

# **Noise and Vibration Impact Assessment for the Larch Avenue Industrial Project**

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**City of Rialto, California**

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**LIST OF ACRONYMS AND ABBREVIATIONS**

<b>Term</b>	<b>Definition</b>
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CBC	California Building Code
CEQA	California Environmental Quality Act
City	City of Rialto
CN	Volume Adjustment
CNEL	Community Noise Equivalent Level
dB	decibels
dBA	A-weighted decibels
DNL	Day-Night Average Noise Level
ECORP	ECORP Consulting, Inc.
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
Hz	Hertz
L <sub>dn</sub>	Day-Night Average Noise Level
L <sub>eq</sub>	Equivalent Noise Level
L <sub>max</sub>	the maximum A-weighted noise level during the measurement period
L <sub>min</sub>	the minimum A-weighted noise level during the measurement period
N/A	Not Applicable
N <sub>A</sub>	average number of automobiles per hour
N <sub>B</sub>	average number of buses per hour
PPV	Peak Particle Velocity
Project	Larch Avenue Industrial Project
RMS	Root Mean Square
SEL	Sound Exposure Level
SELref	Reference Sound Exposure Level
sf	square feet
STC	Sound Transmission Class
VdB	Vibration Velocity Level

## **1.0 INTRODUCTION**

This report documents the results of a Noise and Vibration Impact Assessment completed for the Larch Avenue Industrial Project (Project), which would include construction and operation of a warehouse building on a 20,000 square-foot lot. The building will be comprised of 6,522 square feet of warehouse facilities and 500 square feet of office space, with a parking lot and heavy-duty truck loading docks inside of the main warehouse in the City of Rialto (City) in San Bernardino County (County). This report was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the City of Rialto General Plan and Municipal Code. The purpose of this report is to estimate Project-generated noise and to determine the level of impact the Project would have on the environment.

### **1.1 Location and Setting**

The Proposed Project is located on an approximately 0.46-acre (20,000 square feet [sf]) vacant parcel in the City of Rialto in San Bernardino County, California (Figure 1-1). The Project is located on the western side of S. Larch Avenue, approximately 200 feet south of the W. Rialto Avenue and S. Larch Ave intersection. The Proposed Project is surrounded by industrial uses (i.e., building supply stores and warehouses to the north, east, south, and west). Rialto Middle School and Charlotte N. Werner Elementary School are both located north of the Project Site, across W. Rialto Avenue. The Project Area is composed of one parcel (Assessor's Parcel Number [APN] 0128-151-17-0000) classified as Light Industrial per the City of Rialto's General Plan, Exhibit 2.2 (City of Rialto 2010).

### **1.2 Project Description**

The Project Applicant proposes to construct a 20,000 square-foot lot. The building will be comprised of 6,522 square feet of warehouse facilities and 500 square feet of office space, with a parking lot and heavy-duty truck loading docks inside of the main warehouse. Construction activities would involve site preparation, grading to achieve the finished design elevations, building construction, paving, and painting. Operations of the warehouse would include heavy-duty truck loading and unloading, as well as office workers commuting daily.



Location: W:\Projects\2025-057 Larch Avenue Industrial - Rialto\Emissions\Figure 1. Project Location.aprx - Portrait Template (agme - 6/5/2025)

**Figure 1-1. Project Location**

2025-057 Larch Avenue Industrial Project

## 2.0 ENVIRONMENTAL NOISE AND GROUNDBORNE VIBRATION ANALYSIS

### 2.1 Fundamentals of Noise and Environmental Sound

#### 2.1.1 Addition of Decibels

The decibel (dB) scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be three dB higher than one source under the same conditions. For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by three dB). Under the decibel scale, three sources of equal loudness together would produce an increase of five dB.

Typical noise levels associated with common noise sources are depicted in Figure 2-1.

