2889 LOCUST AVENUE WAREHOUSE PROJECT NOISE IMPACT ANALYSIS

City of Rialto

March 8, 2022

ganddini

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

2889 LOCUST AVENUE WAREHOUSE PROJECT NOISE IMPACT ANALYSIS

City of Rialto

March 8, 2022

prepared by
Roma Stromberg, INCE, MS
Catherine Howe, MS

GANDDINI GROUP INC.
555 Parkcenter Drive, Suite 225
Santa Ana, CA 92705
(714) 795-3100 | ganddini.com

Project No. 19465

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The purpose of this report is to provide an assessment of the noise impacts associated with development and operation of the proposed 2889 Locust Avenue Warehouse project and to identify mitigation measures that may be necessary to reduce those impacts. 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 Rialto.

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 related to noise analysis.

Project Location

The 4.81-acre project site is located at 2889 Locust Avenue, within the Rialto Airport Specific Plan, in the City of Rialto, California. The project site is currently undeveloped and zoned for planned industrial development (I-PID).

Project Description

The proposed project involves construction of a new 98,962 square foot warehouse building. The proposed project also includes 3 parking stalls for trucks and 69 standard parking stalls. Access to the Project Site would be provided by two access driveways on Locust Avenue.

Construction Impacts

The single-family homes located immediately east of the project site will be exposed to short-term increases in ambient noise levels of up to 26 dB Leq. However, project construction will not occur outside of the hours outlined as "exempt" in City of Rialto Municipal Code Section 9.50.070 (as follows) and therefore, will not result in a 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.

- October 1st through April 30th.
  - Monday – Friday: 7:00 AM to 5:30 PM
  - Saturday: 8:00 AM to 5:00 PM
  - Sunday: No permissible hours
  - State holidays: No permissible hours

- May 1st through September 30th.
  - Monday- Friday: 6:00 AM to 7:00 PM
  - Saturday: 8:00 AM to 5:00 PM
  - Sunday: No permissible hours
  - State holidays: No permissible hours

Impacts would be less than significant, and no mitigation is required. Suggested measures to further minimize construction related noise are presented below.

In addition to adherence to the City of Rialto Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors located east of the project site.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences located to the east. The shielding should be without holes and cracks. Entryways should be located on the west side.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Rialto Municipal Code Section 9.50.070.

Project construction is expected to generate up to 122 vehicle trips per day (88 for worker trips and 34 for vendor trips). Given the project site's proximity to the 210 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Project Operational Noise

During operation, the proposed project is expected to generate approximately 169 average daily trips with 16 trips during the AM peak-hour and 17 trips during the PM peak-hour. Existing traffic noise level along Locust Avenue is 71 dBA CNEL at the right-of-way of each modeled roadway segment; and the modeled Existing Plus Project traffic noise level is 71 dBA CNEL at the right-of-way of each modeled roadway segment. Project generated vehicle traffic is anticipated to change the noise a by approximately 0.48 dBA CNEL. Project generated operational vehicle traffic will not result in substantial increases in ambient noise levels. This impact would be less than significant. No mitigation is required.

As discussed previously, sensitive land uses that may be affected by project noise include the existing single-family detached residential dwelling units located adjacent to the east of the project site. Modeled peak hour project operational noise is expected to range between 21 and 46 dBA L_{eq} at these receptors. Existing measured ambient noise levels at the sensitive receptor locations ranged between 45 and 50 dBA Leq. At the most, project generated ambient noise levels may result in an increase of 1 dB at existing sensitive receptors. This increase would not be readily noticeable. Project operation would not result in substantial increases in ambient noise levels. No mitigation is required.

Groundborne Vibration Impacts

The nearest affected structure is the industrial building located approximately 3 feet to the north the northern project property line. At 3 feet, use of a vibratory roller would be expected to generate a PPV of 5.052 in/sec and a bulldozer would be expected to generate a PPV of 2.141 in/sec. Therefore, temporary vibration levels associated with project construction could exceed the threshold at which there is a risk to “architectural” damage to modern industrial/commercial buildings of 0.5 in/sec PPV. In order to avoid impacts related to groundborne vibration, the following best management practice will be added to construction plans.

Best Management Practice to be Added to Project Construction Plans

1. Vibratory rollers, or other similar vibratory equipment will not be used within 15 feet of the existing industrial structure located north of the project site and large bulldozers will not be used within 8 feet of the existing industrial structure located north of the project site. If construction activity must occur within these distances, it will be performed with smaller equipment types that do not exceed the vibration thresholds applied herein.

With implementation of the above best management practice, impacts related to the potential for vibratory equipment to cause structural damage would be less than significant. No mitigation is required.

Annoyance - Groundborne vibration becomes strongly perceptible to sensitive receptors at a level of 0.1 in/sec PPV. Therefore, project construction may cause annoyance to the residential uses to the east for short-term periods. The impact would be short in duration and is not considered a significant. No mitigation is required.

1. INTRODUCTION

This section describes the purpose of this noise impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts resulting from development of the proposed 2889 Locust Avenue Warehouse project and to identify mitigation measures that may be necessary to reduce those impacts. 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 Rialto.

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 related to noise analysis.

PROJECT LOCATION

The 4.81-acre project site is located at 2889 Locust Avenue, within the Rialto Airport Specific Plan, in the City of Rialto, California. The project site is currently undeveloped and zoned for planned industrial development (I-PID).

PROJECT DESCRIPTION

The proposed project involves construction of a new 98,962 square foot warehouse building. The proposed project also includes 3 parking stalls for trucks and 69 standard parking stalls. Access to the Project Site would be provided by two access driveways on Locust Avenue.

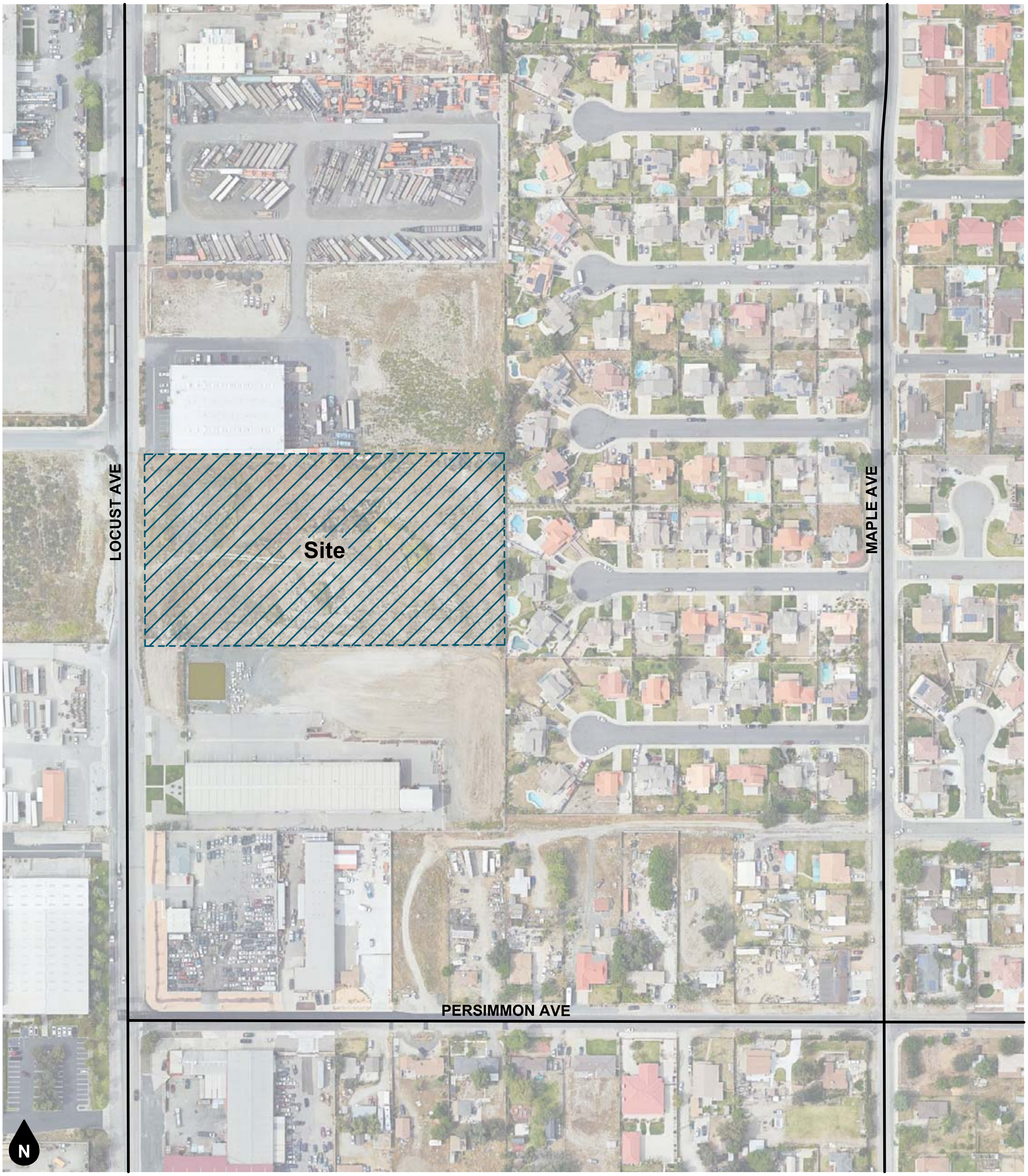


Figure 1
Project Location Map

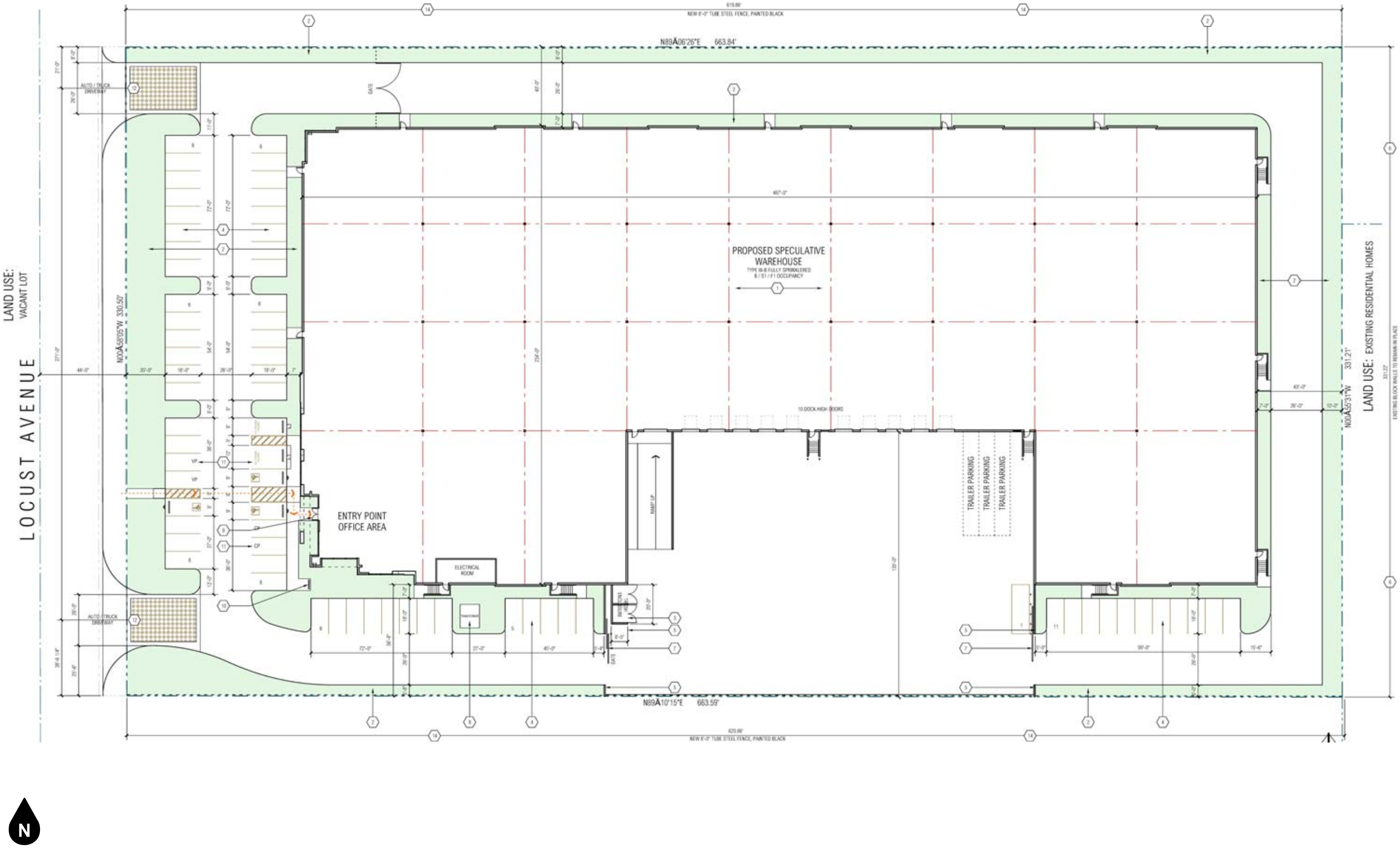


Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

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, $L_{eq(3\text{-}hr)}$ 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

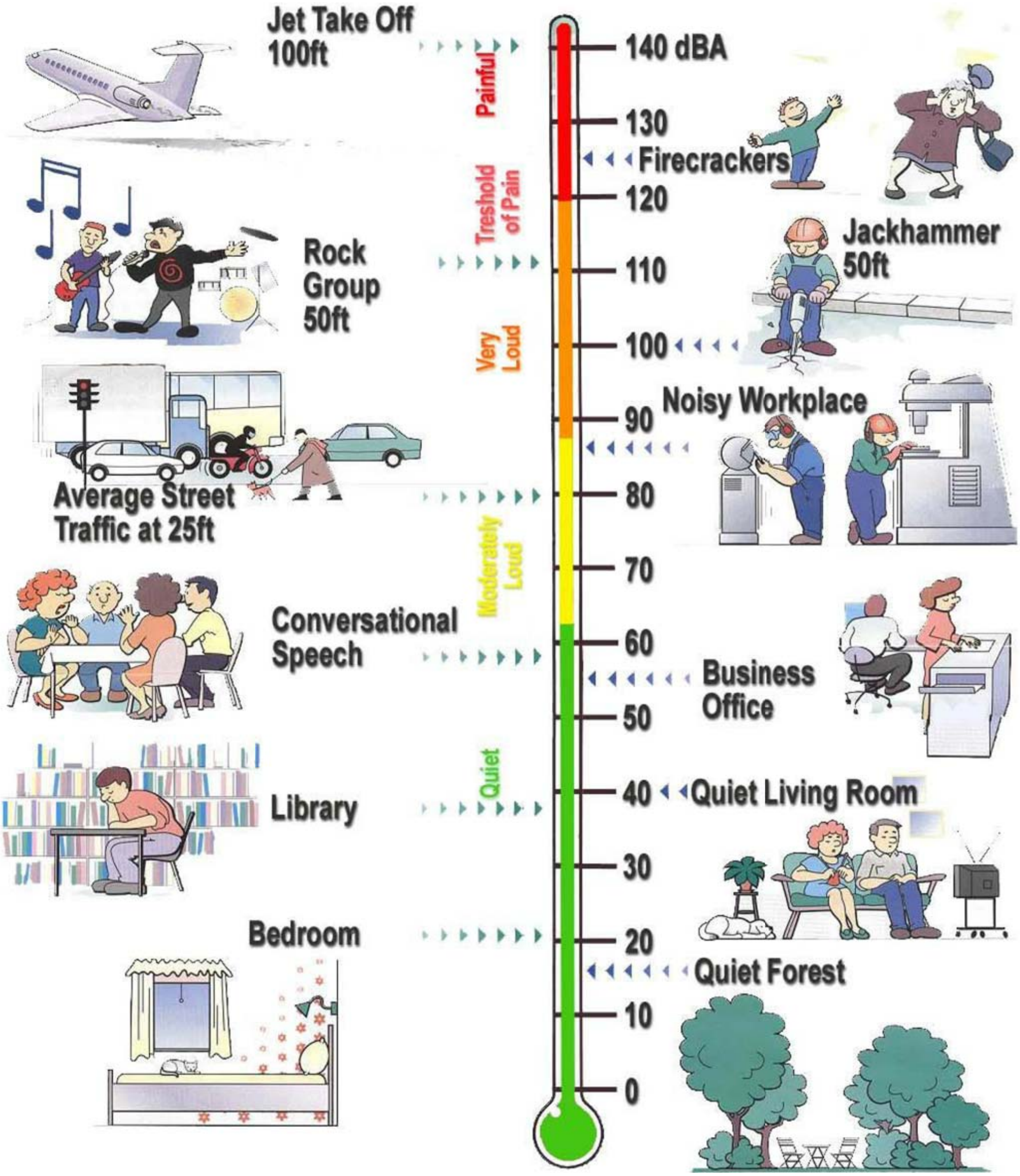
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression,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

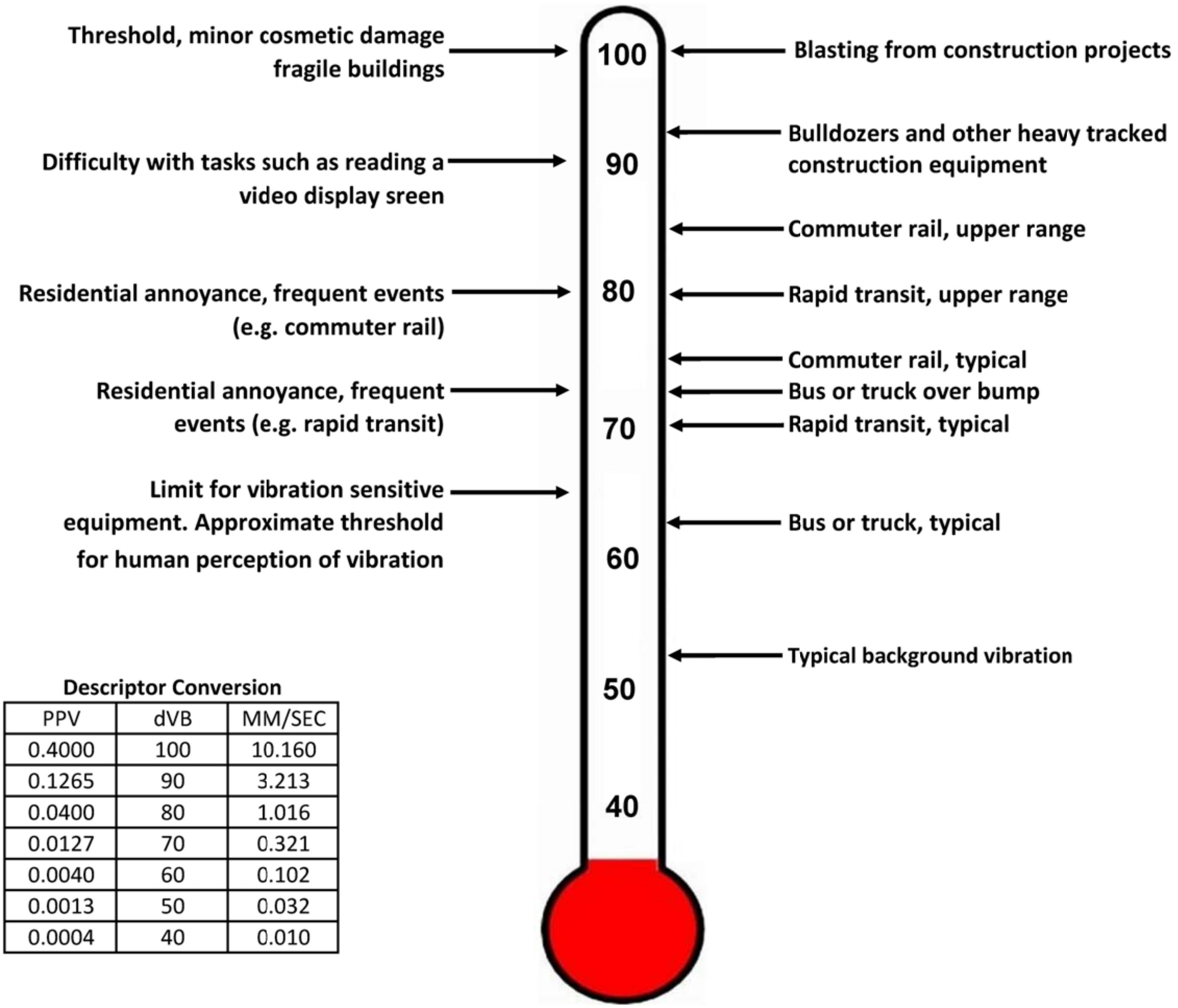
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration 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.



