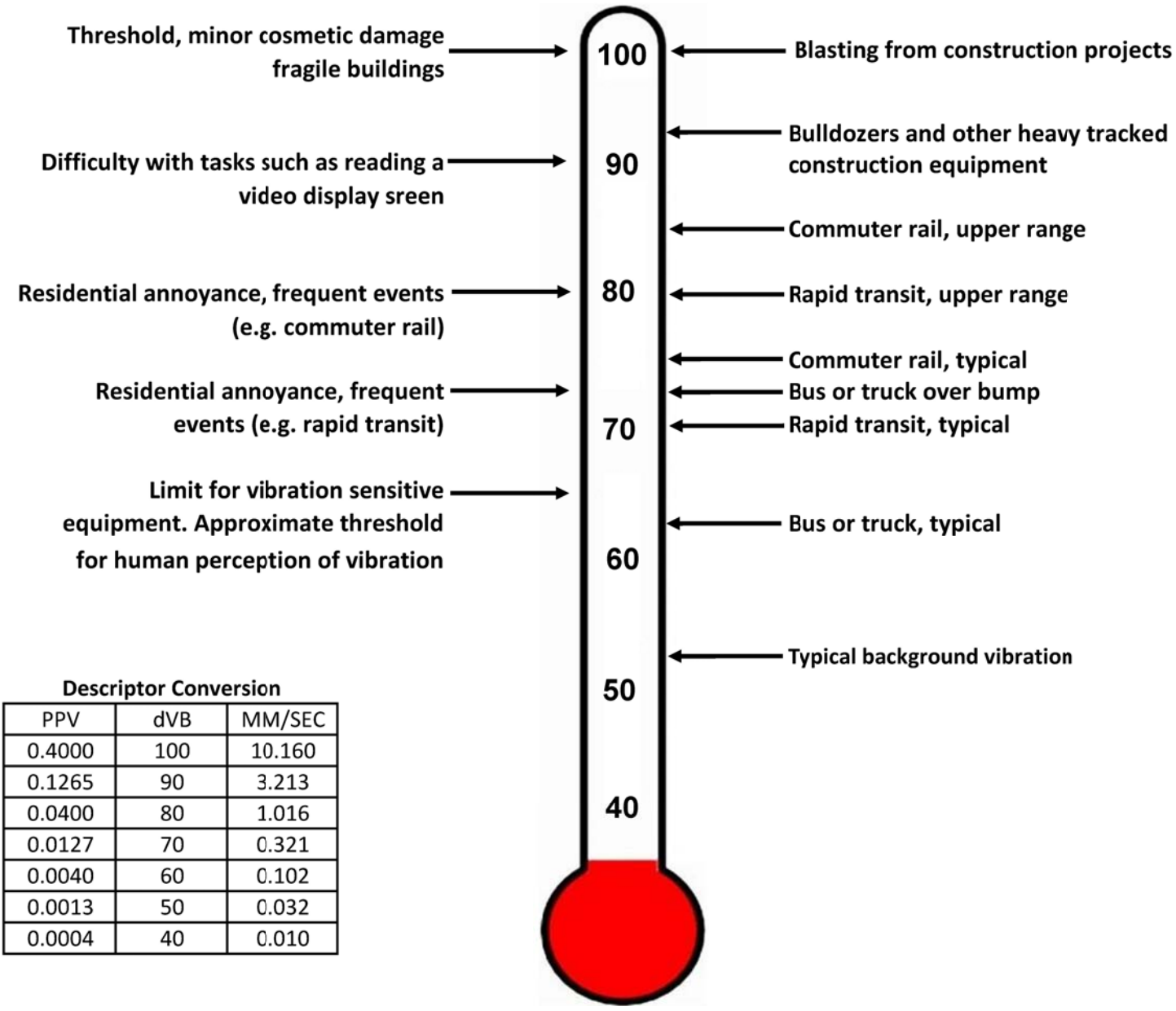
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 4 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.



Based on Policy & Guidance from Federal Aviation Administration

Figure 3
A-Weighted Comparative Sound Levels



Descriptor Conversion

PPV	dVB	MM/SEC
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

Source: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 4
Typical Levels of Groundborne Vibration

3. EXISTING ENVIRONMENT

This section describes the existing noise setting in the project vicinity.

EXISTING ZONING

The project site is bordered by Ventura Boulevard to the north, commercial uses to the east, an alley way to the south, and Quakertown Avenue to the south. Figure 5 shows the existing zoning of the project site and the surrounding properties. As shown in Figure 5, the project site has a zoning designation of Neighborhood Commercial under the Canoga Park – Winnetka – Woodland Hills – West Hills Community Plan.

EXISTING LAND USES AND SENSITIVE RECEPTORS

Some land uses are considered more sensitive to noise than others due to the types of activities typically involved at the receptor location, and the effect that noise can have on those activities and the persons engaged in them. The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. The Noise Element of the City of Los Angeles General Plan (General Plan) defines noise sensitive land uses as: single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[1] These uses are generally considered more sensitive to noise than commercial and industrial land uses.

Based on a review of the land uses in the vicinity of the project site, four off-site noise receptor locations were selected to represent noise sensitive uses within 500 feet of the project site. These locations represent areas with land uses that could qualify as noise sensitive uses.

- R1: School use with property lines located approximately 431 feet southwest of the western boundary of the project site along Winnetka Avenue (Taft High School, 5461 Winnetka Avenue, Woodland Hills).
- R2: Multi-family residential use with property lines located approximately 20 feet south of the southern boundary of the project site along Quakertown Avenue (Atrium Court, 5504 Quakertown Avenue, Woodland Hills).
- R3: Multi-family residential use located approximately 23 feet to the southeast of the southern boundary of the project site along Penfield Avenue (Penfield Apartments, 5515 Penfield Avenue, Woodland Hills).
- R4: Single-family residence located approximately 264 feet southeast of the southern boundary of the project site along Penfield Avenue (5516 Penfield Avenue, Woodland Hills).
- R5: multi-family residential use located south of the project site boundary at the southeastern corner of the intersection of Redwing Street and Quakertown Avenue (5484 Quakertown Avenue, Woodland Hills).

All other land uses that could qualify as noise sensitive uses would have lower noise levels than the chosen receptors. All other sensitive receptors, not identified on Figure 5, are located further than 500 feet from the project site. As discussed previously in Section 2 of this report, noise levels reduce with increasing distance from a noise source. As a result, noise sensitive uses located greater than 500 feet from the project site would experience lower noise levels from potential sources of noise on the project site due to attenuation and distance loss compared to the noise sensitive receptors located within 500 feet of the project site.

[1] Noise Element, City of Los Angeles General Plan, Chapter IV, p. 4-1.

EXISTING AMBIENT NOISE LEVELS

The predominant existing noise source surrounding the project are vehicles traveling along Winnetka Avenue, Ventura Boulevard, 101 Freeway, Quakertown Avenue, Penfield Avenue, Redwing Street and other surrounding roadways. Secondary noise sources include vehicle noise from other surrounding roadways, parking lot activities, residential-related activity, commercial air conditioning units, farmers/grocery market activity, pedestrians, overhead air traffic, and wind-related noise.

To establish baseline noise conditions, an American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. representing nearby land uses in the vicinity of the project site. Figure 6 shows the project site, surrounding land uses, potential sensitive receptors, and noise measurement locations. Five (5) 15-minute daytime noise measurement was taken from 1:05 PM to 3;17 PM on May 31, 2023. Field worksheets and noise measurement output data are included in Appendix C.

As shown in Figure 6, the noise meter was placed at the following locations:

STNM1: represents the existing noise environment of the school use located to the southwest of the project site boundary along Winnetka Avenue (Taft High School, 5461 Winnetka Avenue, Woodland Hills) (R1). The noise meter was placed near the northwestern corner of the school site just southeast of the staff parking lot and west of Winnetka Avenue.

STNM2: represents the existing noise environment of the multi-family residential use located to the south of the project site boundary along Quakertown Avenue (Atrium Court, 5504 Quakertown Avenue, Woodland Hills) (R2). The noise meter was placed just north of the residential use in the alley/access road located between the project site and the residential use.

STNM3: represents the existing noise environment of the multi-family residential use located southeast of the project site boundary along Penfield Avenue (Penfield Apartments, 5515 Penfield Avenue, Woodland Hills) (R3). The noise meter was placed near the northwestern corner of the residential use in the alley/access road located adjacent to the north of the residential use.

STNM4: represents the existing noise environment of the single-family residential uses located southeast of the project site boundary along Penfield Avenue (5516 Penfield Avenue, Woodland Hills) (R4). The noise meter was placed near the northwestern corner of the residential use within the eastern sidewalk of Penfield Avenue.

STNM5: represents the existing noise environment of the multi-family residential use located south of the project site boundary at the southeastern corner of the intersection of Redwing Street and Quakertown Avenue (5484 Quakertown Avenue, Woodland Hills). The noise meter was placed near the northeastern corner of the residential use within the southern sidewalk of Redwing Street.

LTNM1: represents the existing noise environment of the project site. The noise meter was placed near the southwestern corner of the existing vacant building located within the project site (20032 Ventura Boulevard, Woodland Hills).

Table 1 provides a summary of the short-term ambient noise data. Table 2 provides hourly interval ambient noise data from the long-term noise measurements. Measured short-term ambient noise levels ranged between 54.4 to 66.1 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 52.3 to 66 dBA L_{eq}.

GROUNDBORNE VIBRATION

Existing Groundborne Vibration Levels

Aside from periodic construction work occurring throughout the City, field observations noted that other sources of groundborne vibration in the project site vicinity would be limited to heavy-duty vehicular travel (bus, refuse trucks, delivery trucks, etc.) on local roadways. A bus traveling at a distance of 50 feet typically generates groundborne vibration velocity levels of 63 VdB (approximately 0.006 in/sec PPV).

Vibration-Sensitive Receptor Locations

Typically, groundborne vibration generated by man-made activities (i.e., rail and roadway traffic, operation of mechanical equipment and typical construction equipment) diminishes rapidly with distance from the vibration source. The Federal Transit Administration (FTA) uses a screening distance of 100 feet for Category 1 uses (highly vibration-sensitive buildings, e.g., hospitals with vibration sensitive equipment), and 50 feet for Category 2 uses (residential uses), and Category 3 uses (schools). When vibration-sensitive uses are within these distances from a project site, vibration impact analysis is required. Category 1 vibration-sensitive receptors generally include historic buildings, buildings in poor structural condition, and uses that require precision instruments (e.g., hospital operating rooms or scientific research laboratories). There are existing residential uses with property lines located approximately 20 feet to the south and 23 feet southeast of the project site.

Table 1
Noise Measurement Summary (dBA)

Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	1:05 PM	66.1	81.7	50.9	74.2	70.3	65.5	61.3
STNM2	1:39 PM	62.4	75.5	56.5	68.2	64.7	62.9	60.9
STNM3	2:09 PM	58.8	68.1	56.7	61.4	59.9	59.1	58.6
STNM4	2:35 PM	58.3	72.7	53.0	63.5	60.7	58.7	57.1
STNM5	3:02 AM	54.4	69.7	48.8	61.9	56.6	52.8	51.7

Notes:
(1) See Figure 6 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.
(2) Noise measurements performed on May 31, 2023.

Table 2
Long-Term Noise Measurement Summary (LTNM1) (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	3:00 PM	60.7	95.7	42.8	65.9	63.2	60.4	57.5
1	3:00 PM	62.4	83.6	53.0	67.7	64.0	61.7	59.5
2	4:00 PM	52.3	82.8	52.6	68.0	64.4	62.2	59.7
3	5:00 PM	52.7	91.0	51.1	67.6	64.3	62.1	59.6
4	6:00 PM	53.9	79.8	52.7	66.7	64.3	62.3	60.5
5	7:00 PM	56.0	78.7	55.2	67.0	64.6	62.7	60.9
6	8:00 PM	57.1	78.9	52.0	64.4	61.7	59.5	57.7
7	9:00 PM	57.4	76.4	49.8	64.8	61.5	58.9	56.5
8	10:00 PM	57.5	73.5	49.4	62.2	60.2	57.5	55.6
9	11:00 PM	57.6	69.1	47.6	61.5	59.0	56.6	54.5
10	12:00 AM	58.6	83.4	45.7	63.6	59.8	56.1	53.4
11	1:00 AM	59.1	85.8	45.2	62.8	57.8	54.0	51.7
12	2:00 AM	59.2	72.8	42.8	58.5	54.9	52.2	50.0
13	3:00 AM	60.5	65.7	44.1	59.2	55.6	53.0	51.1
14	4:00 AM	60.7	71.0	45.7	59.5	56.6	54.3	52.6
15	5:00 AM	60.9	73.4	48.5	62.8	60.4	58.3	56.6
16	6:00 AM	61.6	75.8	51.5	65.4	61.9	58.9	57.1
17	7:00 AM	61.8	76.2	49.4	66.8	64.2	62.2	59.2
18	8:00 AM	61.9	79.1	49.9	66.8	63.5	61.1	58.5
19	9:00 AM	62.1	88.7	52.5	66.5	63.3	61.0	58.5
20	10:00 AM	62.2	81.9	51.2	65.4	62.9	60.8	58.5
21	11:00 AM	62.2	95.7	54.7	68.0	63.9	61.7	59.5
22	12:00 PM	62.4	77.9	53.9	67.8	64.5	62.3	60.2
23	1:00 PM	63.9	88.7	52.6	67.1	63.8	61.6	59.4
24	2:00 PM	66.0	83.6	51.3	68.5	64.6	61.8	59.5
CNEL	64.7							

Notes:

(1) See Figure 5 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from June 6, 2023 to June 7, 2023.

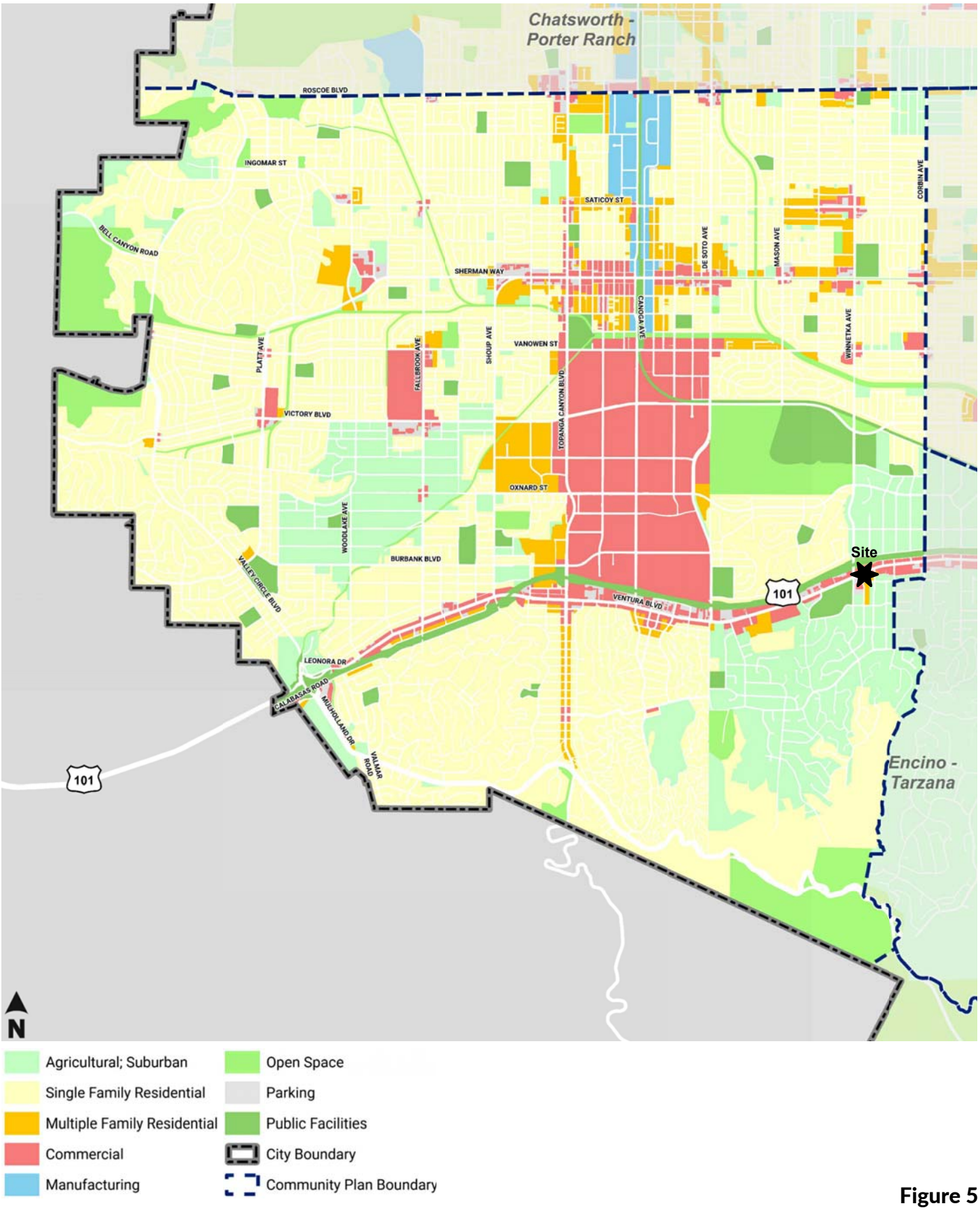
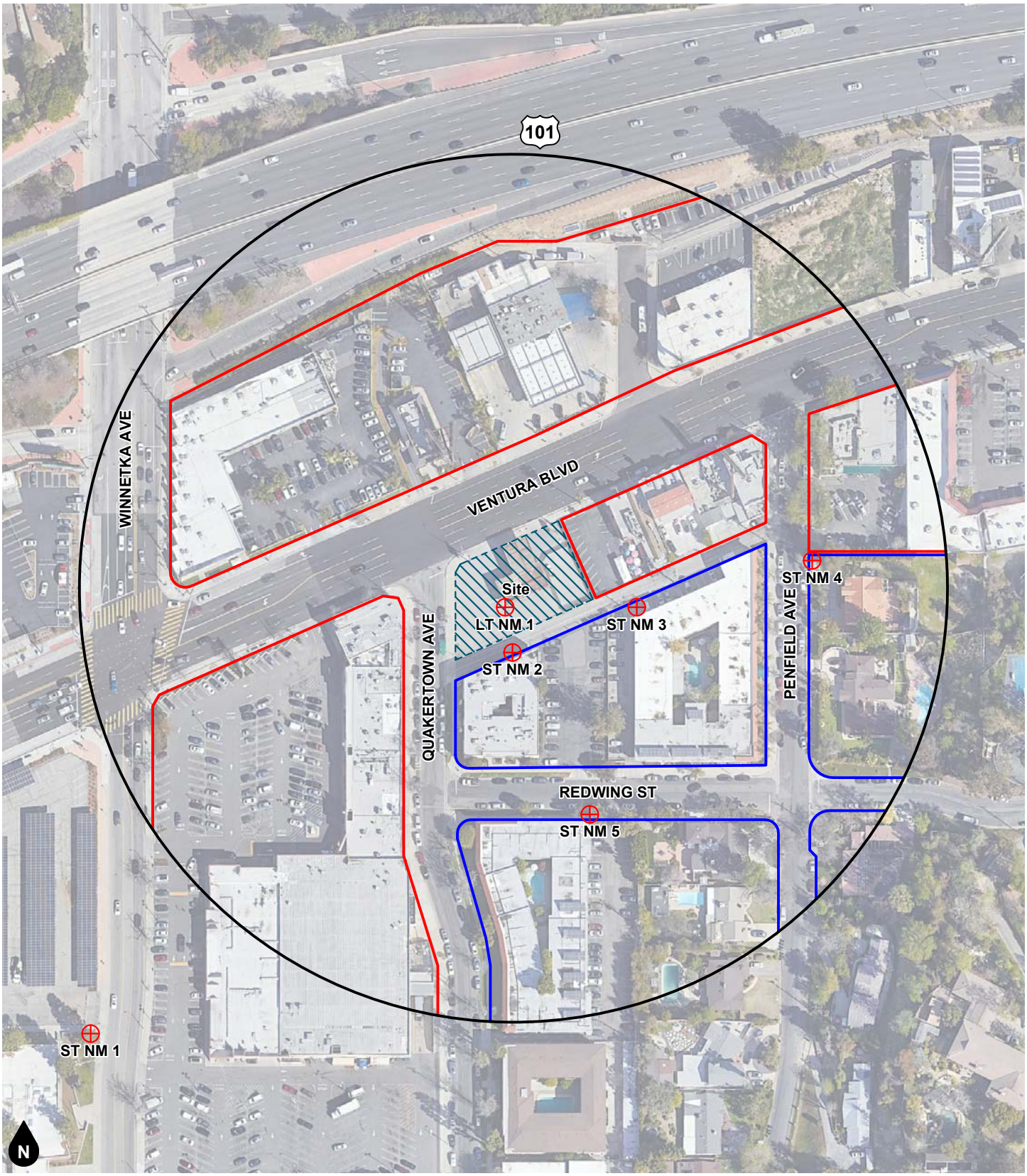


Figure 5
Existing Zoning in the Project Site Vicinity



Legend

- 500 ft Radius
- Commercial
- Residential
- NM 1 Noise Measurement Location
- ST NM Short-Term Noise Measurement
- LT NM Long-Term Noise Measurement

Figure 6
Existing Land Uses and Sensitive Receptor Locations/Noise Measurement Locations

4. REGULATORY SETTING

This section documents the City of Los Angeles applicable noise and vibration standards.

NOISE REGULATIONS

State Regulations

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally unacceptable" ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project. The City of Los Angeles has adopted a version of this matrix (see Table 3).

Local Regulations

City of Los Angeles Municipal Code

LAMC Chapter IV, Public Welfare, Article 1 Disorderly Conduct

Section 41.40. Noise Due to Construction, Excavation Work – When Prohibited. No person shall, between the hours of 9:00 PM and 7:00 AM of the following day, perform any construction or repair work of any kind upon, or any excavating for, any building or structure, where any of the foregoing entails the use of any power-driven drill, riveting machine excavator or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence. In addition, the operation, repair or servicing of construction equipment and the job site delivering of construction materials in such areas shall be prohibited during the hours herein specified. Any person who knowingly and willfully violates the foregoing provision shall be deemed guilty of a misdemeanor punishable as elsewhere provided in this Code. (Amended by Ord. No. 158,587, Eff. 1/29/84.)

LAMC Article 1, Building, Division 12, Interior Environment

Section 91.1206.1. Purpose and Scope. The purpose of this section is to establish uniform minimum noise insulation performance standards to protect persons within new hotels, motels, dormitories, residential care facilities, apartment houses, dwellings, private schools, and places of worship from the effects of excessive noise, including but not limited to, hearing loss or impairment and interference with speech and sleep.

Section 91.1206.14.1. Application Consistent with Local Land-Use Standards. All structures identified in LAMC Subsection 91.1206.1 (listed above) located in noise critical areas, such as proximity to highways, country roads, city streets, railroads, rapid transit lines, airports or industrial areas shall be designed to prevent

the intrusion of exterior noises beyond prescribed levels. Proper design shall include, but shall not be limited to, orientation of the structure, setbacks, shielding and sound insulation of the building itself.

Note: Prescribed levels are provided below in Section 91.1206.14.2.

Section 91.1206.14.2. Allowable Interior Noise Levels. Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.

91.1206.14.3. Airport Noise Sources. Residential structures and all other structures identified in LAMC Subsection 91.1206.1 (see above) located where the annual Ldn or CNEL (as defined in California Code of Regulations, Title 21, Division 2.5, Chapter 6, Section 5001) exceeds 60 dB, shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level.

LAMC Chapter XI, Article 1, General Provisions

LAMC Chapter XI, Article 1, General Provisions, includes general provisions, special noise sources, sanitary operations, vehicles, amplified sounds, and general noise. Section 111.0 is a declaration of policy; Section 111.01 includes related definitions; Section 111.02 includes sound level measurement procedures and criteria; Section 111.03 sets forth minimum ambient noise levels; Section 111.04 establishes violations, additional remedies, and injunctions; and Section 111.05 includes a discussion of enforcement. Noise standards are found in LAMC Chapter XI Article 2.

LAMC Chapter XI, Article 2, Special Noise Sources

Noise standards for special noise sources are provided in Sections 112.01 through 112.06. Special Noise Sources, include radios, television sets, and similar devices, air conditioning, refrigeration, heating, pumping, filtering equipment, powered equipment intended for repetitive use in residential areas, other machinery, equipment and devices, powered equipment, powered hand tools, and places of public entertainment. Those that are likely to apply to construction and operation of the proposed project are listed below.

Section 112.01. Radios, Television sets, and Similar Devices. (Amended by Ord. No. 156,363, Eff. 3/29/82.) It shall be unlawful for any person within any zone of the City to use or operate any radio, musical instrument, phonograph, television receiver, or other machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound, in such a manner, as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area. Any noise level caused by such use or operation which is audible to the human ear at a distance in excess of 150 feet from the property line of the noise source, within any residential zone of the City or within 500 feet thereof, shall be a violation of the provisions of this section.

Note: It is generally acceptable that the average healthy ear can barely perceive a noise level change of 3 dBA. Determination of whether or not a noise source is "audible" will depend upon the existing noise environment, the sound level of the source, the distance between the source and the receptor, and the location of any barriers between the source and the receptor (if applicable).

Any noise level caused by such use or operation which exceeds the ambient noise level on the premises of any other occupied property, or if a condominium, apartment house, duplex, or attached business, within any adjoining unit, by more than five (5) decibels shall be a violation of the provisions of this section.

Note: Compliance with the criteria in this section of the Ordinance is difficult to predict. Reasonable use of radios, television sets, etc. are unlikely to disturb the peace and quiet. This Ordinance exists as an enforcement tool for code enforcement officers.