#### 2.1.2 Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the Equivalent Noise Level ( $L_{eq}$ ) as well as the Day-Night Average Noise Level ( $L_{dn}$ ) and Community Noise Equivalent Level (CNEL). The  $L_{eq}$  is a measure of ambient noise, while the  $L_{dn}$  and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- $L_{eq}$  is the average acoustic energy content of noise for a stated period of time. Thus, the  $L_{eq}$  of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- $L_{dn}$  is a 24-hour average  $L_{eq}$  with a 10-dBA "weighting" added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour  $L_{eq}$  would result in a measurement of 66.4 dBA  $L_{dn}$ .
- CNEL is a 24-hour average  $L_{eq}$  with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
<u>Jet Fly-over at 300m (1000 ft)</u>	<b>110</b>	<u>Rock Band</u>
<u>Gas Lawn Mower at 1 m (3 ft)</u>	<b>100</b>	
<u>Diesel Truck at 15 m (50 ft), at 80 km (50 mph)</u>	<b>90</b>	<u>Food Blender at 1 m (3 ft)</u>
<u>Noisy Urban Area, Daytime</u>	<b>80</b>	<u>Garbage Disposal at 1 m (3 ft)</u>
<u>Gas Lawn Mower, 30 m (100 ft)</u>	<b>70</b>	<u>Vacuum Cleaner at 3 m (10 ft)</u>
<u>Commercial Area</u>		<u>Normal Speech at 1 m (3 ft)</u>
<u>Heavy Traffic at 90 m (300 ft)</u>	<b>60</b>	<u>Large Business Office</u>
<u>Quiet Urban Daytime</u>	<b>50</b>	<u>Dishwasher Next Room</u>
<u>Quiet Urban Nighttime</u>	<b>40</b>	<u>Theater, Large Conference Room (Background)</u>
<u>Quiet Suburban Nighttime</u>		<u>Library</u>
<u>Quiet Rural Nighttime</u>	<b>30</b>	<u>Bedroom at Night,</u>
	<b>20</b>	<u>Concert Hall (Background)</u>
	<b>10</b>	<u>Broadcast/Recording Studio</u>
<u>Lowest Threshold of Human Hearing</u>	<b>0</b>	<u>Lowest Threshold of Human Hearing</u>

Source: California Department of Transportation (Caltrans) 2020a



**Figure 2-1. Common Noise Levels**

Table 2-1 provides a list of other common acoustical descriptors.

<b>Table 2-1. Common Acoustical Descriptors</b>	
<b>Descriptor</b>	<b>Definition</b>
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels is measured on a sound level meter using the A-weighting filter network. 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 and correlates well with subjective reactions to noise.
Equivalent Noise Level ( $L_{eq}$ )	The average acoustic energy content of noise for a stated period of time. Thus, the $L_{eq}$ of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
$L_{max}$ , $L_{min}$	The maximum and minimum A-weighted noise level during the measurement period.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Average Noise Level ( $L_{dn}$ or DNL)	A 24-hour average $L_{eq}$ with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour $L_{eq}$ would result in a measurement of 66.4 dBA $L_{dn}$ .
Community Noise Equivalent Level (CNEL)	A 24-hour average $L_{eq}$ with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour $L_{eq}$ would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

The A-weighted decibel sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the

variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about  $\pm 1$  dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within about  $\pm 1$  to 2 dBA.

### **2.1.3 Sound Propagation and Attenuation**

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB (dBA) for each doubling of distance from a stationary or point source (Federal Highway Administration [FHWA] 2017a). Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dBA for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (FHWA 2017a). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. For line sources, an overall attenuation rate of three dB per doubling of distance is assumed (FHWA 2017a).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about five dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 5 to 10 dBA (FHWA 2017b). According to the FHWA (2017b), noise barriers can reduce noise levels by 15 dBA in certain instances, yet this level of noise reduction is very difficult to achieve. To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend lengthwise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (California Department of Transportation [Caltrans] 2002). The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. 2006). Generally, in exterior noise environments ranging from 60 dBA CNEL to 65 dBA CNEL, interior noise levels can typically be maintained below 45 dBA, a typical residential interior noise standard, with the incorporation of an adequate forced air mechanical ventilation system in each residential building, and standard thermal-pane residential windows/doors with

a minimum rating of Sound Transmission Class (STC) 28. (STC is an integer rating of how well a building partition attenuates airborne sound. In the U.S., it is widely used to rate interior partitions, ceilings, floors, doors, windows, and exterior wall configurations). In exterior noise environments of 65 dBA CNEL or greater, a combination of forced-air mechanical ventilation and sound-rated construction methods is often required to meet the interior noise level limit. Attaining the necessary noise reduction from exterior to interior spaces is readily achievable in noise environments experiencing less than 75 dBA CNEL with proper wall construction techniques following California Building Code methods, the selections of proper windows and doors, and the incorporation of forced-air mechanical ventilation systems.