Source: Bruel & Kjaer 2001

Figure 3
Weighted Sound Levels in Common Environments



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 NOISE ENVIRONMENT

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by an industrial use and vacant land to the north; single-family residential uses to the east; an industrial use to the south; and Locust Avenue to the west.

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. Sensitive land uses that may be affected by project noise include the existing single-family residential uses located adjacent to the east.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section S1.4 2014 Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, three (3) 15-minute daytime noise measurements were taken between 1:40 PM and 2:41 PM on January 31, 2022. In addition, one (1) long-term 24-hour noise measurement was also taken from January 31, 2022, to February 1, 2022. Field worksheets and noise measurement output data are included in Appendix C.

As shown in Figure 5, the noise meter was placed at the following locations:

- STNM1: represents the existing noise environment of the single-family residential uses along Lowell Street to the northeast of the boundaries of the project site (1796 W Lowell Street, Rialto). The noise meter was placed just west of Lowell Street near the single-family residence.

- STNM2: represents the existing noise environment of the single-family residential uses along Carpenter Street to the east of the boundaries of the project site (1796 Carpenter Street, Rialto). The noise meter was placed just west of Carpenter Street near the single-family residence.

- STNM3: represents the existing noise environment of the single-family residential uses along Summit Avenue to the east of the boundaries of the project site (1794 Summit Avenue, Rialto). The noise meter was placed just west of Summit Avenue near the single-family residence.

- LTNM1: represents the existing noise environment of the project site. The noise meter was placed near the northern project boundary.

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 measurement. Short-term ambient noise levels were measured between 44.7 and 50.1 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 42 to 52.1 dBA L_{eq}. The dominant noise source was residential activity including dogs barking and water features, airplane noise, and vehicle traffic from vehicle traffic associated with Locus Avenue.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	1:40 PM	50.1	70.2	33.1	59.7	50.9	42.6	37.7
STNM2	2:10 PM	46.1	58.2	41.6	53.3	49.6	45.6	43.6
STNM3	2:41 PM	44.7	62.3	31.7	53.1	48.2	42.4	34.0

Notes:

(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.

(2) Noise measurements performed on January 31, 2022.

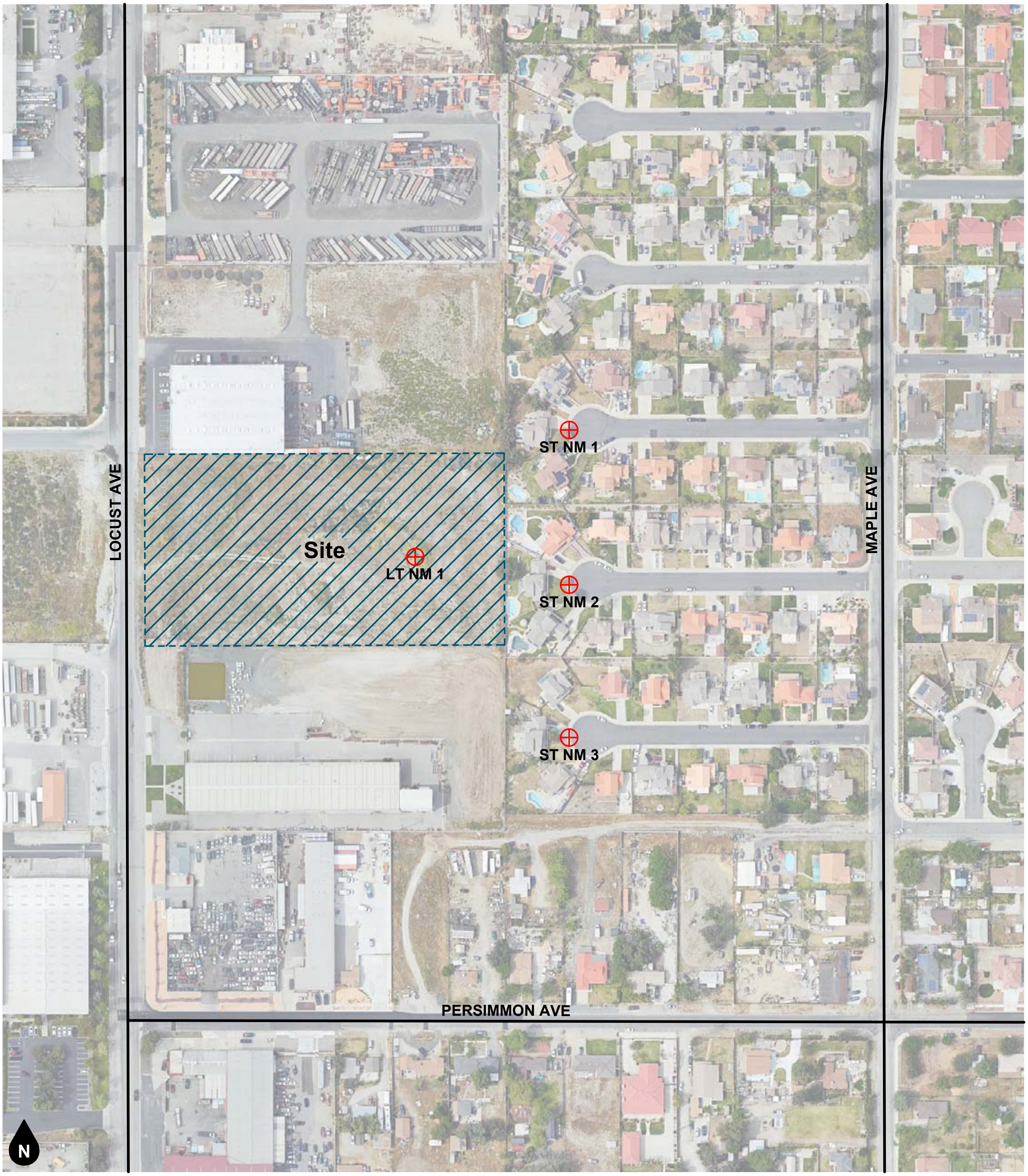
Table 2
Long-Term Noise Measurement Summary (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	5:00 PM	47.0	69.8	31.2	53.3	50.4	47.3	44.9
1	5:00 PM	52.1	69.8	43.7	56.6	54.1	52.4	50.6
2	6:00 PM	50.9	60.1	43.6	55.2	53.6	52.0	50.2
3	7:00 PM	47.2	58.3	36.8	52.1	50.0	48.1	46.6
4	8:00 PM	45.5	56.8	39.3	50.3	48.3	46.1	44.6
5	9:00 PM	46.0	56.1	38.8	50.6	48.6	46.5	45.2
6	10:00 PM	44.5	57.7	35.8	50.4	47.3	44.8	42.8
7	11:00 PM	43.4	54.5	36.4	49.1	46.3	44.0	42.2
8	12:00 AM	43.1	56.1	33.0	50.7	47.1	43.0	40.1
9	1:00 AM	44.4	62.3	35.8	49.3	47.2	45.2	42.9
10	2:00 AM	42.0	56.0	33.2	48.1	45.5	42.9	40.3
11	3:00 AM	43.5	55.5	31.2	49.1	47.2	44.6	42.3
12	4:00 AM	47.5	60.2	34.7	52.6	51.3	49.5	45.4
13	5:00 AM	48.5	57.1	44.2	52.4	50.7	49.1	47.9
14	6:00 AM	48.5	60.2	42.2	55.7	51.3	48.5	46.7
15	7:00 AM	47.4	62.5	42.7	52.3	49.1	47.6	46.5
16	8:00 AM	46.4	64.5	40.2	51.5	48.5	46.7	45.1
17	9:00 AM	48.0	66.4	39.6	56.1	46.9	44.7	43.2
18	10:00 AM	43.3	55.5	39.4	47.9	45.4	43.5	42.3
19	11:00 AM	44.9	63.6	39.8	50.2	46.4	44.3	43.0
20	12:00 PM	45.9	66.8	41.0	50.7	47.4	45.4	44.2
21	1:00 PM	47.6	66.3	41.8	52.1	49.0	47.1	45.6
22	2:00 PM	45.7	56.3	39.2	50.9	48.4	46.2	44.7
23	3:00 PM	47.5	68.5	39.6	53.8	49.7	47.1	45.5
24	4:00 PM	48.1	63.2	39.8	53.1	50.5	48.7	47.2

Notes:

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

(2) Noise measurement performed from January 31, 2022 to February 1, 2022.



Legend

⊕ Noise Measurement Location
NM 1

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 5
Noise Measurement Location Map

4. REGULATORY SETTING

FEDERAL REGULATION

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five (5) dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA Ldn (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

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 the 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.

LOCAL REGULATIONS

City of Rialto General Plan

The City has adopted a version of the State of California's exterior noise and land use compatibility standards for land use development in the Safety and Noise Chapter of its General Plan, as shown in Table 5. These Guidelines establish standards for outdoor noise levels that are normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable for a variety of land uses. Exterior noise levels of up to 75 dBA CNEL are considered "normally acceptable" at general industrial land uses, these standards apply to the proposed project itself.

The City of Rialto General Plan contains goals and policies that address noise. The following goals and policies are presented in the City's General Plan Safety and Noise Chapter and are applicable to the proposed project:

Goal 5-10	Minimize the impact of point source and ambient noise levels throughout the community.
Policy 5-10.1	Revise the City's noise ordinance to address ongoing noise issues by using quantitative noise limits where appropriate and establishing comprehensive noise control measures.
Policy 5-10.2	Consider noise impacts as part of the development review process, particularly the location of parking, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and other noise-sensitive land uses.
Policy 5-10.3	Ensure that acceptable noise levels are maintained near schools, hospitals, and other noise sensitive areas in accordance with the Municipal Code and noise standards contained in Table 5.
Policy 5-10.4	Limit the hours of operation at all noise generation sources that are adjacent to noise-sensitive areas.
Policy 5-10.5	Require all exterior noise sources (construction operations, air compressors, pumps, fans and leaf blowers) to use available noise suppression devices and techniques to reduce exterior noise to acceptable levels that are compatible with adjacent land uses.
Goal 5-11	Minimize the impacts of transportation-related noise.
Policy 5.11-3	Require development of truck-intensive uses to minimize noise impacts on adjacent uses through appropriate site design.

City of Rialto Municipal Code

The City addresses noise in ordinances provided in Chapter 9.5 Noise Control of its Municipal Code. These ordinances are summarized below.

Section 9.50.050 Controlled hours of operation

It is unlawful for any person to engage in the following activities other than between the hours of 7:00 AM and 8:00 PM in all zones:

1. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous or unnecessary noise within one thousand feet of a residence;

2. Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house or any other structure;

3. Operate or permit the use of gasoline or electric powered leaf blowers, such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters and other property;

4. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the city manager;

5. Operate or permit the use of pile driver, steam or gasoline shovel, pneumatic hammer, steam or electric hoist or other similar devices;

6. Operate or permit the use of electrically operated compressor, fan, and other similar devices;

I. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand pounds, or of any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than fifteen minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of the vehicle is restricted by other traffic;

Section 9.50.060 Exemptions

The following activities and noise sources shall be exempt from the provisions of Chapter 9.50 Noise Control of the City of Rialto's Municipal Code:

A. Those noise events in the community (e.g., airport noise, arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy, utilizing the community noise equivalent level (CNEL) method;

L. Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions which agreement provides for noise mitigation measures;

N. Any activity or noise source governed elsewhere in this code. Such activities include but are not limited to:

    4. Performance standards for various commercial and industrial uses (see Title 18 of the City's Municipal Code);

O. Sounds generated in commercial and industrial zones that are necessary and incidental to the uses permitted therein;

Section 9.50.070 Disturbances from construction activity

A. No person shall be engaged or employed or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours provided for by subsection B of Section 9.50.070.

B. The permitted hours for such construction work are as follows:

1. October 1st through April 30th.
    1. Monday – Friday: 7:00 AM to 5:30 PM
    2. Saturday: 8:00 AM to 5:00 PM
    3. Sunday: No permissible hours
    4. State holidays: No permissible hours

2. May 1st through September 30th.
    1. Monday- Friday: 6:00 AM to 7:00 PM
    2. Saturday: 8:00 AM to 5:00 PM
    3. Sunday: No permissible hours
    4. State holidays: No permissible hours

C. For purposes of this section, the following definitions shall apply:

1. "Building" means any structure used or intended for supporting or sheltering any use or occupancy.
2. "Structure" means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

D. For purposes of this section, the following exceptions shall apply:

1. Emergency repair of existing installations, equipment, or appliances; and
2. Such work that complies with the terms and conditions of a written early work permit issued by the city manager or his or her designee upon a showing of a sufficient need and justification for the permit due to hot or inclement weather, the use of an unusually long process material, or other circumstances of an unusual and compelling nature.

Table 3
Guideline Vibration Damage Potential Threshold Criteria

	Maximum PPV (in/sec)	
Structure Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, anceint monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 4
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 5
City of Rialto Noise Guidelines for Land Use Planning

Land Use Category	Community Noise Equivalent Level (CNEL), dB						
	55	60	65	70	75	80	85
R2- Residential 2, R6- Residential 6	░	░	▒	▓	█	█	█
R12- Residential 12	░	░	▒	▓	█	█	█
R21- Residential 21 R45- Residential 45	░	░	▒	▒	▓	█	█
DMU- Downtown Mixed-Use	░	░	▒	▒	▒	▓	█
CC- Community Commercial	░	░	░	▒	▒	▓	█
GC- General Commercial	░	░	░	▒	▒	▓	█
BP- Business Park, O- Office	░	░	░	▒	▒	▓	█
LI- Light Industrial	░	░	░	░	▒	▓	█
GI- General Industrial	░	░	░	░	░	▒	▒
P- Public Facility, P- School Facility	░	░	▒	▓	█	█	█
OSRC Open Space - Recreation	░	░	░	░	░	▓	█
OSRC Open Space - Resources	░	░	░	░	░	▓	█

░	Normally Acceptable:	Specified land use is satisfactory, assuming buildings are of conventional construction.
▒	Conditionally Acceptable:	New development should be undertaken only after a detailed analysis of noise reduction requirements are made.
▓	Normally Unacceptable:	New development should generally be discouraged, if not, a detailed analysis of noise reduction requirements must be made.
█	Clearly Unacceptable:	New development should generally not be undertaken.

Source: City of Rialto General Plan Safety and Noise Element Exhibit 5.5, December 2021.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

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

CONSTRUCTION NOISE MODELING

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 (Lilburn Corporation, 2022). For construction noise 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. Construction noise worksheets are provided in Appendix D.

FEDERAL HIGHWAY ADMINISTRATION (FHWA) TRAFFIC NOISE PREDICTION MODEL

The roadway noise level increases from project generated vehicular traffic were modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emissions Levels.[1] Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification (i.e., collector, secondary, major or arterial), the roadway active width (i.e., distance between the center of the outermost travel lanes on each side of the roadway), travel speed, truck mix (i.e., percentage of automobiles, medium trucks, and heavy trucks in the traffic volume), roadway grade and site conditions (hard or soft ground surface relating to the absorption of the ground, pavement, or landscaping). Research conducted by Caltrans identifies that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model.[2] Therefore, surfaces adjacent to all modeled roadways were assumed to have a "soft site". Possible reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Existing average daily traffic volumes were obtained from the twenty-four-hour traffic count data provided in Appendix E of the Traffic Impact Analysis for Locust Avenue Warehouse Project prepared by Stantec (July 28, 2016). Using a conservative growth rate of 2 percent, existing traffic volumes on Locust Avenue are estimated at 7,112 average daily trips. Project average daily traffic volume was obtained by use of the trip generation provided in the Level of Service and Vehicle Miles Traveled Screening Assessment prepared for the proposed project (Ganddini Group 2021). Existing Plus Project vehicle mixes were calculated by adding the proposed project trips to existing conditions. FHWA spreadsheets are included in Appendix E.

SOUNDPLAN 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 (e.g., residences). SoundPLAN is capable

---

[1] California Department of Transportation Environmental Program, Office of Environmental Engineering. Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction. September 1995. TAN 95-03.

[2] California Department of Transportation. Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report. June 1995. FHWA/CA/TL-95/23.

of evaluating stationary noise sources (e.g., parking lots, drive-thru menus, carwash equipment, vacuums, etc.) and much more. 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 F.

Modeled noise sources include parking lot noise, loading and unloading activities, and HVAC equipment. All noise sources were modeled to be in full operation. This is a conservative modeling effort, given that in actuality, 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, 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[3].

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 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

Loading/Unloading

The proposed loading area was modeled using a sound reference level for loading/unloading of truck pallet loading with a sound power level representative of 70 dBA.

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 5 Ton Carrier HVAC units[4]. A rooftop HVAC plan is not available at the time of this analysis so the exact location and number of units per building were estimated. A roof plan is not yet available, so a conservative number of rooftop units (21) was 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 12.2 meters (40 feet) above grade.

---

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

[4] MD Acoustics, LLC Noise Measurement Data for RTU –Carrier 50TFQ0006 and car alarm.

6. IMPACT ANALYSIS

This impact discussion analyzes the potential for noise and/or groundborne vibration impacts to cause the exposure of a person to, or generation of, noise levels in excess of established City of Rialto standards related to construction, transportation, and operational noise related impacts from the proposed project.

NOISE IMPACTS DUE TO CONSTRUCTION ACTIVITIES

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 activities will occur in phases including site preparation, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than the end of June 2022 and be completed by the end of July 2023.

Construction noise associated with each phase of project construction associated with the proposed project was calculated 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.

Sound level data and typical usage factors for typical construction equipment compiled by the U.S. Department of Transportation is presented in Table 6. For modeling purposes, distances to receptors were based on the acoustical center of the proposed construction activity. Anticipated noise levels during each construction phase are presented in Table 7. Worksheets for each phase are included as Appendix D.

Table 7 also includes a comparison of existing noise levels and project construction noise levels. STNM2 was chosen to represent noise levels at the property line of the single-family residential uses located east of the project site where modeled construction noise levels are expected to reach up to 72 dBA Leq. The expected duration of each phase and the loudest sound level at the nearest sensitive receptor is presented below:

Phase	Number of Days	Maximum Leq
Site Preparation	5	71.6
Grading	8	71.8
Building Construction	230	69.8
Paving	18	69.7
Architectural Coating	18	57.9

The single-family homes located immediately east of the project site will be exposed to short-term increases in ambient noise levels of up to 26 dB Leq. However, project construction will not occur outside of the hours outlined as “exempt” in City of Rialto Municipal Code Section 9.50.070 (as follows) and therefore, will not result in a generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project <u>in excess of standards established in the local general plan or noise ordinance</u>.

- October 1st through April 30th.
    - Monday – Friday: 7:00 AM to 5:30 PM
    - Saturday: 8:00 AM to 5:00 PM
    - Sunday: No permissible hours
    - State holidays: No permissible hours

- May 1st through September 30th.
  - ☐ Monday- Friday: 6:00 AM to 7:00 PM
  - ☐ Saturday: 8:00 AM to 5:00 PM
  - ☐ Sunday: No permissible hours
  - ☐ State holidays: No permissible hours

Impacts would be less than significant, and no mitigation is required. Suggested measures to further minimize construction related noise are presented below.