Section 112.02. Air Conditioning, Refrigeration, Heating, Pumping, Filtering Equipment. (Amended by Ord. No. 156,363, Eff. 3/29/82.) It shall be unlawful for any person, within any zone of the city to operate any air conditioning, refrigeration or heating equipment for any residence or other structure or to operate any pumping, filtering or heating equipment for any pool or reservoir in such manner as to create any noise which would cause the noise level on the premises of any other occupied property or if a condominium, apartment house, duplex, or attached business, within any adjoining unit to exceed the ambient noise level by more than five (5) decibels. This section shall not be applicable to emergency work as defined in Section 111.01(c) of Chapter XI, or to periodic maintenance or testing of such equipment reasonably necessary to maintain such equipment in good working order.

Section 112.03. Construction Noise. Noise due to construction or repair work shall be regulated as provided by Section 41.40 of this Code (see above). (Amended by Ord. No. 161,574, Eff. 9/8/86.)

Section 112.04. Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices. (Title and Section Amended by Ord. No. 161,574, Eff 9/8/86.) Between the hours of 10:00 PM and. 7:00 PM of the following day, no person shall operate any lawn mower, backpack blower, lawn edger, riding tractor, or any other machinery, equipment, or other mechanical or electrical device, or any hand tool which creates a loud, raucous or impulsive sound, within any residential zone or within 500 feet of a residence.

Except as to the equipment and operations specifically mentioned and related elsewhere in this Chapter or for emergency work as that term is defined in Section 111.01(d), and except as to aircraft, tow tractors, aircraft auxiliary power units, trains and motor vehicles in their respective operations governed by State or federal regulations, no person shall operate or cause to be operated any machinery, equipment, tools, or other mechanical or electrical device, or engage in any other activity in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than five (5) decibels.

Notwithstanding the provisions of Subsection (a) above, no gas-powered blower shall be used within 500 feet of a residence at any time. Both the user of such a blower as well as the individual who contracted for the services of the user, if any, shall be subject to the requirements of and penalty provisions for this ordinance. Violation of the provisions of this subsection shall be punishable as an infraction in an amount not to exceed One Hundred Dollars ($100.00), notwithstanding the graduated fines set forth in LAMC § 11.00(m). (Amended by Ord. No. 171,890, Eff. 2/13/98.)

Note: Compliance with the criteria in this section of the Ordinance is difficult to predict. It exists as an enforcement tool for code enforcement officers.

Section 112.05. Maximum Noise Level of Powered Equipment or Powered Hand Tools. (Amended by Ord. No. 161,574, Eff. 9/8/86.) Between the hours of 7:00 AM and 10:00 PM, in any residential zone of the City or within 500 feet thereof, no person shall operate or cause to be operated any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet therefrom:

- 75 dBA for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment;
- 75 dBA for powered equipment of 20 HP or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools;
- 65dBA for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors;

Said noise limitations shall not apply where compliance therewith is technically infeasible. The burden of proving that compliance is technically infeasible shall be upon the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers and/or other noise reduction device or techniques during the operation of the equipment.

LAMC Chapter XI, Article 4, Vehicles

Noise standards for vehicle related noise sources are provided in Sections 114.01 through 114.07. Vehicles, include vehicle repairs, motor driven vehicles, loading and unloading, audible signaling devices, audible advertising devices, vehicle theft alarm systems, and audible status indicators. With the exception of loading and unloading, it is difficult to predict people's behavior in regards to repairs, operation of vehicles, signaling devices, alarms and indicators. Enforcement of these standards will be the responsibility of City of Los Angeles Code Enforcement Officers.

LAMC Chapter XI, Article 4, Vehicles, Loading and Unloading. (Amended by Ord. No. 166,514, Eff. 1/24/91.)

Section 114.03, Loading and Unloading
It shall be unlawful for any person, between the hours of 10:00 PM and 7:00 AM of the following day, to load or unload any vehicle, or operate any dollies, carts, forklifts, or other wheeled equipment, which causes any impulsive sound, raucous or unnecessary noise within 200 feet of any residential building.

Irrespective of the provisions of Subsection (a), loading or unloading of vehicles of the type of activity referred to in Subsection (a) may occur between the hours of 6:00 AM to 11:00 PM of the same day pursuant to a permit issued by the Department of Transportation in accordance with a business program as defined by said department. This permit program would be limited to the area bounded by Western Avenue, Santa Monica Freeway, Central Avenue, and the San Diego Freeway, within the limits of the City of Los Angeles. Such permits will not be issued to high-noise businesses such as trash pickup.

VIBRATION

Federal Transit Administration

The City currently does not have a significance threshold to assess vibration impacts during construction. Thus, FTA guidelines, set forth in FTA's Transit Noise and Vibration Impact Assessment Manual, dated September 2018, are used to evaluate potential impacts related to construction vibration for both potential building damage and human annoyance. The FTA guidelines regarding construction vibration are the most current guidelines and are commonly used in evaluating vibration impacts. Based on this FTA guidance, shown in Table 4, impacts relative to the groundborne vibration associated with potential building damage would be considered significant if any of the following future events were to occur:

- Project construction activities cause groundborne vibration levels to exceed 0.5 in/sec PPV at the nearest off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause groundborne vibration levels to exceed 0.3 in/sec PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause groundborne vibration levels to exceed 0.2 in/sec PPV at the nearest off-site non-engineered timber and masonry buildings
- Project construction activities cause groundborne vibration levels to exceed 0.12 in/sec PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

There are no buildings, such as historic buildings, which are extremely susceptible to building damage located immediately adjacent to the project site. For conservative purposes, the construction vibration analysis provided below for potential building damage due to on-site construction compares the estimated vibration levels generated during construction of the project to the 0.2 in/sec PPV significance threshold for non-engineered timber and masonry buildings.

Based on FTA guidance shown in Table 5, construction vibration impacts associated with human annoyance/special buildings would be significant if the following were to occur:

- Project construction activities cause groundborne vibration levels to exceed 72 VdB at offsite sensitive uses, including residential uses and buildings where people normally sleep (i.e., hotels, and hospitals).
- Project construction activities cause groundborne vibration levels to exceed 65 VdB at offsite buildings with vibration sensitive interior operations (i.e., vibration-sensitive equipment in hospitals or research etc.).
- Project construction activities cause groundborne vibration levels to exceed 75 VdB at offsite institutional land uses (i.e., schools, churches, and doctors' offices).

The FTA guidance further classifies the vibration levels above based on whether the vibration producing events are frequent, occasional, or infrequent. "Frequent Events" is defined as more than 70 vibration events of the same source per day. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. The values listed above are applicable to "Frequent Events." There are no buildings with vibration-sensitive interior operation or institutional uses that are sensitive to human annoyance as a result of vibration in the immediate vicinity of the project site. For conservative purposes, the vibration analysis provided below for potential human annoyance compares the estimated vibration levels generated during construction of the project to the 72 VdB significance threshold for off-site sensitive uses for "Frequent Event."

Table 3
Community Noise Exposure Thresholds

Land Use	Community Noise Exposure CNEL, db			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging - Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters		50 - 70		above 65
Sports Arena, Outdoor Spectator Sports		50 - 75		above 70
Playgrounds, Neighborhood Parks	50 - 70		67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75		70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	
Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.				
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.				
Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.				
Clearly Unacceptable: New construction or development should generally not be undertaken.				

Notes:

Source: California Department of Health Services (DHS).

Table 4
Construction Vibration Damage Criteria

Building/Structural Category	PPV, in/sec	Approximate Lv*
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extemely susceptible to vibration damage	0.1	90

Notes:

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

*RMS velocity in decibels, VdB re 1 micro-in/sec

Table 5
Ground-Borne Vibration (GBV) Impact Criteria for General Vibration Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB*	65 VdB*	65 VdB*
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes:

Source:Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

*This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

Construction noise associated with the proposed project was calculated at the sensitive receptor locations, utilizing methodology presented in the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2018) together with several key construction parameters, including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the project site.

The equipment used to calculate the construction noise levels for each phase were based on the assumptions provided in the CalEEMod modeling in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, Inc., 2023). For analysis purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. Sound emission levels associated with typical construction equipment as well as typical usage factors are provided in Table 6. Construction noise worksheets are provided in Appendix D.

STATIONARY SOURCE NOISE MODEL

The SoundPLAN acoustical modeling software was utilized to model project operational worst-case stationary noise impacts from the proposed project to adjacent sensitive uses as well as traffic noise impacts to the proposed project (e.g., residences). SoundPLAN is capable of evaluating stationary noise sources (e.g., parking lots, drive-thru menus, carwash equipment, vacuums, etc.). The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition to the information provided below, noise modeling input and outputs assumptions are provided in Appendix E.

Sound levels associated with project operation were modeled utilizing representative sound levels in the SoundPLAN model. Modeled noise sources include parking lot noise, drive-through speakers, drive-through queue line, and HVAC equipment. All noise sources were modeled to be in full operation for an entire hour. This is a conservative modeling effort, given that several of the noise sources are not in operation continuously for an entire hour.

Parking Lot Noise

Parking lot noise was calculated using SoundPLAN methodology. Specifically, the traffic volume of the parking lot is entered with the number of moves per parking lot, the hour and the number of parking bays. The user defines whether the parking lots are for automobiles, motorcycles, or trucks, and the emission level of a parking lot is automatically adjusted accordingly. The values for the number of parking moves for each time slice is the number of parking moves per reference unit (most often per parking bay), averaged for the hour[2].

SoundPLAN utilizes parking lot noise emission levels from the 6th revised edition of the parking lot study "Recommendations for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus

[2] SoundPLAN Essential 4.0 Manual. SoundPLAN International, LLC. May 2016.

Stations as well as of Multi-Story Car Parks and Underground Car Parks" published by the Bavarian Landesamt für Umwelt provides calculation methods to determine the emissions of parking lots.

The parking lot emission table documents the reference level (Lw, ref) from the parking lot study.

Lw, ref = Lw0 + KPA + KI + KD + KStrO + 10 log(B) [dB(A)]

With the following parameters:

Lw0 = Basic sound power, sound power level of one motion / per hour on P+R areas = 63 dB(A)
KPA = Surcharge parking lot type
KI = Surcharge for impulse character
KD = Surcharge for the traffic passaging and searching for parking bays in the driving lanes 2,5 * lg (f * B - 9)
f = Parking bays per unit of the reference value
B = Reference value
KStrO = Surcharge for the road surface
B = Reference value

Drive Through Noise

The drive-thru speakers were modeled as point sources and a SoundPLAN noise reference level to represent raised human voices of 70 dBA was utilized.

Que

A line noise source with a sound pressure level of 50 dB L_{eq} every square meter was utilized to represent vehicle drive-through queuing.

Patio Seating Areas

A reference noise level of 67 dBA L_w per meter was utilized to model conversational noise associated with the patio seating areas (not just at the tables).

Mechanical Equipment (HVAC Units) Noise

A noise reference level of 67.7 dBA at 3 feet (sound power level of 78.7 dB) was utilized to represent rooftop 50 Ton Carrier HVAC units.[3] A total of six rooftop units were modeled on the proposed rooftops. The noise source height for each HVAC unit was assumed at 1 meter above the roof top. Roof top is assumed to be approximately 6.7 meters (~22 feet) above grade. It is assumed that no HVAC equipment will be stored at ground level outside of the proposed building.

TRAFFIC NOISE MODELING

Noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Key model parameters and REMEL adjustments are presented below:

- Roadway classification (e.g., freeway, major arterial, arterial, secondary, collector, etc.)
- Roadway active width (distance between the center of the outer most travel lanes on each side of the roadway)

3 MD Acoustics, LLC Noise Measurement Data for RTU –Carrier 50TFQ0006.

- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks
- Roadway grade and angle of view
- Site conditions (e.g., soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period.

Table 7 shows the roadway volumes, speeds, and site conditions used in the analysis. The following outlines key adjustments made to the REMEL for project site parameter inputs:

- Vertical and horizontal distances (sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (noise barrier distance from sound source and receptor).
- Traffic noise source spectra
- Topography

Traffic noise levels were calculated at the right-of-way based on distance from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the modeled noise levels are shown for comparative purposes only to show the difference between with and without project conditions. The traffic noise calculation worksheets are included in Appendix F.

GROUNDBORNE VIBRATION MODELING

Groundborne vibration modeling was performed using vibration propagation equations and construction equipment source levels obtained from the FTA *Transit Noise and Vibration Impact Assessment Manual* (2018). Table 8 shows typical vibration levels associated with commonly used construction equipment based on data from the FTA.

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 8, a vibratory roller could generate up to 0.21 in/sec PPV at and operation of a large bulldozer could generate up to 0.089 PPV at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 0.0026 in/sec PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (25/D_{rec})^{n}$$

Where: PPV_{ref} = *reference PPV at 25ft.*
D_{rec} = *distance from equipment to receiver in ft.*
n = 1.5 (*the value related to the attenuation rate through ground*)

Groundborne vibration calculations are provided in Appendix G.

Table 6 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90

Table 6 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014 http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

Table 7
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1]		Posted Travel Speeds (MPH)	Site Conditions
		Existing	Existing Plus Project		
Winnetka Avenue	North of Ventura Boulevard	19,670	19,800	35	Soft
	South of Ventura Boulevard	9,430	9,470	30	Soft
Quakertown Avenue	South of Ventura Boulevard	2,880	3,030	25	Soft
Ventura Boulevard	West of Winnetka Avenue	26,040	26,170	35	Soft
	East of Winnetka Avenue	26,060	26,360	35	Soft
	West of Quakertown Avenue	27,300	27,600	35	Soft
	East of Quakertown Avenue	27,340	27,490	35	Soft
	West of Oakdale Avenue	27,010	27,140	35	Soft
	East of Oakdale Avenue	26,830	26,960	35	Soft

Vehicle Distribution (Light Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.56	13.96	10.49
Medium Trucks	48.91	2.17	48.91
Heavy Trucks	47.30	5.41	47.30

Vehicle Distribution (Heavy Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.54	14.02	10.43
Medium Trucks	48.00	2.00	50.00
Heavy Trucks	48.00	2.00	50.00

Notes:

(1) Existing and project daily traffic volumes were calculated from the PM peak hour turning movement volumes provided in the *Transportation Analysis for 20032 Ventura Boulevard* (Gibson Transportation Consulting, Inc., December 1, 2022).

(2) Existing and project vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 8
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.
*RMS velocity in decibels, VdB re 1 micro-in/sec

6. NOISE AND VIBRATION IMPACT ANALYSIS

This section analyzes the significance of project-related noise and groundborne vibration impacts relative to standards established by the City of Los Angeles and other applicable agencies in the context of CEQA. Appendix G of the California Environmental Quality Act Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations) includes an environmental checklist that identifies issues upon which findings of significance should be made. The CEQA Environmental Checklist Appendix G, XIII. Noise, requires determination if the project would result in:

a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

b) *Generation of excessive groundborne vibration or groundborne noise levels?*

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?*

NOISE IMPACTS

Would the project result in:

a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "a", applicable standards established by the City of Los Angles can be categorized into the following areas:

- Construction Noise
- Stationary Source Noise
- Mobile Source Noise

Construction Noise

Construction noise is regulated within Sections 41.4, 114.03, and 112.05 of the LAMC (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if:

- Project construction occurs outside the hours of 7:00 AM to 9:00 PM (LAMC Chapter IV, Article 1, Section 41.40); or,

- Project construction causes the loading or unloading of any vehicle, or operating of any dollies, carts, forklifts, or other wheeled equipment within 200 feet of any residential building between the hours of 10:00 PM and 7:00 AM (LAMC Chapter XI, Article 4, Section 114.03); or,

- Project construction noise exceeds 75 dBA L_{eq} as measured at a distance of 50 feet between the hours of 7:00 AM and 10:00 PM in any residential zone or within 500 feet of a residential zone (LAMC Chapter XI, Article 2, Section 112.05).

Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix D. Anticipated noise levels during each construction phase are presented in Table 9.

As stated previously, zoning in the vicinity of the project site is shown in Figure 5. Land that allows residential development, and is currently developed with existing residential uses, is located as close as approximately 20 feet south, 23 feet southeast, 264 feet southeast of the boundaries of the project site. Therefore, the project must comply with LAMC Section 112.05 by ensuring that construction equipment does not exceed a L_{eq} of 75 dB as measured at a distance of 50 feet.

As shown in Table 9, noise associated with project construction noise may range between 74 and 87 dBA L_{eq} at a distance of 50 feet. However, with implementation of BMPs 1 through 9 project construction noise levels would not exceed 75 dBA L_{eq} at a distance of 50 feet during any phase of construction and will not occur outside of the hours outlined in LAMC Sections 41.4 and 114.03. Therefore, the project would not exceed City-established standards relating to construction noise. The project impact is less than significant; no mitigation is required.

The BMPs are provided in the Project Description and should be added to project plans and in contract specifications to minimize construction noise emanating from the proposed project.

Stationary Source Noise

Stationary source noise standards are established within Section 112.02, 112.01, and 114.03 of the LAMC (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if:

- Project operation of any air conditioning, refrigeration or heating equipment causes the noise level at an occupied residential use to exceed the ambient noise level by more than 5 dB (LAMC Chapter XI, Article 2, Section 112.02); or,

- Project operation of any machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound is audible to the human ear at a distance in excess of 150 feet from the property line of the noise source within any residential zone or within 500 feet of a residential zone or causes the ambient noise level at an occupied residential use to exceed the ambient noise level by more than 5 dB (LAMC Chapter XI, Article 2, Section 112.01); or,

- Project operation causes the loading or unloading of any vehicle, or operating of any dollies, carts, forklifts, or other wheeled equipment within 200 feet of any residential building between the hours of 10:00 PM and 7:00 AM (LAMC Chapter XI, Article 4, Section 114.03).

Heating and Ventilation (HVAC) equipment proposed on the rooftop of the proposed building was modeled using the SoundPLAN model along with parking lot noise, outdoor eating areas, and the drive-through speakers and queue line. As shown in Figures 7 and 8, combined operational noise is expected to range between 34 and 55 dBA L_{eq} at modeled sensitive receptor locations. Existing daytime measured noise levels at these locations range between 54 and 66 dBA; and the measured quietest nighttime hour was 52 dBA Leq. As shown in Table 10 project operational noise would not result in increases in the ambient noise levels at modeled receptors. Assuming peak hour operation were to occur between 10:00 PM and 7:00 AM, project operation would result in increases of 2 to 3 dBA L_{eq} at receptors 2 and 3 respectively but would not result in increases of 5 dBA L_{eq} or more. Impacts associated with on-site operation of the project would be less than significant; no mitigation is required.

Mobile Source Noise

California courts have rejected use of what is effectively a single "absolute noise level" threshold of significance (e.g., exceed 65 dBA CNEL) on the grounds that the use of such a threshold fails to consider the magnitude or severity of increases in noise levels attributable to the project in different environments (see *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814). California courts have also upheld the use of "ambient plus increment" thresholds for assessing project noise impacts as consistent with CEQA, noting however, that the severity of existing noise levels should not be ignored by incorporating a smaller incremental threshold for areas where existing ambient noise levels were already high (see *Mission Bay Alliance v. Office of Community Investment and Infrastructure* (2016) 6 Cal.App.5th 160).

It is widely accepted that the average healthy human ear can barely perceive changes of 3 dBA in an outdoor environment and that a change of 5 dBA is readily perceptible.[4] Based on Table 3 and considering relevant case law, the project would result in a significant impact if:

- The addition of project trips on surrounding roadways causes noise levels to increase by:
  - 5 dBA in residential areas where the existing ambient noise level is less than or equal to a CNEL of 65 dBA; or,
  - 3 dBA in residential areas where the existing ambient noise level exceeds a CNEL of 65 dBA.

Operational Mobile Source Noise

Roadway noise levels were calculated at Winnetka Avenue, Quakertown Avenue, and Ventura Boulevard based on the FHWA Traffic Noise Prediction Model methodology. As stated in the *Transportation Analysis for 20032 Ventura Boulevard* (Transportation Analysis) prepared by Gibson Transportation Consulting, Inc. (December 1, 2022), during operation the proposed project is expected to generate approximately 556 average daily trips. Roadway noise levels were calculated for the following scenarios:

- *Existing (without Project)*: This scenario refers to existing year traffic noise conditions.
- *Existing Plus Project*: This scenario refers to existing year plus project traffic noise conditions.

Table 11 shows the change in existing roadway noise levels with the addition of project-generated operational trips. FHWA Traffic Noise Prediction Model calculation worksheets are provided in Appendix F.

As shown in Table 11, modeled existing traffic noise levels range between 61-75 dBA CNEL and the modeled Existing Plus Project traffic noise levels range between 61-75 dBA CNEL at the right-of-way of each study roadway segment. The addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments (see Table 11). The project impact is less than significant; no mitigation is required.

Construction Mobile Source Noise

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the 101 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps.

In the vicinity of the project site, Ventura Boulevard currently handles between approximately 26,040 to 27,340 average daily vehicle trips, Winnetka Avenue currently handles between approximately 9,430 to 19,670 average daily vehicle trips, and Quakertown Avenue currently handles approximately 2,880 average

daily vehicle trips.[5] According to the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Ganddini Group, Inc., 2023), the greatest number of construction-related vehicle trips per day would be during grading at up to 31 vehicle trips per day (7.5 for worker trips and 23.5 for hauling trips). Therefore, vehicle traffic generated during project construction is nominal relative to existing roadway volumes and would not result in the doubling of traffic volume necessary to increase noise levels by 3 dBA. The project impact is less than significant; no mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

Would the project result in:

b) Generation of excessive groundborne vibration or groundborne noise levels?

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "b", the City of Los Angeles has not established thresholds of significance concerning groundborne vibration. In the absence of City-established thresholds, groundborne vibration impacts are based on guidance from the *Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual* (FTA, September 2018) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:
  - 0.10 in/sec at buildings extremely susceptible to vibration damage
  - 0.20 in/sec at non-engineered timber and masonry buildings
  - 0.30 in/sec at engineered concrete and masonry (no plaster) buildings
  - 0.50 in/sec at reinforced-concrete, steel or timber (no plaster) buildings
- Groundborne vibration levels generated by the project have the potential to cause annoyance at sensitive receptors by exceeding 72 VdB.

Groundborne vibration modeling worksheets are provided in Appendix G.

Groundborne Vibration - Construction

The closest vibration-sensitive receptors to the project site include the residential buildings located as close as approximately 20 feet south of the southern property line (R2) and 53 feet southeast of the southern property line (R3) of the project site (see Table 12 and Figure 5). Although, commercial structures are located approximately 60 feet east of the eastern project property line, 62 feet west of the western project property line, 234 feet northwest of the northern project property line, 120 feet north of the northern project property line and 132 feet northeast of the northern project property line, they are not considered to be vibration-sensitive land uses.

Groundborne vibration associated with project construction has the potential to cause architectural damage to the residential buildings to the south of the project site, as shown in Table 12. However, with implementation of BMP 10, groundborne vibration at the buildings located south of the project site would not exceed 0.2 PPV in/sec. Groundborne vibration impacts, as they relate to potential structural impacts, would be less than significant. No mitigation is required.

The threshold for annoyance due to vibration (72 VdB at offsite sensitive uses) could theoretically be exceeded at existing sensitive receptors within 136 feet of the project site and residents may be temporarily

[5] Existing average daily traffic calculated from the PM peak hour turning movement volumes provided in the *Transportation Analysis for 20032 Ventura* prepared by Gibson Transportation Consulting, Inc. (December 1, 2022). See Table 7 for further details.

annoyed. However, the impact would only occur during daytime hours and will be temporary. In addition, BMP 10, discussed above, will reduce annoyance related impacts. This impact would be less than significant. No mitigation is required.

Groundborne Vibration – Operation

Project operations would include typical commercial-grade stationary mechanical and electrical equipment, such as heating and ventilation equipment etc., which would produce vibration. In addition, the primary sources of transient vibration would include passenger vehicle circulation within the proposed parking lot and drive-through queue line. Groundborne vibration generated by each of the above-mentioned activities would generate approximately up to 50 VdB to 60 VdB adjacent to the project site.[6] The potential vibration levels of approximately up to 50 VdB to 60 VdB from all project operational sources at the closest existing sensitive receptor locations would be less than the significance threshold of 72 VdB for perceptibility for "Frequent Events". As such, project operations would not result in the generation of excessive groundborne vibration. Impacts associated with operation of the project would be below the significance threshold and impacts would be less than significant.

AIR TRAFFIC IMPACTS

Would the project result in:

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?*

The closest airport to the project site is the Van Nuys Airport, with airport runways located as close as approximately 4.89 miles northeast of the project site. The Airport Influence Area map provided in the Los Angeles County Airport Land Use Commission (ALUC) Airport Land Use Plan (May 2003) shows that the project site is well outside both the airport influence area and 65 dBA CNEL contours for the Van Nuys Airport.[7] The proposed project would not expose people residing or working in the project area to excessive noise levels. No impact and no mitigation is required.

CUMULATIVE IMPACTS

Cumulative Noise Impacts

Noise by definition is a localized phenomenon and drastically reduces as distance from the source increases. As a result, only project and growth in the general area of the project site would contribute to cumulative noise impacts. Noise impacts are localized in nature and decrease with distance. In addition, cumulative construction noise impacts have the potential to occur when multiple construction projects in the local area generate noise within the same time frame and contribute to the local ambient noise environment. However, it is expected that, as with the project, any potential cumulative projects in the area would implement BMPs, or similar mitigation measures, which would minimize any noise-related nuisances during construction.

Cumulative Construction Noise

Compliance with the existing ordinance regulating construction noise will minimize construction noise impacts. As shown in the modeling for the proposed project, with incorporation of BMPs, temporary construction noise from the project would not result in the on-site generation of construction noise levels in excess of standards

[6] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.2, September 2018.

[7] https://planning.lacounty.gov/long-range-planning/los-angeles-county-airport-land-use-plan/

established by the City at any sensitive receptors. Cumulative impacts associated with project construction would not be significant. No mitigation is required.

Cumulative Project Operational Noise

Existing daytime measured noise levels at these locations range between 54 and 66 dBA; and the measured quietest nighttime hour was 52 dBA Leq. As shown in Table 10, project operational noise would not result in increases in the ambient noise levels at modeled receptors. Assuming peak hour operation were to occur between 10:00 PM and 7:00 AM, project operation would result in increases of 2 to 3 dBA L_{eq} at receptors 2 and 3 respectively but would not result in increases of 5 dBA L_{eq} or more. Cumulative impacts associated with on-site operation of the project would be less than significant; no mitigation is required.