#### **2.1.4 Human Response to Noise**

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL or  $L_{dn}$  is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in A-weighted noise levels (dBA), the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5 dBA is required before any noticeable change in community response would be expected. An increase of 5 dBA is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

## **2.1.5 Effects of Noise on People**

### **2.1.5.1 Hearing Loss**

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

### **2.1.5.2 Annoyance**

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes of annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The  $L_{dn}$  as a measure of noise has been found to provide a valid correlation between noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources.

## **2.2 Fundamentals of Environmental Groundborne Vibration**

### **2.2.1 Vibration Sources and Characteristics**

Sources of earthborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or manmade causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions).

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the Peak Particle Velocity (PPV); another is the Root Mean Square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

PPV is generally accepted as the most appropriate descriptor for evaluating the potential for building damage. For human response, however, an average vibration amplitude is more appropriate because it takes time for the human body to respond to the excitation (the human body responds to an average vibration amplitude, not a peak amplitude). Because the average particle velocity over time is zero, the RMS amplitude is typically used to assess human response. The RMS value is the average of the amplitude squared over time, typically a 1- sec. period.

Table 2-2 displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high-noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. For instance, heavy-duty trucks generally generate groundborne vibration velocity levels of 0.006 PPV at 50 feet under typical circumstances, which as identified in Table 2-2 is considered very unlikely to cause damage to buildings of any type. Common sources for groundborne vibration are planes, trains, and construction activities such as earthmoving which requires the use of heavy-duty earth moving equipment.

<b>Table 2-2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels</b>			
<b>Peak Particle Velocity (inches/second)</b>	<b>Approximate Vibration Velocity Level (VdB)</b>	<b>Human Reaction</b>	<b>Effect on Buildings</b>
0.006–0.019	64–74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Threshold at which there is a risk of architectural damage to extremely fragile historic buildings, ruins, ancient monuments
0.10	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Threshold at which there is a risk of architectural damage to fragile buildings. Virtually no risk of architectural damage to normal buildings
0.25	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to historic and some old buildings
0.30	96	Vibrations may begin to feel severe to people in buildings	Threshold at which there is a risk of architectural damage to older residential structures

<b>Table 2-2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels</b>			
<b>Peak Particle Velocity (inches/second)</b>	<b>Approximate Vibration Velocity Level (VdB)</b>	<b>Human Reaction</b>	<b>Effect on Buildings</b>
0.50	103	Vibrations considered unpleasant by people subjected to continuous vibrations	Threshold at which there is a risk of architectural damage to new residential structures and Modern industrial/commercial buildings

Source: California Department of Transportation 2020b

## **3.0 EXISTING ENVIRONMENTAL NOISE SETTING**

### **3.1 Noise Sensitive Land Uses**

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in adverse risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as historic sites, hotels, schools, health care centers, libraries, churches, senior homes, recreational areas, and cemeteries are also commonly considered sensitive to increases in exterior noise levels. The Proposed Project is surrounded by industrial uses (i.e., building supply stores and warehouses to the north, east, south, and west) and the immediate Project Area is devoid of sensitive receptors. The nearest sensitive receptors to the Project Site include two schools located north of the Project Site across W. Rialto Avenue, specifically Rialto Middle School and Charlotte N. Werner Elementary School. Charlotte N. Werner Elementary School is nearer to the Proposed Project, approximately 425 feet distant.

#### **3.1.1 Existing Ambient Noise Environment**

The most common and significant source of noise in the City of Rialto is mobile noise generated by traffic on the City's streets and freeways (City of Rialto 2010). Secondary sources of noise consist of arterial roadways and intersections, along with railway activity in the City. Other sources of noise are the development and use of the various land uses (i.e., residential, commercial and industrial) that generate stationary-source noise from construction or operational activities. The Project Site is bound by S. Larch Avenue to the east and industrial uses on all other sides, which are the predominant sources of noise influencing the ambient noise environment, along with W. Rialto Avenue to the north. The Project Site is southwest of the intersection of W. Rialto Avenue and S. Larch Avenue. As shown in Table 3-1 below, the ambient recorded noise levels range from 56.7 dBA to 61.2 dBA  $L_{eq}$  in the vicinity of the Project Site.

#### **3.1.2 Existing Ambient Noise Measurements**

In order to quantify existing ambient noise levels on the Project Site, ECORP Consulting, Inc. (ECORP) conducted four short-term noise measurements (15-minutes) on June 4, 2025, in the area surrounding the Project Site. The 15-minute measurements were taken between 2:54 p.m. and 4:18 p.m. These short-term noise measurements are representative of typical existing noise exposure within and immediately adjacent to the Project Site during the daytime (see Appendix A for a visual representation of the measurement locations). The average noise levels at each location are listed in Table 3-1.