In addition to adherence to the City of Rialto Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices – Noise

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors located east of the project site.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences located to the east. The shielding should be without holes and cracks. Entryways should be located on the west side.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Rialto Municipal Code Section 9.50.070.

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.[5] The estimated existing average daily trips along Locust Avenue are 7,112 average daily vehicle trips.[6] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Lilburn Corporation, 2022) the greatest number of construction-related vehicle trips per day would be during building construction at up to 122 vehicle trips per day (88 for worker trips and 34 for vendor trips). Given the project site's proximity to the 210 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

---

[5] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[6] The existing average daily traffic volumes were obtained from the twenty-four-hour traffic count data provided in Appendix E of the Traffic Impact Analysis for Locust Avenue Warehouse Project prepared by Stantec (July 28, 2016) and growth rate of 2% was applied..

NOISE IMPACTS DUE TO PROJECT OPERATION

During operation, the proposed project is expected to generate approximately 169 average daily trips with 16 trips during the AM peak-hour and 17 trips during the PM peak-hour. A project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated at the right of way 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 levels are shown for comparative purposes only to show the difference in with and without project conditions. Roadway input parameters including average daily traffic volumes (ADTs), speeds, and vehicle distribution data is shown in Table 8. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions and is demonstrated in Table 8.

Existing Year (With Project): This scenario refers to existing year plus project traffic noise conditions and is demonstrated in Table 8.

As shown in Table 9, the modeled Existing traffic noise level along Locust Avenue is 71 dBA CNEL at the right-of-way of each modeled roadway segment; and the modeled Existing Plus Project traffic noise level is 71 dBA CNEL at the right-of-way of each modeled roadway segment. Project generated vehicle traffic is anticipated to change the noise a by approximately 0.48 dBA CNEL.

As stated previously, for purposes of this project, increases in ambient noise are considered substantial if they result in an increase of 3 dBA CNEL and if: (1) the existing noise levels already exceed the land use compatibility standard for "normally acceptable", or (2) the project increases noise levels from below the standard to above the standard. Project generated operational vehicle traffic will not result in substantial increases in ambient noise levels. This impact would be less than significant. No mitigation is required.

As discussed previously, sensitive land uses that may be affected by project noise include the existing single-family detached residential dwelling units located adjacent to the east of the project site.

The SoundPLAN noise model was utilized to estimate peak hour operation of the project in order to determine if it is likely to result in substantial increases in ambient noise levels. A description of each noise source and model parameters are discussed in Section 5 of this report. As shown in Figures 6 and 7, much of the loading/unloading noise will be shielding by the proposed building and peak hour project operation is expected to range between 21 and 46 dBA L_{eq} at the nearest sensitive receptors. Existing measured ambient noise levels at the sensitive receptor locations ranged between 45 and 50 dBA Leq. At the most, project generated ambient noise levels may result in an increase of 1 dB at existing sensitive receptors. This increase would not be readily noticeable. Project operation would not result in substantial increases in ambient noise levels. No mitigation is required.

Residential construction typically provides an exterior to interior noise reduction of 20 dB with a windows-closed condition. An exterior sound level of 65 is typically required to necessitate mitigation for interior noise levels. Given that project operational noise is not expected to exceed 46 dBA Leq at nearby residences, it is not likely that project operation would cause interior noise levels at nearby residences to exceed the State of California interior noise level standard of 45 dBA CNEL (State of California 2019). Project operational noise levels would be considered less than significant. No mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

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 10, a vibratory roller could generate up to 0.21 PPV at a distance of 25 feet; and operation of a large bulldozer (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 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.

Architectural Damage

Construction activity has the potential to result in cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile. (California Department of Transportation, 2020). Land uses adjacent to the proposed construction are industrial and residential. Table 3 identifies a PPV level of 0.5 in/sec as the threshold at which there is a risk to “architectural” damage to modern industrial/commercial buildings and a PPV level of 0.3 in/sec for older residential structures.

The nearest off-site structure is the industrial building located approximately 3 feet to the north of the northern project property line. At 3 feet, use of a vibratory roller would be expected to generate a PPV of 5.052 in/sec and a bulldozer would be expected to generate a PPV of 2.141 in/sec. Therefore, temporary vibration levels associated with project construction could exceed the threshold at which there is a risk to “architectural” damage to modern industrial/commercial buildings of 0.5 in/sec PPV. A best management practice prohibiting the use of vibratory rollers, or other similar vibratory equipment, within 15 feet and large bulldozers within 8 feet of the industrial building to the north would reduce the potential for vibration related damage to less than significant.

Buildings associated with the residential uses to the east are located as close as approximately 28 feet from the project site’s eastern property line. At 28 feet, use of a vibratory roller would be expected to generate a PPV of 0.177 in/sec and a bulldozer would be expected to generate a PPV of 0.075 in/sec. Temporary vibration levels associated with project construction would not exceed the threshold at which there is a risk to “architectural” damage to older residential structures PPV of 0.3 in/sec PPV. Impacts would be less than significant at the residential uses to the east.

An industrial building is located as close as approximately 204 feet from the project’s southern property line. At 204 feet, use of a vibratory roller would be expected to generate a PPV of 0.009 in/sec and a bulldozer would be expected to generate a PPV of 0.004 in/sec. Temporary vibration levels associated with project construction would not exceed the threshold at which there is a risk to “architectural” damage to modern industrial/commercial buildings of 0.5 in/sec PPV. Impacts would be less than significant at the industrial use to the south.

Implementation of the following best management practice, to be included on project construction plans will avoid impacts associated with structural damage to nearby structures.

Best Management Practices to be Included in Project Plans – Groundborne Vibration

1. Vibratory rollers, or other similar vibratory equipment will not be used within 15 feet of the existing industrial structure located north of the project site and large bulldozers will not be used within 8 feet of the existing industrial structure located north of the project site. If construction activity must occur within these distances, it will be performed with smaller equipment types that do not exceed the vibration thresholds applied herein.

Annoyance to Persons

The primary effect of perceptible vibration is often a concern. However, secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Any effect (primary perceptible vibration, secondary effects, or a combination of the two) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping, or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels are well below minimum thresholds for damage potential. (California Department of Transportation, 2020).

Groundborne vibration becomes distinctly perceptible to sensitive receptors at a level of 0.04 in/sec PPV and severely perceptible at a level of 0.1 in/sec PPV. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. Therefore, use of a vibratory roller could cause annoyance to residents located within the single-family homes located east of the project site. However, it will be short-term and will occur only during site grading and preparation which will be limited to daytime hours. Impacts are less than significant. Vibration worksheets 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
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Existing Ambient Noise Levels (dBA Leq)[2]	Construction Noise Levels (dBA Leq)
Site Preparation	Single-Family Residential Uses to the East	46.1	71.6
Grading	Single-Family Residential Uses to the East	46.1	71.8
Building Construction	Single-Family Residential Uses to the East	46.1	69.8
Paving	Single-Family Residential Uses to the East	46.1	69.7
Architectural Coating	Single-Family Residential Uses to the East	46.1	57.9

Notes:

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

(2) Per measured existing ambient noise levels (see Table 1), STNM2 was used for residential uses to the east.

Table 8
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[2]		
Locust Avenue	In vicinity of the project site	6,315	6,484	40	Hard

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)[3]			
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 average daily traffic volumes were obtained from the twenty-four hour traffic count data provided in Appendix E of the Traffic Impact Analysis for Locust Avenue Warehouse Project prepared by Stantec (July 28, 2016). Project average daily traffic volume was obtained by use of the trip generation provided in the 2889 Locust Avenue Warehouse Project Level of Service and Vehicle Miles Traveled Screening Assessmen, Ganddini Group Inc. (December 22, 2021).

(2) It was assumed that all project generated trips would travel along Locust Avenue.

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

Table 9
Increase in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

			Modeled Noise Levels (dBA CNEL)[1]				
Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level	Exceeds Standards[3]	Increase of 5 dB or More?
Locust Avenue	In vicinity of the project site	42	70.93	71.41	0.48	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 Rialto General Plan Circulation Chapter.

(3) Per the City of Rialto normally acceptable standard for residential uses (see Table 3).

Table 10
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

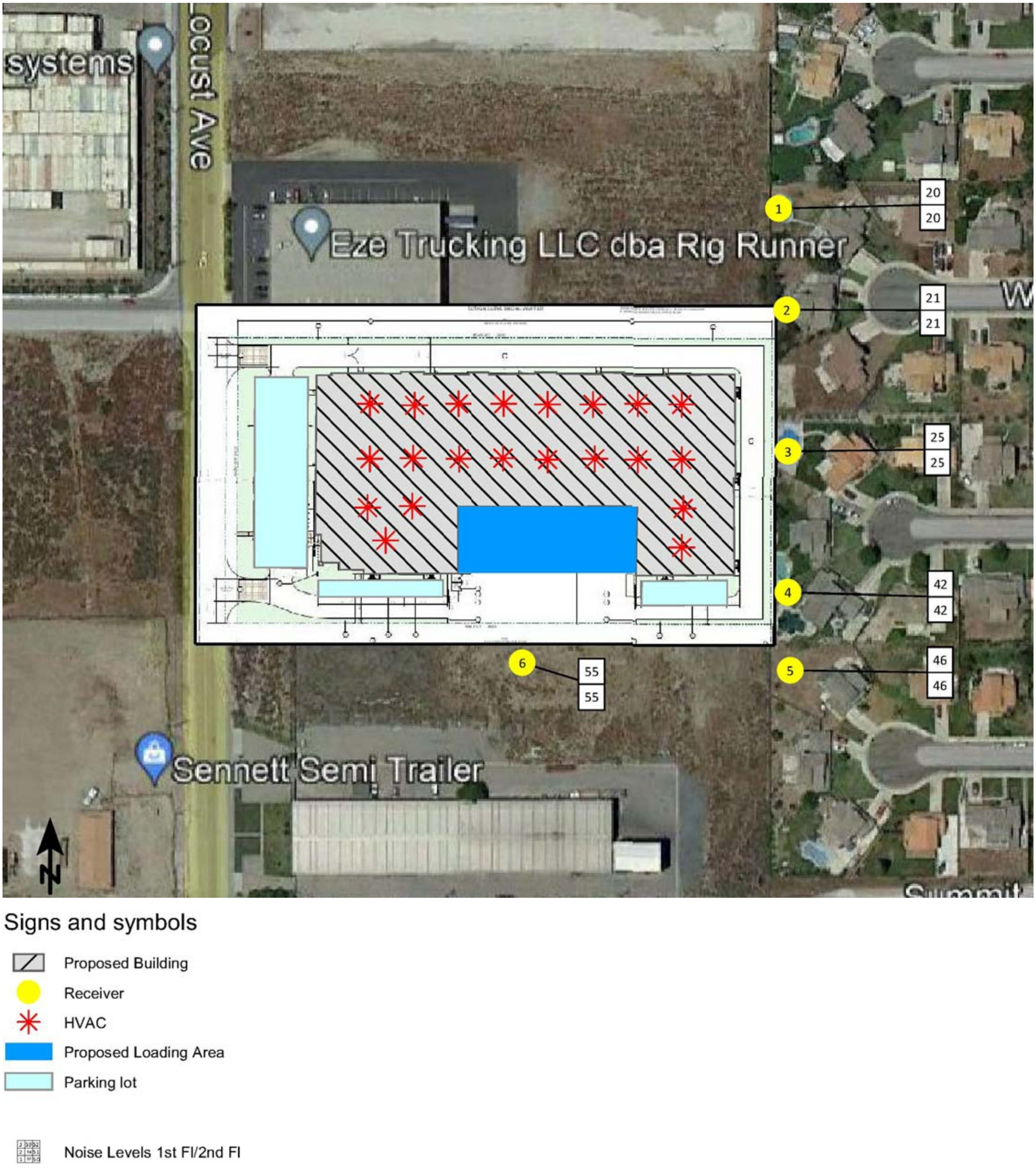


Figure 6
Operational Noise Levels

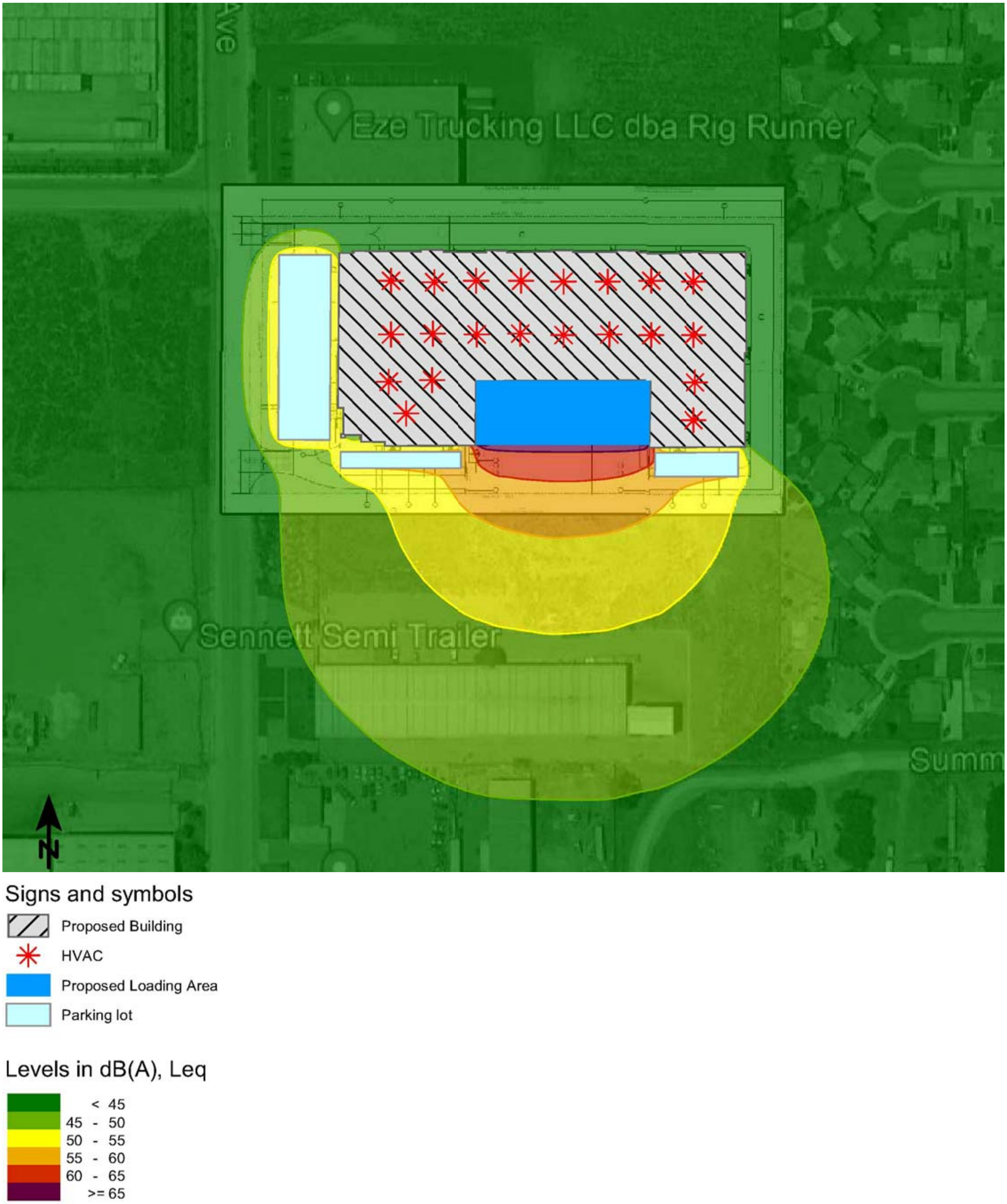


Figure 7
Operational Noise Contours

7. CEQA THRESHOLDS & IMPACTS EVALUATION

Will the project result in the:

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?*

Less Than Significant Impact:

On-Site Construction Noise

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 activities will occur in phases including site preparation, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than the end of June 2022 and be completed by the end of July 2023.

Construction noise associated with each phase of project construction associated with the proposed project was calculated 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.

The single-family homes located immediately east of the project site will be exposed to short-term construction related noise levels of up to 72 dBA Leq, an increase of up to 26 dB Leq at the nearest residence. However, project construction will not occur outside of the hours outlined as “exempt” in City of Rialto Municipal Code Section 9.50.070 (as follows) and therefore, will not result in a 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.

- October 1st through April 30th.
  - Monday – Friday: 7:00 AM to 5:30 PM
  - Saturday: 8:00 AM to 5:00 PM
  - Sunday: No permissible hours
  - State holidays: No permissible hours

- May 1st through September 30th.
  - Monday- Friday: 6:00 AM to 7:00 PM
  - Saturday: 8:00 AM to 5:00 PM
  - Sunday: No permissible hours
  - State holidays: No permissible hours

Impacts would be less than significant, and no mitigation is required.

In addition to adherence to the City of Rialto Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices – Noise

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors located east of the project site.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences east of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences located to the east. The shielding should be without holes and cracks. Entryways should be located on the west side.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Rialto Municipal Code Section 9.50.070.

Off-Site Construction Noise

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.[7] The estimated existing average daily trips along Locust Avenue are 7,112 average daily vehicle trips.[8] As shown in the CalEEMod output files provided in the Air Quality, Global Climate Change, and Energy Impact Analysis prepared for the proposed project (Lilburn Corporation, 2022) the greatest number of construction-related vehicle trips per day would be during building construction at up to 122 vehicle trips per day (88 for worker trips and 34 for vendor trips). Given the project site's proximity to the 210 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

On-Site Operational Noise

The SoundPLAN noise model was utilized to estimate project peak hour operational noise at sensitive receptors in order to determine if it is likely to result in a substantial increase in ambient noise levels. Modeling results show that peak hour project operation is expected to range between 21 and 46 dBA L_{eq} at the nearest sensitive. Existing measured ambient noise levels at the sensitive receptor locations ranged between 45 and 50 dBA Leq. At the most, project generated ambient noise levels may result in an increase of 1 dB at existing sensitive receptors. This increase would not be readily noticeable. Project operation would not result in substantial increases in ambient noise levels. No mitigation is required.

---

[7] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[8] The existing average daily traffic volumes were obtained from the twenty-four-hour traffic count data provided in Appendix E of the Traffic Impact Analysis for Locust Avenue Warehouse Project prepared by Stantec (July 28, 2016) and growth rate of 2% was applied..

Off-Site Operational Noise

During operation, the proposed project is expected to generate approximately 169 average daily trips with 16 trips during the AM peak-hour and 17 trips during the PM peak-hour. A Project generated vehicle noise along affected roadways was modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108. Project generated vehicle trips are anticipated to increase noise levels by approximately 0.48 dB along Locust Avenue and would not result in significant increases in ambient noise levels. The impact would be less than significant. No mitigation is required.

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

Less Than Significant Impact With BMP:

The Caltrans Transportation and Construction Vibration Guidance Manual (2020) provides a comprehensive discussion regarding groundborne vibration and the appropriate thresholds to use to assess the potential for damage. As shown in Table 3, the threshold at which there is a risk of "architectural" damage to historic structures is a peak particle velocity (PPV) of 0.25 in/sec, and a PPV of 0.3 in/sec at older residential structures. There is a risk of architectural damage at newer residential structures and modern commercial/industrial buildings at a PPV of 0.5 in/sec. In addition, the Caltrans Noise and Vibration Manual identifies 0.1 PPV in./sec. as the level that is "strongly perceptible" (Table 4).