Cumulative Groundborne Vibration Impacts

Because groundborne vibration drops off rapidly with distance from the source, it is highly unlikely that vibration waves created on the project site would combine with vibration waves generated on a nearby construction site and result in a cumulative impact. The proposed project would not contribute to a cumulative groundborne vibration impact. No mitigation is required.

Table 9
Construction Noise Levels at 50 Feet (dBA L_{eq})

Phase	Distance from Construction Activity to Receptor (ft)	Construction Noise Levels (dBA Leq)[1]	BMP[2] Reduction (dB)	Construction Noise Levels With BMPs (dBA Leq)	Exceeds 75 dB Standard?[3]
Demolition	50	86.7	12	75	No
Site Preparation	50	83.6	9	75	No
Grading	50	84.6	10	75	No
Building Construction	50	85.3	10	74	No
Paving	50	84.4	9	74	No
Architectural Coating	50	74.0	-	-	No

Notes:

(1) Construction noise worksheets are provided in Appendix D.

(2) Project Best Management Practices (BMPs) include, but not limited to, the use of alternative equipment, muffled equipment, and temporary barriers.

(3) The applicable LAMC Section 112.05 standard is 75 dBA at a distance of 50 feet.

Table 10
Increase in Existing Noise Levels Due to On-Site Project Operation (dBA Leq)

Receptor	Existing Measured Noise Level[1]	Modeled Operational Noise Level[2]	Increase in Noise Level	Increase of 5 dB or More?[3]
Daytime (7:00 AM-10:00 PM)				
1	66	34	0	No
2	62	55	0	No
3	59	49	0	No
4	58	39	0	No
5	54	42	0	No
Nighttime (10:00 PM to 7:00 AM)				
1	52	34	0	No
2	52	55	2	No
3	52	49	3	No
4	52	39	0	No
5	52	42	0	No

Notes:

1) See Table 1 for daytime noise levels and Table 2 for nighttime noise level. The quietest nighttime hourly noise measurement was used.

2) See Figures 7 and 8.

3) Per LAMC Section 114.03.

Table 11
Increase in Existing Noise Levels Due to Project Generated Vehicle Traffic (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Modeled Noise Levels (dBA CNEL)[1]				
			Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level	Exceeds Standards[3]	Increase of 3 dB or More?
Winnetka Avenue	North of Ventura Boulevard	55	73.90	73.93	0.03	Yes	No
	South of Ventura Boulevard	33	67.12	67.13	0.01	Yes	No
Quakertown Avenue	South of Ventura Boulevard	30	60.91	61.13	0.22	Yes	No
Ventura Boulevard	West of Winnetka Avenue	55	75.12	75.14	0.02	Yes	No
	East of Winnetka Avenue	55	75.12	75.17	0.05	Yes	No
	West of Quakertown Avenue	55	75.32	75.37	0.05	Yes	No
	East of Quakertown Avenue	55	75.33	75.35	0.02	Yes	No
	West of Oakdale Avenue	55	75.28	75.30	0.02	Yes	No
	East of Oakdale Avenue	55	75.3	75.3	0.02	Yes	No

Notes:

(1) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

(2) Right of way per the City of Los Angeles General Plan Mobility Plan.

(3) Per the normally acceptable standard for single-family detached residential dwelling units of 60 dBA CNEL (see Table 3).

Table 12
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level[1]	Threshold Exceeded?[2]	Vibration Level with Best Management Practices[1,3]	Threshold Exceeded With Best Management Practices?[2,3]
Architectural Damage Analysis						
Residential to South (R2)	20	Vibratory Roller	0.293	Yes	0.198	No
	20	Large Bulldozer	0.124	No	-	-
Residential to Southeast (R3)	53	Vibratory Roller	0.068	No	-	-
	53	Large Bulldozer	0.029	No	-	-
Commercial to East	60	Vibratory Roller	0.056	No	-	-
	60	Large Bulldozer	0.024	No	-	-
Commercial to West	62	Vibratory Roller	0.054	No	-	-
	62	Large Bulldozer	0.023	No	-	-
Commercial to Northwest	234	Vibratory Roller	0.007	No	-	-
	234	Large Bulldozer	0.003	No	-	-
Commercial to North	120	Vibratory Roller	0.020	No	-	-
	120	Large Bulldozer	0.008	No	-	-
Commercial to Northeast	132	Vibratory Roller	0.017	No	-	-
	132	Large Bulldozer	0.007	No	-	-
Annoyance Analysis						
Residential to South (R2)	20	Vibratory Roller	97	Yes	-	-
	20	Large Bulldozer	90	Yes	-	-
Residential to Southeast (R3)	53	Vibratory Roller	84	Yes	-	-
	53	Large Bulldozer	77	Yes	-	-

Notes:

(1) Vibration levels are provided in PPV in/sec for architectural damage and VdB for annoyance.

(2) The FTA identifies the threshold at which there is a risk to "architectural" damage to non-engineered timber and masonry buildings as a PPV of 0.2 in/sec (see Table 3). In addition, the FTA identifies a vibration annoyance threshold of 72 VdB for residential uses (see Table 4). Per the FTA Transit Noise and VIbration Impact Assessment Manual (September 2018), commercial uses are not considered vibration-sensitive land uses; therefore, the annoyance threshold does not apply to commercial uses.

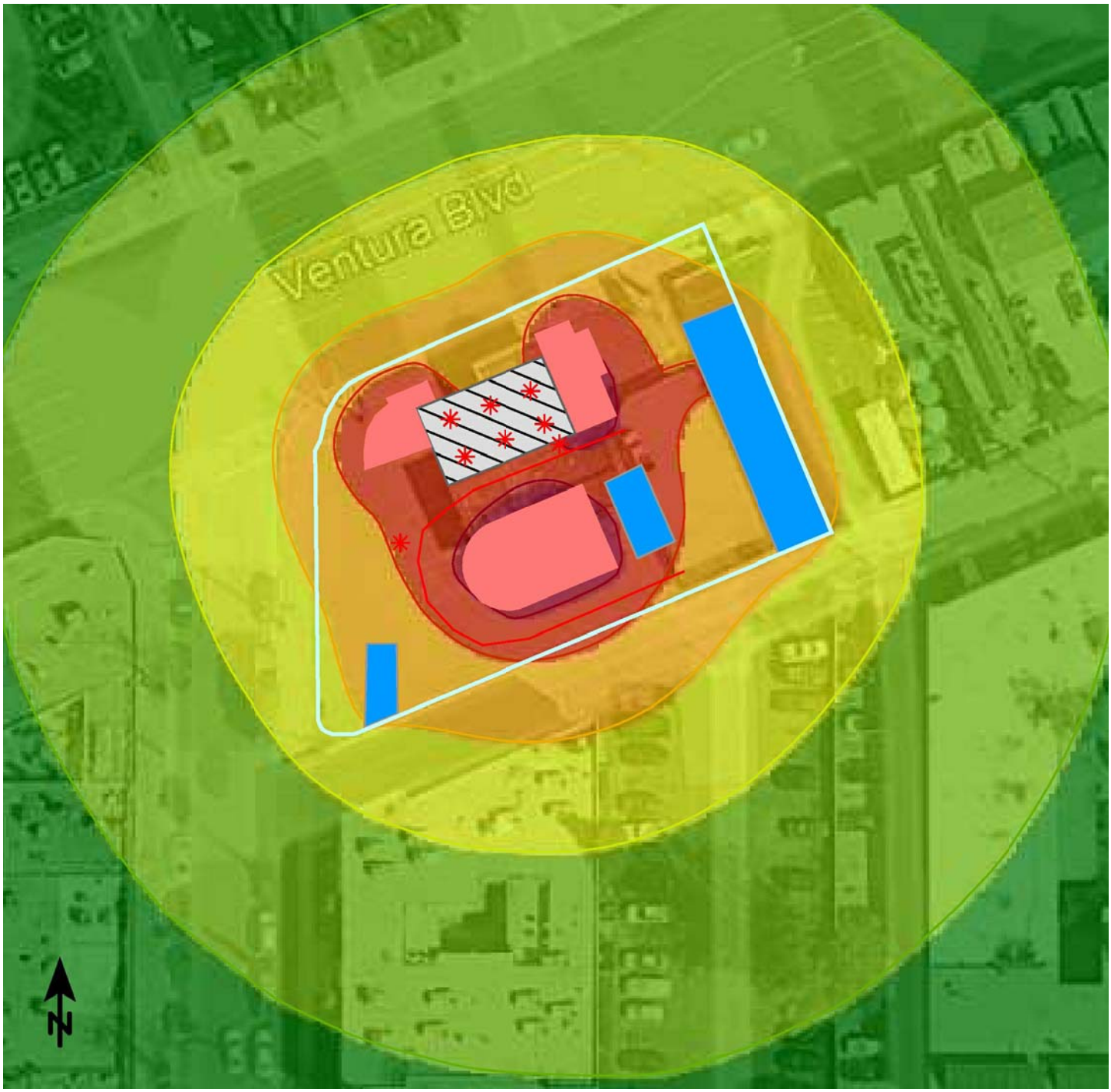
(3) Needed Best Management Practices (BMPs) for architectural damage would include prohibiting the use of vibratory rollers, or other similar vibratory equipment, within 26 feet of residential strucures to the south of the project site.

N

Signs and symbols

- Project Boundary
- Proposed Building
- Receiver
- HVAC, Speaker, and Drive Through Window
- Que
- Patio Seating- (Conversation)
- Parking lot

Figure 7
Operational Noise Levels (dBA Leq)



Signs and symbols

- Project Boundary
- Proposed Building
- HVAC, Speaker, and Drive Through Window
- Que
- Patio Seating- (Conversation)
- Parking lot

Levels in dB(A)

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

Figure 8
Operational Noise Contours (dBA)

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APPENDICES

APPENDIX A

LIST OF ACRONYMS

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
Lp	Sound Pressure Level
LOS C	Level of Service C
Lw	Sound Power Level
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

GLOSSARY

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max}, L_{min}	Lmax is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. Lmin is the minimum level.
Offensive/ Offending/Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEETS

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** May 31, 2023

Project #: 19639

Noise Measurement #: STNM1 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 5461 Winnetka Avenue, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Near the NE corner of Taft High School, 5461 Winnetka Ave. Adjacent: Winnetka Ave (running N-S) just east with commercial and parking lot uses further east, Ventura Blvd ~340' and 101 Fwy ~800' north (both running WSW-ENE), and high school buildings to SW and parking lot to NW,

Weather: Overcast. Sunset 8:00 PM **Settings:** SLOW FAST

Temperature: 66 deg F **Wind:** 9 mph **Humidity:** 57% **Terrain:** Flat

Start Time: 1:05 PM **End Time:** 1:20 PM **Run Time:**

Leq:	66.1	dB	**Primary Noise Source:** Traffic noise from the 130 vehicles passing microphone traveling on Winnetka
Lmax	81.7	dB	Avenue. Traffic noise from Ventura Blvd & 101 Freeway to north.
L2	74.2	dB	**Secondary Noise Sources:** Traffic ambiance from vehicles on other roads. Overhead air traffic.
L8	70.3	dB	Parking lot ambiance from businesses on other side of Winnetka Avenue.
L25	65.5	dB	
L50	61.3	dB	

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:

STNM1 looking W towards NE corner of High School. High school staff parking lot on right side of image.

STNM1 looking E across Winnetka Ave, towards grocery store building 20060 Ventura Blvd, Woodland Hills.

Summary	
File Name on Meter	LxT_Data.278.s
File Name on PC	LxT_0003099-20230531 130524-LxT_Data.278.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM1 34°10'11.23"N 118°34'15.87"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills

Measurement	
Start	2023-05-31 13:05:24
Stop	2023-05-31 13:20:24
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 13:05:05
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.9 dB

Results			
LA_{eq}	66.1		
LAE	95.7		
EA	410.692	µPa²h	
EA8	13.142	mPa²h	
EA40	65.711	mPa²h	
$LA_{peak\ (max)}$	2023-05-31 13:10:10	98.7	dB
LAS_{max}	2023-05-31 13:20:05	81.7	dB
LAS_{min}	2023-05-31 13:17:39	50.9	dB

			Statistics		
LC_{eq}	73.2	dB	**LA2.00**	74.2	dB
LA_{eq}	66.1	dB	**LA8.00**	70.3	dB
LC_{eq} - LA_{eq}	7.0	dB	**LA25.00**	65.5	dB
LAI_{eq}	67.5	dB	**LA50.00**	61.3	dB
LA_{eq}	66.1	dB	**LA66.60**	58.5	dB
LAI_{eq} - LA_{eq}	1.4	dB	**LA90.00**	53.7	dB
Overload Count	0				

Measurement Report

Report Summary

Meter's File Name	LxT_Data.278.s	Computer's File Name	LxT_0003099-20230531 130524-LxT_Data.278.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 34°10'11.23"N 118°34'15.87"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-05-31 13:05:24	Duration	0:15:00.0
End Time	2023-05-31 13:20:24	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	66.1 dB		
LAE	95.7 dB	SEA	--- dB
EA	410.7 µPa²h	LAFTM5	70.4 dB
EA8	13.1 mPa²h		
EA40	65.7 mPa²h		
LA_{peak}	98.7 dB	2023-05-31 13:10:10	
LAS_{max}	81.7 dB	2023-05-31 13:20:05	
LAS_{min}	50.9 dB	2023-05-31 13:17:39	
LA_{eq}	66.1 dB		
LC_{eq}	73.2 dB	LC_{eq} - LA_{eq}	7.0 dB
LAI_{eq}	67.5 dB	LAI_{eq} - LA_{eq}	1.4 dB

Exceedances	Count	Duration
LAS > 65.0 dB	34	0:05:07.4
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

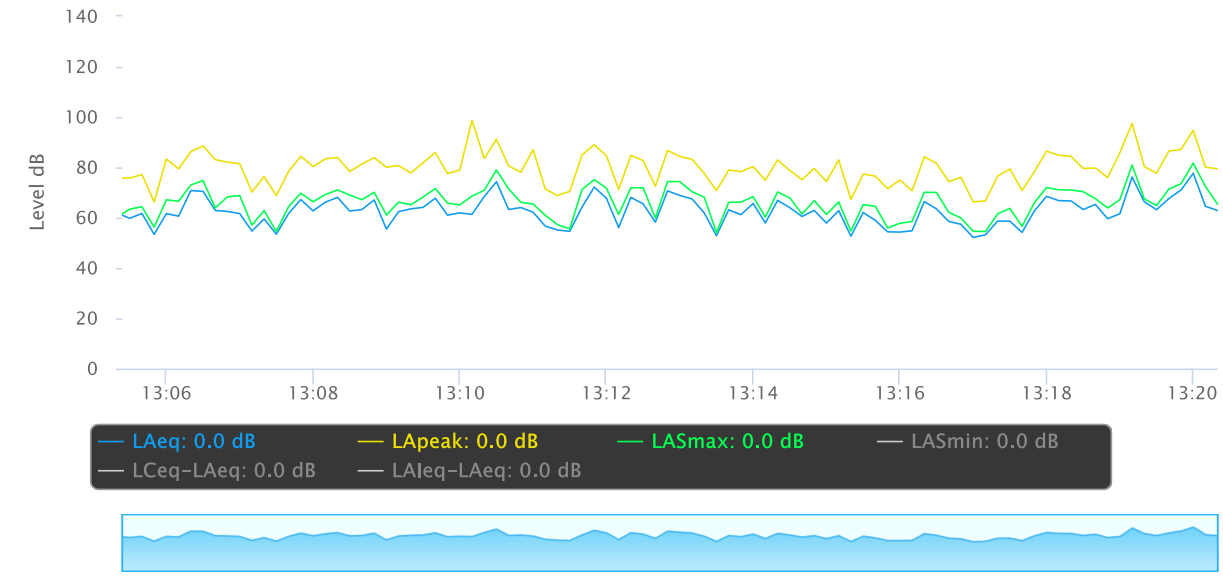
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	66.1 dB		73.2 dB		--- dB	
$L_{S(max)}$	81.7 dB	2023-05-31 13:20:05	--- dB		--- dB	
$L_{S(min)}$	50.9 dB	2023-05-31 13:17:39	--- dB		--- dB	
$L_{Peak(max)}$	98.7 dB	2023-05-31 13:10:10	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

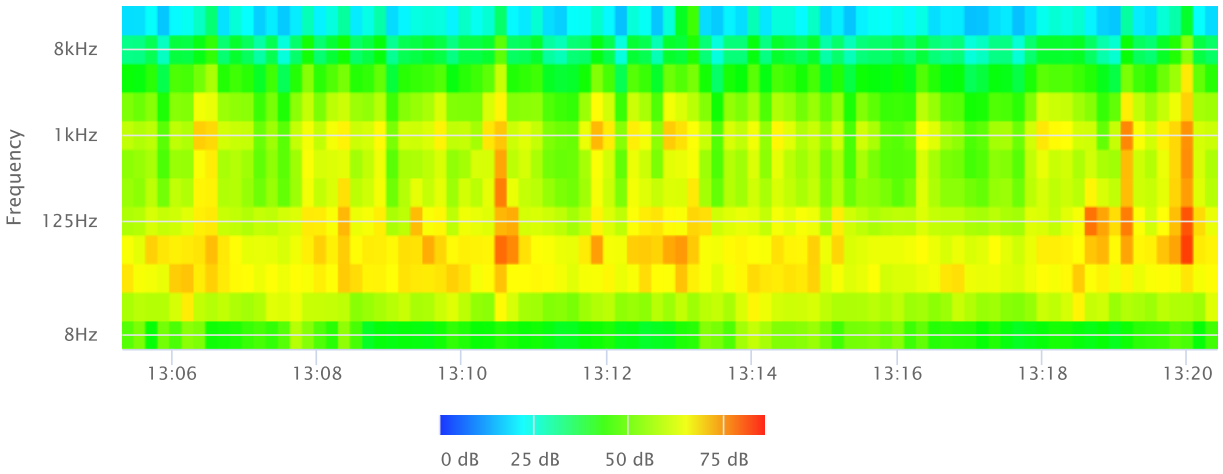
Statistics

LAS 2.0	74.2 dB
LAS 8.0	70.3 dB
LAS 25.0	65.5 dB
LAS 50.0	61.3 dB
LAS 66.6	58.5 dB
LAS 90.0	53.7 dB

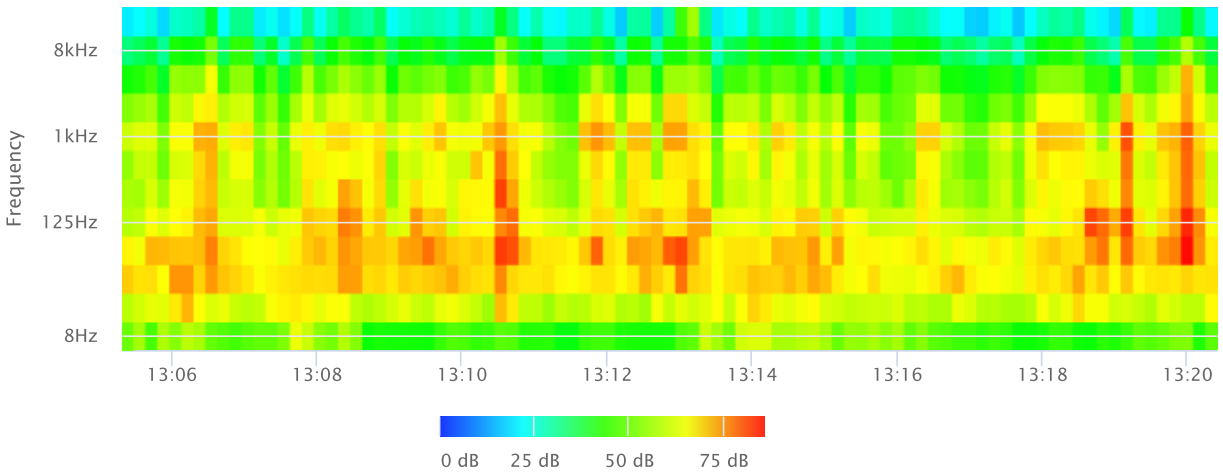
Time History



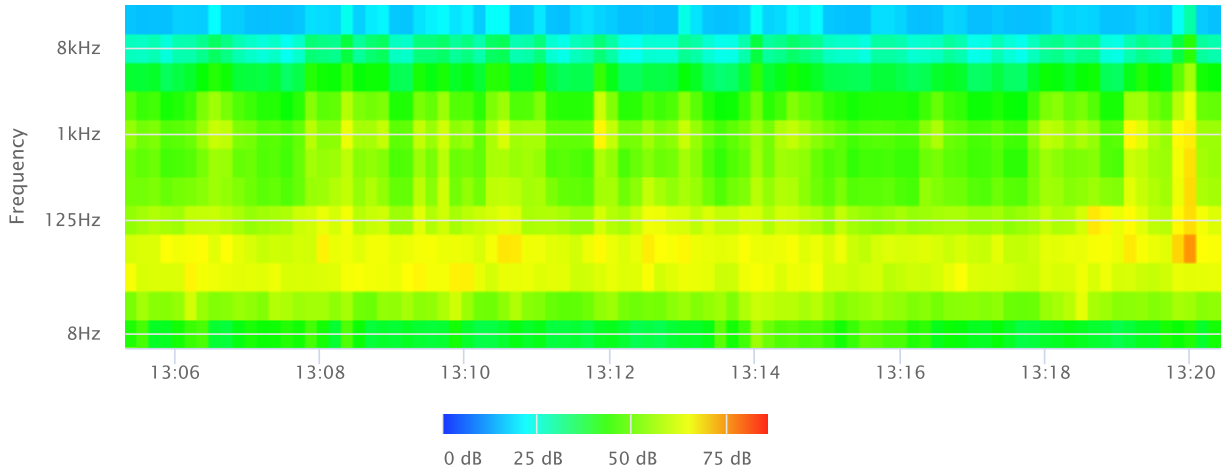
OBA 1/1 Leq



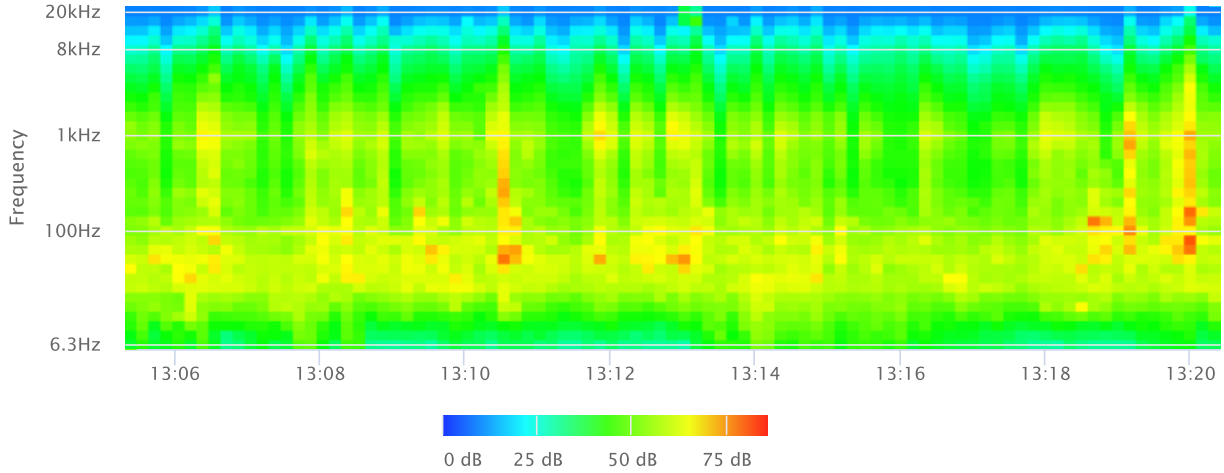
OBA 1/1 Lmax



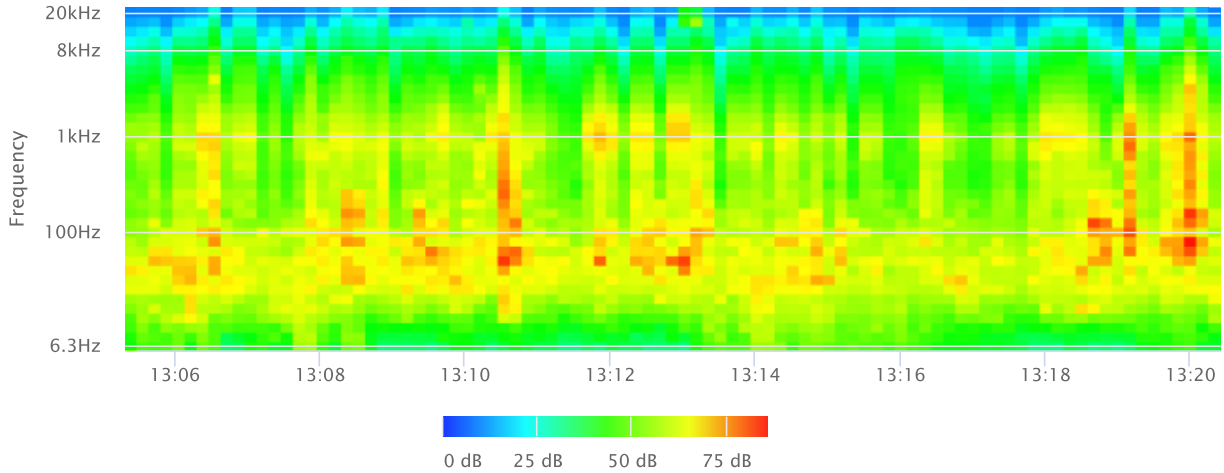
OBA 1/1 Lmin



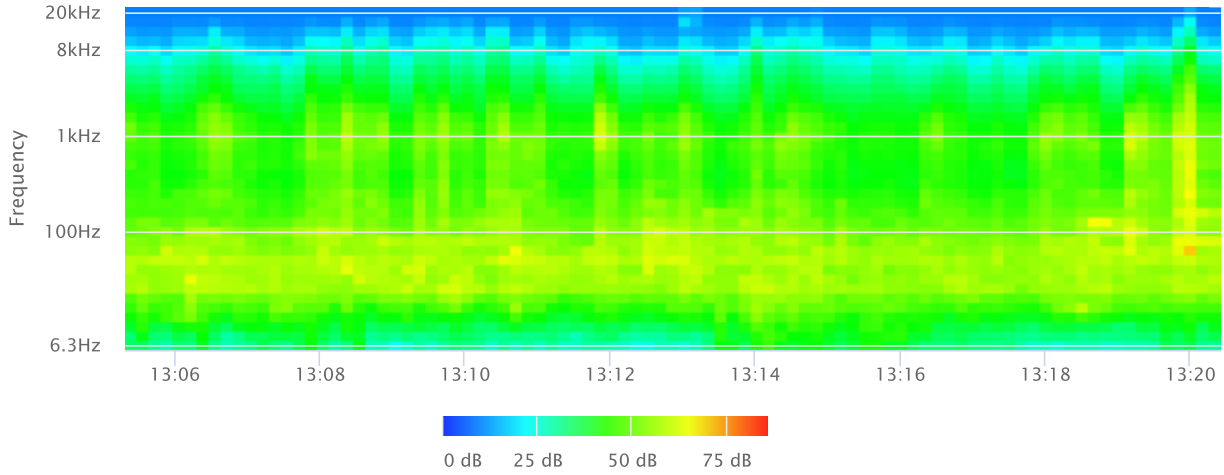
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
13:06
13:08
13:10
13:12
13:14
13:16
13:18
13:20
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** May 31, 2023

Project #: 19639

Noise Measurement #: STNM2 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 5504 Quakertown Avenue, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Just north of multi-family residence at 5504 Quakertown Ave within paved access/alley road. Adjacent: Ventura Blvd ~150' & 101 Fwy 550' north (both running WSW-ENE), alley/access road to north with vacant project site further north, multi-family residnetial to south. Mix of commercial and residential uses surrounding.