<b>Table 3-1. Existing Ambient Noise Measurements</b>					
<b>Location Number</b>	<b>Location</b>	<b>L<sub>eq</sub> dBA</b>	<b>L<sub>min</sub> dBA</b>	<b>L<sub>max</sub> dBA</b>	<b>Time</b>
<b>Short-Term Measurements</b>					
ST-1	Rialto Middle School	59.1	47.8	72.8	4:03 p.m.–4:18 p.m.
ST-2	Charlotte N. Werner Elementary School	61.0	51.7	77.3	3:41 p.m.–3:56 p.m.
ST-3	Bob Murphy Community School	61.2	46.0	77.9	3:17 p.m.–3:32 p.m.
ST-4	Southern end of S Larch Ave	56.7	47.4	72.3	2:54 p.m.–3:09 p.m.

Notes: dBA = A-weighted decibels; N/A = Not Applicable  
 L<sub>eq</sub> is the average acoustic energy content of noise for a stated period of time. Thus, the L<sub>eq</sub> of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. L<sub>min</sub> is the minimum noise level during the measurement period and L<sub>max</sub> is the maximum noise level during the measurement period.

Source: Measurements were taken by ECORP Consulting, Inc. with a Larson Davis LxT SE sound level meter, which satisfies the American National Standards Institute for general environmental noise measurement instrumentation. Prior to the measurements, the LxT SE sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. See Appendix A for noise measurement outputs.

As shown in Table 3-1, the ambient recorded noise levels range from 56.7 dBA to 61.2 dBA L<sub>eq</sub> over the course of the four short-term noise measurements taken in the Project vicinity in June of 2025. The most common noise in the Project vicinity is produced by automotive vehicles (e.g., cars, trucks, buses, motorcycles) on W. Rialto Ave and noise generated by industrial uses in the area.

## **4.0 REGULATORY FRAMEWORK**

### **4.1 Federal**

#### **4.1.1 Federal Transit Administration**

The Federal Transit Administration (FTA) provides a guidance manual that contains procedures for predicting and assessing noise and vibration impacts of proposed transit projects. This manual acknowledges that noise and vibration are among the primary concerns of the surrounding communities. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the surrounding land use. The FTA provides guidelines that are typically considered applicable criteria for construction noise assessments in a California Environmental Quality Act (CEQA) analysis. The FTA considers a daytime exterior construction noise level of 80 dBA  $L_{eq}$  and a nighttime exterior construction noise level of 70 dBA  $L_{eq}$  as a reasonable threshold for noise sensitive residential land uses.

#### **4.1.2 Federal Interagency Committee on Noise**

The Federal Interagency Committee on Noise (FICON) thresholds of significance assist in the evaluation of increased traffic noise. The 2000 FICON findings provide guidance as to the significance of changes in ambient noise levels due to transportation noise sources. FICON recommendations are based on studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. FICON's measure of substantial increase for transportation noise exposure is as follows:

- if the existing ambient noise levels at existing and future noise-sensitive land uses (e.g., residential, etc.) are less than 60 dBA CNEL and the project creates a readily perceptible 5 dBA CNEL or greater noise level increase; or
- if the existing noise levels range from 60 to 65 dBA CNEL and the project creates a barely perceptible 3 dBA CNEL or greater noise level increase; or
- if the existing noise levels already exceed 65 dBA CNEL and the project creates a community noise level increase of greater than 1.5 dBA CNEL.

### **4.2 State**

#### **4.2.1 California Building Code**

The State of California provides a minimum standard for building design through Title 24, Part 2, of the California Code of Regulations, commonly referred to as the California Building Code (CBC). The CBC is updated every three years. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions.

The State of California's noise insulation standards for non-residential uses are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 11, California Green Building Standards Code (CALGreen). CALGreen noise standards are applied to new or renovation construction

projects in California to control interior noise levels resulting from exterior noise sources. Future individual projects may use either the prescriptive method (Section 5.507.4.1) or the performance method (5.507.4.2) to show compliance. Under the prescriptive method, a project must demonstrate transmission loss ratings for the wall and roof-ceiling assemblies and exterior windows when located within a noise environment of 65 dBA CNEL or higher. Under the performance method, a project must demonstrate that interior noise levels do not exceed 50 dBA  $L_{eq(1hr)}$ .