Existing structures in the immediate vicinity of the project site include industrial structures located approximately 3 feet to the north and 204 feet to the south and residential structures located as close as approximately 28 feet to the east of the project site boundaries. Groundborne vibration associated with project construction may reach up to a PPV of 0.177 in/sec at the nearest residential structure to the east of the project site and will not exceed the 0.3 PPV (in./sec.) damage potential threshold for residential structures. In addition, groundborne vibration associated with project construction may reach up to a PPV of 5.052 in/sec at the industrial structure to the north and 0.009 PPV (in./sec.) at the industrial structure to the south of the project site. Groundborne vibration associated with project construction will exceed the 0.5 PPV (in./sec.) damage potential threshold for modern industrial/commercial buildings at the industrial structure to the north. Significant impacts associated with groundborne vibration as it relates to damage, will be avoided with the implementation of the following best management practice:

<u>Best Management Practices to be Included in Project Construction Plans – Groundborne Vibration</u>

1. Vibratory rollers, or other similar vibratory equipment will not be used within 15 feet of the existing industrial structure located north of the project site and large bulldozers will not be used within 8 feet of the existing industrial structure located north of the project site. If construction activity must occur within these distances, it will be performed with smaller equipment types that do not exceed the vibration thresholds applied herein.

As shown in Table 4, groundborne vibration associated with project construction may result in annoyance if it exceeds 0.1 PPV in./sec. at a sensitive receptor. Operation of a vibratory roller may result in groundborne vibration levels of up to 0.1 at a distance of 41 feet and a large bulldozer at a distance of 23 feet. The closest sensitive receptors to the project site are the residential dwelling units located as close as approximately 28 feet to the east of the project property line. Therefore, the use of a vibratory roller could cause annoyance to the residential uses to the east; however, annoyance is expected to be short-term, occurring only during site grading and preparation. Impacts are less than significant.

Operation of the proposed project will involve the movement of passenger vehicles and trucks. Driving surfaces associated with the project will be paved and will generally be smooth. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020). Groundborne vibration levels associated with passenger vehicles is much lower. The movement of vehicles on the project site would not result in the generation of excessive groundborne vibration or groundborne noise. Impacts would be less than significant. No mitigation is required.

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?*

No Impact:

The closest airport to the project site is the San Bernardino International Airport with associated airport runways located as close as approximately 9.78 miles southeast of the project site. The San Bernardino International Airport noise contours provided in the Technical Memorandum prepared for the San Bernardino International Airport – Eastgate Air Cargo Facility – Aircraft Noise Contour Development (July 2019) shows that the proposed project is well outside the 60 dBA CNEL noise contour for the airport.[9] Therefore, the proposed project would not expose people residing or working in the area to excessive noise levels. There is no impact, and no mitigation is required.

---

[9] http://www.sbiaa.org/wp-content/uploads/2019/07/7_Appendix-F_Noise-Technical-Memo.pdf

8. REFERENCES

California Department of Transportation

2002 Transportation Related Earthborne Vibrations (California Department of Transportation Experiences), Technical Advisory, Vibration TAV-02-01-R9601. February 20.

Environmental Protection Agency

1974 "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," EPA/ONAC 550/9-74-004, March 1974.

Federal Transit Administration

2006 Transit Noise and Vibration Impact Assessment. Typical Construction Equipment Vibration Emissions. FTAVA-90-1003-06.

2018 Transit Noise and Vibration Impact Assessment Manual. Typical Construction Equipment Vibration Emissions.

Ganddini Group, Inc.

2021 2889 Locust Avenue Warehouse Project Level of Service and Vehicle Miles Traveled Screening Assessment. December 22.

Office of Planning and Research

2017 State of California General Plan Guidelines

Rialto, City of

2010 City of Rialto General Plan. December
2021 City of Rialto Municipal Code. October 11.

Riverside, County of

2001 General Plan, Chapter 4, Figure C-3 "Link Volume Capacities/Level of Service for Riverside County Roadways".
2009 County of Riverside Industrial Hygiene Guidelines for Determining and Mitigating Traffic Noise Impacts to Residential Structures and County.

U.S. Department of Transportation

2006 FHWA Roadway Construction Noise Model User’s Guide. January.

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

DEFINITIONS OF ACOUSTICAL TERMS

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.
Lp	Sound pressure level. The sound pressure level is a measure for the effect of the energy of an acoustic source (or a collection of sources) and depends on the distance to the source(s) and acoustic properties of the surroundings of the source. Given a well-defined operation condition, the sound power level of a machine is a fixed value, were the sound pressure level always depends on position and environment.
Lw	Sound power level. The sound power level indicates the total acoustic energy that a machine, or piece of equipment, radiates to its environment.

Term	Definition
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 WORKSHEET

Noise Measurement
Field Data

Project Name: 2889 Locust Avenue Warehouse Project, City of Rialto **Date:** January 31, 2022

Project #: 19465

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

Nearest Address or Cross Street: 1796 W Lowell Street, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Project Site: Open, recently cleared land w/ small trees around perimeter with industrial uses adjacent to north/south, single-family residnetial to east, & Locust Ave to west. Noise Measurement Site: Single-family residential neighborhood surrounding with project site past residences to southwest and W Lowell St to east.

Weather: Partly cloudy. About 80% cloud. Sunset 5:19 PM. **Settings:** [✓ SLOW] FAST

Temperature: 61 deg F **Wind:** 0-3 mph **Humidity:** 26% **Terrain:** Flat

Start Time: 1:40 PM **End Time:** 1:55 PM **Run Time:**

Leq: 50.1 dB

Lmax 70.2 dB

L2 59.7 dB

L8 50.9 dB

L25 42.6 dB

L50 37.7 dB

Primary Noise Source: Residential ambiance, significant number of domestic dogs residing on Lowell St.

Air traffic noise, mostly propellor planes.

Secondary Noise Sources: Bird song, outside caged parakeet on street, very distant 210 Fwy traffic ambiance.

Pigeons lining roof tops in area.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 11/17/2021

FIELD CALIBRATION DATE: 1/31/2022

CALIBRATOR: Larson Davis CA 250

MAKE: Larson Davis

MODEL: CA 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 11/18/2021

Noise Measurement
Field Data

PHOTOS:

STNM1 looking W from sidewalk towards front yard of residence 1796 W Lowell Street, Rialto.

STNM1 looking E from sidewalk, down Lowell Street, towards N Maple Avenue intersection.

Summary

File Name on Meter	LxT_Data.035.s
File Name on PC	LxT_0003099-20220131 134005-LxT_Data.035.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM1 34° 9'8.55"N 117°24'26.04"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto.

Measurement

Start	2022-01-31 13:40:05
Stop	2022-01-31 13:55:05
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2022-01-31 13:39:16
Post-Calibration	None

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.4 dB

Results

LAeq	50.1	
LAE	79.6	
EA	10.216 µPa²h	
EA8	326.917 µPa²h	
EA40	1.635 mPa²h	
LZpeak (max)	2022-01-31 13:52:02	91.2 dB
LASmax	2022-01-31 13:47:50	70.2 dB
LASmin	2022-01-31 13:45:41	33.1 dB

		Statistics	
LCeq	59.2 dB	**LA2.00**	59.7 dB
LAeq	50.1 dB	**LA8.00**	50.9 dB
LCeq - LAeq	9.1 dB	**LA25.00**	42.6 dB
LAIeq	58.7 dB	**LA50.00**	37.7 dB
LAeq	50.1 dB	**LA66.60**	36.1 dB
LAIeq - LAeq	8.6 dB	**LA90.00**	34.6 dB
Overload Count	0		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.035.s	Computer's File Name	LxT_0003099-20220131 134005-LxT_Data.035.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 34° 9'8.55"N 117°24'26.04"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto.		

Start Time	2022-01-31 13:40:05	Duration	0:15:00.0		
End Time	2022-01-31 13:55:05	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	50.1 dB		
LAE	79.6 dB	SEA	--- dB
EA	10.2 μPa^2h	LAFTM5	60.4 dB
EA8	326.9 μPa^2h		
EA40	1.6 mPa^2h		
LZ_{peak}	91.2 dB	2022-01-31 13:52:02	
LAS_{max}	70.2 dB	2022-01-31 13:47:50	
LAS_{min}	33.1 dB	2022-01-31 13:45:41	
LA_{eq}	50.1 dB		
LC_{eq}	59.2 dB	LC_{eq} - LA_{eq}	9.1 dB
LAI_{eq}	58.7 dB	LAI_{eq} - LA_{eq}	8.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	6	0:00:13.9
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 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

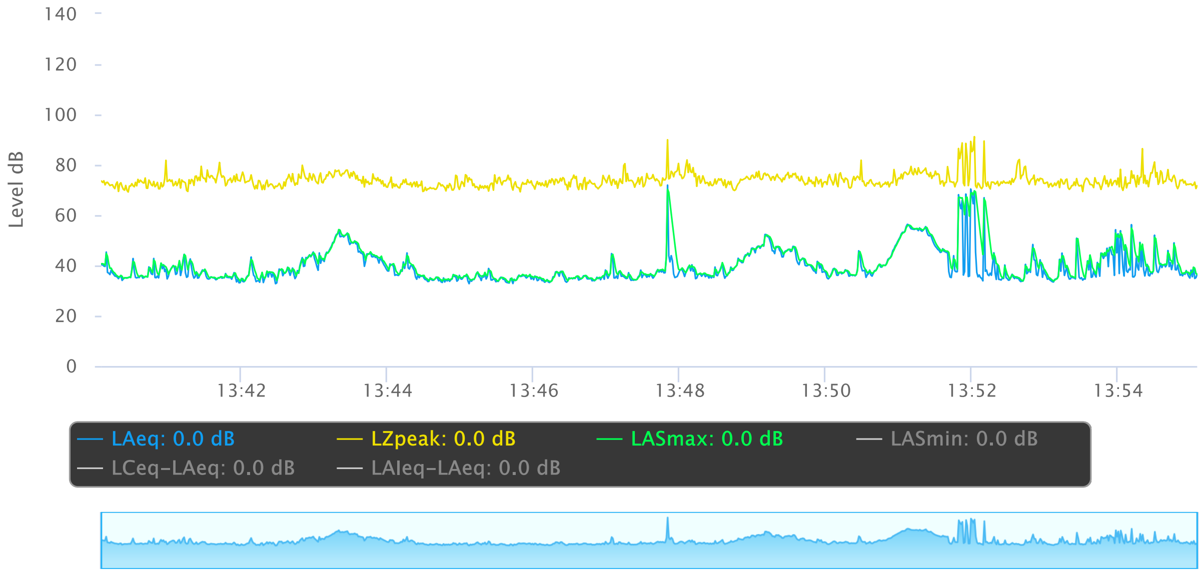
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	50.1 dB		59.2 dB		--- dB	
$Ls_{(max)}$	70.2 dB	2022-01-31 13:47:50	--- dB		--- dB	
$LS_{(min)}$	33.1 dB	2022-01-31 13:45:41	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		91.2 dB	2022-01-31 13:52:02

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

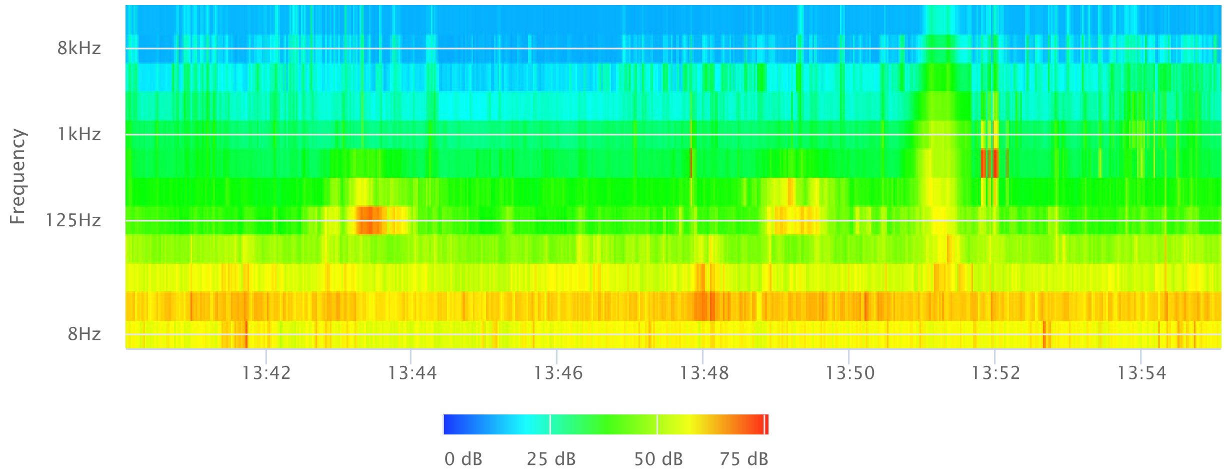
Statistics

LAS 2.0	59.7 dB
LAS 8.0	50.9 dB
LAS 25.0	42.6 dB
LAS 50.0	37.7 dB
LAS 66.6	36.1 dB
LAS 90.0	34.6 dB

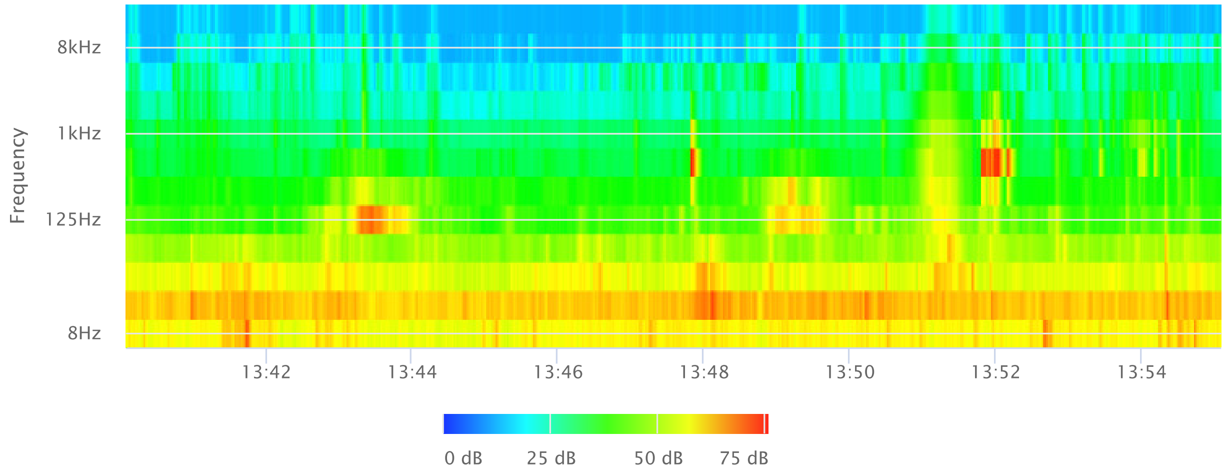
Time History



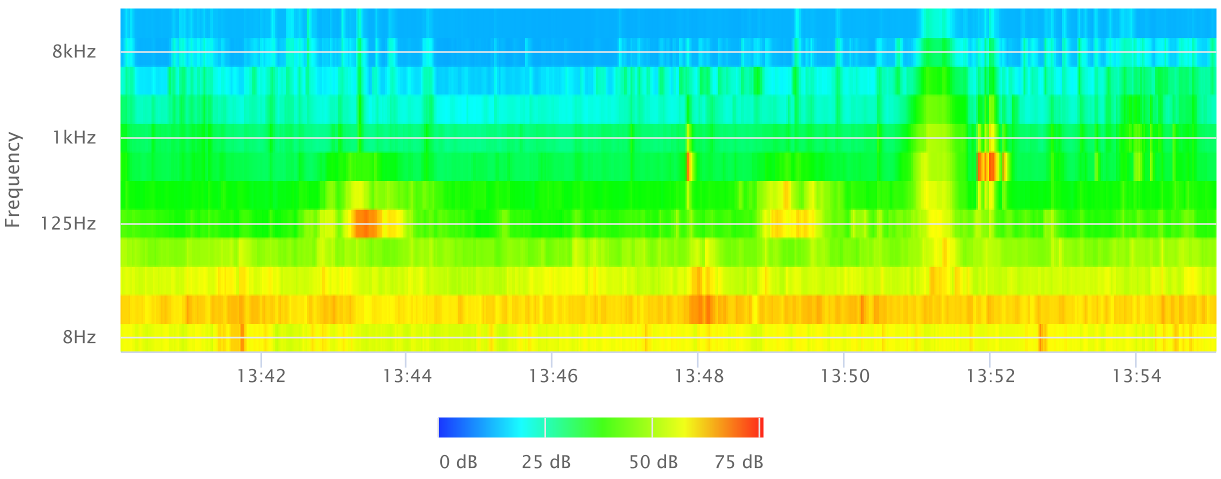
OBA 1/1 Leq



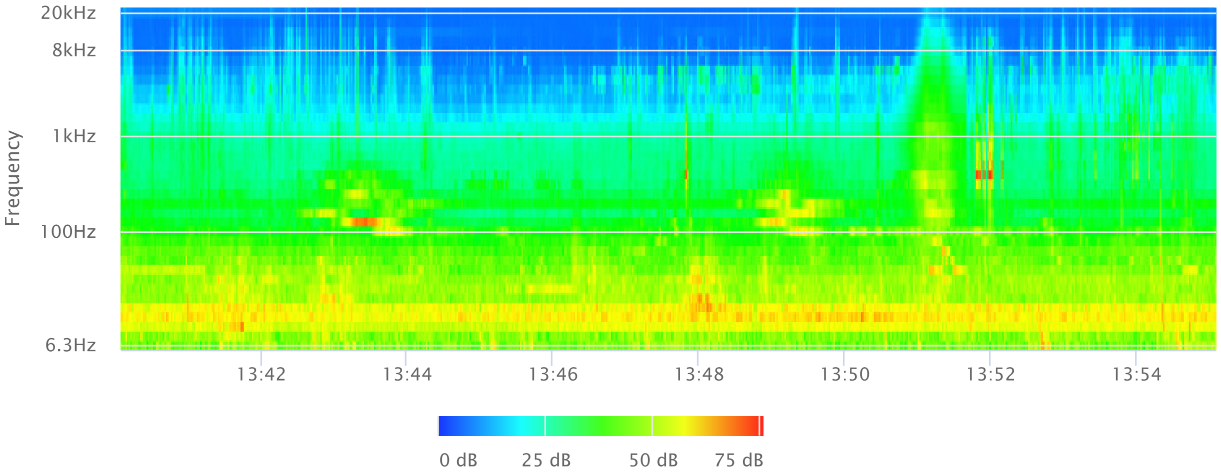
OBA 1/1 Lmax



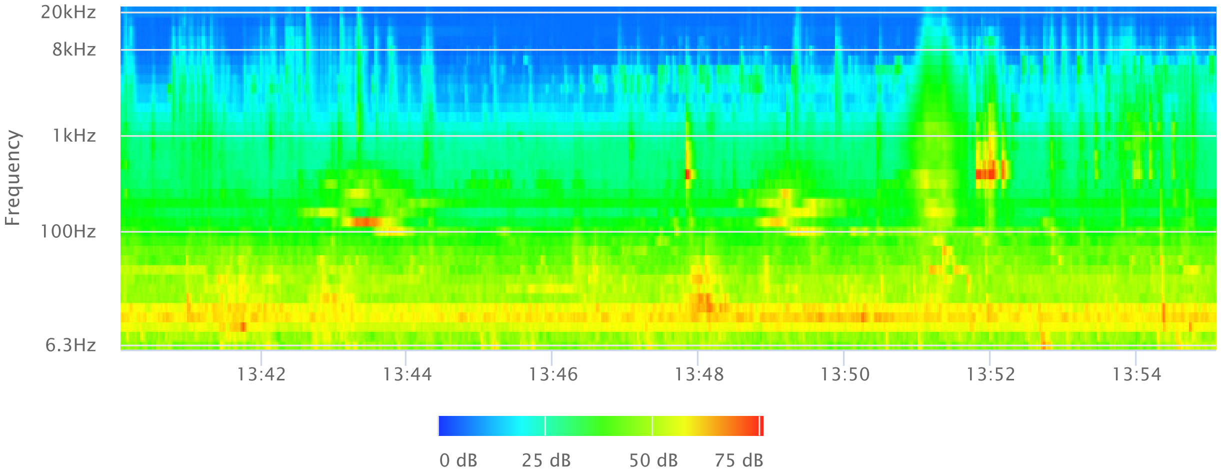
OBA 1/1 Lmin



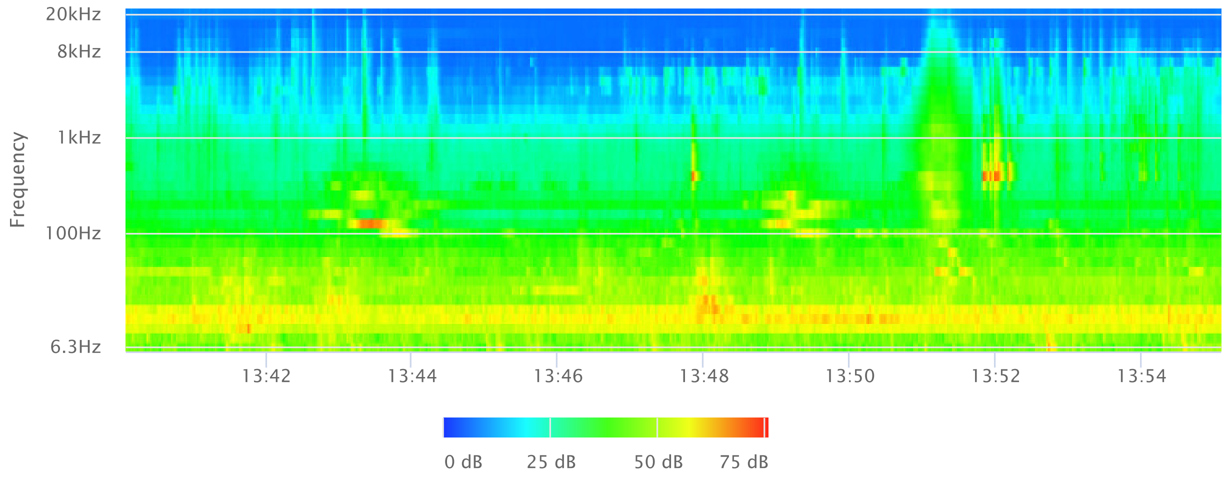
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
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: 2889 Locust Avenue Warehouse Project, City of Rialto **Date:** January 31, 2022

Project #: 19465

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

Nearest Address or Cross Street: 1796 W Carpenter Street, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Project Site: Open, recently cleared land w/ small trees around perimeter with industrial uses adjacent to north/south, single-family residnetial to east, & Locust Ave to west. Noise Measurement Site: Single-family residential neighborhood surrounding with project site past residences to west and W Carpenter Street to east.