Weather: Overcast. Sunset 8:00 PM **Settings:** SLOW FAST

Temperature: 66 deg F **Wind:** 9 mph **Humidity:** 57% **Terrain:** Flat

Start Time: 1:39 PM **End Time:** 1:54 PM **Run Time:**

Leq: 62.4 dB

Lmax 75.5 dB

L2 68.2 dB

L8 64.7 dB

L25 62.9 dB

L50 60.9 dB

Primary Noise Source: Traffic noise from the 551 vehicles passing microphone traveling on Ventura Boulevard. Traffic noise from Quakertown Ave to W & 101 Freeway to N.

Secondary Noise Sources: Traffic ambiance from vehicles on other roads. Overhead air traffic. Residential ambiance from multi-family residence to south.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:

STNM2 looking NNW past vacant building on project site, 20032 Ventura Blvd, towards Ventura Blvd (~130'). Quakertown Ave & Ventura Blvd intersection on left of image.

STNM2 looking WSW down access/alley road towards interesection with Quakertown Ave (~65'). Multi-family residence building 5504 Quakertown Ave on left of image.

Summary	
File Name on Meter	LxT_Data.279.s
File Name on PC	LxT_0003099-20230531 133904-LxT_Data.279.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM2 34°10'15.54"N 118°34'10.18"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland

Measurement	
Start	2023-05-31 13:39:04
Stop	2023-05-31 13:54:04
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 13:38:36
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	123.0 dB

Results			
LA_{eq}	62.4		
LAE	91.9		
EA	172.761	µPa²h	
EA8	5.528	mPa²h	
EA40	27.642	mPa²h	
$LA_{peak\ (max)}$	2023-05-31 13:51:05	90.9	dB
LAS_{max}	2023-05-31 13:51:06	75.5	dB
LAS_{min}	2023-05-31 13:49:20	56.5	dB

			Statistics	
LC_{eq}	72.7	dB	**LA2.00**	68.2 dB
LA_{eq}	62.4	dB	**LA8.00**	64.7 dB
LC_{eq} - LA_{eq}	10.4	dB	**LA25.00**	62.9 dB
LAI_{eq}	63.6	dB	**LA50.00**	60.9 dB
LA_{eq}	62.4	dB	**LA66.60**	59.9 dB
LAI_{eq} - LA_{eq}	1.3	dB	**LA90.00**	58.3 dB
Overload Count	0			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.279.s	Computer's File Name	LxT_0003099-20230531 133904-LxT_Data.279.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 34°10'15.54"N 118°34'10.18"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-05-31 13:39:04	Duration	0:15:00.0
End Time	2023-05-31 13:54:04	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	62.4 dB		
LAE	91.9 dB	SEA	--- dB
EA	172.8 µPa²h	LAFTM5	65.8 dB
EA8	5.5 mPa²h		
EA40	27.6 mPa²h		
LA_{peak}	90.9 dB	2023-05-31 13:51:05	
LAS_{max}	75.5 dB	2023-05-31 13:51:06	
LAS_{min}	56.5 dB	2023-05-31 13:49:20	
LA_{eq}	62.4 dB		
LC_{eq}	72.7 dB	LC_{eq} - LA_{eq}	10.4 dB
LAI_{eq}	63.6 dB	LAI_{eq} - LA_{eq}	1.3 dB

Exceedances	Count	Duration
LAS > 65.0 dB	15	0:01:45.6
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

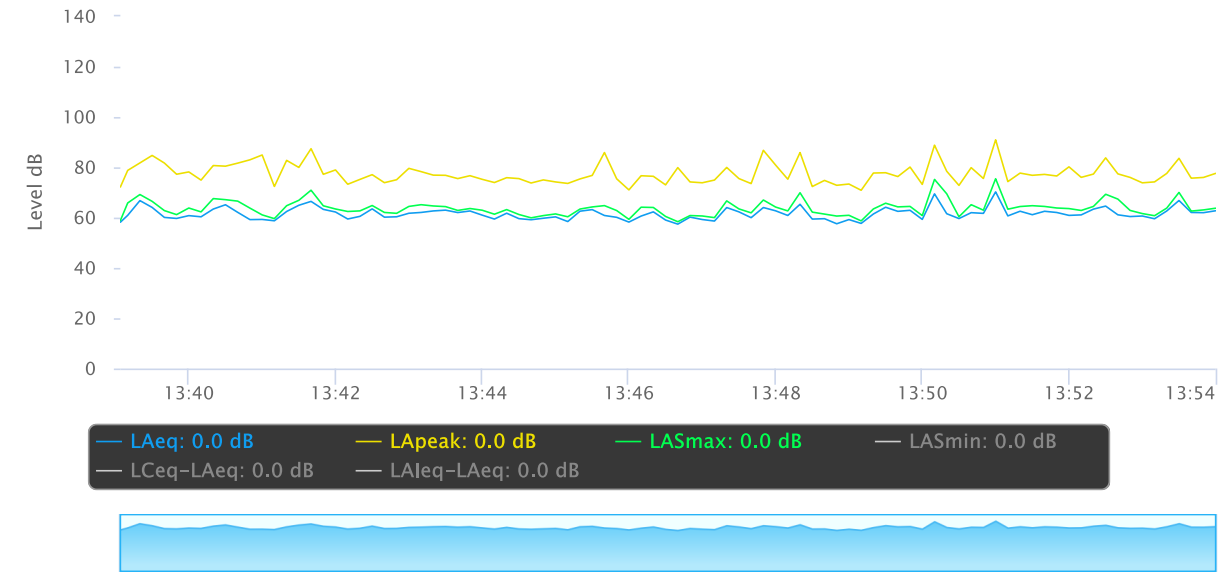
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	62.4 dB		72.7 dB		--- dB	
$L_{S(max)}$	75.5 dB	2023-05-31 13:51:06	--- dB		--- dB	
$L_{S(min)}$	56.5 dB	2023-05-31 13:49:20	--- dB		--- dB	
$L_{Peak(max)}$	90.9 dB	2023-05-31 13:51:05	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

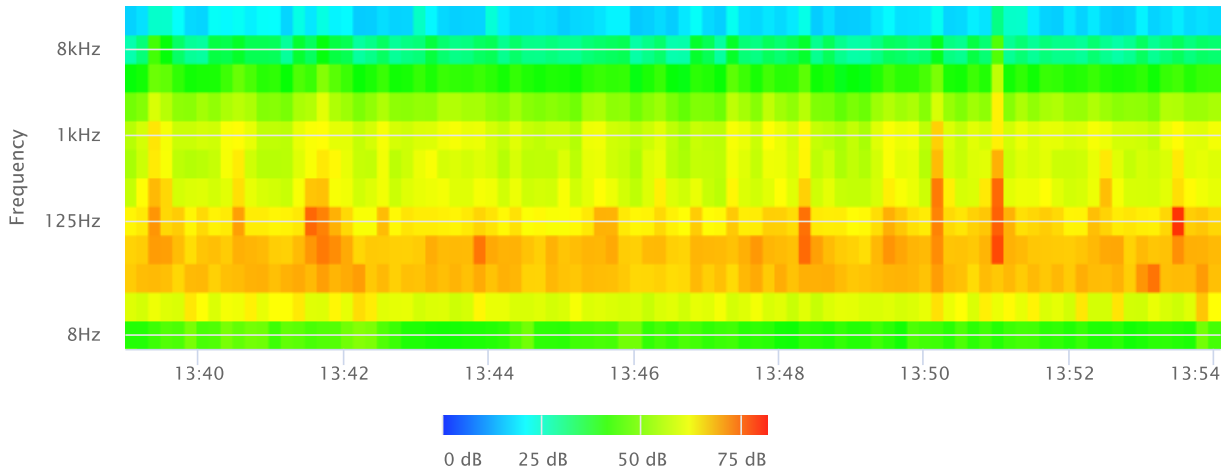
Statistics

LAS 2.0	68.2 dB
LAS 8.0	64.7 dB
LAS 25.0	62.9 dB
LAS 50.0	60.9 dB
LAS 66.6	59.9 dB
LAS 90.0	58.3 dB

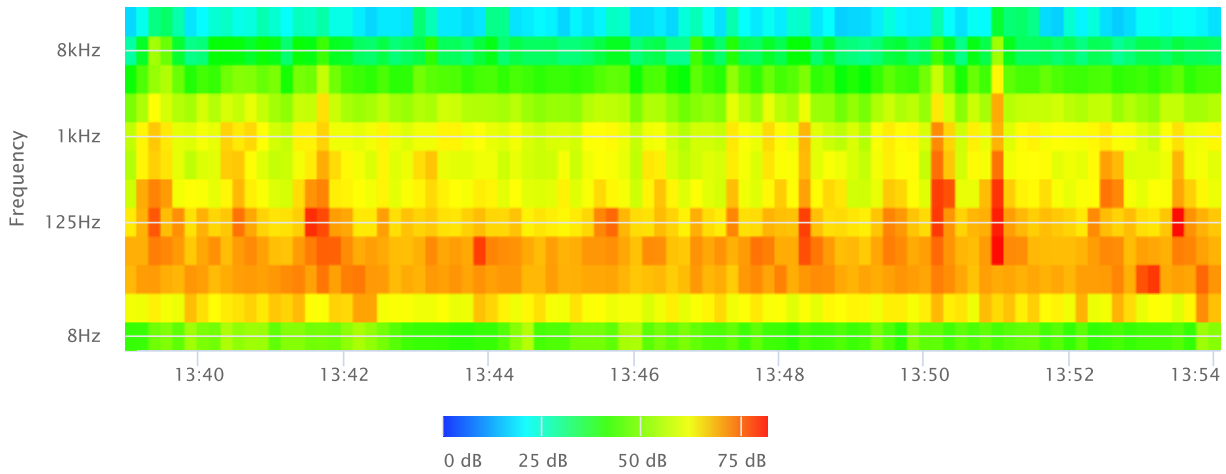
Time History



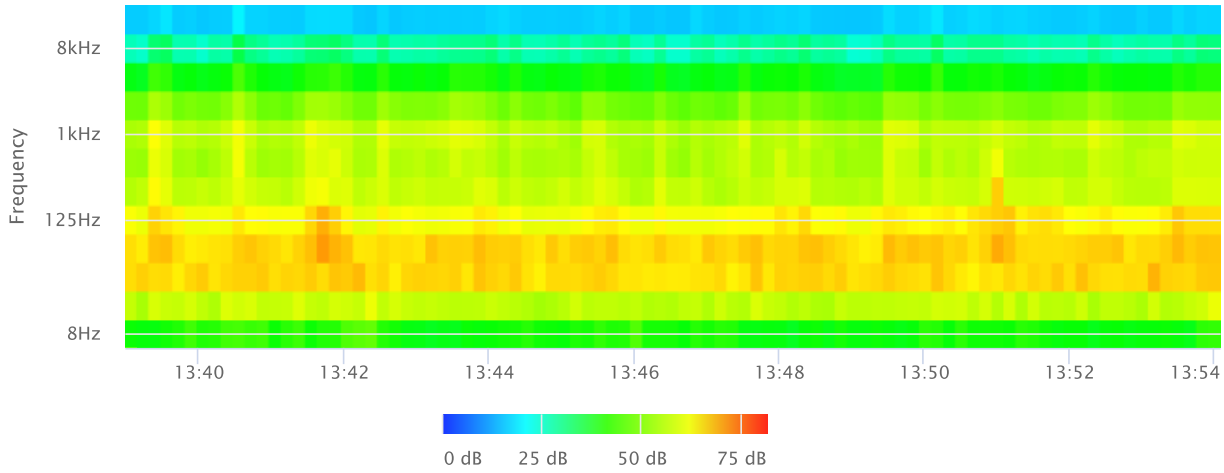
OBA 1/1 Leq



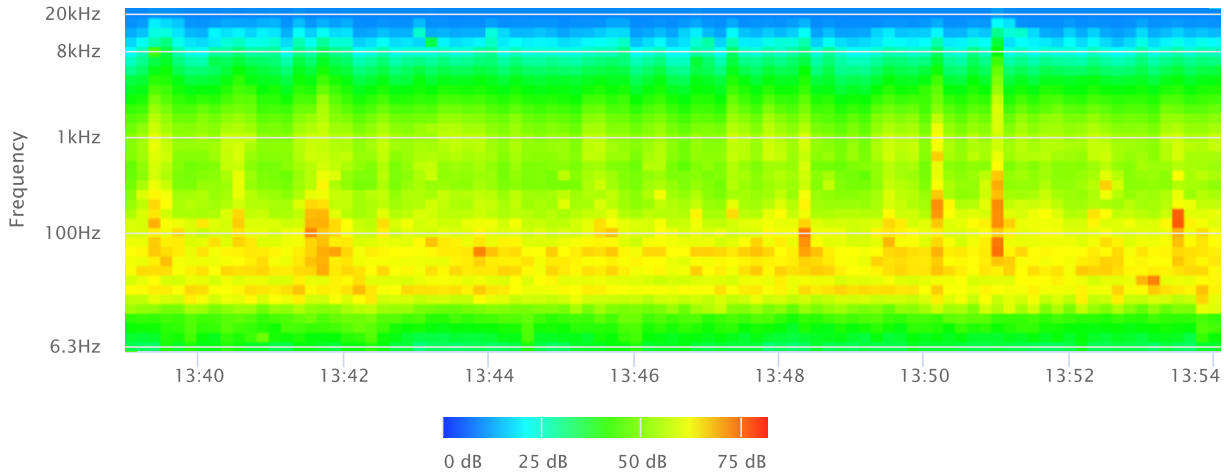
OBA 1/1 Lmax



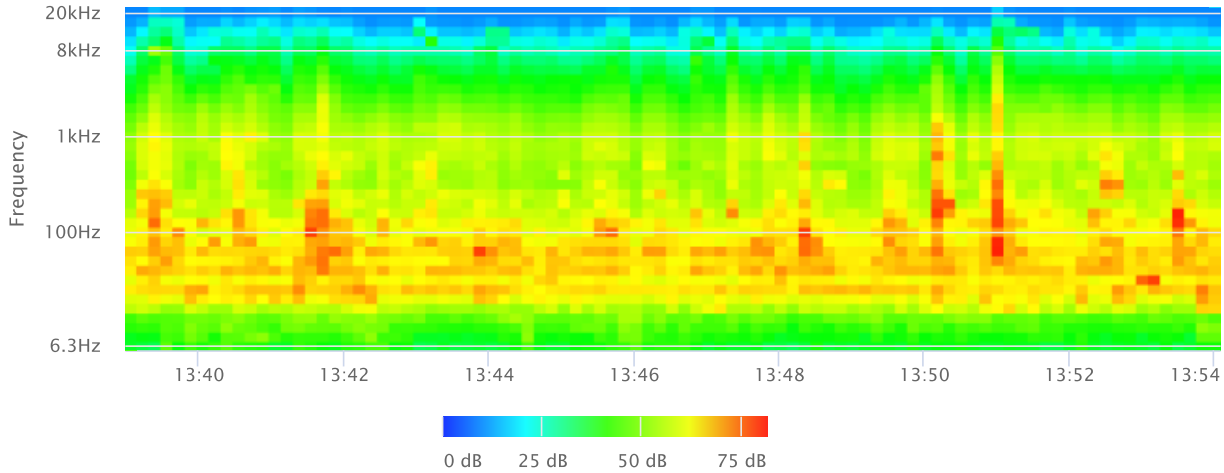
OBA 1/1 Lmin



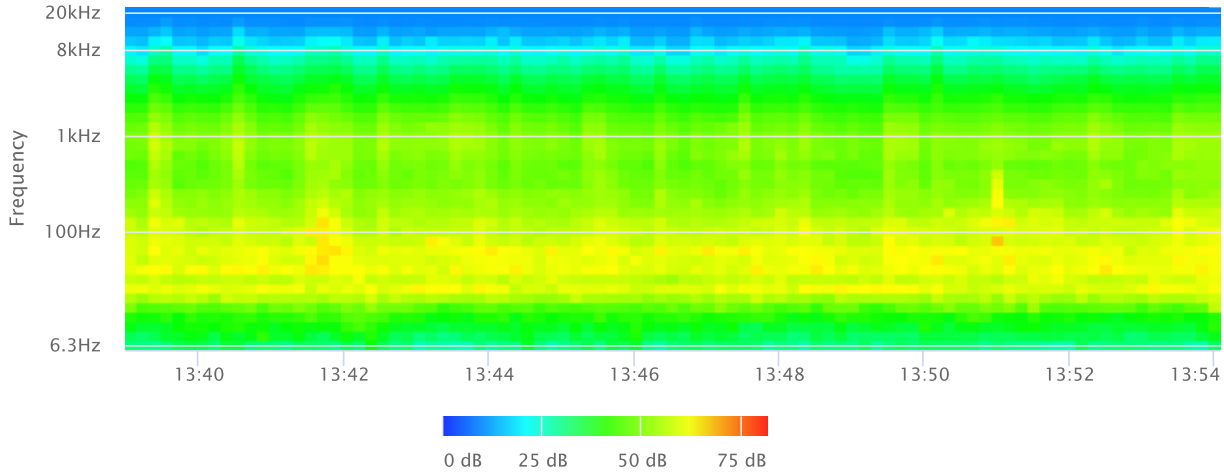
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
13:40
13:42
13:44
13:46
13:48
13:50
13:52
13:54
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** May 31, 2023

Project #: 19639

Noise Measurement #: STNM3 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 5515 Penfield Avenue, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: NW corner of multi-family residence at 5515 Penfield Ave on asphalt paved access/alley road. Adjacent: Ventura Blvd ~150' & 101 Fwy 480' north (both running WSW-ENE), multi-family residential to south with associated parking areas, access/alley way to north with commercial restaurant use further north. Mix of commercial and residential uses surrounding.

Weather: Overcast. Sunset 8:00 PM **Settings:** SLOW FAST

Temperature: 66 deg F **Wind:** 9 mph **Humidity:** 57% **Terrain:** Flat

Start Time: 2:09 PM **End Time:** 2:24 PM **Run Time:**

Leq: 58.8 dB **Primary Noise Source:** Traffic noise from vehicles traveling on Ventura Blvd, 101 Fwy, Penfield Ave,

Lmax 68.1 dB Quakertown Ave & other roads.

L2 61.4 dB **Secondary Noise Sources:** Noise from AC unit on back of restaurant, 20022 Ventura Blvd. Overhead air traffic.

L8 59.9 dB Residential ambiance from multi-family residence to south.

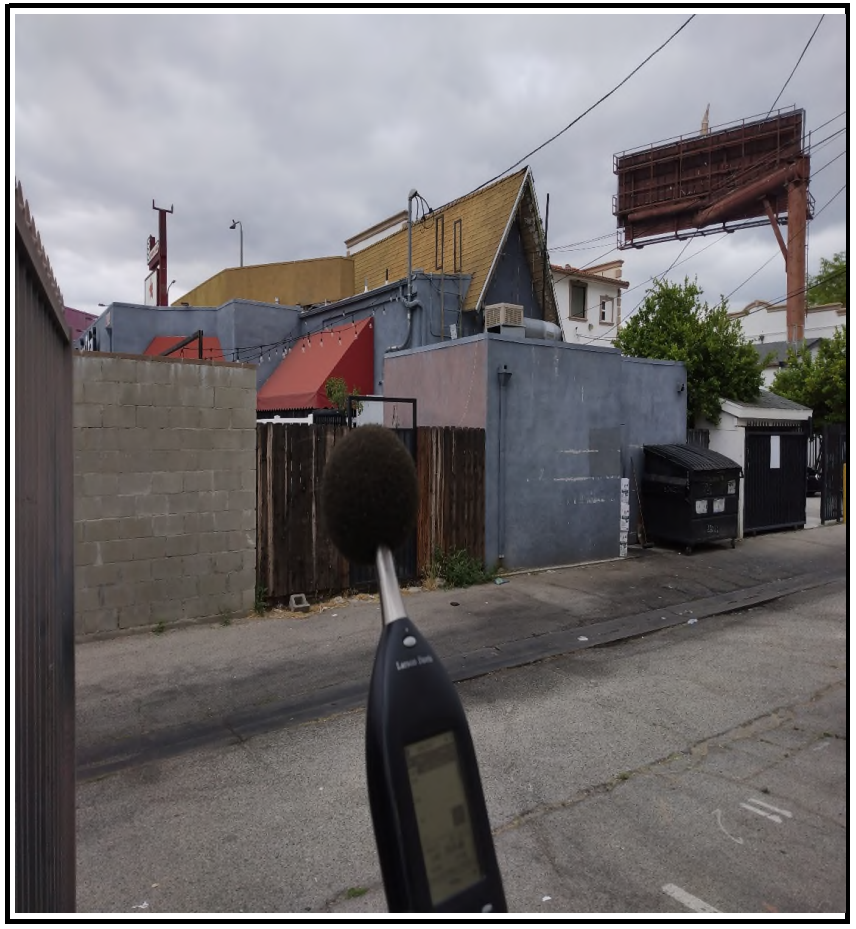
L25 59.1 dB

L50 58.6 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:



STNM3 looking NNE towards back of restaurant building, 20022 Ventura Blvd, Woodland Hills.

STNM3 looking S towards NW corner of multi-family residence, 5515 Penfield Ave, Woodland Hills.