Weather: Partly cloudy. About 80% cloud. Sunset 5:19 PM. **Settings:** [✓ SLOW] FAST

Temperature: 61 deg F **Wind:** 0-3 mph **Humidity:** 26% **Terrain:** Flat

Start Time: 2:10 PM **End Time:** 2:25 PM **Run Time:**

Leq: 46.1 dB

Lmax 58.2 dB

L2 53.3 dB

L8 49.6 dB

L25 45.6 dB

L50 43.6 dB

Primary Noise Source: Residential ambiance. Front yard of 1777 Carpenter St has water feature with noisy electric water pump. Air traffic noise, mostly propellor planes.

Secondary Noise Sources: Bird song, pigeons in area, very distant 210 Fwy traffic ambiance.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 11/17/2021

FIELD CALIBRATION DATE: 1/31/2022

CALIBRATOR: Larson Davis CA 250

MAKE: Larson Davis

MODEL: CA 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 11/18/2021

PHOTOS:

STNM2 looking W from sidewalk towards front yard of residence 1796 W Carpenter Street, Rialto.

STNM2 looking E from sidewalk, down Carpenter Street, towards N Maple Avenue intersection.

Summary

File Name on Meter	LxT_Data.036.s
File Name on PC	LxT_0003099-20220131 141021-LxT_Data.036.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM2 34° 9'6.01"N 117°24'26.04"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto

Measurement

Start	2022-01-31 14:10:21
Stop	2022-01-31 14:25:21
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2022-01-31 14:09:57
Post-Calibration	None

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.5 dB

Results

LAeq	46.1	
LAE	75.6	
EA	4.035 µPa²h	
EA8	129.105 µPa²h	
EA40	645.523 µPa²h	
LZpeak (max)	2022-01-31 14:14:18	86.7 dB
LASmax	2022-01-31 14:22:55	58.2 dB
LASmin	2022-01-31 14:16:48	41.6 dB

LCeq	59.7 dB
LAeq	46.1 dB
LCeq - LAeq	13.6 dB
LAIeq	48.6 dB
LAeq	46.1 dB
LAIeq - LAeq	2.5 dB
Overload Count	0

Statistics

LA2.00	53.3 dB
LA8.00	49.6 dB
LA25.00	45.6 dB
LA50.00	43.6 dB
LA66.60	42.9 dB
LA90.00	42.3 dB

Measurement Report

Report Summary

Meter's File Name	LxT_Data.036.s	Computer's File Name	LxT_0003099-20220131 141021-LxT_Data.036.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 34° 9'6.01"N 117°24'26.04"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto		

Start Time	2022-01-31 14:10:21	Duration	0:15:00.0		
End Time	2022-01-31 14:25:21	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	46.1 dB		
LAE	75.6 dB	SEA	--- dB
EA	4.0 µPa²h	LAFTM5	50.2 dB
EA8	129.1 µPa²h		
EA40	645.5 µPa²h		
LZ_{peak}	86.7 dB	2022-01-31 14:14:18	
LAS_{max}	58.2 dB	2022-01-31 14:22:55	
LAS_{min}	41.6 dB	2022-01-31 14:16:48	
LA_{eq}	46.1 dB		
LC_{eq}	59.7 dB	LC_{eq} - LA_{eq}	13.6 dB
LAI_{eq}	48.6 dB	LAI_{eq} - LA_{eq}	2.5 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 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

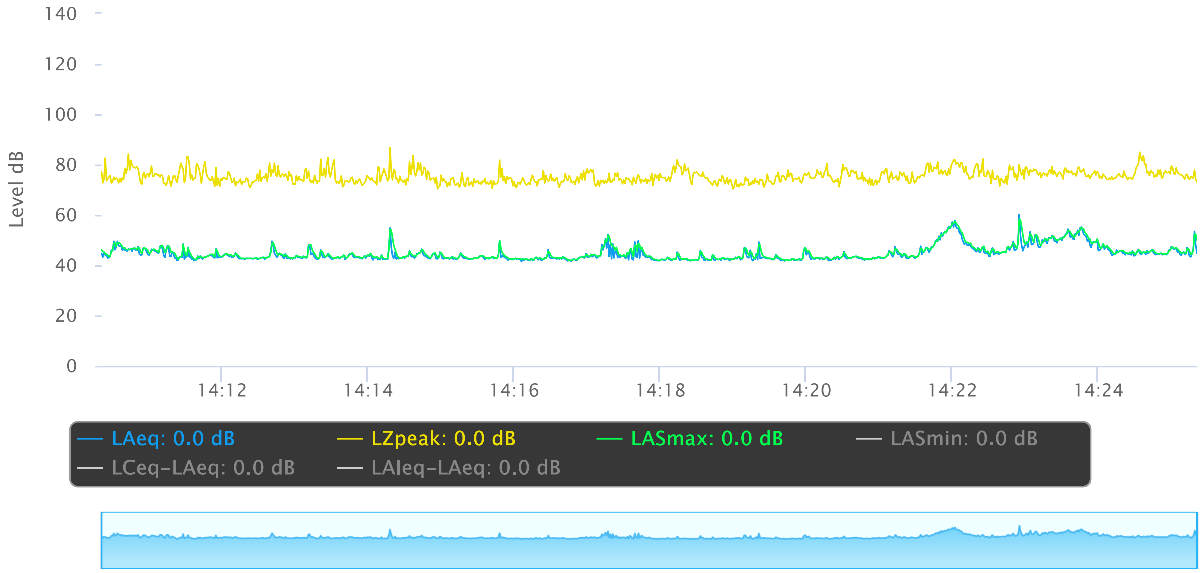
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	46.1 dB		59.7 dB		--- dB	
$L_{S(max)}$	58.2 dB	2022-01-31 14:22:55	--- dB		--- dB	
$L_{S(min)}$	41.6 dB	2022-01-31 14:16:48	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		86.7 dB	2022-01-31 14:14:18

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

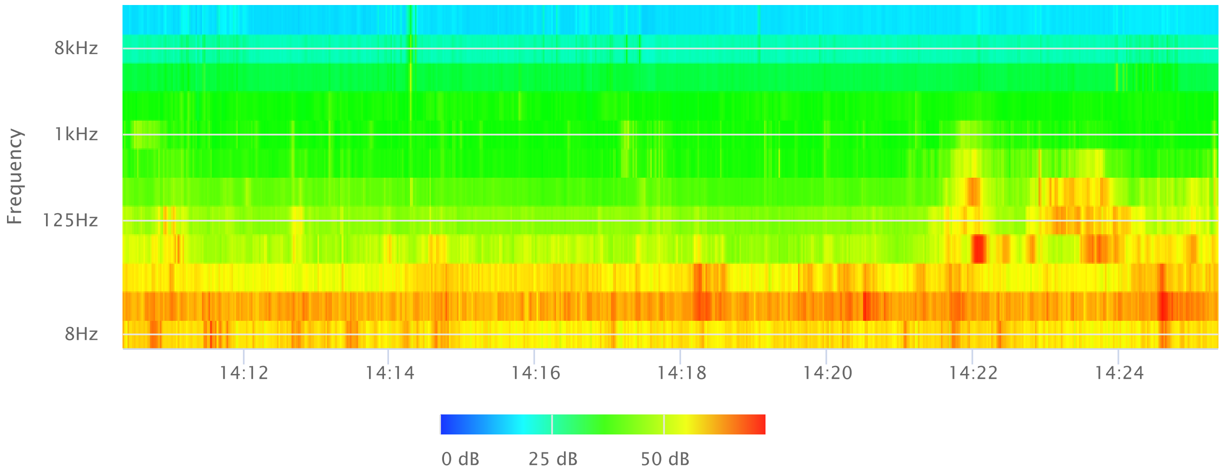
Statistics

LAS 2.0	53.3 dB
LAS 8.0	49.6 dB
LAS 25.0	45.6 dB
LAS 50.0	43.6 dB
LAS 66.6	42.9 dB
LAS 90.0	42.3 dB

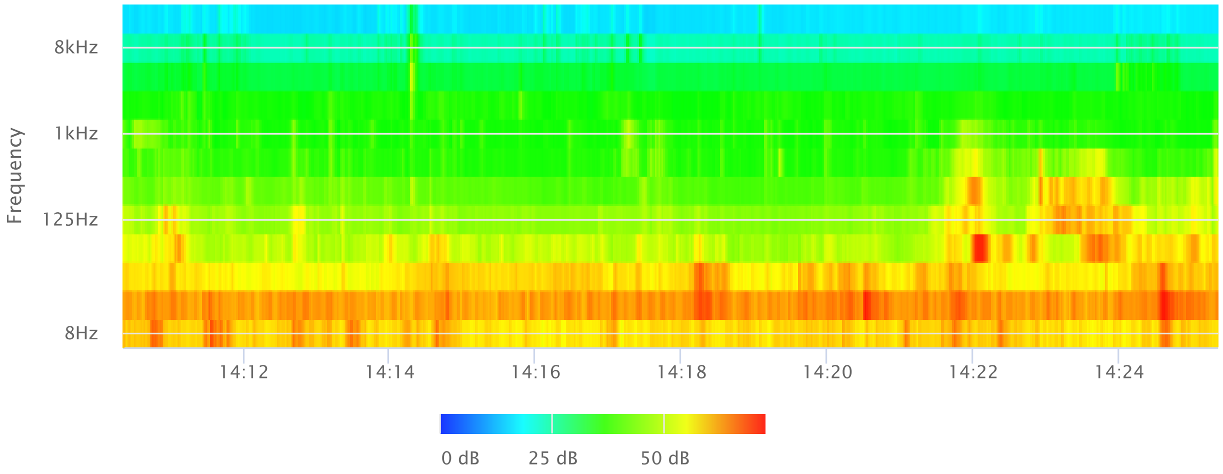
Time History



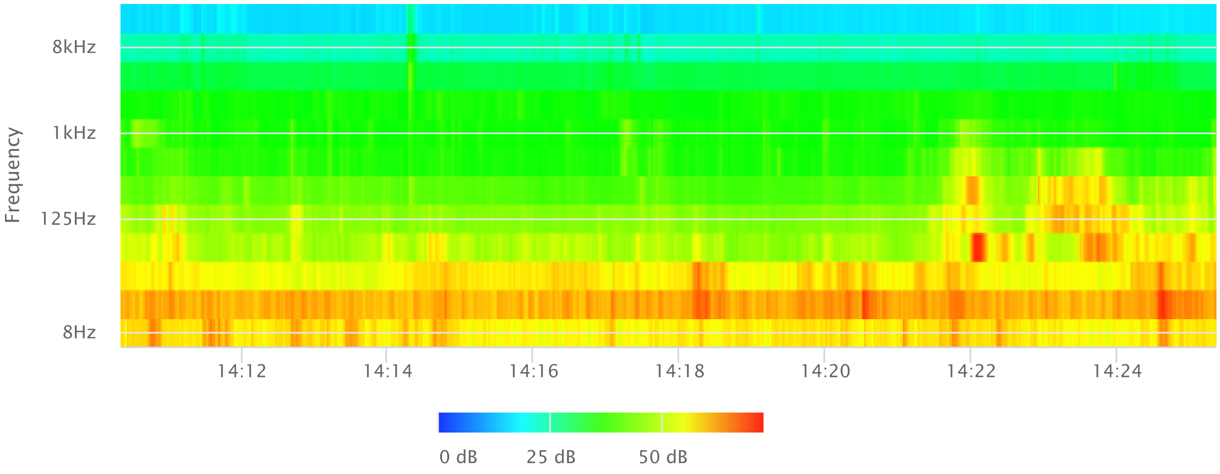
OBA 1/1 Leq



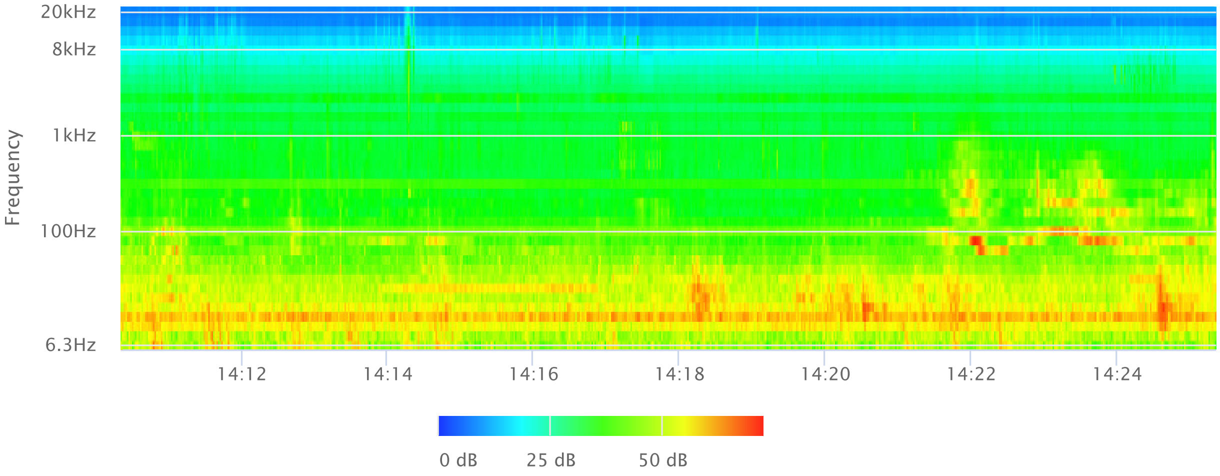
OBA 1/1 Lmax



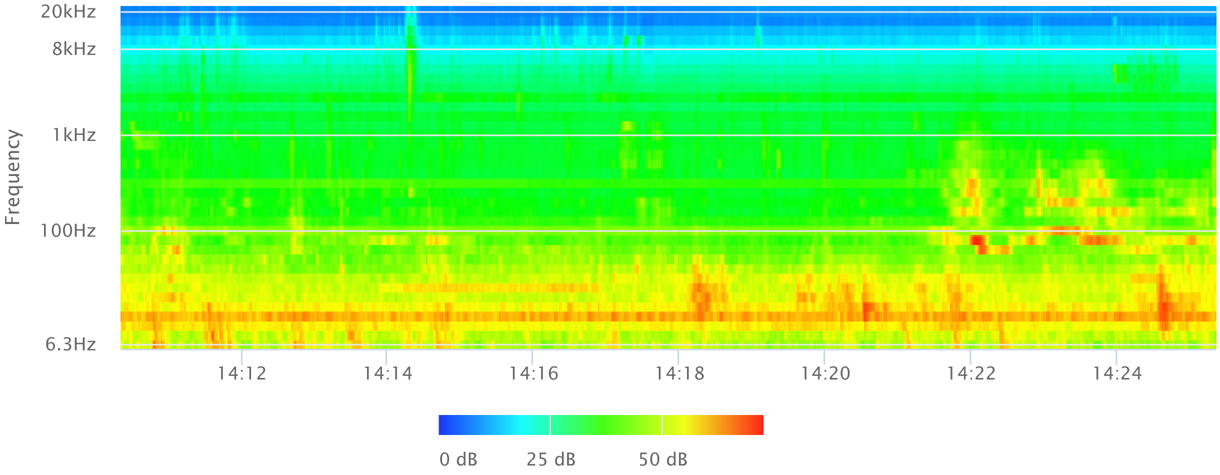
OBA 1/1 Lmin



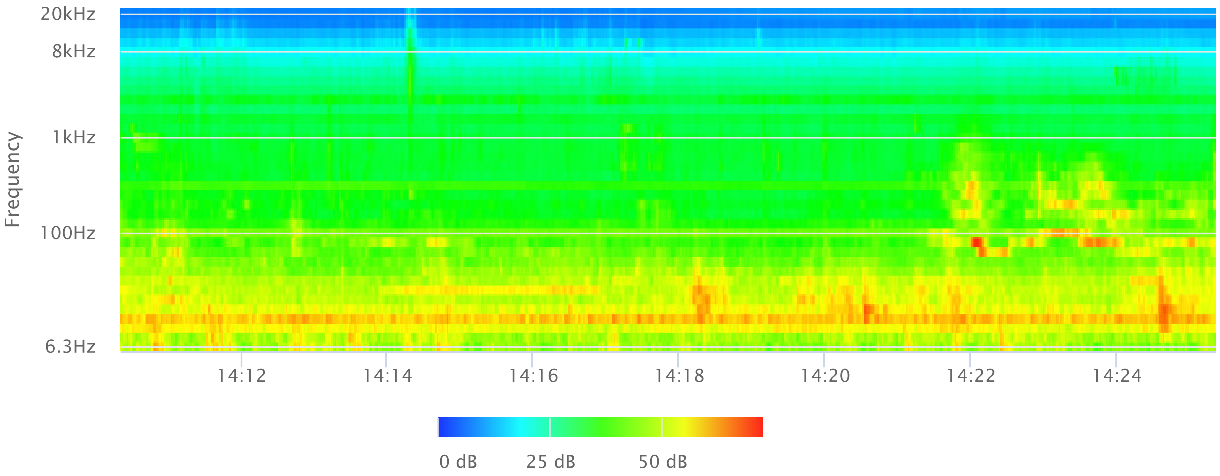
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



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

Noise Measurement
Field Data

Project Name: 2889 Locust Avenue Warehouse Project, City of Rialto **Date:** January 31, 2022

Project #: 19465

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

Nearest Address or Cross Street: 1794 W Summit Avenue, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Project Site: Open, recently cleared land w/ small trees around perimeter with industrial uses adjacent to north/south, single-family residnetial to east, & Locust Ave to west. Noise Measurement Site: Single-family residential neighborhood surrounding with project site past residences to northwest and W Summit Ave to east.

Weather: Partly cloudy. About 80% cloud. Sunset 5:19 PM. **Settings:** [✓ SLOW] FAST

Temperature: 61 deg F **Wind:** 0-3 mph **Humidity:** 26% **Terrain:** Flat

Start Time: 2:41 PM **End Time:** 2:56 PM **Run Time:**

Leq: 44.7 dB

Lmax 62.3 dB

L2 53.1 dB

L8 48.2 dB

L25 42.4 dB

L50 34.0 dB

Primary Noise Source: Residential ambiance. Air traffic noise, mostly propellor planes.

Secondary Noise Sources: Bird song, pigeons in area, very distant 210 Fwy traffic ambiance.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 11/17/2021

FIELD CALIBRATION DATE: 1/31/2022

CALIBRATOR: Larson Davis CA 250

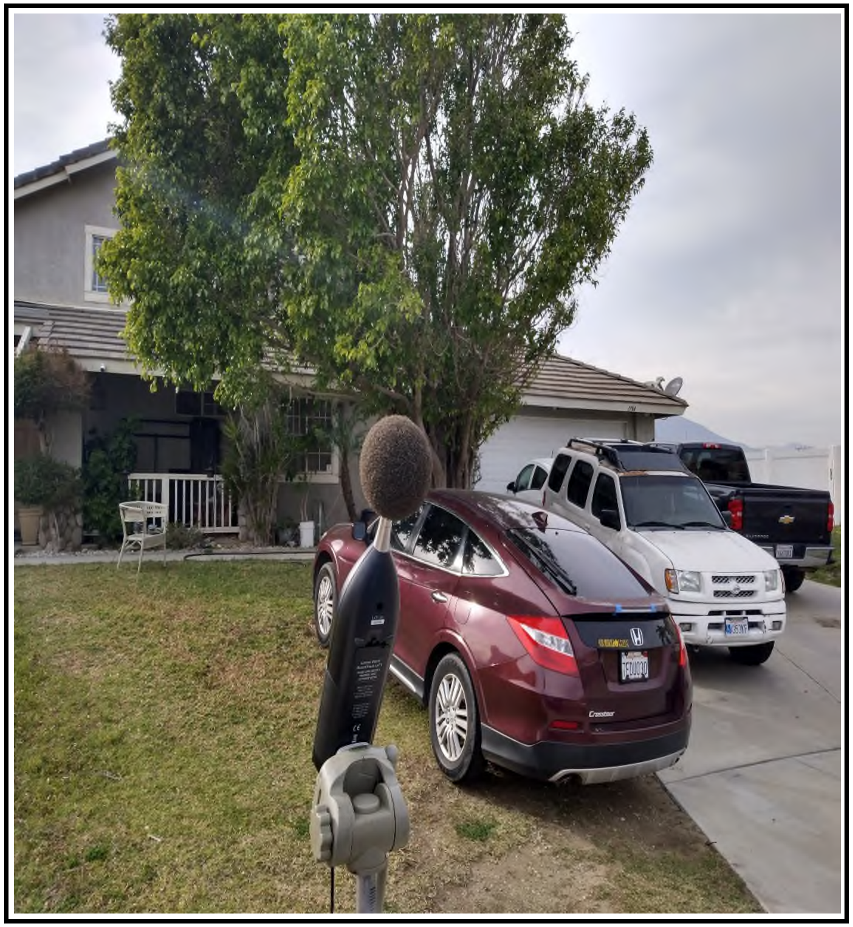
MAKE: Larson Davis

MODEL: CA 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 11/18/2021

PHOTOS:



STNM3 looking W from sidewalk towards front yard of residence 1794 W Summit Avenue, Rialto.

STNM3 looking E from sidewalk, down W Summit Avenue, towards N Maple Avenue intersection.

Summary

File Name on Meter	LxT_Data.037.s
File Name on PC	LxT_0003099-20220131 144136-LxT_Data.037.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM3 34° 9'3.36"N 117°24'25.99"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto

Measurement

Start	2022-01-31 14:41:36
Stop	2022-01-31 14:56:36
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2022-01-31 14:41:08
Post-Calibration	None

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.6 dB

Results

LAeq	44.7	
LAE	74.3	
EA	2.965 µPa^{2}h	
EA8	94.889 µPa^{2}h	
EA40	474.447 µPa^{2}h	
LZpeak (max)	2022-01-31 14:48:00	87.9 dB
LASmax	2022-01-31 14:48:05	62.3 dB
LASmin	2022-01-31 14:52:51	31.7 dB

LCeq	60.4 dB
LAeq	44.7 dB
LCeq - LAeq	15.7 dB
LAIeq	47.3 dB
LAeq	44.7 dB
LAIeq - LAeq	2.6 dB
Overload Count	0

Statistics

LA2.00	53.1 dB
LA8.00	48.2 dB
LA25.00	42.4 dB
LA50.00	39.0 dB
LA66.60	36.3 dB
LA90.00	34.0 dB

Measurement Report

Report Summary

Meter's File Name	LxT_Data.037.s	Computer's File Name	LxT_0003099-20220131 144136-LxT_Data.037.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 34° 9'3.36"N 117°24'25.99"W
Job Description	15 minute noise measurement (1 x 15 minutes)		
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto		

Start Time	2022-01-31 14:41:36	Duration	0:15:00.0		
End Time	2022-01-31 14:56:36	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	44.7 dB		
LAE	74.3 dB	SEA	--- dB
EA	3.0 µPa²h	LAFTM5	48.9 dB
EA8	94.9 µPa²h		
EA40	474.4 µPa²h		

LZ_{peak}	87.9 dB	2022-01-31 14:48:00
LAS_{max}	62.3 dB	2022-01-31 14:48:05
LAS_{min}	31.7 dB	2022-01-31 14:52:51

LA_{eq}	44.7 dB		
LC_{eq}	60.4 dB	LC_{eq} - LA_{eq}	15.7 dB
LAI_{eq}	47.3 dB	LAI_{eq} - LA_{eq}	2.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 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

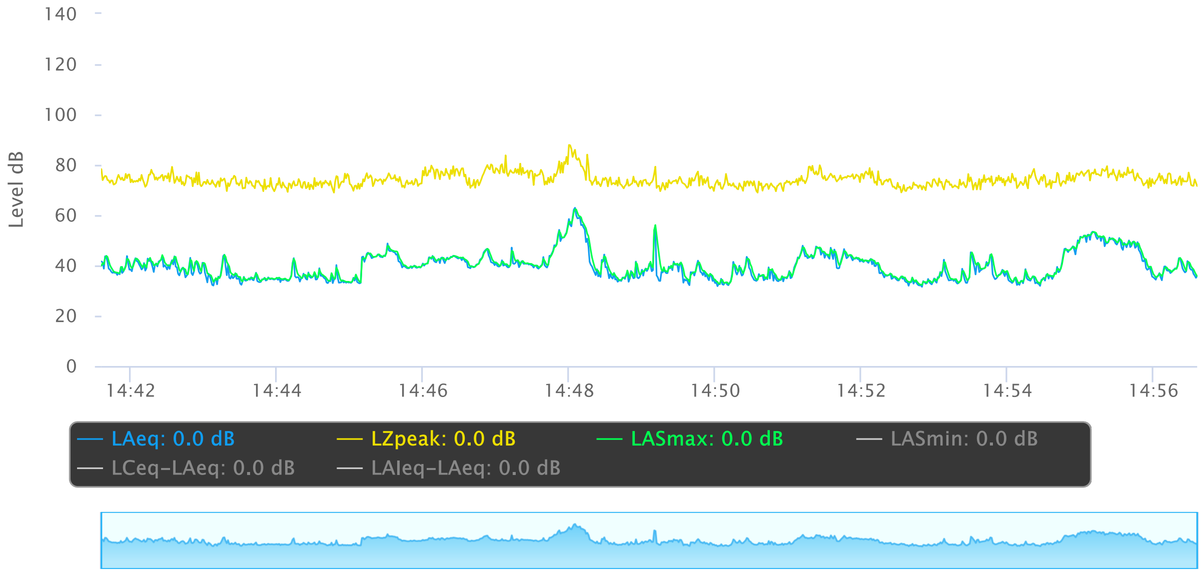
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	44.7 dB		60.4 dB		--- dB	
$Ls_{(max)}$	62.3 dB	2022-01-31 14:48:05	--- dB		--- dB	
$LS_{(min)}$	31.7 dB	2022-01-31 14:52:51	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		87.9 dB	2022-01-31 14:48:00

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

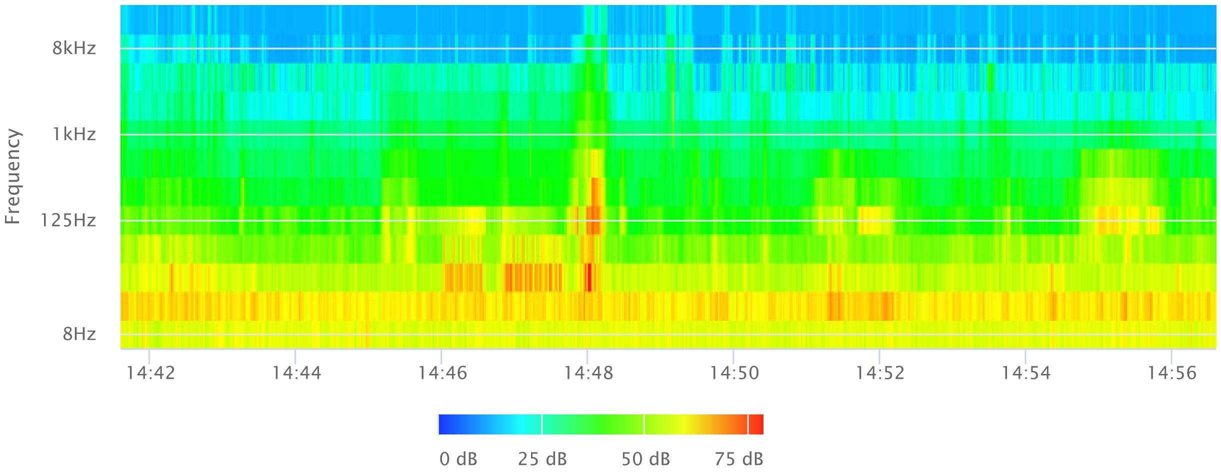
Statistics

LAS 2.0	53.1 dB
LAS 8.0	48.2 dB
LAS 25.0	42.4 dB
LAS 50.0	39.0 dB
LAS 66.6	36.3 dB
LAS 90.0	34.0 dB

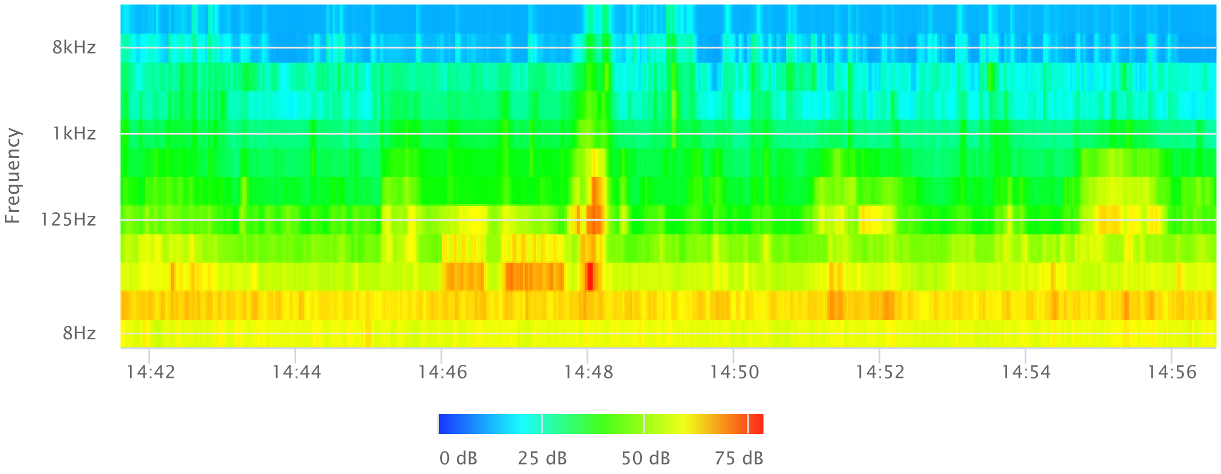
Time History



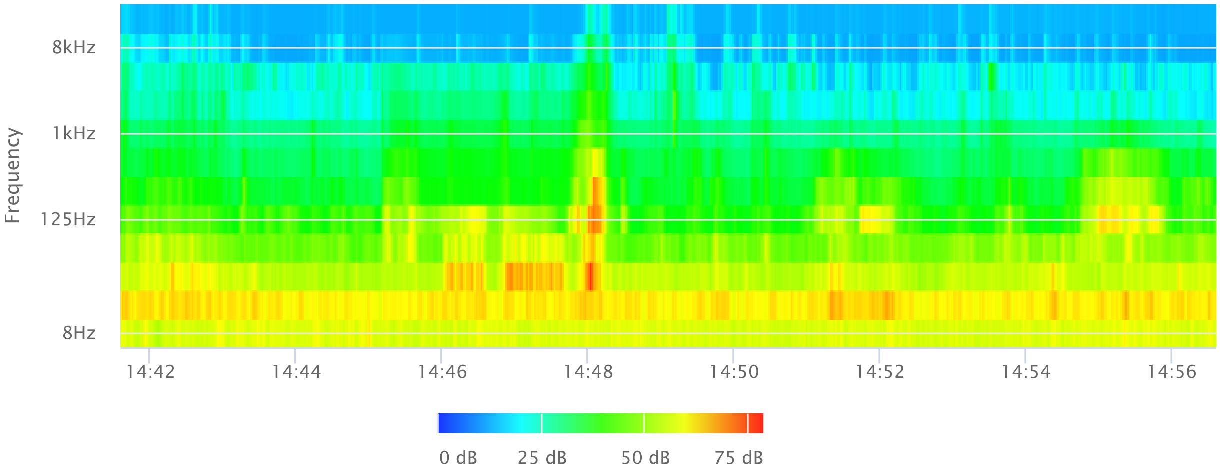
OBA 1/1 Leq



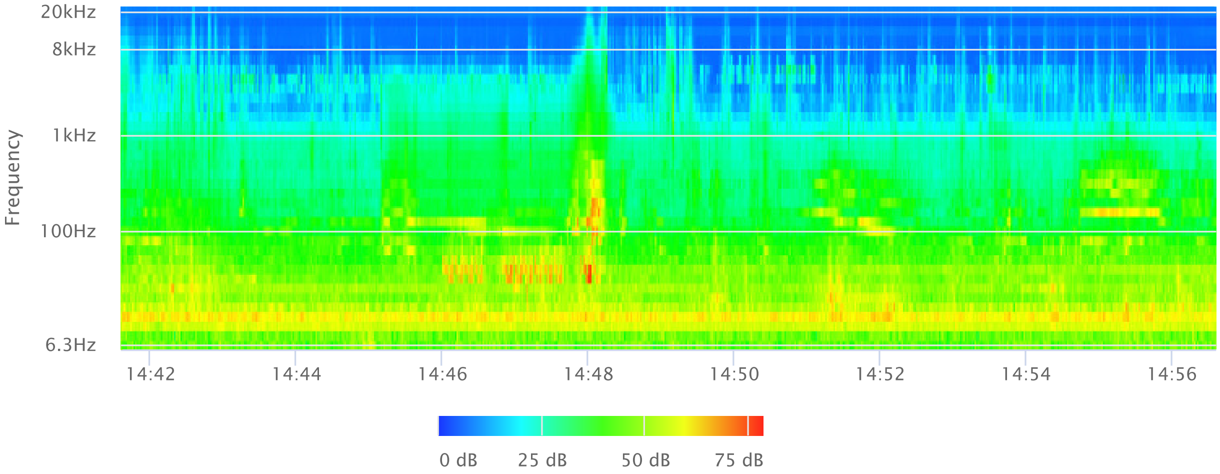
OBA 1/1 Lmax



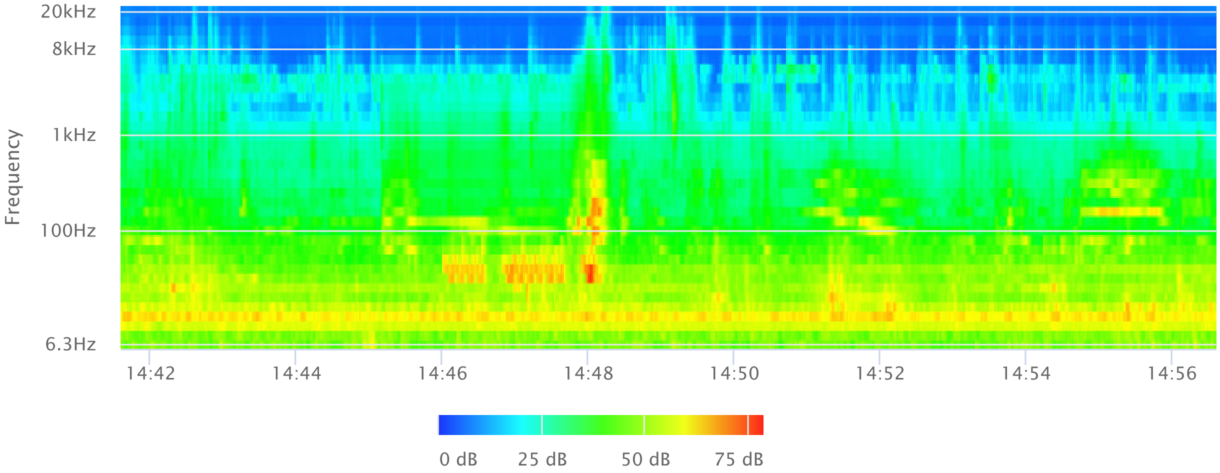
OBA 1/1 Lmin



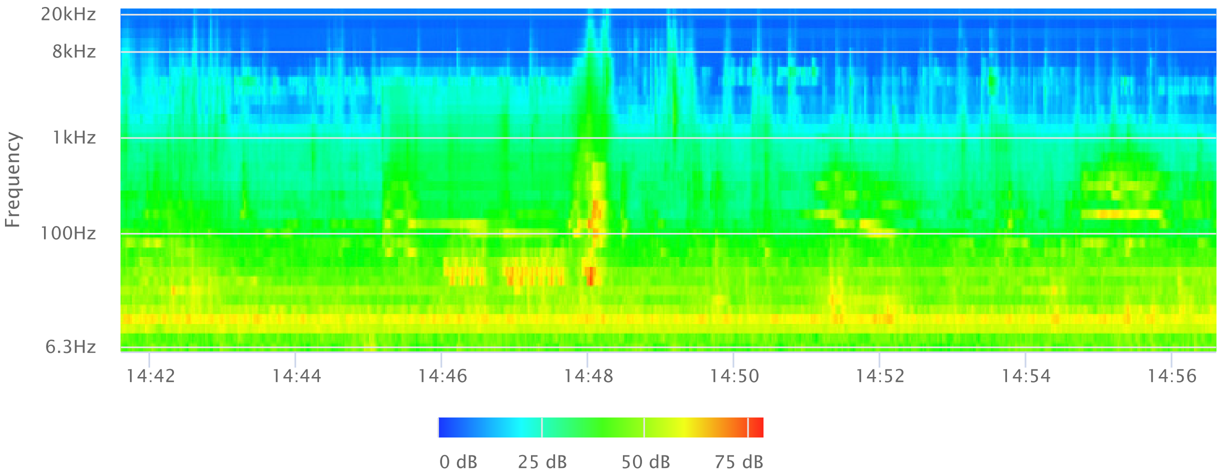
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:42
14:44
14:46
14:48
14:50
14:52
14:54
14:56
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: 2889 Locust Avenue Warehouse Project, City of Rialto **Date:** Jan 31 - Feb 01, 2022

Project #: 19465

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

Nearest Address or Cross Street: 2889 N Locust Avenue, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Project Site: Open, recently cleared land w/ small trees around perimeter with industrial uses adjacent to north/south, single-family residnetial to east, & Locust Ave to west. Noise Measurement Site: Located adjacent to northern property line with industrial use to northwest, vacant site to south/east/west and single-family residential uses further east.