Summary	
File Name on Meter	LxT_Data.280.s
File Name on PC	LxT_0003099-20230531 140912-LxT_Data.280.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM3 34°10'16.07"N 118°34'8.43"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills

Measurement	
Start	2023-05-31 14:09:12
Stop	2023-05-31 14:24:12
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 14:08:43
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.9 dB

Results			
L_{Aeq}	58.8		
LAE	88.4		
EA	76.246	µPa²h	
EA8	2.440	mPa²h	
EA40	12.199	mPa²h	
$L_{Apeak\ (max)}$	2023-05-31 14:13:47	87.6	dB
L_{ASmax}	2023-05-31 14:13:47	68.1	dB
L_{ASmin}	2023-05-31 14:16:47	56.7	dB

			Statistics	
L_{Ceq}	71.5	dB	**LA2.00**	61.4 dB
L_{Aeq}	58.8	dB	**LA8.00**	59.9 dB
L_{Ceq} - L_{Aeq}	12.7	dB	**LA25.00**	59.1 dB
L_{AIeq}	59.9	dB	**LA50.00**	58.6 dB
L_{Aeq}	58.8	dB	**LA66.60**	58.2 dB
L_{AIeq} - L_{Aeq}	1.1	dB	**LA90.00**	57.6 dB
Overload Count	0			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.280.s	Computer's File Name	LxT_0003099-20230531 140912-LxT_Data.280.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 34°10'16.07"N 118°34'8.43"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-05-31 14:09:12	Duration	0:15:00.0
End Time	2023-05-31 14:24:12	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	58.8 dB		
LAE	88.4 dB	SEA	--- dB
EA	76.2 µPa²h	LAFTM5	61.1 dB
EA8	2.4 mPa²h		
EA40	12.2 mPa²h		
LA_{peak}	87.6 dB	2023-05-31 14:13:47	
LAS_{max}	68.1 dB	2023-05-31 14:13:47	
LAS_{min}	56.7 dB	2023-05-31 14:16:47	
LA_{eq}	58.8 dB		
LC_{eq}	71.5 dB	LC_{eq} - LA_{eq}	12.7 dB
LAI_{eq}	59.9 dB	LAI_{eq} - LA_{eq}	1.1 dB

Exceedances	Count	Duration
LAS > 65.0 dB	2	0:00:04.5
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

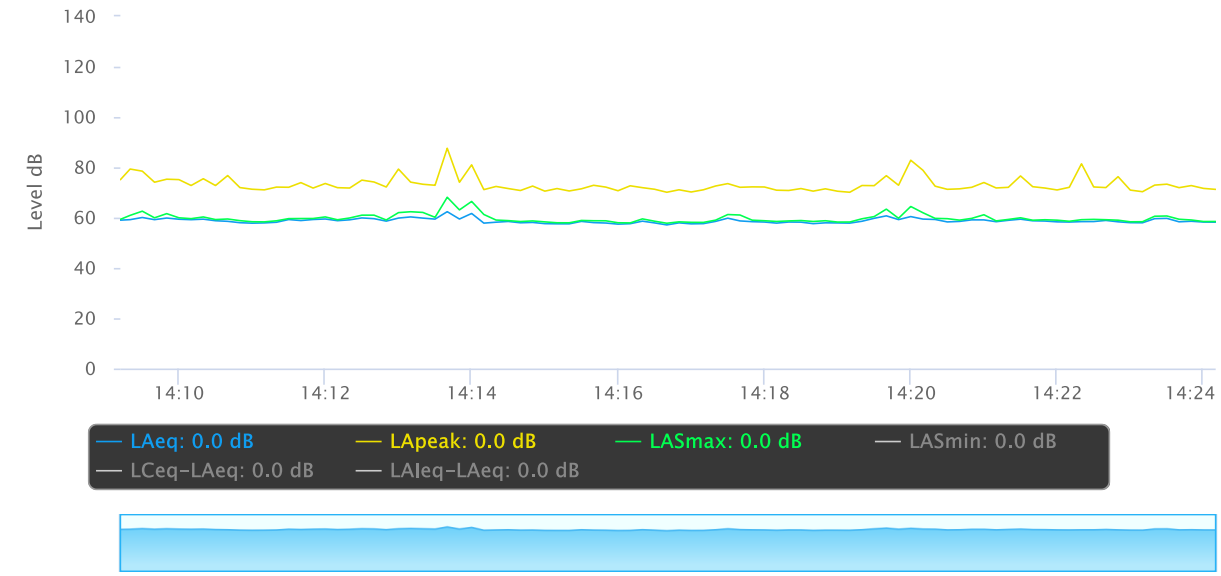
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	58.8 dB		71.5 dB		--- dB	
$L_{S(max)}$	68.1 dB	2023-05-31 14:13:47	--- dB		--- dB	
$L_{S(min)}$	56.7 dB	2023-05-31 14:16:47	--- dB		--- dB	
$L_{Peak(max)}$	87.6 dB	2023-05-31 14:13:47	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

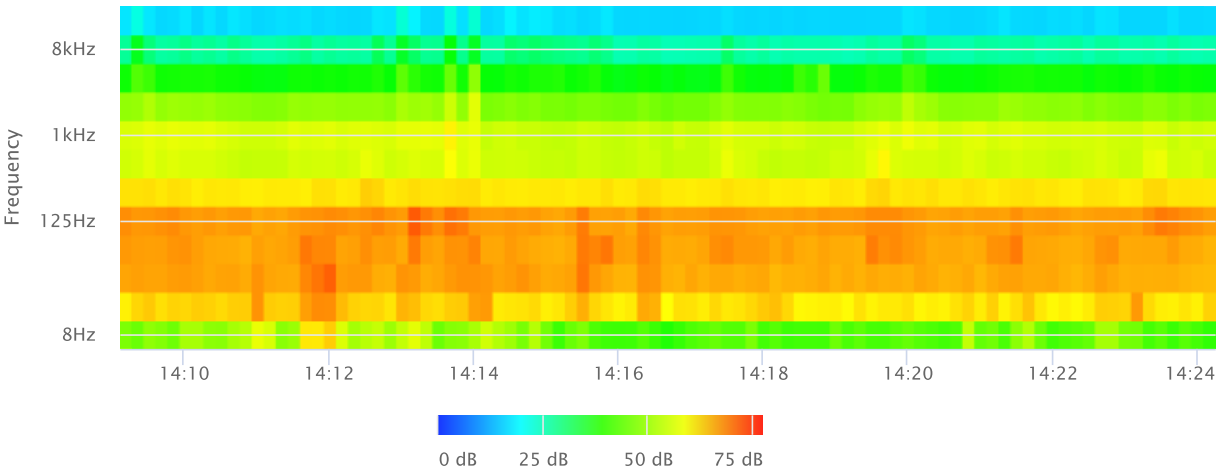
Statistics

LAS 2.0	61.4 dB
LAS 8.0	59.9 dB
LAS 25.0	59.1 dB
LAS 50.0	58.6 dB
LAS 66.6	58.2 dB
LAS 90.0	57.6 dB

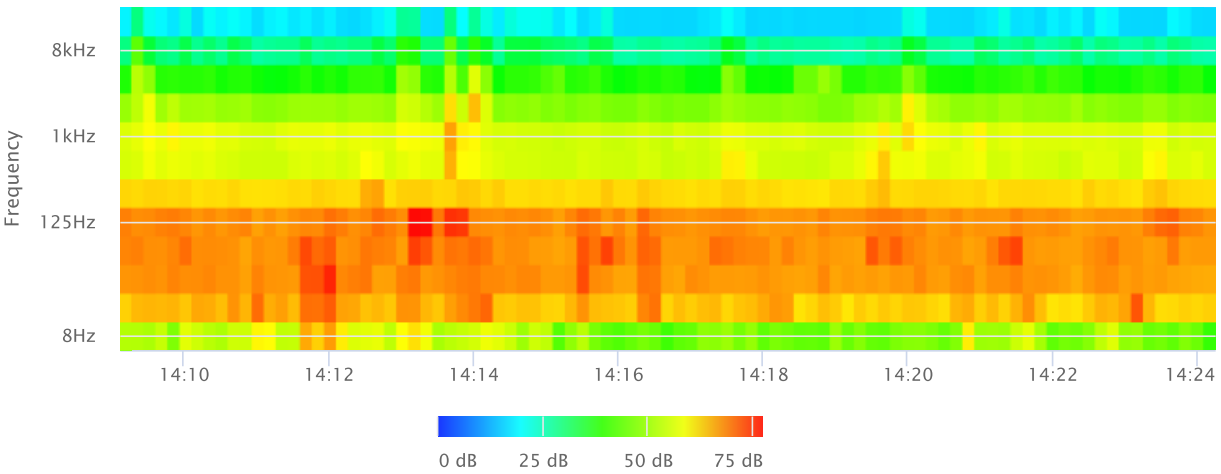
Time History



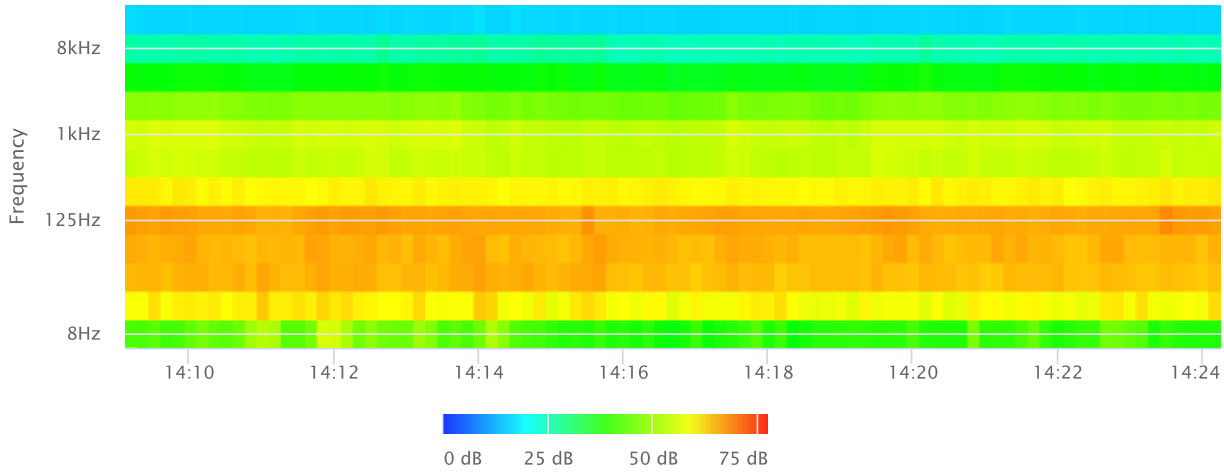
OBA 1/1 Leq



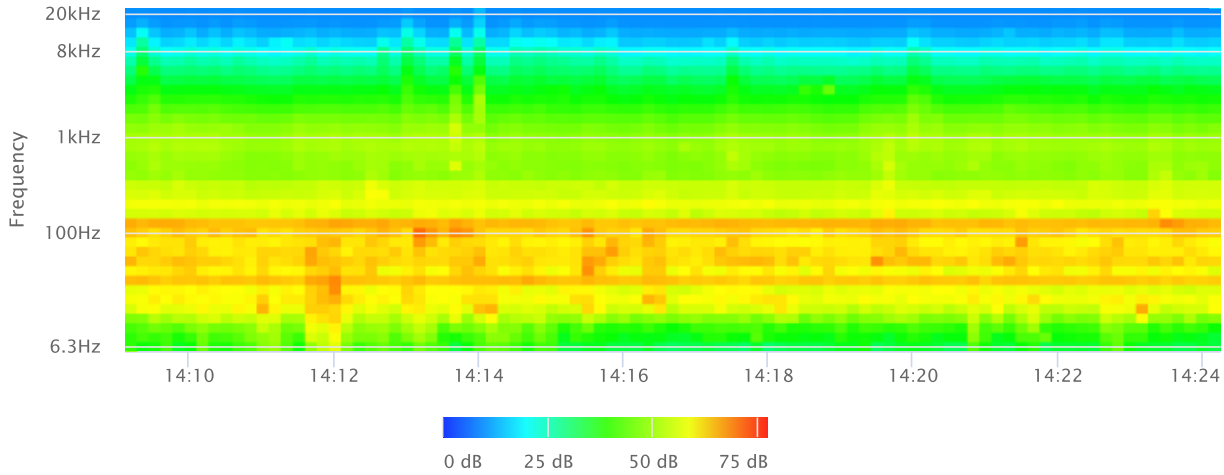
OBA 1/1 Lmax



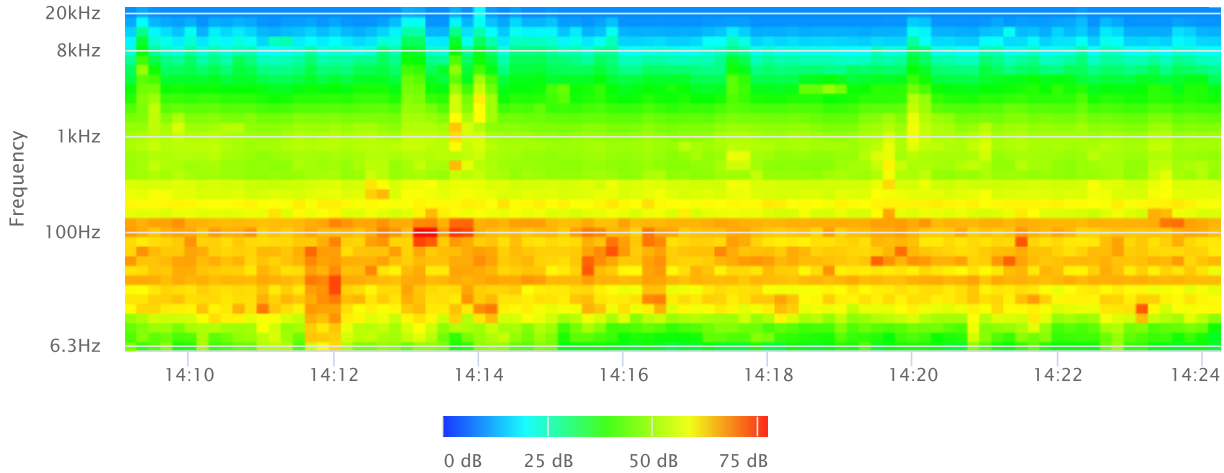
OBA 1/1 Lmin



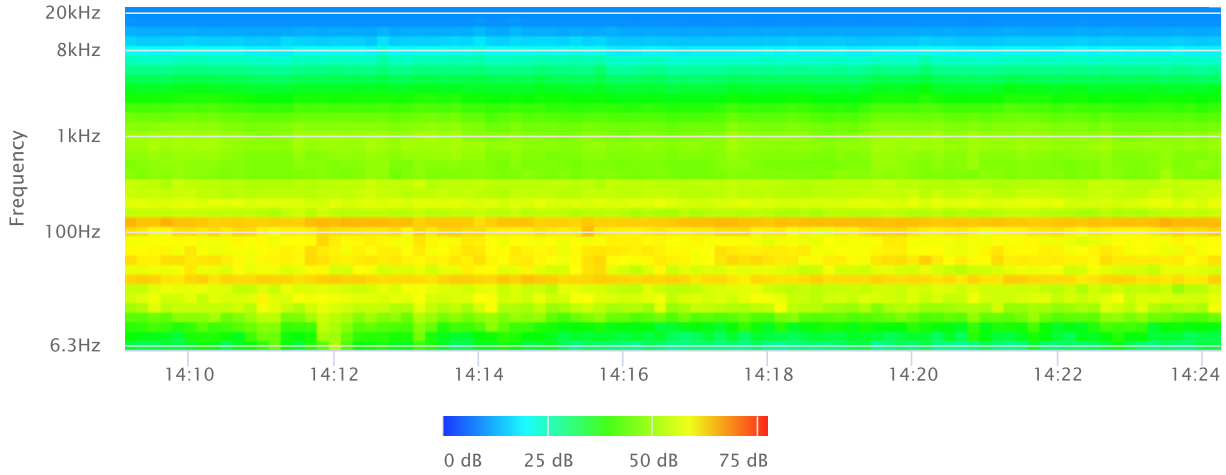
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:10
14:12
14:14
14:16
14:18
14:20
14:22
14:24
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** May 31, 2023

Project #: 19639

Noise Measurement #: STNM4 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 5516 Penfield Avenue, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: NW corner of residence 5516 Penfield Ave on sidewalk.
Adjacent: Ventura Blvd ~200' & 101 Fwy 500' to north (both running WSW-ENE), Penfield Ave (running N-S) just west with multi-family residential uses further west, single-family residential uses to east, and commercial uses to northeast. Mix of residential and commercial uses surrounding.

Weather: Overcast. Sunset 8:00 PM **Settings:** SLOW FAST

Temperature: 66 deg F **Wind:** 9 mph **Humidity:** 57% **Terrain:** Flat

Start Time: 2:35 PM **End Time:** 2:50 PM **Run Time:**

Leq: 58.3 dB **Primary Noise Source:** Traffic noise from the 20 vehicles passing microphone traveling on Penfield Ave.

Lmax 72.7 dB Traffic noise from Ventura Blvd & 101 Fwy.

L2 63.5 dB **Secondary Noise Sources:** Overhead air traffic, residential ambince, pedestrians. Farmers market/

L8 60.7 dB grocery market ambiance from building 19964 Ventura Blvd.

L25 58.7 dB

L50 57.1 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:

STNM4 looking ESE from eastern sidewalk of Penfield Ave towards frontyard of residence 5516 Penfield Ave, Woodland Hills.

STNM4 looking WNW across Penfield Ave towards NE corner of multi-family residence 5515 Penfield Ave, Woodland Hills.

Summary	
File Name on Meter	LxT_Data.281.s
File Name on PC	LxT_0003099-20230531 143557-LxT_Data.281.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM4 34°10'16.52"N 118°34'6.10"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills

Measurement	
Start	2023-05-31 14:35:57
Stop	2023-05-31 14:50:57
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 14:35:31
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	123.0 dB

Results			
LA_{eq}	58.3		
LAE	87.9		
EA	67.870 µPa²h		
EA8	2.172 mPa²h		
EA40	10.859 mPa²h		
$LA_{peak\ (max)}$	2023-05-31 14:40:40	95.8 dB	
LAS_{max}	2023-05-31 14:40:40	72.7 dB	
LAS_{min}	2023-05-31 14:44:56	53.0 dB	

		Statistics	
LC_{eq}	70.7 dB	**LA2.00**	63.5 dB
LA_{eq}	58.3 dB	**LA8.00**	60.7 dB
LC_{eq} - LA_{eq}	12.3 dB	**LA25.00**	58.7 dB
LAI_{eq}	61.7 dB	**LA50.00**	57.1 dB
LA_{eq}	58.3 dB	**LA66.60**	56.4 dB
LAI_{eq} - LA_{eq}	3.4 dB	**LA90.00**	54.9 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.281.s	Computer's File Name	LxT_0003099-20230531 143557-LxT_Data.281.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM4 34°10'16.52"N 118°34'6.10"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-05-31 14:35:57	Duration	0:15:00.0
End Time	2023-05-31 14:50:57	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	58.3 dB		
LAE	87.9 dB	SEA	--- dB
EA	67.9 µPa²h	LAFTM5	63.3 dB
EA8	2.2 mPa²h		
EA40	10.9 mPa²h		
LA_{peak}	95.8 dB	2023-05-31 14:40:40	
LAS_{max}	72.7 dB	2023-05-31 14:40:40	
LAS_{min}	53.0 dB	2023-05-31 14:44:56	
LA_{eq}	58.3 dB		
LC_{eq}	70.7 dB	LC_{eq} - LA_{eq}	12.3 dB
LAI_{eq}	61.7 dB	LAI_{eq} - LA_{eq}	3.4 dB

Exceedances	Count	Duration
LAS > 65.0 dB	5	0:00:13.8
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

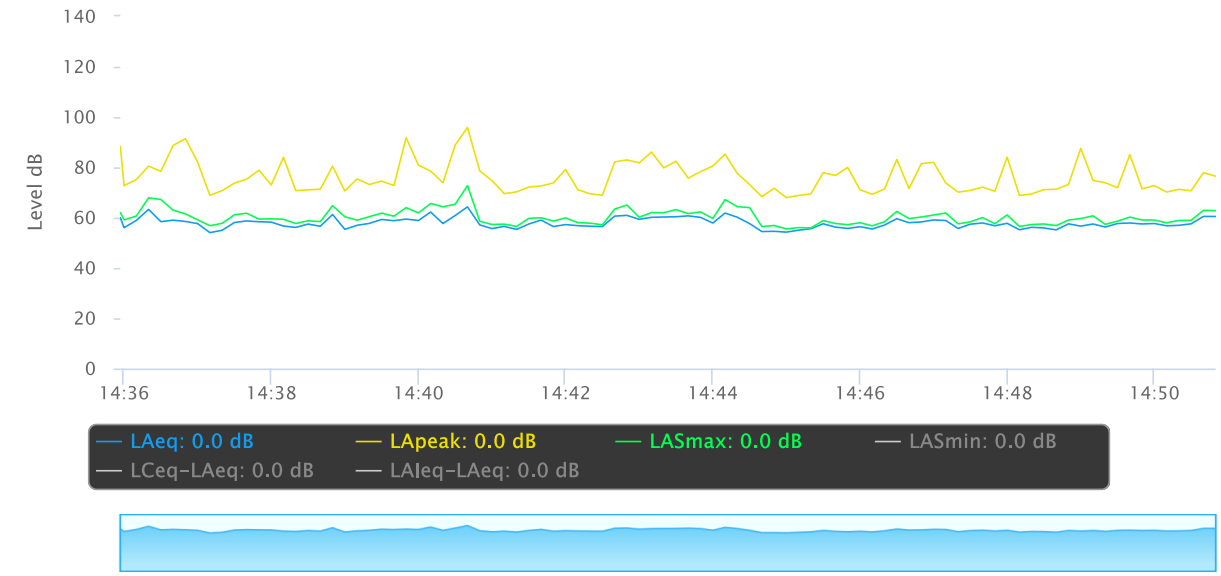
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	58.3 dB		70.7 dB		--- dB	
$L_{S(max)}$	72.7 dB	2023-05-31 14:40:40	--- dB		--- dB	
$L_{S(min)}$	53.0 dB	2023-05-31 14:44:56	--- dB		--- dB	
$L_{Peak(max)}$	95.8 dB	2023-05-31 14:40:40	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

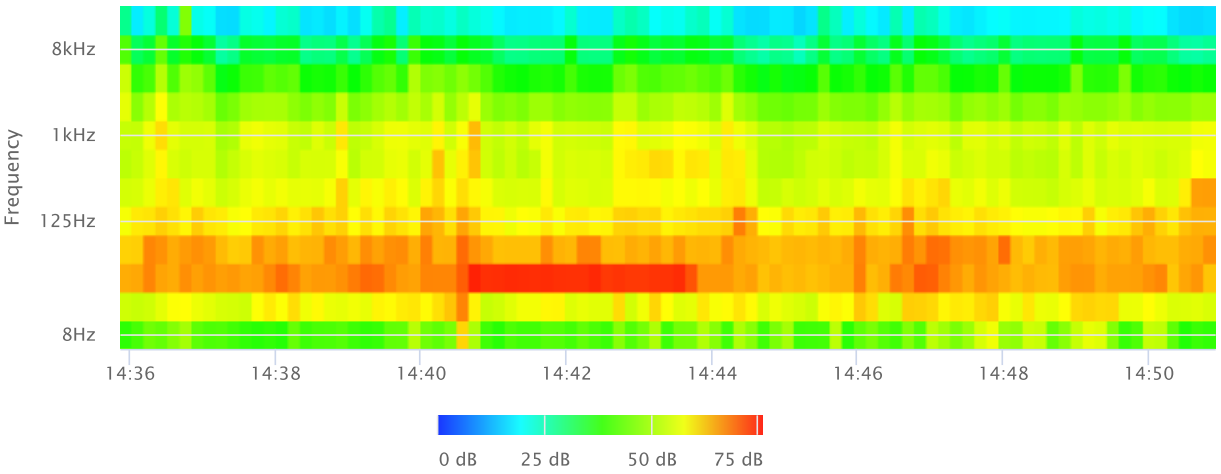
Statistics

LAS 2.0	63.5 dB
LAS 8.0	60.7 dB
LAS 25.0	58.7 dB
LAS 50.0	57.1 dB
LAS 66.6	56.4 dB
LAS 90.0	54.9 dB