Weather: Partly cloudy. About 80% cloud. Sunset 5:19 PM. **Settings:** [✓ SLOW] FAST

Temperature: 46-62 deg F **Wind:** 0-3 mph **Humidity:** 26-40% **Terrain:** Flat

Start Time: 5:00 PM **End Time:** 5:00 PM **Run Time:**

Leq: 47 dB

Lmax 69.8 dB

L2 53.3 dB

L8 50.4 dB

L25 47.3 dB

L50 44.9 dB

Primary Noise Source: Air traffic, mostly propellor planes, & vehicular traffic from Locust Avenue.

Secondary Noise Sources: Bird song, very distant 210 Fwy traffic ambiance.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 11/17/2021

FIELD CALIBRATION DATE: 1/31/2022

CALIBRATOR: Larson Davis CA 250

MAKE: Larson Davis

MODEL: CA 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 11/18/2021

Noise Measurement
Field Data

PHOTOS:

LTNM1 looking west past microphone towards Locust Avenue. Building 2941 N Locust Avenue in photo (behind small tree & microphone).

LTNM1 looking N, showing location of equipment on ground & location of microphone in tree. Microphone about 7 feet above the ground.

Summary

File Name on Meter	LxT_Data.038.s
File Name on PC	LxT_0003099-20220131 170000-LxT_Data.038.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 34° 9'8.21"N 117°24'29.71"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of

Measurement

Start	2022-01-31 17:00:00
Stop	2022-02-01 17:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2022-01-31 16:15:15
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	A Weighting
OBA Max Spectrum	Bin Max
Overload	122.5 dB

Results

LAeq	47.0	
LAE	96.4	
EA	486.572 µPa^{2}h	
EA8	162.191 µPa^{2}h	
EA40	810.953 µPa^{2}h	
LApeak (max)	2022-01-31 17:13:38	100.7 dB
LASmax	2022-01-31 17:24:12	69.8 dB
LASmin	2022-02-01 03:04:56	31.2 dB

LCeq	59.7 dB
LAeq	47.0 dB
LCeq - LAeq	12.6 dB
LAIeq	49.9 dB
LAeq	47.0 dB
LAIeq - LAeq	2.9 dB
Overload Count	0

Statistics

LA2.00	53.3 dB
LA8.00	50.4 dB
LA25.00	47.3 dB
LA50.00	44.9 dB
LA90.00	40.6 dB
LA99.00	35.8 dB

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	2022-01-31	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.1	43.7	17:00:33	69.8	17:24:12	56.6	54.1	52.4	50.6	47.4	45.4
2	2022-01-31	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	50.9	43.6	18:58:18	60.1	18:08:24	55.2	53.6	52.0	50.2	47.0	45.1
3	2022-01-31	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.2	36.8	19:55:47	58.3	19:07:08	52.1	50.0	48.1	46.6	40.9	38.3
4	2022-01-31	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	45.5	39.3	20:38:15	56.8	20:10:12	50.3	48.3	46.1	44.6	41.7	40.1
5	2022-01-31	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	46.0	38.8	21:53:55	56.1	21:22:00	50.6	48.6	46.5	45.2	43.0	41.5
6	2022-01-31	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	44.5	35.8	22:34:00	57.7	22:07:16	50.4	47.3	44.8	42.8	39.6	36.8
7	2022-01-31	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.4	36.4	23:50:56	54.5	23:07:17	49.1	46.3	44.0	42.2	39.3	37.7
8	2022-02-01	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.1	33.0	00:25:59	56.1	00:24:47	50.7	47.1	43.0	40.1	36.4	34.3
9	2022-02-01	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	44.4	35.8	01:14:26	62.3	01:15:48	49.3	47.2	45.2	42.9	39.5	37.6
10	2022-02-01	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	42.0	33.2	02:56:17	56.0	02:24:19	48.1	45.5	42.9	40.3	36.3	34.2
11	2022-02-01	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.5	31.2	03:04:56	55.5	03:47:13	49.1	47.2	44.6	42.3	35.7	32.8
12	2022-02-01	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.5	34.7	04:21:35	60.2	04:50:53	52.6	51.3	49.5	45.4	40.9	36.5
13	2022-02-01	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.5	44.2	05:28:51	57.1	05:44:55	52.4	50.7	49.1	47.9	46.0	44.8
14	2022-02-01	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.5	42.2	06:30:20	60.2	06:13:18	55.7	51.3	48.5	46.7	44.6	43.1
15	2022-02-01	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.4	42.7	07:32:19	62.5	07:30:55	52.3	49.1	47.6	46.5	44.7	43.8
16	2022-02-01	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	46.4	40.2	08:54:02	64.5	08:23:33	51.5	48.5	46.7	45.1	42.5	41.2
17	2022-02-01	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.0	39.6	09:59:09	66.4	09:03:03	56.1	46.9	44.7	43.2	41.4	40.4
18	2022-02-01	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.3	39.4	10:53:52	55.5	10:25:33	47.9	45.4	43.5	42.3	40.9	40.1
19	2022-02-01	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	44.9	39.8	11:00:11	63.6	11:07:14	50.2	46.4	44.3	43.0	41.3	40.3
20	2022-02-01	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	45.9	41.0	12:31:46	66.8	12:26:11	50.7	47.4	45.4	44.2	42.8	42.0
21	2022-02-01	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.6	41.8	13:06:35	66.3	13:52:09	52.1	49.0	47.1	45.6	43.6	42.6
22	2022-02-01	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	45.7	39.2	14:59:59	56.3	14:41:09	50.9	48.4	46.2	44.7	42.3	40.4
23	2022-02-01	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.5	39.6	15:08:14	68.5	15:30:34	53.8	49.7	47.1	45.5	42.7	40.7
24	2022-02-01	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.1	39.8	16:01:27	63.2	16:21:27	53.1	50.5	48.7	47.2	43.6	41.4

Measurement Report

Report Summary

Meter's File Name	LxT_Data.038.s	Computer's File Name	LxT_0003099-20220131 170000-LxT_Data.038.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 34° 9'8.21"N 117°24'29.71"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Ganddini 19465 2889 Locust Avenue Warehouse Project, City of Rialto		

Start Time	2022-01-31 17:00:00	Duration	24:00:00.0		
End Time	2022-02-01 17:00:00	Run Time	24:00:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	47.0 dB		
LAE	96.4 dB	SEA	--- dB
EA	486.6 µPa²h	LAFTM5	51.0 dB
EA8	162.2 µPa²h		
EA40	811.0 µPa²h		

LA_{peak}	100.7 dB	2022-01-31 17:13:38
LAS_{max}	69.8 dB	2022-01-31 17:24:12
LAS_{min}	31.2 dB	2022-02-01 03:04:56

LA_{eq}	47.0 dB		
LC_{eq}	59.7 dB	LC_{eq} - LA_{eq}	12.6 dB
LAI_{eq}	49.9 dB	LAI_{eq} - LA_{eq}	2.9 dB

Exceedances	Count	Duration
LAS > 65.0 dB	12	0:00:57.2
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

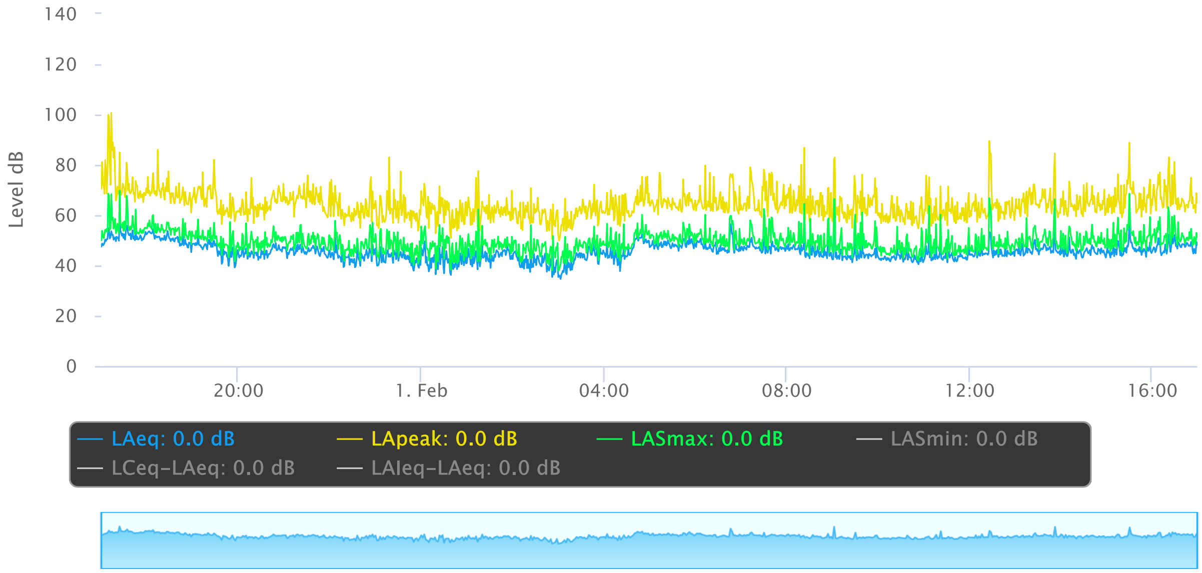
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	47.0 dB		59.7 dB		--- dB	
$Ls_{(max)}$	69.8 dB	2022-01-31 17:24:12	--- dB		--- dB	
$LS_{(min)}$	31.2 dB	2022-02-01 03:04:56	--- dB		--- dB	
$L_{Peak(max)}$	100.7 dB	2022-01-31 17:13:38	--- dB		--- dB	

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

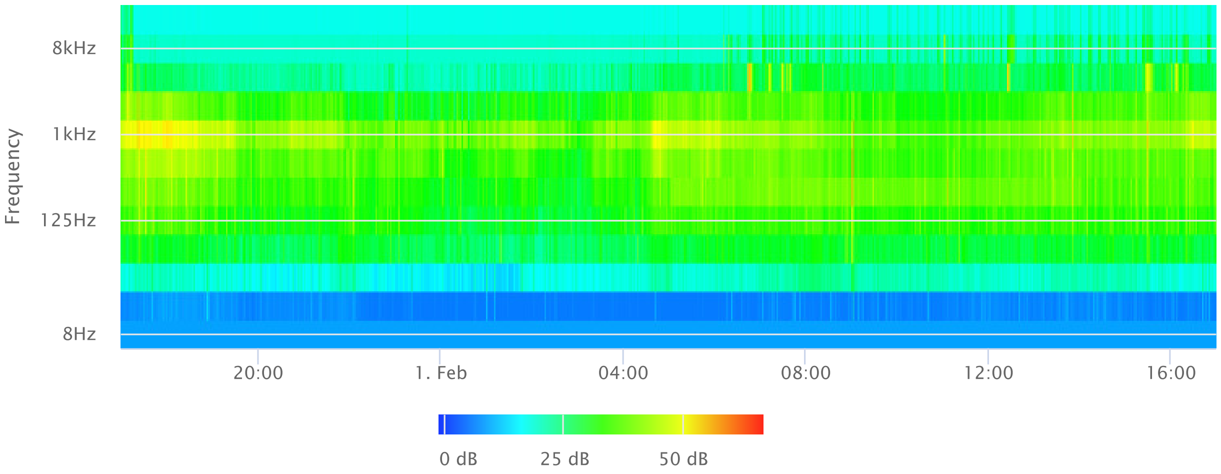
Statistics

LAS 2.0	53.3 dB
LAS 8.0	50.4 dB
LAS 25.0	47.3 dB
LAS 50.0	44.9 dB
LAS 90.0	40.6 dB
LAS 99.0	35.8 dB

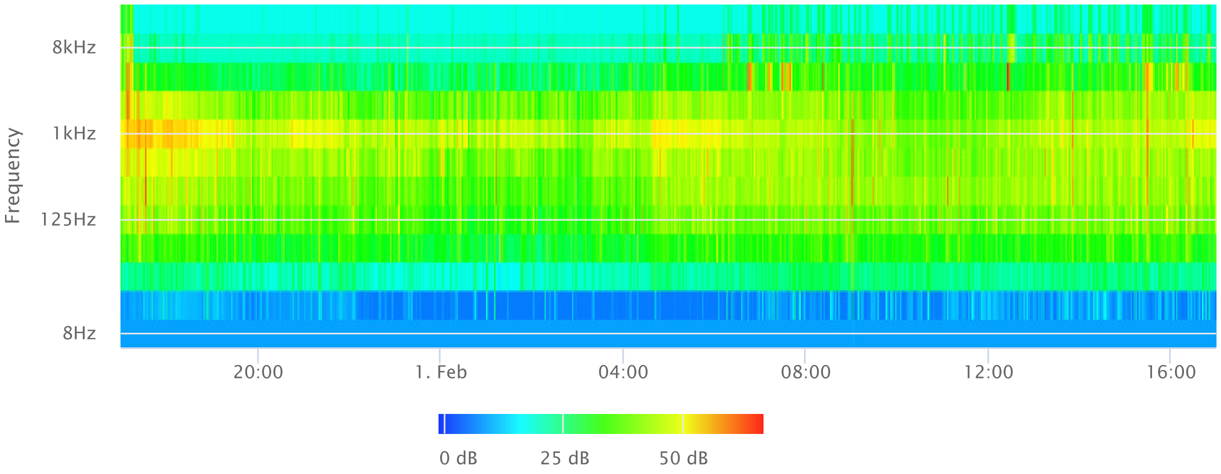
Time History



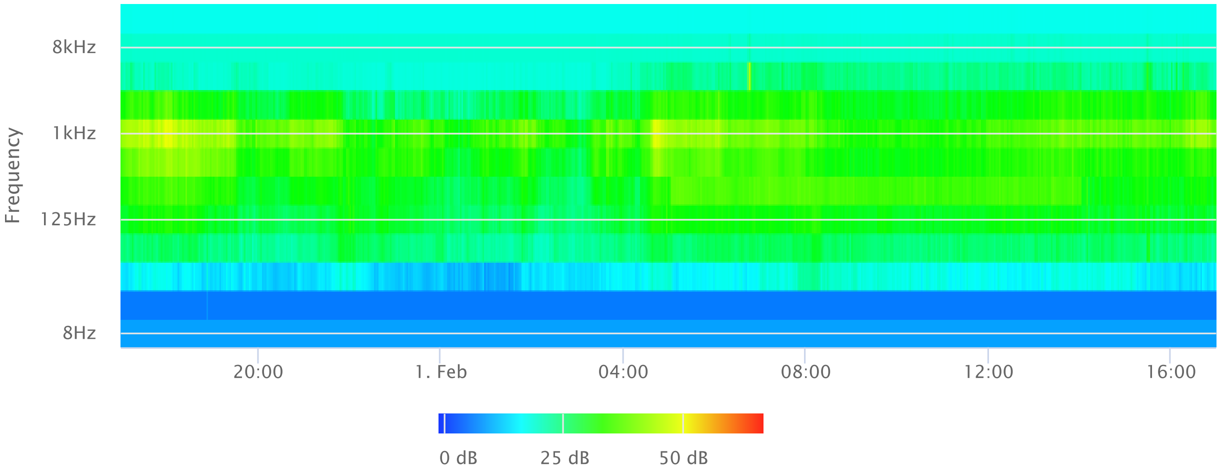
OBA 1/1 Leq



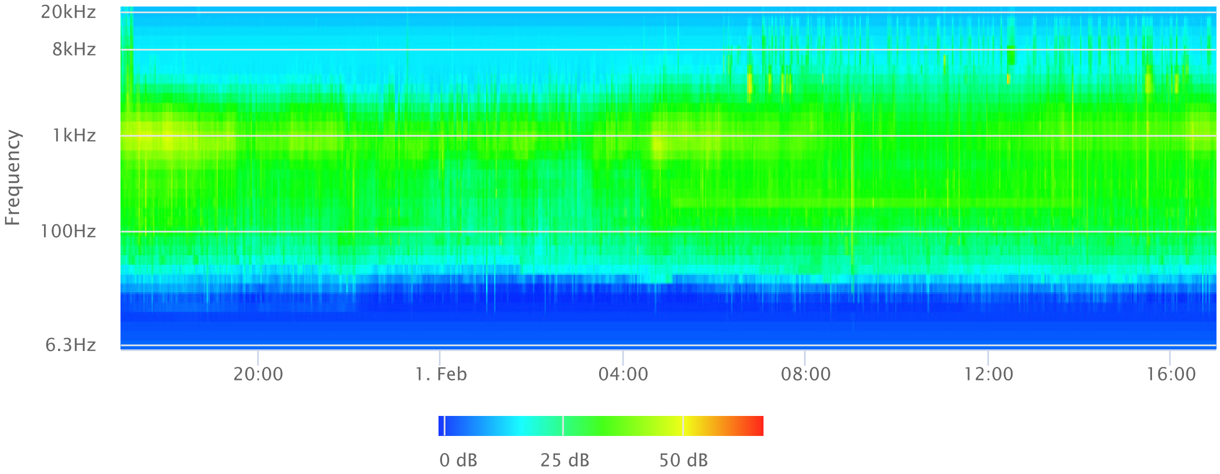
OBA 1/1 Lmax



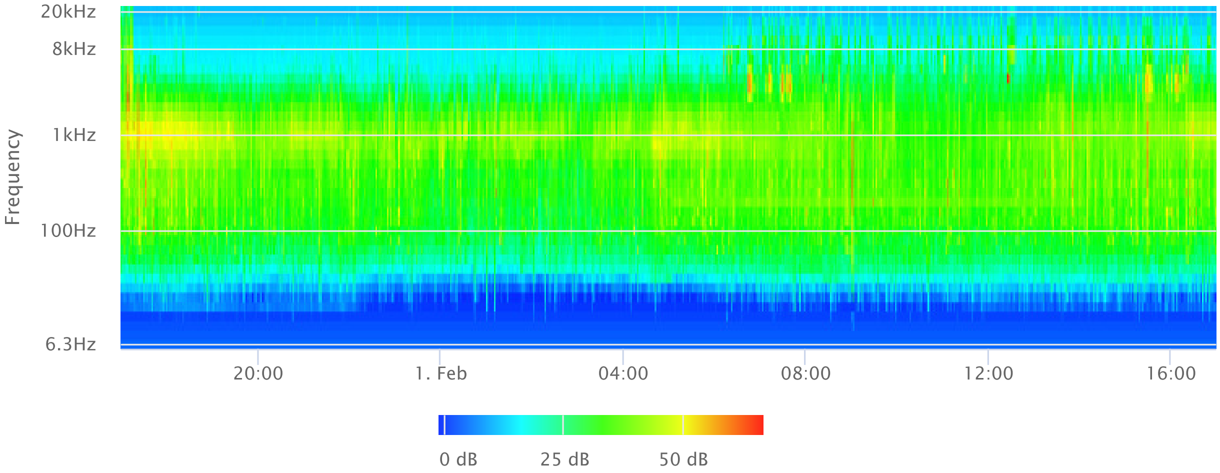
OBA 1/1 Lmin



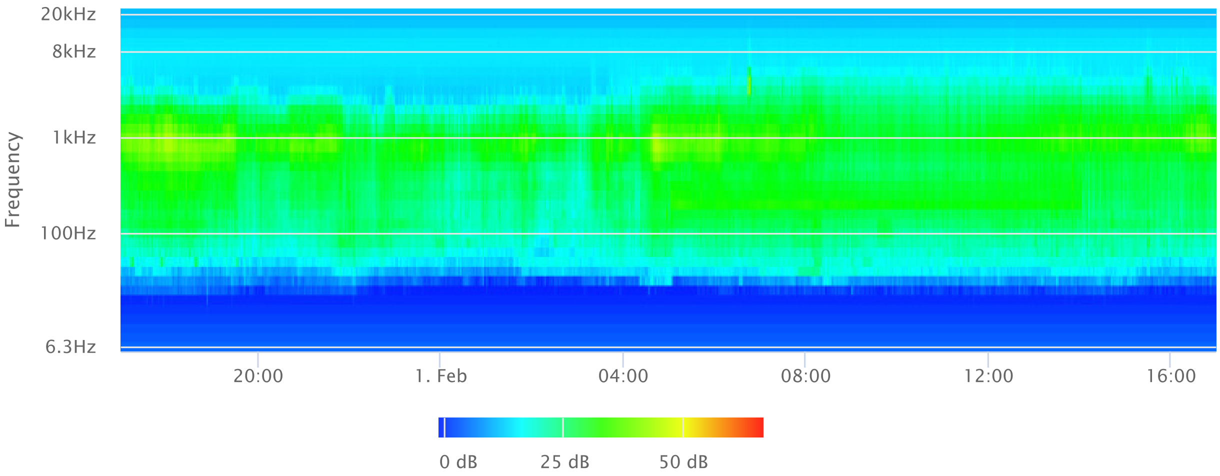
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


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

APPENDIX D

CONSTRUCTION NOISE MODELING

Receptor - Single-Family Residential to East

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Tractors/Loaders/Backhoes	4	84	320	40	1.60	-16.1	2.0	67.9	69.9
Rubber Tired Dozers	3	82	320	40	1.20	-16.1	0.8	65.9	66.7
							Log Sum		71.6
Grading									
Excavator	1	85	320	40	0.4	-16.1	-4.0	68.9	64.9
Grader	1	85	320	40	0.40	-16.1	-4.0	68.9	64.9
Rubber Tired Dozers	1	82	320	40	0.40	-16.1	-4.0	65.9	61.9
Tractors/Loaders/Backhoes	3	84	320	40	1.20	-16.1	0.8	67.9	68.7
							Log Sum		71.8
Building Construction									
Cranes	1	81	320	16	0.16	-16.1	-8.0	64.9	56.9
Forklifts [2]	3	48	320	40	1.20	-16.1	0.8	31.9	32.7
Generator Set	1	81	320	50	0.50	-16.1	-3.0	64.9	61.9
Welders	1	74	320	40	0.40	-16.1	-4.0	57.9	53.9
Tractors/Loaders/Backhoes	3	84	320	40	1.20	-16.1	0.8	67.9	68.7
							Log Sum		69.8
Paving									
Cement and Mortar Mixers	2	79	320	40	0.80	-16.1	-1.0	62.9	61.9
Pavers	2	77	320	50	1.00	-16.1	0.0	60.9	60.9
Paving Equipment	2	85	320	20	0.40	-16.1	-4.0	68.9	64.9
Rollers	2	80	320	20	0.40	-16.1	-4.0	63.9	59.9
Tractors/Loaders/Backhoes	1	84	320	40	0.40	-16.1	-4.0	67.9	63.9
							Log Sum		69.7
Architectural Coating									
Air Compressors	1	78	320	40	0.40	-16.1	-4.0	61.9	57.9
							Log Sum		57.9

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 reference list.

(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).

APPENDIX E

PROJECT GENERATED TRIPS FHWA WORKSHEETS

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

Existing Traffic Noise

Project: **19465 2889 Locust Avenue Warehouse Project**
Road: **Locust Avenue**
Segment: **Vicinity of Project Site**

	DAYTIME			EVENING			NIGHTTIME		
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS
INPUT PARAMETERS									
Vehicles per hour	411.90	8.53	14.22	305.82	1.42	2.37	75.86	11.85	19.76
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
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	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	19.82	2.99	5.20	18.53	-4.80	-2.58	12.47	4.41	6.63
Distance	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
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	62.87	54.99	62.05	61.58	47.20	54.27	55.52	56.41	63.48
	DAY LEQ	65.86		EVENING LEQ	62.45		NIGHT LEQ	64.80	
		CNEL	**71.45**						

ADT	7112.00
SPEED	40.00
DISTANCE	42.00
% A	92
% MT	3
% HT	5
LEFT	-90.00
RIGHT	90.00
CNEL	71.45
DAY LEQ	65.86
Day hour	89.00
Absorbtive?	no
Use hour?	no
GRADE dB	0.00

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

Existing Plus Project Traffic Noise

Project:	**19465 2889 Locust Avenue Warehouse Project**
Road:	**Locust Avenue**
Segment:	**Vicinity of Project Site**

	DAYTIME			EVENING			NIGHTTIME		
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS
INPUT PARAMETERS									
Vehicles per hour	418.33	9.33	16.10	310.59	1.56	2.68	77.04	12.96	22.37
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
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	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	19.89	3.37	5.74	18.60	-4.41	-2.04	12.54	4.80	7.17
Distance	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
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	62.94	55.37	62.59	61.64	47.59	54.81	55.59	56.80	64.02
	DAY LEQ	66.16		EVENING LEQ	62.60		NIGHT LEQ	65.27	
		CNEL	**71.87**						

ADT	7281.00
SPEED	40.00
DISTANCE	42.00
% A	91.27
% MT	3.20
% HT	5.53
LEFT	-90.00
RIGHT	90.00
CNEL	71.87
DAY LEQ	66.16
Day hour	89.00
Absorbtive?	no
Use hour?	no
GRADE dB	0.00

APPENDIX F

SOUNDPLAN INPUTS AND OUTPUTS

Noise emissions of industry sources

				Frequency spectrum [dB(A)]										Corrections		
Source name	Reference	Level		31	63	125	250	500	1	2	4	8	16	Cwall	CI	CT
			dB(A)	Hz	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	kHz	dB	dB	dB
Loading Area	Lw/m²	Day	66.0	-	33.0	43.0	50.1	56.1	59.0	60.0	60.1	58.0	-	-	-	-
HVAC1	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC2	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC3	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC4	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC5	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC6	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC7	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC8	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC9	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC10	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC11	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC12	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC13	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC14	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC15	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC16	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC17	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC18	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC19	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC20	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-
HVAC21	Lw/unit	Day	56.2	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-

Noise emissions of parking lot traffic

Name	Parking bays	Movements			Corrections		Level	
		Day	Evening	Night	Parking lot type	dB(A)	Day dB(A)	Evening dB(A)
Parking 1	44.0	0.200	0.200	0.000		0.0	46.4	46.4
Parking 2	13.0	0.200	0.200	0.000		0.0	41.1	41.1
Parking 3	11.0	0.200	0.200	0.000		0.0	40.4	40.4

Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level Day dB(A)	Conflict Day dB
1	1	-	EG	-	19.9	-
			1.OG	-	19.5	-
2	2	-	EG	-	21.4	-
			1.OG	-	21.0	-
3	3	-	EG	-	24.5	-
			1.OG	-	24.5	-
4	4	-	EG	-	41.8	-
			1.OG	-	42.2	-
5	5	-	EG	-	46.0	-
			1.OG	-	45.9	-
6	6	-	EG	-	55.3	-
			1.OG	-	55.4	-

Contribution levels of the receivers

Source name	Traffic lane	Level Day dB(A)
1 EG		19.9
HVAC1	-	-44.9
HVAC2	-	-44.6
HVAC3	-	-43.9
HVAC4	-	-43.5
HVAC5	-	-42.9
HVAC6	-	-42.4
HVAC7	-	-41.4
HVAC8	-	-47.7
HVAC9	-	-47.4
HVAC10	-	-47.1
HVAC11	-	-46.7
HVAC12	-	-46.4
HVAC13	-	-45.9
HVAC14	-	-45.7
HVAC15	-	-41.1
HVAC16	-	-45.3
HVAC17	-	-47.6
HVAC18	-	-49.0
HVAC19	-	-49.1
HVAC20	-	-49.4
HVAC21	-	-50.2
Loading Area	-	18.9
Parking 1	-	12.9
Parking 2	-	-3.3
Parking 3	-	2.2
1 1.OG		19.5
HVAC1	-	-43.5
HVAC2	-	-43.0
HVAC3	-	-42.3
HVAC4	-	-41.7
HVAC5	-	-41.0
HVAC6	-	-40.5
HVAC7	-	-39.5
HVAC8	-	-45.5
HVAC9	-	-45.2
HVAC10	-	-44.8
HVAC11	-	-44.4
HVAC12	-	-44.1
HVAC13	-	-43.6
HVAC14	-	-43.3
HVAC15	-	-39.1
HVAC16	-	-43.0
HVAC17	-	-45.1
HVAC18	-	-46.4
HVAC19	-	-46.6
HVAC20	-	-47.0
HVAC21	-	-47.7
Loading Area	-	18.3
Parking 1	-	13.1
Parking 2	-	-3.1
Parking 3	-	2.2
2 EG		21.4
HVAC1	-	-46.8
HVAC2	-	-46.9
HVAC3	-	-46.0
HVAC4	-	-45.4
HVAC5	-	-44.8
HVAC6	-	-43.7
HVAC7	-	-42.8
HVAC8	-	-51.0
HVAC9	-	-50.4
HVAC10	-	-49.9

Contribution levels of the receivers

Source name	Traffic lane	Level Day dB(A)
HVAC11	-	-49.4
HVAC12	-	-48.9
HVAC13	-	-48.0
HVAC14	-	-47.3
HVAC15	-	-41.6
HVAC16	-	-45.7
HVAC17	-	-46.7
HVAC18	-	-47.6
HVAC19	-	-52.3
HVAC20	-	-52.7
HVAC21	-	-53.8
Loading Area	-	20.9
Parking 1	-	10.3
Parking 2	-	-2.1
Parking 3	-	4.8
2 1.OG		21.0
HVAC1	-	-44.7
HVAC2	-	-44.6
HVAC3	-	-43.7
HVAC4	-	-43.1
HVAC5	-	-42.5
HVAC6	-	-41.3
HVAC7	-	-40.4
HVAC8	-	-48.3
HVAC9	-	-47.8
HVAC10	-	-47.3
HVAC11	-	-46.8
HVAC12	-	-46.5
HVAC13	-	-45.7
HVAC14	-	-45.0
HVAC15	-	-39.3
HVAC16	-	-43.4
HVAC17	-	-44.3
HVAC18	-	-45.2
HVAC19	-	-49.6
HVAC20	-	-50.0
HVAC21	-	-51.0
Loading Area	-	20.5
Parking 1	-	10.5
Parking 2	-	-1.6
Parking 3	-	4.9
3 EG		24.5
HVAC1	-	-55.8
HVAC2	-	-54.7
HVAC3	-	-53.5
HVAC4	-	-52.0
HVAC5	-	-50.4
HVAC6	-	-48.3
HVAC7	-	-45.9
HVAC8	-	-55.8
HVAC9	-	-54.7
HVAC10	-	-53.4
HVAC11	-	-51.9
HVAC12	-	-50.2
HVAC13	-	-48.1
HVAC14	-	-45.5
HVAC15	-	-42.4
HVAC16	-	-41.9
HVAC17	-	-42.5
HVAC18	-	-43.9
HVAC19	-	-54.8
HVAC20	-	-56.0
HVAC21	-	-55.6

Contribution levels of the receivers

Source name	Traffic lane	Level Day dB(A)
Loading Area	-	23.9
Parking 1	-	2.6
Parking 2	-	0.2
Parking 3	-	15.4
3 1.OG		24.5
HVAC1	-	-54.3
HVAC2	-	-53.3
HVAC3	-	-52.0
HVAC4	-	-50.6
HVAC5	-	-48.9
HVAC6	-	-46.9
HVAC7	-	-44.3
HVAC8	-	-54.3
HVAC9	-	-53.3
HVAC10	-	-52.0
HVAC11	-	-50.5
HVAC12	-	-48.8
HVAC13	-	-46.6
HVAC14	-	-44.0
HVAC15	-	-40.7
HVAC16	-	-40.2
HVAC17	-	-40.6
HVAC18	-	-41.8
HVAC19	-	-53.4
HVAC20	-	-54.4
HVAC21	-	-54.1
Loading Area	-	23.8
Parking 1	-	3.3
Parking 2	-	1.3
Parking 3	-	16.0
4 EG		41.8
HVAC1	-	-56.6
HVAC2	-	-55.6
HVAC3	-	-54.6
HVAC4	-	-53.5
HVAC5	-	-52.1
HVAC6	-	-50.7
HVAC7	-	-49.0
HVAC8	-	-56.2
HVAC9	-	-55.2
HVAC10	-	-54.0
HVAC11	-	-52.7
HVAC12	-	-51.3
HVAC13	-	-49.6
HVAC14	-	-47.6
HVAC15	-	-46.4
HVAC16	-	-45.0
HVAC17	-	-43.3
HVAC18	-	-40.8
HVAC19	-	-54.1
HVAC20	-	-54.8
HVAC21	-	-52.2
Loading Area	-	40.4
Parking 1	-	8.4
Parking 2	-	21.0
Parking 3	-	36.1
4 1.OG		42.2
HVAC1	-	-54.9
HVAC2	-	-53.9
HVAC3	-	-52.9
HVAC4	-	-51.7
HVAC5	-	-50.4
HVAC6	-	-48.7

Contribution levels of the receivers

Source name	Traffic lane	Level Day dB(A)
HVAC7	-	-46.8
HVAC8	-	-54.5
HVAC9	-	-53.6
HVAC10	-	-52.4
HVAC11	-	-51.1
HVAC12	-	-49.7
HVAC13	-	-47.9
HVAC14	-	-45.8
HVAC15	-	-44.0
HVAC16	-	-42.8
HVAC17	-	-41.3
HVAC18	-	-39.4
HVAC19	-	-52.0
HVAC20	-	-52.5
HVAC21	-	-49.6
Loading Area	-	40.1
Parking 1	-	8.5
Parking 2	-	21.4
Parking 3	-	37.9
5 EG		46.0
HVAC1	-	-52.6
HVAC2	-	-52.3
HVAC3	-	-52.0
HVAC4	-	-51.7
HVAC5	-	-51.3
HVAC6	-	-50.8
HVAC7	-	-50.3
HVAC8	-	-46.1
HVAC9	-	-45.7
HVAC10	-	-50.2
HVAC11	-	-49.7
HVAC12	-	-49.2
HVAC13	-	-45.2
HVAC14	-	-45.1
HVAC15	-	-45.9
HVAC16	-	-44.5
HVAC17	-	-42.7
HVAC18	-	-41.0
HVAC19	-	-43.9
HVAC20	-	-45.7
HVAC21	-	-44.9
Loading Area	-	45.8
Parking 1	-	13.1
Parking 2	-	22.5
Parking 3	-	33.5
5 1.OG		45.9
HVAC1	-	-49.8
HVAC2	-	-49.5
HVAC3	-	-49.3
HVAC4	-	-49.0
HVAC5	-	-48.6
HVAC6	-	-48.3
HVAC7	-	-47.8
HVAC8	-	-44.4
HVAC9	-	-43.9
HVAC10	-	-47.5
HVAC11	-	-47.1
HVAC12	-	-46.6
HVAC13	-	-43.2
HVAC14	-	-43.1
HVAC15	-	-43.5
HVAC16	-	-42.5
HVAC17	-	-40.9

Contribution levels of the receivers

Source name	Traffic lane	Level Day dB(A)
HVAC18	-	-38.8
HVAC19	-	-42.6
HVAC20	-	-44.0
HVAC21	-	-43.3
Loading Area	-	45.5
Parking 1	-	13.3
Parking 2	-	22.8
Parking 3	-	34.9
6 EG		55.3
HVAC1	-	-49.3
HVAC2	-	-46.5
HVAC3	-	-44.5
HVAC4	-	-42.8
HVAC5	-	-42.6
HVAC6	-	-46.2
HVAC7	-	-46.5
HVAC8	-	-48.3
HVAC9	-	-45.7
HVAC10	-	-42.6
HVAC11	-	-39.1
HVAC12	-	-40.4
HVAC13	-	-40.4
HVAC14	-	-42.9
HVAC15	-	-46.7
HVAC16	-	-44.3
HVAC17	-	-43.8
HVAC18	-	-42.3
HVAC19	-	-44.8
HVAC20	-	-45.7
HVAC21	-	-42.4
Loading Area	-	55.3
Parking 1	-	21.7
Parking 2	-	32.7
Parking 3	-	30.3
6 1.OG		55.4
HVAC1	-	-46.8
HVAC2	-	-44.0
HVAC3	-	-41.9
HVAC4	-	-40.2
HVAC5	-	-40.0
HVAC6	-	-43.7
HVAC7	-	-44.0
HVAC8	-	-45.9
HVAC9	-	-43.2
HVAC10	-	-40.3
HVAC11	-	-36.9
HVAC12	-	-38.1
HVAC13	-	-38.2
HVAC14	-	-40.7
HVAC15	-	-44.3
HVAC16	-	-42.0
HVAC17	-	-41.4
HVAC18	-	-40.0
HVAC19	-	-42.4
HVAC20	-	-43.2
HVAC21	-	-40.1
Loading Area	-	55.4
Parking 1	-	22.1
Parking 2	-	33.9
Parking 3	-	31.3

APPENDIX G

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project
Date: 12/29/21
Source: Vibratory Roller
Scenario: Unmitigated
Location: Single-family residential to east
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 =	28.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.177	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project Date: 12/29/21
Source: Large Bulldozer
Scenario: Unmitigated
Location: Single-family residential to east
Address:
PPV = PPVref(25/D)^n (in/sec)

INPUT

INPUT SECTION IN GREEN

Equipment = Type	2	Large Bulldozer
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.
D =	28.00	Distance from Equipment to Receiver (ft)
n =	1.50	Vibration attenuation rate through the ground

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.075	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19465 2889 Locust Avenue Warehouse Project	Date:	12/29/21
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Industrial to south		
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 =	204.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.009	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project Date: 12/29/21
Source: Large Bulldozer
Scenario: Unmitigated
Location: Industrial to south
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 =	204.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.004	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project Date: 12/29/21
Source: Vibratory Roller
Scenario: Unmitigated
Location: Industrial to north
Address:
PPV = PPVref(25/D)^n (in/sec)

INPUT

INPUT SECTION IN GREEN

Equipment = Type	1	Vibratory Roller
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.
D =	3.00	Distance from Equipment to Receiver (ft)
n =	1.50	Vibration attenuation rate through the ground

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	5.052	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project Date: 12/29/21
Source: Large Bulldozer
Scenario: Unmitigated
Location: Industrial to north
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 =	3.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	2.141	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19465 2889 Locust Avenue Warehouse Project	Date:	12/29/21
Source:	Vibratory Roller		
Scenario:	Mitigated		
Location:	Industrial to north		
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 =	15.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.452	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19465 2889 Locust Avenue Warehouse Project	Date:	12/29/21
Source:	Large Bulldozer		
Scenario:	Mitigated		
Location:	Industrial to north		
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 =	8.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.492	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project   Date: 12/29/21
Source: Vibratory Roller
Scenario: Annoyance
Location: Residential to east
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 =	41.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.100	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project: 19465 2889 Locust Avenue Warehouse Project   Date: 12/29/21
Source: Large Bulldozer
Scenario: Annoyance
Location: Residential to east
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 =	23.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.101	IN/SEC	OUTPUT IN BLUE

GANDDINI GROUP INC.

714.795.3100 | ganddini.com