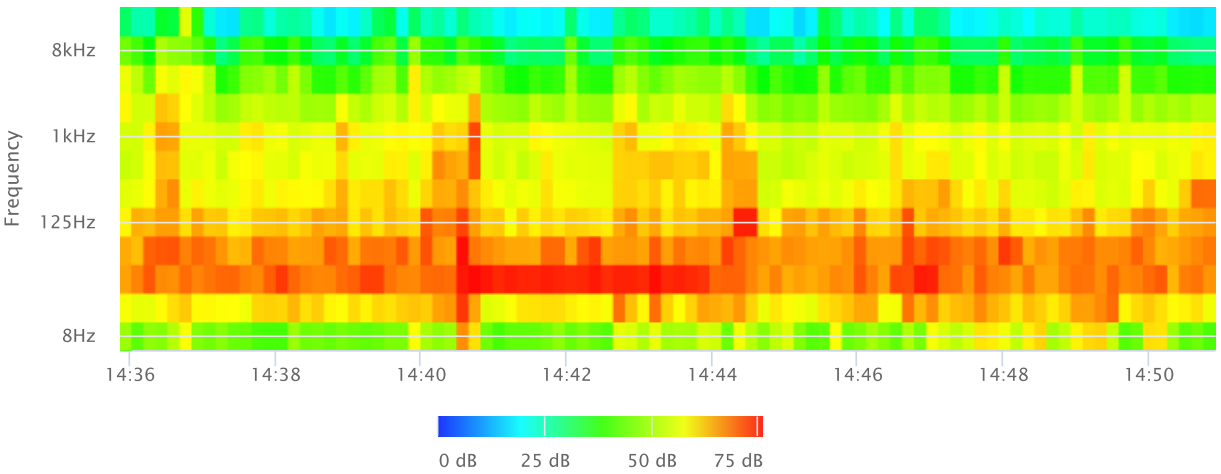
Time History



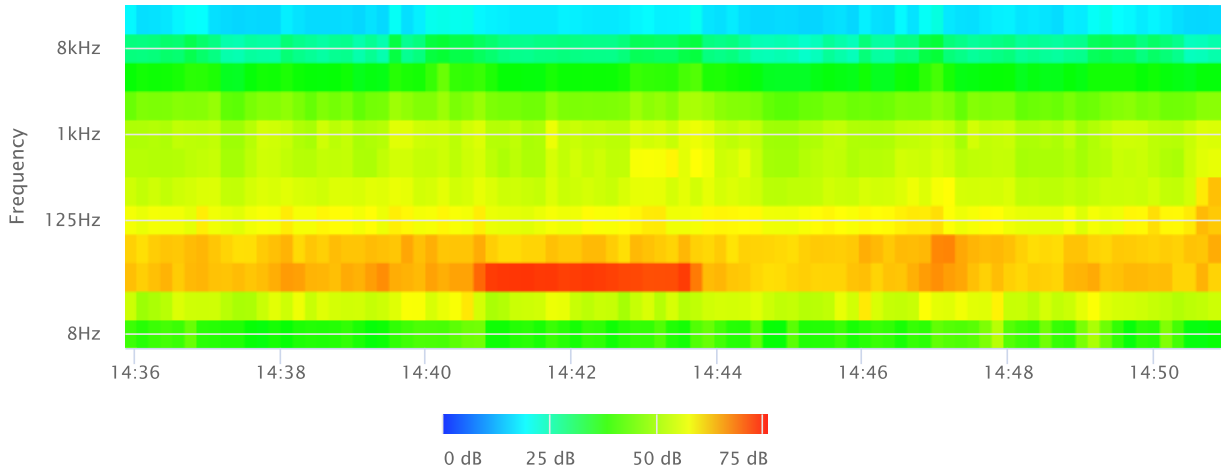
OBA 1/1 Leq



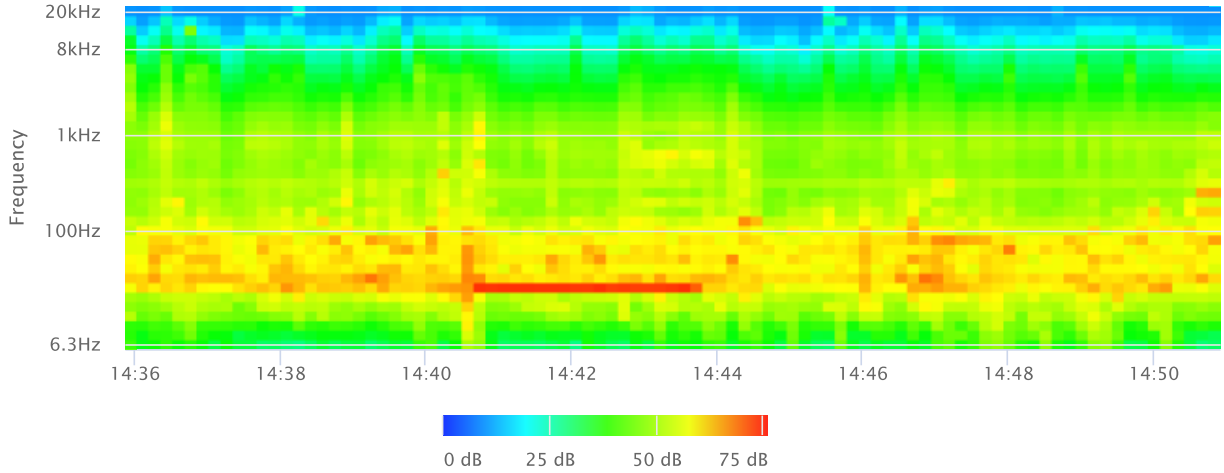
OBA 1/1 Lmax



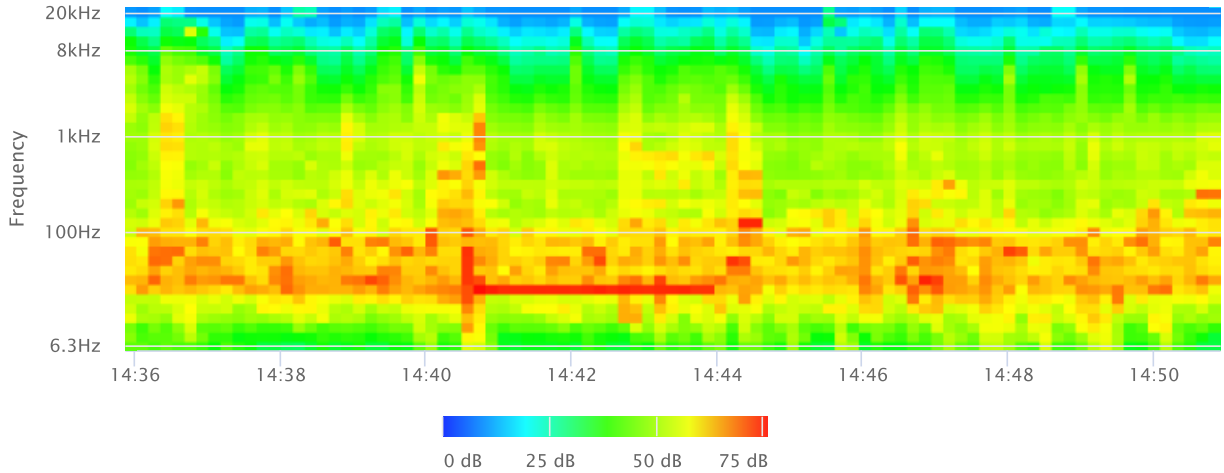
OBA 1/1 Lmin



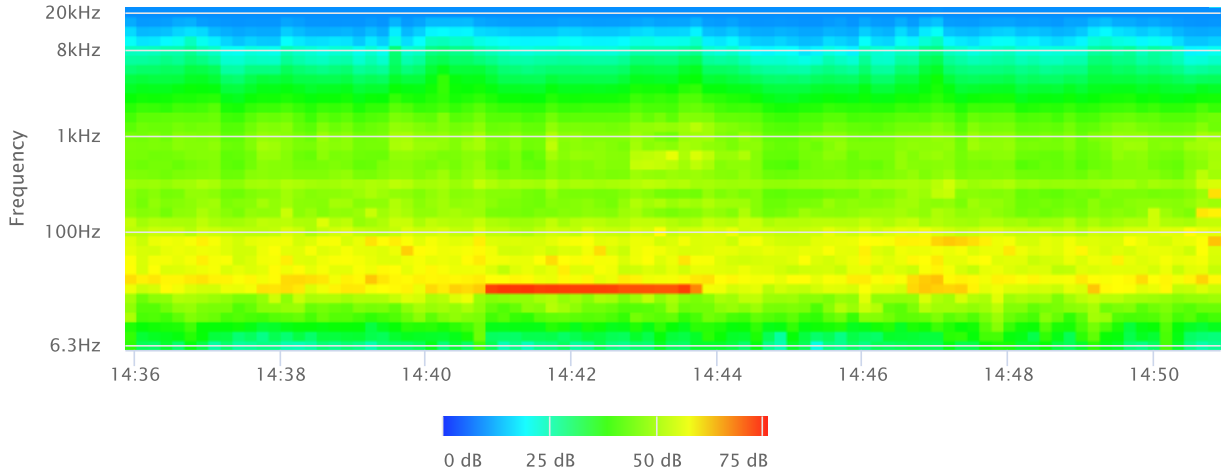
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:36
14:38
14:40
14:42
14:44
14:46
14:48
14:50
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** May 31, 2023

Project #: 19639

Noise Measurement #: STNM5 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 5484 Quakertown Avenue, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: NE corner of multi-family residence 5484 Quakertown Ave, taken in sidewalk next to entry/exit to parking lot. Adjacent: Ventura Blvd ~360' & 101 Fwy ~720' north (both running WSW-ENE), Redwing St (running E-W) just north with multi-family residential further north, and multi-family residential to south with associated parking area to southwest.

Weather: Overcast. Sunset 8:00 PM **Settings:** SLOW FAST

Temperature: 66 deg F **Wind:** 9 mph **Humidity:** 57% **Terrain:** Flat

Start Time: 3:02 PM **End Time:** 3:17 PM **Run Time:**

Leq:	54.4 dB	**Primary Noise Source:**	Traffic noise from the 6 vehicles passing microphone traveling on Redwing St.
Lmax	69.7 dB		Traffic noise from Ventura Blvd & 101 Fwy.
L2	61.9 dB	**Secondary Noise Sources:**	Overhead air traffic, residential ambiance, and pedestrians.
L8	56.6 dB		9mph breeze causing leaf rustle in trees & shrubs.
L25	52.8 dB		
L50	51.7 dB		

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:

STNM5 looking N across Redwing Street towards parking lot to building 5504 Quakertown Avenue (left) & 5515 Penfield Avenue (right).

STNM5 looking SE to entry/exit to parking lot of multi-family residence, 5484 Quakertown Ave.

Summary	
File Name on Meter	LxT_Data.282.s
File Name on PC	LxT_0003099-20230531 150237-LxT_Data.282.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM5 34°10'13.74"N 118°34'9.10"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills

Measurement	
Start	2023-05-31 15:02:37
Stop	2023-05-31 15:17:37
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-05-31 15:02:15
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	123.0 dB

Results			
LA_{eq}	54.4		
LAE	83.9		
EA	27.549	µPa²h	
EA8	881.555	µPa²h	
EA40	4.408	mPa²h	
$LA_{peak\ (max)}$	2023-05-31 15:04:13	87.1	dB
LAS_{max}	2023-05-31 15:03:31	69.7	dB
LAS_{min}	2023-05-31 15:15:05	48.8	dB

		Statistics	
LC_{eq}	65.3 dB	**LA2.00**	61.9 dB
LA_{eq}	54.4 dB	**LA8.00**	56.6 dB
LC_{eq} - LA_{eq}	10.9 dB	**LA25.00**	52.8 dB
LAI_{eq}	56.8 dB	**LA50.00**	51.7 dB
LA_{eq}	54.4 dB	**LA66.60**	51.1 dB
LAI_{eq} - LA_{eq}	2.4 dB	**LA90.00**	50.2 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.282.s	Computer's File Name	LxT_0003099-20230531 150237-LxT_Data.282.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM5 34°10'13.74"N 118°34'9.10"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-05-31 15:02:37	Duration	0:15:00.0
End Time	2023-05-31 15:17:37	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	54.4 dB		
LAE	83.9 dB	SEA	--- dB
EA	27.5 µPa²h	LAFTM5	58.8 dB
EA8	881.6 µPa²h		
EA40	4.4 mPa²h		
LA_{peak}	87.1 dB	2023-05-31 15:04:13	
LAS_{max}	69.7 dB	2023-05-31 15:03:31	
LAS_{min}	48.8 dB	2023-05-31 15:15:05	
LA_{eq}	54.4 dB		
LC_{eq}	65.3 dB	LC_{eq} - LA_{eq}	10.9 dB
LAI_{eq}	56.8 dB	LAI_{eq} - LA_{eq}	2.4 dB

Exceedances	Count	Duration
LAS > 65.0 dB	4	0:00:12.7
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

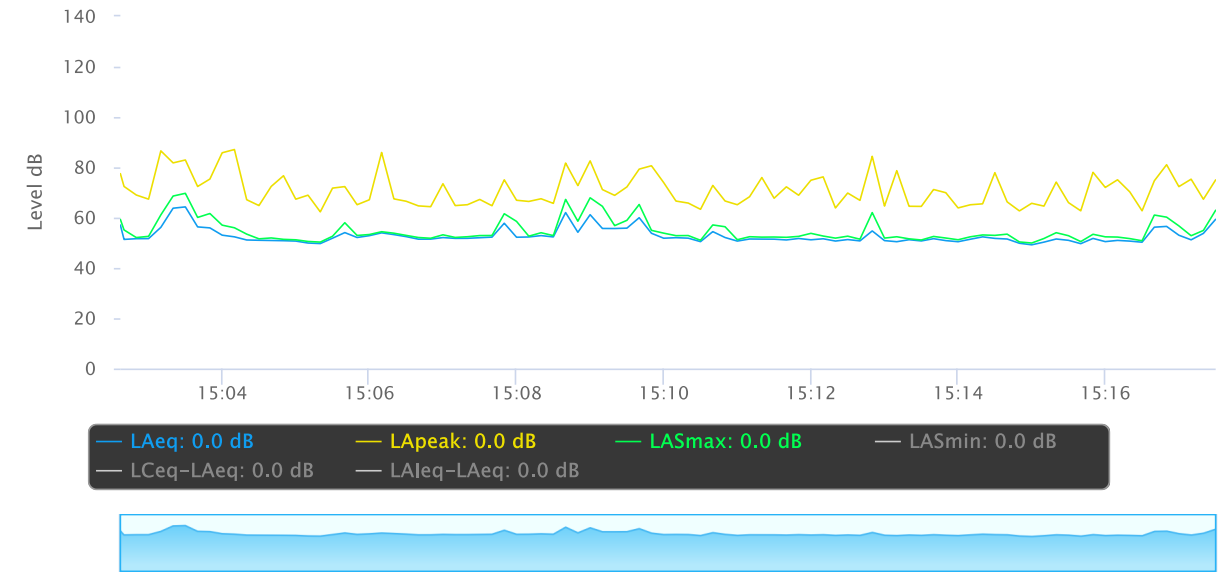
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	54.4 dB		65.3 dB		--- dB	
$L_{S(max)}$	69.7 dB	2023-05-31 15:03:31	--- dB		--- dB	
$L_{S(min)}$	48.8 dB	2023-05-31 15:15:05	--- dB		--- dB	
$L_{Peak(max)}$	87.1 dB	2023-05-31 15:04:13	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

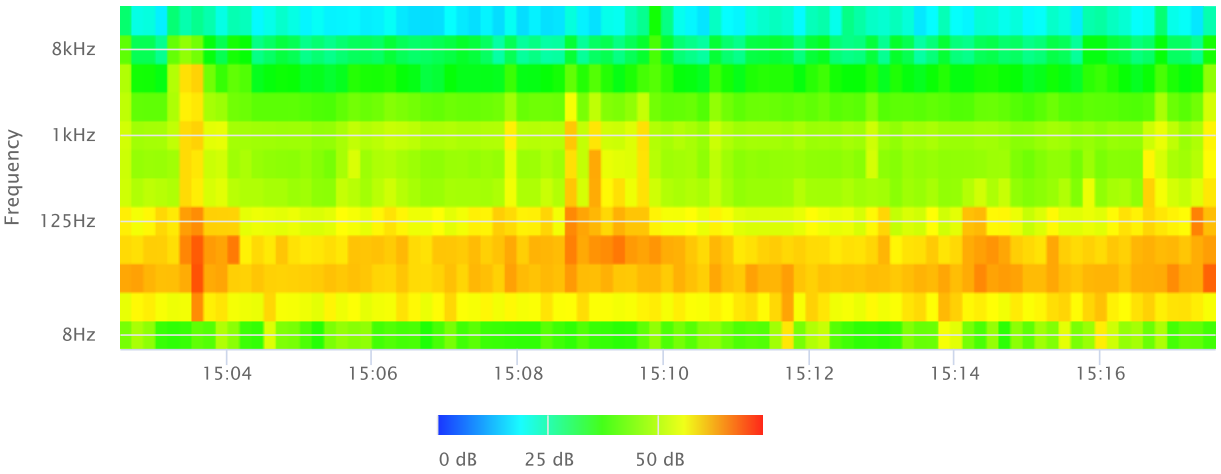
Statistics

LAS 2.0	61.9 dB
LAS 8.0	56.6 dB
LAS 25.0	52.8 dB
LAS 50.0	51.7 dB
LAS 66.6	51.1 dB
LAS 90.0	50.2 dB

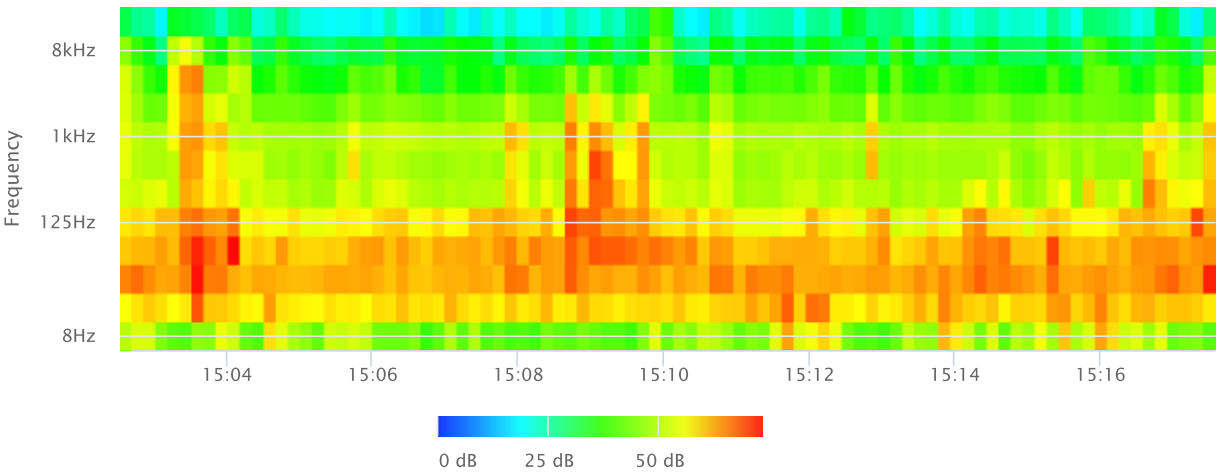
Time History



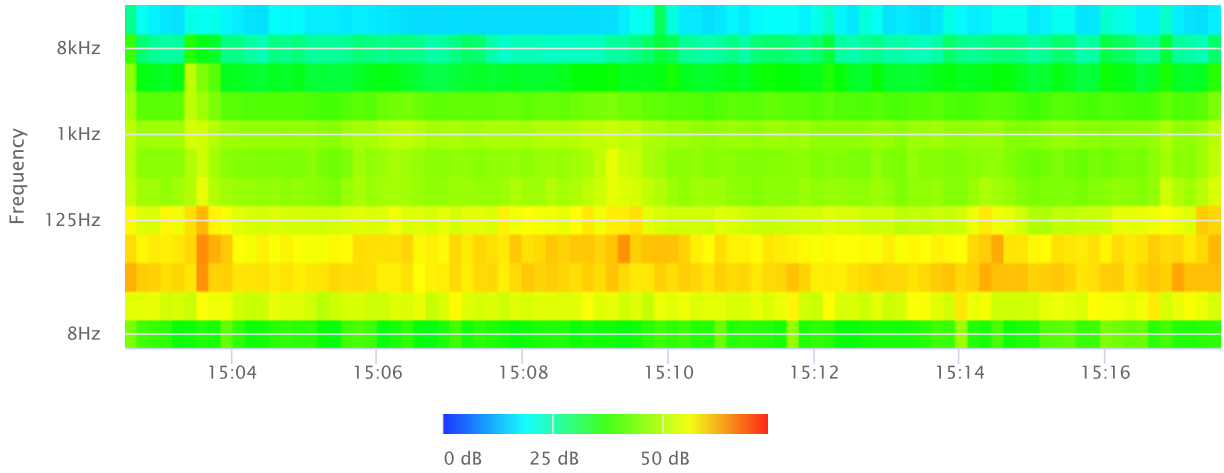
OBA 1/1 Leq



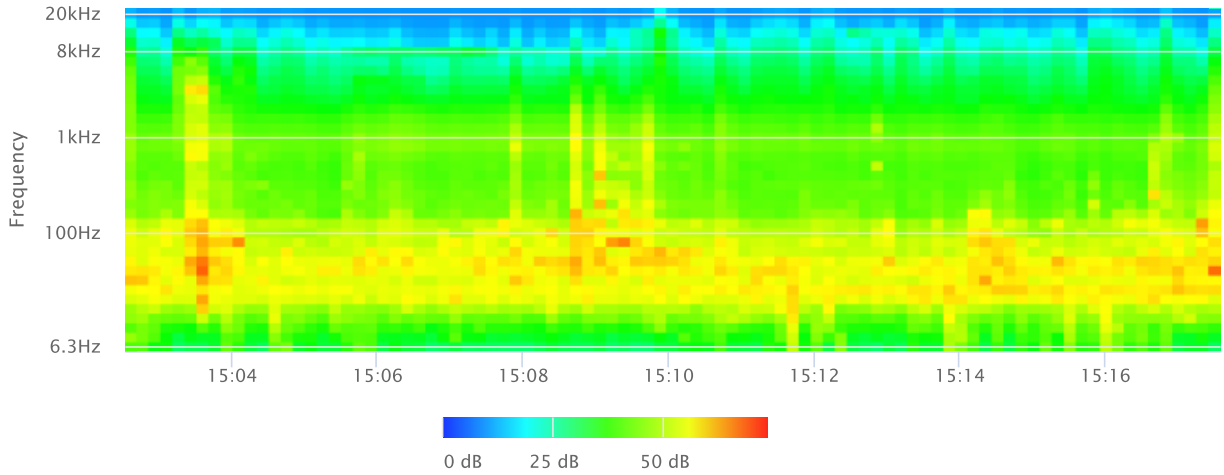
OBA 1/1 Lmax



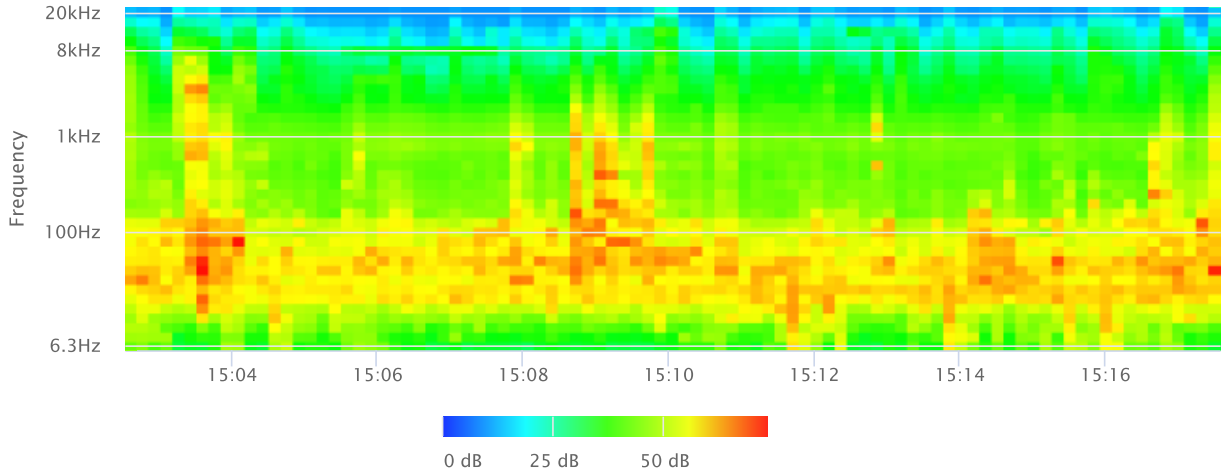
OBA 1/1 Lmin



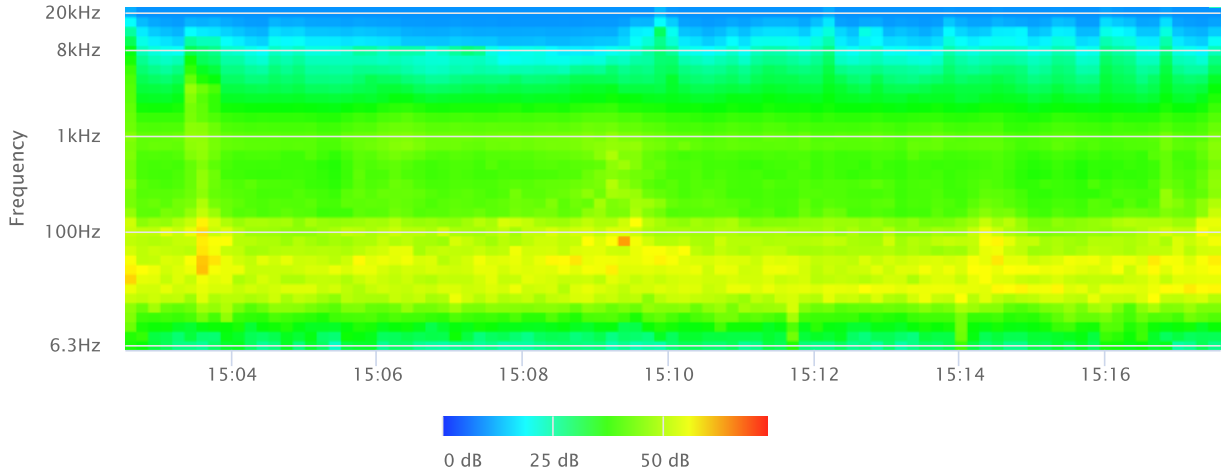
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
15:04
15:06
15:08
15:10
15:12
15:14
15:16
0 dB
25 dB
50 dB

Noise Measurement
Field Data

Project Name: Tommy's Restaurant, 20032 Ventura Boulevard, Woodland Hills **Date:** June 6-7, 2023

Project #: 19639

Noise Measurement #: LTNM1 Run Time: 24 hours (24 x 1 hourss) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 20023 Ventura Boulevard, Woodland Hills, CA 91364

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: SW corner of existing building at 20023 Ventura Blvd with paved asphalt parking lot surrounding. Adjacent: Ventura Blvd (~75') to north & 101 Fwy ~460' to north (both running WSW-ENE), Quakertown Avenue to west with commercial uses further west, an alley way to south with multi-family residential uses further south, and commercial uses/parking lot to east.

Weather: Overcast, skies clearing. Sunset/Rise 8:00 PM/5:43 AM **Settings:** SLOW FAST

Temperature: 55-70 deg F **Wind:** 2-10mph **Humidity:** 55-80% **Terrain:** Flat

Start Time: 3:00 PM **End Time:** 3:00 PM **Run Time:**

Leq:	60.7	dB	**Primary Noise Source:** Traffic noise from vehicles passing microphone traveling on Ventura Blvd.
Lmax	95.7	dB	Traffic noise from vehicles on Quakertown Ave to west & 101 Freeway to north.
L2	65.9	dB	**Secondary Noise Sources:** Traffic ambiance from vehicles on other roads. Overhead air traffic.
L8	63.2	dB	Residential ambiance from multi-family residences to south. Pedestrians.
L25	60.4	dB	
L50	57.5	dB	

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CA 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CA 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	11/17/2021	**FACTORY CALIBRATION DATE:**	11/18/2021
FIELD CALIBRATION DATE:	5/31/2023		

Noise Measurement
Field Data

PHOTOS:

LTNM1 looking NNW towards Ventura Boulevard (~75'), Ventura Boulevard & Quakertown Avenue intersection on left of image

LTNM1 looking WSW towards Quakertown Avenue (~75'). Quakertown Avenue and Ventura Boulevard intersection on right of image.

Summary	
File Name on Meter	LxT_Data.289.s
File Name on PC	LxT_0003099-20230606 150000-LxT_Data.289.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 34°10'16.12"N 118°34'10.25"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.

Measurement	
Start	2023-06-06 15:00:00
Stop	2023-06-07 15:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2023-06-06 14:22:20
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	122.8 dB

Results			
LA_{eq}	60.7		
LAE	110.1		
EA	11.393	mPa^2h	
EA8	3.798	mPa^2h	
EA40	18.989	mPa^2h	
$LA_{peak\ (max)}$	2023-06-07 11:55:37	108.9	dB
LAS_{max}	2023-06-07 11:55:38	95.7	dB
LAS_{min}	2023-06-07 02:20:42	42.8	dB

		Statistics	
LC_{eq}	70.7 dB	**LA2.00**	65.9 dB
LA_{eq}	60.7 dB	**LA8.00**	63.2 dB
LC_{eq} - LA_{eq}	9.9 dB	**LA25.00**	60.4 dB
LAI_{eq}	62.9 dB	**LA50.00**	57.5 dB
LA_{eq}	60.7 dB	**LA90.00**	51.4 dB
LAI_{eq} - LA_{eq}	2.1 dB	**LA99.00**	46.8 dB
Overload Count	0		

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2023-06-06	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.4	53.0	15:27:00	83.6	15:07:36	67.7	64.0	61.7	59.5	55.9	54.5
2	2023-06-06	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.4	52.6	16:55:29	82.8	16:14:21	68.0	64.4	62.2	59.7	55.8	53.6
3	2023-06-06	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	63.9	51.1	17:38:46	91.0	17:00:38	67.6	64.3	62.1	59.6	55.3	52.7
4	2023-06-06	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.8	52.7	18:09:16	79.8	18:19:33	66.7	64.3	62.3	60.5	56.9	54.4
5	2023-06-06	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.2	55.2	19:59:38	78.7	19:04:58	67.0	64.6	62.7	60.9	58.4	56.4
6	2023-06-06	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.2	52.0	20:32:10	78.9	20:43:39	64.4	61.7	59.5	57.7	55.2	53.4
7	2023-06-06	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.6	49.8	21:56:04	76.4	21:29:27	64.8	61.5	58.9	56.5	53.6	51.8
8	2023-06-06	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.1	49.4	22:17:21	73.5	22:11:16	62.2	60.2	57.5	55.6	52.7	50.9
9	2023-06-06	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.0	47.6	23:40:02	69.1	23:26:39	61.5	59.0	56.6	54.5	51.6	49.2
10	2023-06-07	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.5	45.7	00:33:07	83.4	00:05:25	63.6	59.8	56.1	53.4	49.7	47.4
11	2023-06-07	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.4	45.2	01:47:50	85.8	01:50:14	62.8	57.8	54.0	51.7	48.1	46.0
12	2023-06-07	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.3	42.8	02:20:42	72.8	02:55:10	58.5	54.9	52.2	50.0	46.1	43.9
13	2023-06-07	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.7	44.1	03:16:56	65.7	03:04:00	59.2	55.6	53.0	51.1	47.4	45.1
14	2023-06-07	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.9	45.7	04:29:03	71.0	04:02:56	59.5	56.6	54.3	52.6	49.4	47.4
15	2023-06-07	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.6	48.5	05:02:02	73.4	05:59:12	62.8	60.4	58.3	56.6	53.2	50.5
16	2023-06-07	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.1	51.5	06:59:02	75.8	06:27:01	65.4	61.9	58.9	57.1	55.0	53.3
17	2023-06-07	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.9	49.4	07:06:52	76.2	07:25:29	66.8	64.2	62.2	59.2	53.7	50.8
18	2023-06-07	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.7	49.9	08:13:04	79.1	08:28:54	66.8	63.5	61.1	58.5	53.8	51.3
19	2023-06-07	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.6	52.5	09:22:45	88.7	09:48:56	66.5	63.3	61.0	58.5	55.1	53.8
20	2023-06-07	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.5	51.2	10:20:27	81.9	10:57:31	65.4	62.9	60.8	58.5	55.4	52.8
21	2023-06-07	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	66.0	54.7	11:32:20	95.7	11:55:38	68.0	63.9	61.7	59.5	56.8	55.8
22	2023-06-07	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.9	53.9	12:20:16	77.9	12:52:44	67.8	64.5	62.3	60.2	56.9	55.2
23	2023-06-07	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.2	52.6	13:39:31	88.7	13:40:12	67.1	63.8	61.6	59.4	56.2	54.5
24	2023-06-07	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.1	51.3	14:37:21	83.6	14:06:46	68.5	64.6	61.8	59.5	55.4	53.1

Measurement Report

Report Summary

Meter's File Name	LxT_Data.289.s	Computer's File Name	LxT_0003099-20230606 150000-LxT_Data.289.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 34°10'16.12"N 118°34'10.25"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Ganddini 19639 Tommy's Restaurant, 20032 Ventura Blvd, Woodland Hills.		
Start Time	2023-06-06 15:00:00	Duration	24:00:00.0
End Time	2023-06-07 15:00:00	Run Time	24:00:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	60.7 dB		
LAE	110.1 dB	SEA	--- dB
EA	11.4 mPa²h	LAFTM5	65.2 dB
EA8	3.8 mPa²h		
EA40	19.0 mPa²h		
LA_{peak}	108.9 dB	2023-06-07 11:55:37	
LAS_{max}	95.7 dB	2023-06-07 11:55:38	
LAS_{min}	42.8 dB	2023-06-07 02:20:42	
LA_{eq}	60.7 dB		
LC_{eq}	70.7 dB	LC_{eq} - LA_{eq}	9.9 dB
LAI_{eq}	62.9 dB	LAI_{eq} - LA_{eq}	2.1 dB

Exceedances	Count	Duration
LAS > 65.0 dB	782	1:11:27.8
LAS > 85.0 dB	5	0:00:17.6
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

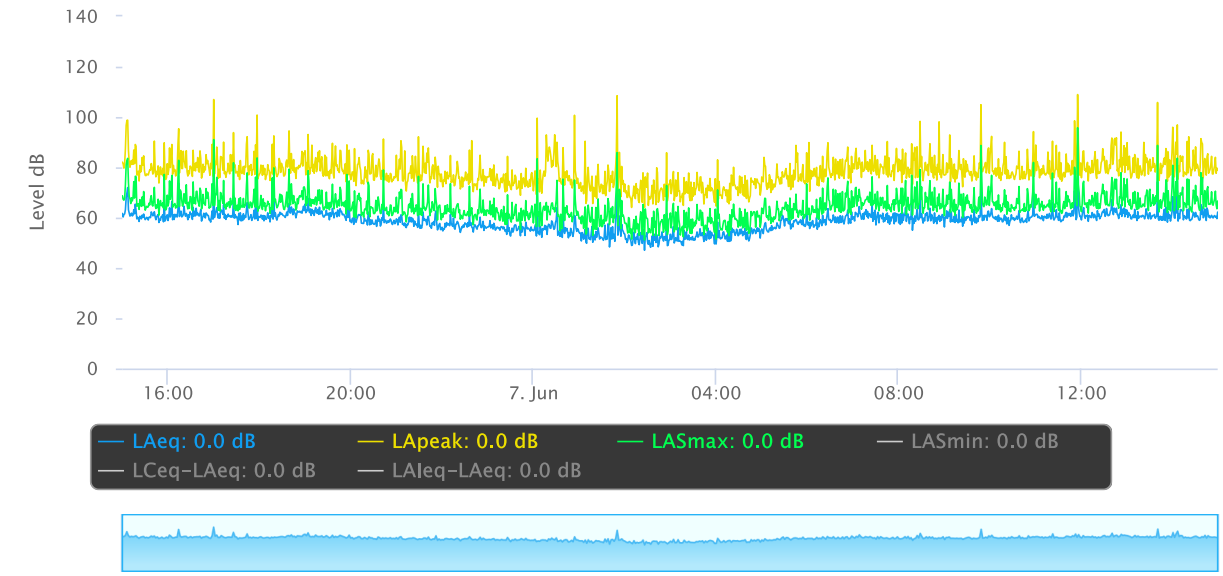
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	60.7 dB		70.7 dB		--- dB	
$L_{S(max)}$	95.7 dB	2023-06-07 11:55:38	--- dB		--- dB	
$L_{S(min)}$	42.8 dB	2023-06-07 02:20:42	--- dB		--- dB	
$L_{Peak(max)}$	108.9 dB	2023-06-07 11:55:37	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

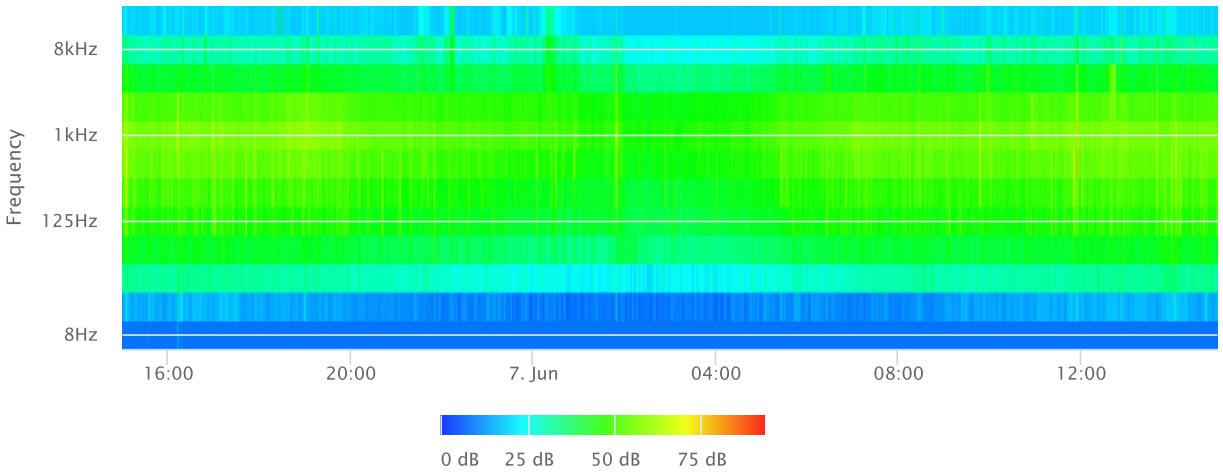
Statistics

LAS 2.0	65.9 dB
LAS 8.0	63.2 dB
LAS 25.0	60.4 dB
LAS 50.0	57.5 dB
LAS 90.0	51.4 dB
LAS 99.0	46.8 dB

Time History



OBA 1/1 Leq



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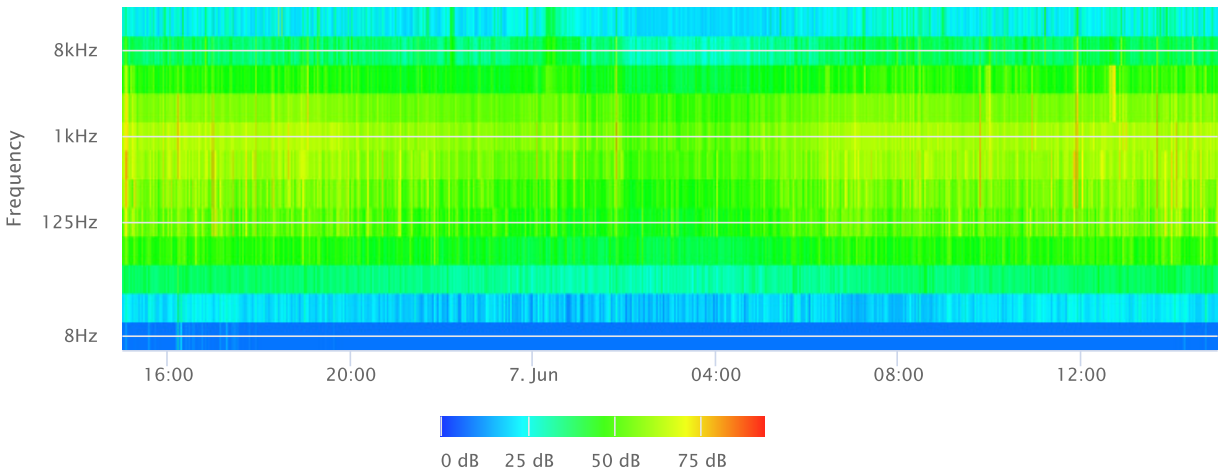

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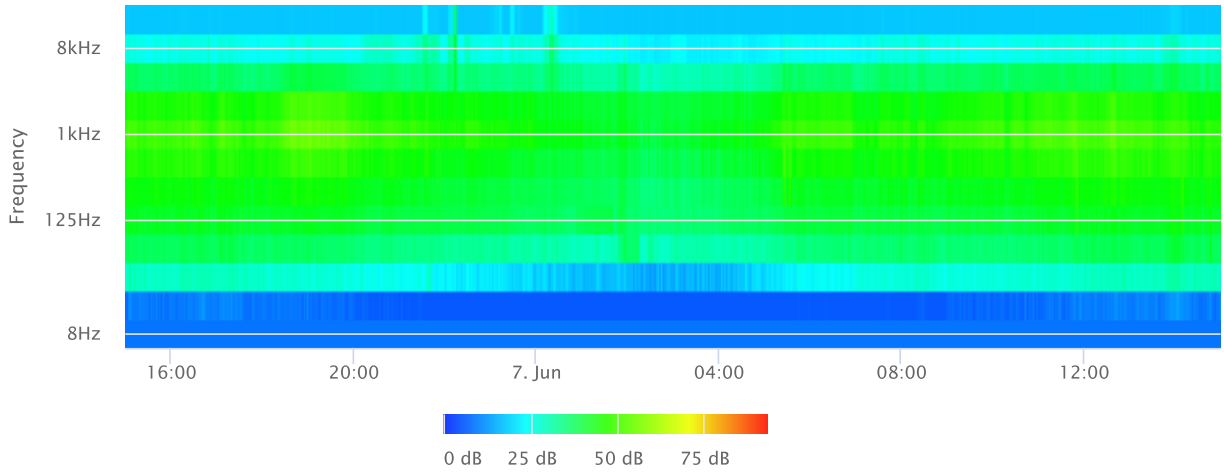

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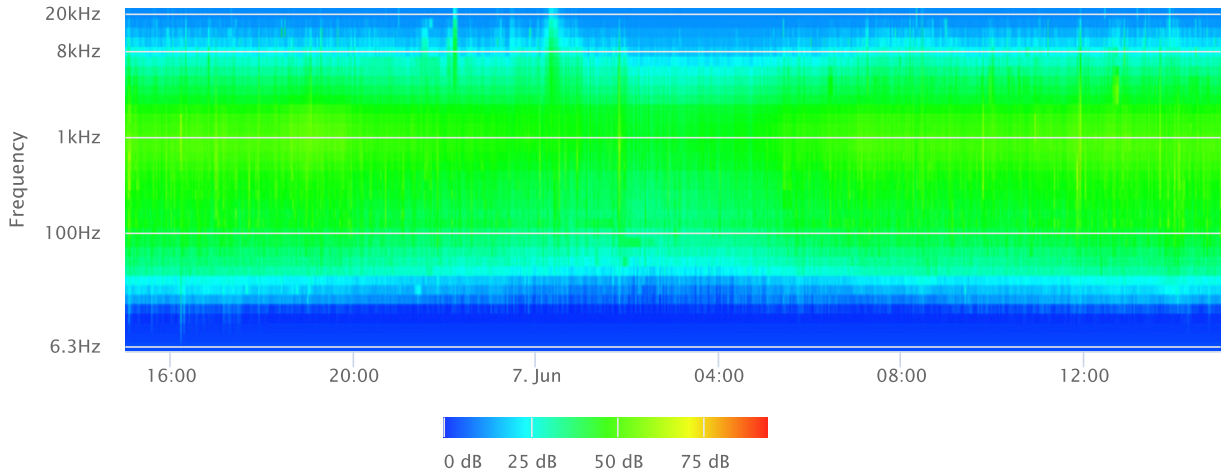
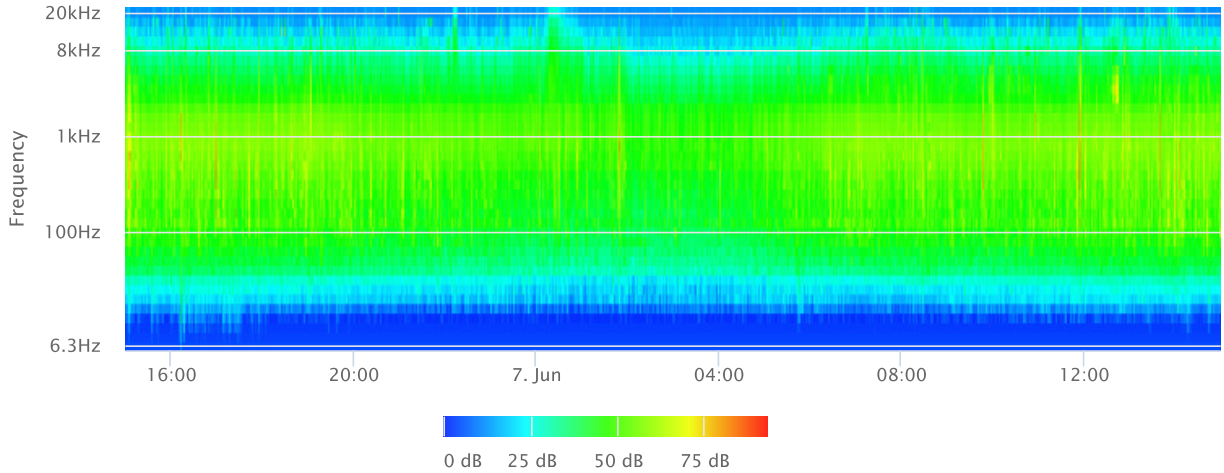


OBA 1/3 Lmax



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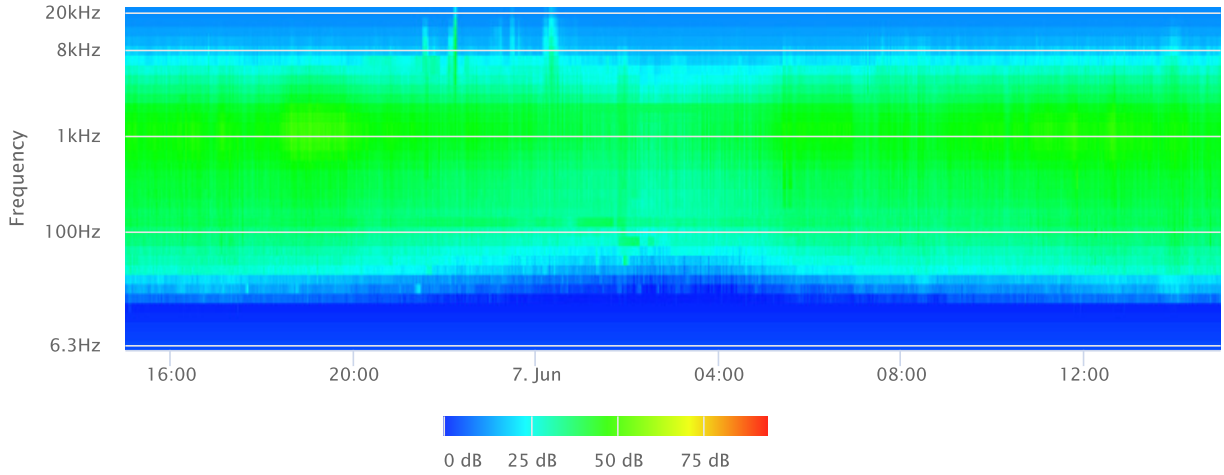
20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
16:00
20:00
7. Jun
04:00
08:00
12:00
0 dB
25 dB
50 dB
75 dB

APPENDIX D

CONSTRUCTION NOISE MODEL WORKSHEETS

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

At 50 Feet

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	BMP Reduction	With BMPs Implemented	Recommended BMP(s)[4]
Demolition											
Concrete/Industrial Saws	1	90	50	20	0.20	0.0	-7.0	83.0	-12.0	71.0	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	50	40	0.40	0.0	-4.0	78.0	-12.0	66.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	50	40	0.80	0.0	-1.0	83.0	-12.0	71.0	Alternative Equipment, Muffler
								86.7	**-11.7**	74.7	
Site Preparation											
Graders	1	85	50	40	0.40	0.0	-4.0	81.0	-9.0	72.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	50	40	0.40	0.0	-4.0	80.0	-9.0	71.0	Alternative Equipment, Muffler
								83.6	**-8.6**	74.6	
Grading											
Rubber Tired Dozers	1	82	50	40	0.40	0.0	-4.0	78.0	-10.0	68.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	50	40	0.40	0.0	-4.0	80.0	-10.0	70.0	Alternative Equipment, Muffler
Graders	1	85	50	40	0.40	0.0	-4.0	81.0	-10.0	71.0	Alternative Equipment, Muffler
								84.6	**-9.6**	74.6	
Building Construction											
Cranes	2	81	50	16	0.32	0.0	-4.9	76.1	-11.0	65.1	Alternative Equipment, Muffler
Forklifts[2]	2	48	50	40	0.80	0.0	-1.0	47.0	0.0	47.0	n/a
Tractors/Loaders/Backhoes	3	84	50	40	1.20	0.0	0.8	84.8	-11.0	73.8	Alternative Equipment, Muffler
								85.3	**-10.3**	74.3	
Paving											
Cement and Mortar Mixers	4	79	50	40	1.60	0.0	2.0	81.0	-10.0	71.0	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	50	50	0.50	0.0	-3.0	74.0	-10.0	64.0	Alternative Equipment, Muffler
Rollers	1	80	50	20	0.20	0.0	-7.0	73.0	-10.0	63.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	50	40	0.40	0.0	-4.0	80.0	-10.0	70.0	Alternative Equipment, Muffler
								84.4	**-9.4**	74.4	
Architectural Coating											
Air Compressors	1	78	50	40	0.40	0.0	-4.0	74.0	0.0	74.0	n/a
								74.0	**0.0**	74.0	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN Noise Model library.

(3) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

(4) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

Receptor 1 (Taft High School, 5461 Winnetka Avenue, Woodland Hills)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	Existing Noise Levels[4]	BMP Reduction	Noise Level with BMPs	Recommended BMP(s)[5]
Demolition												
Concrete/Industrial Saws	1	90	534	20	0.20	-20.6	-7.0	62.4	66.1	-12.0	50.4	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	534	40	0.40	-20.6	-4.0	57.4	66.1	-12.0	45.4	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	534	40	0.80	-20.6	-1.0	62.5	66.1	-12.0	50.5	Alternative Equipment, Muffler
								66.1	66.1	**-11.7**	54.1	
Site Preparation												
Graders	1	85	523	40	0.40	-15.8	-4.0	65.3	66.1	-9.0	50.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	523	40	0.80	-20.4	-1.0	62.6	66.1	-9.0	53.6	Alternative Equipment, Muffler
								67.2	66.1	**-8.6**	55.2	
Grading												
Rubber Tired Dozers	1	82	523	40	0.40	-20.4	-4.0	57.6	66.1	-10.0	47.6	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	523	40	0.40	-20.4	-4.0	59.6	66.1	-10.0	49.6	Alternative Equipment, Muffler
Graders	1	85	523	40	0.40	-20.4	-4.0	60.6	66.1	-10.0	50.6	Alternative Equipment, Muffler
								64.2	66.1	**-9.6**	54.2	
Building Construction												
Cranes	2	81	523	16	0.32	-20.4	-4.9	55.7	66.1	-11.0	44.7	Alternative Equipment, Muffler
Forklifts	2	48	523	40	0.80	-20.4	-1.0	26.6	66.1	0.0	26.6	none
Tractors/Loaders/Backhoes	3	84	523	40	1.20	-20.4	0.8	64.4	66.1	-11.0	53.4	Alternative Equipment, Muffler
								64.9	66.1	**-10.3**	54.0	
Paving												
Cement and Mortar Mixers	4	79	523	40	1.60	-20.4	2.0	60.7	66.1	-10.0	50.7	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	523	50	0.50	-20.4	-3.0	53.6	66.1	-10.0	43.6	Alternative Equipment, Muffler
Rollers	1	80	523	20	0.20	-20.4	-7.0	52.6	66.1	-10.0	42.6	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	523	40	0.40	-20.4	-4.0	59.6	66.1	-10.0	49.6	Alternative Equipment, Muffler
								64.0	66.1	**-9.4**	54.0	
Architectural Coating												
Air Compressors	1	78	523	40	0.40	-20.4	-4.0	53.6	66.1	0.0	53.6	None
								53.6	66.1	**0.0**	53.6	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) With BMPs implemented.

(2) Source: SoundPLAN Noise Model Library.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Existing noise levels. See Table 2.

(5) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

Receptor 2 (Residential at Atrium Court, 5504 Quakertown Avenue, Woodland Hills)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	Existing Noise Levels[4]	BMP Reduction	Noise Level with BMPs	Recommended BMP(s)[5]
Demolition												
Concrete/Industrial Saws	1	90	89	20	0.20	-5.0	-7.0	78.0	62.4	-12.0	66.0	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	89	40	0.40	-5.0	-4.0	73.0	62.4	-12.0	61.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	89	40	0.80	-5.0	-1.0	78.0	62.4	-12.0	66.0	Alternative Equipment, Muffler
								81.7	62.4	**-11.7**	69.7	
Site Preparation												
Graders	1	85	73	40	0.40	-15.8	-4.0	65.3	62.4	-9.0	50.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	73	40	0.80	-3.3	-1.0	79.7	62.4	-9.0	70.7	Alternative Equipment, Muffler
								79.9	62.4	**-8.6**	70.8	
Grading												
Rubber Tired Dozers	1	82	73	40	0.40	-3.3	-4.0	74.7	62.4	-10.0	64.7	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	73	40	0.40	-3.3	-4.0	76.7	62.4	-10.0	66.7	Alternative Equipment, Muffler
Graders	1	85	73	40	0.40	-3.3	-4.0	77.7	62.4	-10.0	67.7	Alternative Equipment, Muffler
								81.3	62.4	**-9.6**	71.3	
Building Construction												
Cranes	2	81	73	16	0.32	-3.3	-4.9	72.8	62.4	-11.0	61.8	Alternative Equipment, Muffler
Forklifts	2	48	73	40	0.80	-3.3	-1.0	43.7	62.4	0.0	43.7	none
Tractors/Loaders/Backhoes	3	84	73	40	1.20	-3.3	0.8	81.5	62.4	-11.0	70.5	Alternative Equipment, Muffler
								82.1	62.4	**-10.3**	71.1	
Paving												
Cement and Mortar Mixers	4	79	73	40	1.60	-3.3	2.0	77.8	62.4	-10.0	67.8	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	73	50	0.50	-3.3	-3.0	70.7	62.4	-10.0	60.7	Alternative Equipment, Muffler
Rollers	1	80	73	20	0.20	-3.3	-7.0	69.7	62.4	-10.0	59.7	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	73	40	0.40	-3.3	-4.0	76.7	62.4	-10.0	66.7	Alternative Equipment, Muffler
								81.1	62.4	**-9.4**	71.1	
Architectural Coating												
Air Compressors	1	78	73	40	0.40	-3.3	-4.0	70.7	62.4	0.0	70.7	None
								70.7	62.4	**0.0**	70.7	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) With BMPs implemented.

(2) Source: SoundPLAN Noise Model Library.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Existing noise levels. See Table 2.

(5) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

Receptor 3 (Residential at Penfield Apartments, 5515 Penfield Avenue, Woodland Hills)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	Existing Noise Levels[4]	BMP Reduction	Noise Level with BMPs	Recommended BMP(s)[5]
Demolition												
Concrete/Industrial Saws	1	90	115	20	0.20	-7.2	-7.0	75.8	58.8	-12.0	63.8	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	115	40	0.40	-7.2	-4.0	70.8	58.8	-12.0	58.8	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	115	40	0.80	-7.2	-1.0	75.8	58.8	-12.0	63.8	Alternative Equipment, Muffler
								79.4	58.8	**-11.7**	67.4	
Site Preparation												
Graders	1	85	110	40	0.40	-15.8	-4.0	65.3	58.8	-9.0	50.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	110	40	0.80	-6.8	-1.0	76.2	58.8	-9.0	67.2	Alternative Equipment, Muffler
								76.5	58.8	**-8.6**	67.3	
Grading												
Rubber Tired Dozers	1	82	110	40	0.40	-6.8	-4.0	71.2	58.8	-10.0	61.2	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	110	40	0.40	-6.8	-4.0	73.2	58.8	-10.0	63.2	Alternative Equipment, Muffler
Graders	1	85	110	40	0.40	-6.8	-4.0	74.2	58.8	-10.0	64.2	Alternative Equipment, Muffler
								77.8	58.8	**-9.6**	67.8	
Building Construction												
Cranes	2	81	110	16	0.32	-6.8	-4.9	69.2	58.8	-11.0	58.2	Alternative Equipment, Muffler
Forklifts	2	48	110	40	0.80	-6.8	-1.0	40.2	58.8	0.0	40.2	none
Tractors/Loaders/Backhoes	3	84	110	40	1.20	-6.8	0.8	77.9	58.8	-11.0	66.9	Alternative Equipment, Muffler
								78.5	58.8	**-10.3**	67.5	
Paving												
Cement and Mortar Mixers	4	79	110	40	1.60	-6.8	2.0	74.2	58.8	-10.0	64.2	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	110	50	0.50	-6.8	-3.0	67.1	58.8	-10.0	57.1	Alternative Equipment, Muffler
Rollers	1	80	110	20	0.20	-6.8	-7.0	66.2	58.8	-10.0	56.2	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	110	40	0.40	-6.8	-4.0	73.2	58.8	-10.0	63.2	Alternative Equipment, Muffler
								77.5	58.8	**-9.4**	67.5	
Architectural Coating												
Air Compressors	1	78	110	40	0.40	-6.8	-4.0	67.2	58.8	0.0	67.2	None
								67.2	58.8	**0.0**	67.2	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) With BMPs implemented.

(2) Source: SoundPLAN Noise Model Library.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Existing noise levels. See Table 2.

(5) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

Receptor 4 (Residential at 5516 Penfield Avenue, Woodland Hills)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	Existing Noise Levels[4]	BMP Reduction	Noise Level with BMPs	Recommended BMP(s)[5]
Demolition												
Concrete/Industrial Saws	1	90	350	20	0.20	-16.9	-7.0	66.1	58.3	-12.0	54.1	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	350	40	0.40	-16.9	-4.0	61.1	58.3	-12.0	49.1	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	350	40	0.80	-16.9	-1.0	66.1	58.3	-12.0	54.1	Alternative Equipment, Muffler
								69.8	58.3	**-11.7**	57.8	
Site Preparation												
Graders	1	85	353	40	0.40	-15.8	-4.0	65.3	58.3	-9.0	50.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	353	40	0.80	-17.0	-1.0	66.1	58.3	-9.0	57.1	Alternative Equipment, Muffler
								68.7	58.3	**-8.6**	57.8	
Grading												
Rubber Tired Dozers	1	82	353	40	0.40	-17.0	-4.0	61.0	58.3	-10.0	51.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	353	40	0.40	-17.0	-4.0	63.0	58.3	-10.0	53.0	Alternative Equipment, Muffler
Graders	1	85	353	40	0.40	-17.0	-4.0	64.0	58.3	-10.0	54.0	Alternative Equipment, Muffler
								67.7	58.3	**-9.6**	57.7	
Building Construction												
Cranes	2	81	353	16	0.32	-17.0	-4.9	59.1	58.3	-11.0	48.1	Alternative Equipment, Muffler
Forklifts	2	48	353	40	0.80	-17.0	-1.0	30.1	58.3	0.0	30.1	none
Tractors/Loaders/Backhoes	3	84	353	40	1.20	-17.0	0.8	67.8	58.3	-11.0	56.8	Alternative Equipment, Muffler
								68.4	58.3	**-10.3**	57.4	
Paving												
Cement and Mortar Mixers	4	79	353	40	1.60	-17.0	2.0	64.1	58.3	-10.0	54.1	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	353	50	0.50	-17.0	-3.0	57.0	58.3	-10.0	47.0	Alternative Equipment, Muffler
Rollers	1	80	353	20	0.20	-17.0	-7.0	56.0	58.3	-10.0	46.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	353	40	0.40	-17.0	-4.0	63.0	58.3	-10.0	53.0	Alternative Equipment, Muffler
								67.4	58.3	**-9.4**	57.4	
Architectural Coating												
Air Compressors	1	78	353	40	0.40	-17.0	-4.0	57.0	58.3	0.0	57.0	None
								57.0	58.3	**0.0**	57.0	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) With BMPs implemented.

(2) Source: SoundPLAN Noise Model Library.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Existing noise levels. See Table 2.

(5) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

WORKSHEET SHOWING FEASIBILITY OF BEST MANAGEMENT PRACTICES TO ACHIEVE LAMC 41.40 GOAL OF 75 dBA

Receptor 5 (Residential at 5484 Quakertown Avenue, Woodland Hills)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1,2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Construction Noise Level Leq, dBA	Existing Noise Levels[4]	BMP Reduction	Noise Level with BMPs	Recommended BMP(s)[5]
Demolition												
Concrete/Industrial Saws	1	90	285	20	0.20	-15.1	-7.0	67.9	54.4	-12.0	55.9	Alternative Equipment, Temporary Solid Barrier
Rubber Tired Dozers	1	82	285	40	0.40	-15.1	-4.0	62.9	54.4	-12.0	50.9	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	285	40	0.80	-15.1	-1.0	67.9	54.4	-12.0	55.9	Alternative Equipment, Muffler
								71.6	54.4	**-11.7**	59.6	
Site Preparation												
Graders	1	85	268	40	0.40	-15.8	-4.0	65.3	54.4	-9.0	50.0	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	2	84	268	40	0.80	-14.6	-1.0	68.4	54.4	-9.0	59.4	Alternative Equipment, Muffler
								70.1	54.4	**-8.6**	59.9	
Grading												
Rubber Tired Dozers	1	82	268	40	0.40	-14.6	-4.0	63.4	54.4	-10.0	53.4	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	268	40	0.40	-14.6	-4.0	65.4	54.4	-10.0	55.4	Alternative Equipment, Muffler
Graders	1	85	268	40	0.40	-14.6	-4.0	66.4	54.4	-10.0	56.4	Alternative Equipment, Muffler
								70.0	54.4	**-9.6**	60.0	
Building Construction												
Cranes	2	81	268	16	0.32	-14.6	-4.9	61.5	54.4	-11.0	50.5	Alternative Equipment, Muffler
Forklifts	2	48	268	40	0.80	-14.6	-1.0	32.4	54.4	0.0	32.4	none
Tractors/Loaders/Backhoes	3	84	268	40	1.20	-14.6	0.8	70.2	54.4	-11.0	59.2	Alternative Equipment, Muffler
								70.8	54.4	**-10.3**	59.8	
Paving												
Cement and Mortar Mixers	4	79	268	40	1.60	-14.6	2.0	66.5	54.4	-10.0	56.5	Alternative Equipment, Temporary Solid Barrier
Pavers	1	77	268	50	0.50	-14.6	-3.0	59.4	54.4	-10.0	49.4	Alternative Equipment, Muffler
Rollers	1	80	268	20	0.20	-14.6	-7.0	58.4	54.4	-10.0	48.4	Alternative Equipment, Muffler
Tractors/Loaders/Backhoes	1	84	268	40	0.40	-14.6	-4.0	65.4	54.4	-10.0	55.4	Alternative Equipment, Muffler
								69.8	54.4	**-9.4**	59.8	
Architectural Coating												
Air Compressors	1	78	268	40	0.40	-14.6	-4.0	59.4	54.4	0.0	59.4	None
								59.4	54.4	**0.0**	59.4	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) With BMPs implemented.

(2) Source: SoundPLAN Noise Model Library.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Existing noise levels. See Table 2.

(5) Alternative Equipment would be equipment that does the same job but with a lower sound level. A ten-foot barrier will provide at least 10 dB of sound reduction. After 10-feet, every additional 1 foot in height provides approximately 1 dB of reduction. Mufflers can be designed to provide up to 30 dB of sound reduction.

APPENDIX E

SOUNDPLAN WORKSHEETS

Noise emissions of industry sources

Source name	Referer	Level	Frequency spectrum [dB(A)]																											Correctio		
			31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.3 kHz	1.6 kHz	2 kHz	2.5 kHz	3.2 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	Cwa dB	CI dB	CT dB
Que	Lw/m	Da 50.0																												-	-	-
Patio1	Lw/m²	Da 67.0	-	-	-	-	-	-	-	-	-	-	-	-	67.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Patio2	Lw/m²	Da 67.0	-	-	-	-	-	-	-	-	-	-	-	-	67.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Patio3	Lw/m²	Da 67.0	-	-	-	-	-	-	-	-	-	-	-	-	67.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HVAC1	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
HVAC2	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
HVAC3	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
HVAC4	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
HVAC5	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
HVAC6	Lw/unit	Da 78.7	42.	47.	42.	46.	50.	56.	59.	62.	62.	64.	66.	56.	58.	59.	68.	69.	70.	71.	71.	71.	70.	70.	70.	73.	72.	71.	74.	72.	-	-	-
Speaker	Lw/unit	Da 70.0	-	-	-	-	-	-	-	-	-	-	-	-	70.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drive Through V	Lw/unit	Da 70.0	-	-	-	-	-	-	-	-	-	-	-	-	70.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Noise emissions of parking lot traffic

Name	Parking lot type	Size	Movements per hour		Road surface	Separated method	Lw,ref
			Day	Lmax			dB(A)
P-1	Visitors and staff	9 Parking bays	2.200	0.000	Asphaltic driving lanes	no	72.5
P-2	Visitors and staff	1 Parking bays	2.200	0.000	Asphaltic driving lanes	no	63.0
P-3	Visitors and staff	3 Parking bays	2.200	0.000	Asphaltic driving lanes	no	67.8

Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level w/o NP Day dB(A)	Level w NP Day dB(A)	Difference Day dB	Conflict Day	Conflict Night dB	Conflict Ldn
1	1	-	EG	-	34.5	0.0	-34.5	-	-	-
2	2	-	EG	-	55.2	0.0	-55.2	-	-	-
3	3	-	EG	-	48.9	0.0	-48.9	-	-	-
4	4	-	EG	-	39.4	0.0	-39.4	-	-	-
5	5	-	EG	-	41.8	0.0	-41.8	-	-	-

APPENDIX F

FHWA TRAFFIC NOISE MODEL WORKSHEETS

Existing Traffic Noise

1	:Id	
Winnetka Avenue	:Road	
North of Ventura Boulevard	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	19670
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1139.17	23.60	39.34	845.71	3.93	6.56	209.72	32.78	54.64
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	24.82	7.98	10.20	23.53	0.20	2.42	17.47	9.41	11.63
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	64.45	57.33	64.76	63.15	49.55	56.98	57.10	58.75	66.19
	DAY LEQ	68.01		EVENING LEQ	64.24		NIGHT LEQ	67.34	

F	CNEL	73.90	
	DAY LEQ	68.01	

Day hour	89.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

1	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	19800
Winnetka Avenue	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
North of Ventura Boulevard	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1146.70	23.76	39.60	851.29	3.96	6.60	211.10	33.00	55.00
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	24.85	8.01	10.23	23.55	0.23	2.45	17.50	9.44	11.66
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	64.47	57.36	64.79	63.18	49.57	57.01	57.12	58.78	66.22
	DAY LEQ	68.03		EVENING LEQ	64.27		NIGHT LEQ	67.37	

CNEL	73.93	Day hour	89.00
DAY LEQ	68.03	Absorptive?	no
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

2	:Id
Winnetka Avenue	:Road
South of Ventura Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	9430
Speed	30
Distance	33
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	578.34	7.07	2.75	427.40	1.26	1.26	107.05	9.43	3.67
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	22.54	3.42	-0.68	21.23	-4.09	-4.08	15.22	4.67	0.57
Distance	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	61.79	53.27	54.81	60.48	45.76	51.42	54.47	54.52	56.06
	DAY LEQ	63.07		EVENING LEQ	61.11		NIGHT LEQ	59.85	

CNEL	67.12
DAY LEQ	63.07

Day hour	90.00
Absorptive?	no
Use hour?	no
GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

2	:Id
Winnetka Avenue	:Road
South of Ventura Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	9470
Speed	30
Distance	33
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	580.79	7.10	2.76	429.21	1.26	1.26	107.51	9.47	3.68
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	22.56	3.44	-0.66	21.25	-4.07	-4.06	15.24	4.69	0.58
Distance	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	61.81	53.29	54.83	60.50	45.78	51.43	54.48	54.53	56.08
	DAY LEQ	63.08		EVENING LEQ	61.13		NIGHT LEQ	59.87	

CNEL	67.13
DAY LEQ	63.08

Day hour	90.00
Absorptive?	no
Use hour?	no
GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

3	:Id	
Quakertown Avenue	:Road	
South of Ventura Boulevard	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2880
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	176.63	2.16	0.84	130.53	0.38	0.38	32.70	2.88	1.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.19	-0.94	-5.04	16.87	-8.45	-8.44	10.86	0.31	-3.79
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.77	47.29	49.35	53.46	39.79	45.95	47.45	48.54	50.60
	DAY LEQ	56.43		EVENING LEQ	54.33		NIGHT LEQ	53.83	

CNEL	**60.91**
DAY LEQ	56.43

Day hour	91.00
Absorptive?	no
Use hour?	no
GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

3	:Id
Quakertown Avenue	:Road
South of Ventura Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3030
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	185.83	2.27	0.88	137.33	0.40	0.40	34.40	3.03	1.18
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.41	-0.72	-4.82	17.09	-8.23	-8.22	11.08	0.53	-3.57
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.99	47.52	49.57	53.68	40.01	46.17	47.67	48.76	50.82
	DAY LEQ	56.65		EVENING LEQ	54.55		NIGHT LEQ	54.05	

CNEL	61.13
DAY LEQ	56.65

Day hour	91.00
Absorptive?	no
Use hour?	no
GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

4	:Id
Ventura Boulevard	:Road
West of Winnetka Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	26040
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1508.08	31.25	52.08	1119.58	5.21	8.68	277.63	43.40	72.33
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.04	9.20	11.42	24.74	1.42	3.64	18.69	10.63	12.85
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.66	58.55	65.98	64.37	50.76	58.20	58.31	59.97	67.41
	DAY LEQ	69.22		EVENING LEQ	65.46		NIGHT LEQ	68.56	

CNEL	75.12
DAY LEQ	69.22

Day hour	92.00
Absorptive?	no
Use hour?	no
GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

4	:Id	
Ventura Boulevard	:Road	
West of Winnetka Avenue	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	26170
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1515.61	31.40	52.34	1125.17	5.23	8.72	279.02	43.62	72.69
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.06	9.22	11.44	24.77	1.44	3.66	18.71	10.65	12.87
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.69	58.57	66.00	64.39	50.79	58.22	58.34	59.99	67.43
	DAY LEQ	69.25		EVENING LEQ	65.48		NIGHT LEQ	68.58	

CNEL	75.14
DAY LEQ	69.25

Day hour	92.00
Absorptive?	no
Use hour?	no
GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

5	:Id
Ventura Boulevard	:Road
East of Winnetka Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	26060
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1509.24	31.27	52.12	1120.44	5.21	8.69	277.85	43.43	72.39
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.04	9.21	11.42	24.75	1.42	3.64	18.69	10.63	12.85
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.67	58.55	65.99	64.37	50.77	58.20	58.32	59.98	67.41
	DAY LEQ	69.23		EVENING LEQ	65.46		NIGHT LEQ	68.56	

CNEL	75.12
DAY LEQ	69.23

Day hour	93.00
Absorptive?	no
Use hour?	no
GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

5	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	26360
Ventura Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
East of Winnetka Avenue	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1526.61	31.63	52.72	1133.34	5.27	8.79	281.04	43.93	73.22
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.09	9.25	11.47	24.80	1.47	3.69	18.74	10.68	12.90
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.72	58.60	66.04	64.42	50.82	58.25	58.37	60.03	67.46
	DAY LEQ	69.28		EVENING LEQ	65.51		NIGHT LEQ	68.61	

CNEL	75.17	Day hour	93.00
DAY LEQ	69.28	Absorptive?	no
		Use hour?	no
		GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

6	:Id
Ventura Boulevard	:Road
West of Quakertown Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27300
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1581.05	32.76	54.60	1173.75	5.46	9.10	291.07	45.50	75.83
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.24	9.41	11.63	24.95	1.63	3.84	18.89	10.83	13.05
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.87	58.75	66.19	64.58	50.97	58.41	58.52	60.18	67.61
	DAY LEQ	69.43		EVENING LEQ	65.66		NIGHT LEQ	68.77	

CNEL	75.32
DAY LEQ	69.43

Day hour	94.00
Absorptive?	no
Use hour?	no
GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

6	:Id
Ventura Boulevard	:Road
West of Quakertown Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27600
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1598.43	33.12	55.20	1186.65	5.52	9.20	294.27	46.00	76.67
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.29	9.45	11.67	25.00	1.67	3.89	18.94	10.88	13.10
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.92	58.80	66.24	64.62	51.02	58.45	58.57	60.23	67.66
	DAY LEQ	69.48		EVENING LEQ	65.71		NIGHT LEQ	68.81	

CNEL	75.37
DAY LEQ	69.48

Day hour	94.00
Absorptive?	no
Use hour?	no
GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

7	:Id
Ventura Boulevard	:Road
East of Quakertown Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27340
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1583.37	32.81	54.68	1175.47	5.47	9.11	291.49	45.57	75.94
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.25	9.41	11.63	24.96	1.63	3.85	18.90	10.84	13.06
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.88	58.76	66.19	64.58	50.98	58.41	58.53	60.18	67.62
	DAY LEQ	69.44		EVENING LEQ	65.67		NIGHT LEQ	68.77	

CNEL	75.33
DAY LEQ	69.44

Day hour	95.00
Absorptive?	no
Use hour?	no
GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

7	:Id
Ventura Boulevard	:Road
East of Quakertown Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27490
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1592.06	32.99	54.98	1181.92	5.50	9.16	293.09	45.82	76.36
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.27	9.44	11.66	24.98	1.66	3.87	18.92	10.86	13.08
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.90	58.78	66.22	64.61	51.00	58.44	58.55	60.21	67.64
	DAY LEQ	69.46		EVENING LEQ	65.69		NIGHT LEQ	68.80	

CNEL	75.35
DAY LEQ	69.46

Day hour	95.00
Absorptive?	no
Use hour?	no
GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

8	:Id	
Ventura Boulevard	:Road	
West of Oakdale Avenue	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27010
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1564.26	32.41	54.02	1161.29	5.40	9.00	287.97	45.02	75.03
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.20	9.36	11.58	24.90	1.58	3.80	18.85	10.79	13.01
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.82	58.70	66.14	64.53	50.92	58.36	58.47	60.13	67.57
	DAY LEQ	69.38		EVENING LEQ	65.62		NIGHT LEQ	68.72	

CNEL	75.28
DAY LEQ	69.38

Day hour	96.00
Absorptive?	no
Use hour?	no
GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

8	:Id	
Ventura Boulevard	:Road	
West of Oakdale Avenue	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27140
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1571.79	32.57	54.28	1166.88	5.43	9.05	289.36	45.23	75.39
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.22	9.38	11.60	24.92	1.60	3.82	18.87	10.81	13.03
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.84	58.73	66.16	64.55	50.94	58.38	58.49	60.15	67.59
	DAY LEQ	69.40		EVENING LEQ	65.64		NIGHT LEQ	68.74	

CNEL	75.30
DAY LEQ	69.40

Day hour	96.00
Absorptive?	no
Use hour?	no
GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Traffic Noise

9	:Id
Ventura Boulevard	:Road
East of Oakdale Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	26830
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1553.83	32.20	53.66	1153.55	5.37	8.94	286.06	44.72	74.53
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.17	9.33	11.55	24.87	1.55	3.77	18.82	10.76	12.98
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.79	58.68	66.11	64.50	50.89	58.33	58.44	60.10	67.54
	DAY LEQ	69.35		EVENING LEQ	65.59		NIGHT LEQ	68.69	

CNEL	75.25
DAY LEQ	69.35

Day hour	97.00
Absorptive?	no
Use hour?	no
GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

9	:Id
Ventura Boulevard	:Road
East of Oakdale Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	26960
Speed	35
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1561.36	32.35	53.92	1159.14	5.39	8.99	287.44	44.93	74.89
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	26.19	9.35	11.57	24.89	1.57	3.79	18.84	10.78	13.00
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.81	58.70	66.13	64.52	50.92	58.35	58.46	60.12	67.56
	DAY LEQ	69.38		EVENING LEQ	65.61		NIGHT LEQ	68.71	

F	CNEL	75.27	
	DAY LEQ	69.38	

Day hour	97.00
Absorptive?	no
Use hour?	no
GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

EXISTING & Project ADT'S BY LEG

FACTOR= 10.0 Use 10 (LA County), 12 (Riverside), or 11.5 (SB)

														NORTH	SOUTH	EAST	WEST
Intersection	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	LEG	LEG	LEG	LEG
Existing																	
(1) Winnetka Ave (NS) / Ventura Blvd (EW)	94	312	38	371	333	267	334	1144	114	52	651	350	4,060	19,670	9,430	26,060	26,040
(2) Quakertown Ave (NS) / Ventura Blvd (EW)	16	140	0	0	0	0	0	1561	56	76	1097	0	2,946	1,400	2,880	27,340	27,300
(3) Oakdale Ave (NS) / Ventura Blvd (EW)	135	1	158	18	2	11	21	1465	122	87	947	8	2,975	610	5,050	26,830	27,010
Project																	
(1) Winnetka Ave (NS) / Ventura Blvd (EW)	0	0	2	7	0	0	0	7	0	2	6	6	30	130	40	300	130
(2) Quakertown Ave (NS) / Ventura Blvd (EW)	15	0	0	0	0	0	0	15	0	0	0	0	30	-	150	150	300
(3) Oakdale Ave (NS) / Ventura Blvd (EW)	0	0	0	0	0	0	0	6	0	0	7	0	13	-	-	130	130

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Riverside County Published Mix

Larger than Secondary

Buildout Traffic Noise

Ventura Boulevard - at closest outdoor eating area & closest portion of proposed building

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	40500.00
										SPEED	35.00
							AUTOS			DISTANCE	55.00
INPUT PARAMETERS											
Vehicles per hour	2345.52	48.60	81.00	1741.28	8.10	13.50	431.80	67.50	112.50	% A	92.00
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	% MT	3.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	% HT	5.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	LEFT	-90.00
										RIGHT	90.00
NOISE CALCULATIONS											
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05	CNEL	77.04
ADJUSTMENTS										DAY LEQ	71.14
Flow	27.96	11.12	13.34	26.66	3.34	5.56	20.61	12.55	14.77		
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	Day hour	89.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Absorbtive?	no
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	Use hour?	no
LEQ	67.58	60.46	67.90	66.29	52.68	60.12	60.23	61.89	69.33	GRADE dB	0.00

DAY LEQ	71.14	EVENING LEQ	67.38	NIGHT LEQ	70.48	
CNEL	**77.0**					

APPENDIX G

GROUNDBORNE VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to South (R2)		
Address:	Atrium Court, 5504 Quakertown Avenue, Woodland Hills		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	20.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.293	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to South (R2)		
Address:	Atrium Court, 5504 Quakertown Avenue, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	20.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.124	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to Southeast (R3)		
Address:	Penfield Apartments, 5515 Penfield Avenue, Woodland Hills		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	53.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.068	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to Southeast (R3)		
Address:	Penfield Apartments, 5515 Penfield Avenue, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	53.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.029	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to East		
Address:	Jasmine Thai Cuisine, 20022 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	60.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.056	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to East		
Address:	Jasmine Thai Cuisine, 20022 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	60.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.024	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to West		
Address:	Chase Mortgage, 20040 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	62.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.054	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to West		
Address:	Chase Mortgage, 20040 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	62.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.023	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19639 Tommy's Restaurant (20032 Ventura)		Date: 5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to Northwest		
Address:	Access San Fernando Valley Animal Hospital, 20051 Ventura Boulevard, Woodland Hills		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	234.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.007	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19639 Tommy's Restaurant (20032 Ventura)		Date: 5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to Northwest		
Address:	Access San Fernando Valley Animal Hospital, 20051 Ventura Boulevard, Woodland Hills		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	234.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.003	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to North		
Address:	Jack in the Box, 20037 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	120.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.020	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to North		
Address:	Jack in the Box, 20037 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	120.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.008	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to Northeast		
Address:	76 Gas Station, 20021 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	132.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.017	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to Northeast		
Address:	76 Gas Station, 20021 Ventura Boulevard, Woodland Hills		

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	132.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.007	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Vibratory Roller		
Scenario:	BMPs		
Location:	Threshold for Damage		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	26.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.198	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19639 Tommy's Restaurant (20032 Ventura)	Date:	5/9/23
Source:	Large Bulldozer		
Scenario:	BMPs		
Location:	Threshold for Damage		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	15.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.191	IN/SEC	OUTPUT IN BLUE

Construction Annoyance Vibration Calculations

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

Eq. 7-3: $Lvdistance = Lvref - 30\log(D/25)$

Lvdistance = the rms velocity level adjsuted for distance, VdB
Lvref = the source reference vibration level at 25 feet, VdB
D = distance from the equipment to th receiver, ft.

Large Bulldozer:

Residential to South (R2): $Lvdistance = 87 - 30 \log(20/25) = 89.91$ VdB
Residential to Southeast (R3): $Lvdistance = 87 - 30 \log(53/25) = 77.21$ VdB

Under Threshold Mitigation Distance: $87 - 30 \log(80/25) = 71.85$ VdB

Vibratory Roller:

Residential to South (R2): $Lvdistance = 94 - 30 \log(20/25) = 96.91$ VdB
Residential to Southeast (R3): $Lvdistance = 94 - 30 \log(53/25) = 84.21$ VdB

Under Threshold Mitigation Distance: $94 - 30 \log(136/25) = 71.93$ VdB

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