#### **4.2.2 California Department of Transportation**

In 2020, Caltrans published the Transportation and Construction Vibration Manual (2020b). The manual provides general guidance on vibration issues associated with the construction and operation of projects concerning human perception and structural damage. Table 2-2 above presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

### **4.3 Local**

#### **4.3.1 City of Rialto General Plan Safety and Noise Chapter**

The Project Site is located within the City of Rialto and therefore would potentially affect receptors within the City from onsite and offsite sources. The City's Safety and Noise Chapter of the General Plan is a tool for planners to use in achieving and maintaining land uses that are compatible with existing and future environmental noise levels. It is the intent of the City to regulate and control unnecessary, excessive, and annoying sounds and vibrations emanating from land uses and activities within the City. The Safety and Noise Chapter contains policies that are intended to protect noise sensitive uses from excessive noise levels. The following policies are applicable to the Proposed Project:

- *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 Exhibit 5-5 (of the General Plan Safety and Noise Chapter).

<b>Table 4-1. City of Rialto Noise Guidelines for Land Use Planning</b>							
<b>Land Use Categories</b>	<b>CNEL (dB)</b>						
	<b>&lt;55</b>	<b>60</b>	<b>65</b>	<b>70</b>	<b>75</b>	<b>80&gt;</b>	
R2, R6, R 12	A	A	B	C	D	D	D
R21, R45	A	A	B	B	C	D	D
Downtown Mixed Use	A	A	B	B	B	C	D
Community Commercial, General Commercial, Business Park, Office	A	A	A	B	B	C	D
Light Industrial	A	A	A	A	B	C	D
General Industrial	A	A	A	A	A	B	B
Public Facility, School Facility	A	A	B	C	D	D	D
Open Space - Recreation & Resources	A	A	A	A	A	C	D

Notes: CNEL = Community Noise Equivalent Level; dB = decibels  
*Zone A Normally Acceptable:* Specified land use is satisfactory, assuming buildings are of conventional construction  
*Zone B Conditionally Acceptable:* New development should be undertaken only after detailed analysis of noise reduction requirements are made.  
*Zone C Normally Unacceptable:* New development should be generally discouraged, if not, a detailed analysis of noise reduction requirements must be made.  
*Zone D Clearly Unacceptable:* New development should generally not be undertaken.

Source: City of Rialto 2010

### 4.3.2 City of Rialto Municipal Code

The City of Rialto specifies quantitative noise thresholds in its Municipal Code, prohibiting “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 this section” as outlined in Section 9.50.070 of Chapter 9.50. Furthermore, Section 9.50.070(B) states that construction activities generating disturbing noise are permitted from 7:00 a.m. to 5:30 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays from October 1<sup>st</sup> through April 30<sup>th</sup>. From May 1<sup>st</sup> to September 30<sup>th</sup>, construction activities generating disturbing noise are permitted from 6:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays. These provisions underscore a qualitative, context-based approach to noise regulation that relies on the perceived disruption to community well-being.

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## **5.0 IMPACT ASSESSMENT**

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### **5.1 Thresholds of Significance**

The impact analysis provided below is based on the following California Environmental Quality Act Guidelines Appendix G thresholds of significance. The Project would result in a significant noise-related impact if it would result in the:

- 1) 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.
- 2) Generation of excessive groundborne vibration or groundborne noise levels.
- 3) 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 project area to excessive noise levels.

For the purposes of this analysis, Project construction noise is compared to the permitted hours of construction established by the City. Additionally, construction noise is quantified and evaluated against the FTA standard of 80 dBA. Construction vibration generated by the Project is compared to the Caltrans (2020b) recommended standard of 0.3 inches per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. The increase in transportation-related noise is analyzed according to the Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013), which states that a doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). Similarly, Project increases in onsite (non-transportation) noise are compared to the just-perceivable 3 dB increase threshold.

### **5.2 Methodology**

This analysis of the existing and future noise environments is based on empirical observations and noise prediction modeling. Predicted construction noise levels were calculated utilizing the FHWA's Roadway Construction Noise Model (FHWA 2006). Groundborne vibration levels associated with construction-related activities for the Project have been evaluated utilizing typical groundborne vibration levels associated with construction equipment. Potential groundborne vibration impacts related to structural damage were evaluated, taking into account the distance from construction activities to nearby structures and typically applied criteria for structural damage.

Onsite stationary source noise levels associated with the Project have been calculated with the SoundPLAN 3D noise model, which predicts noise propagation from a noise source based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings and barriers. SoundPLAN allows computer simulations of noise situations, and creates noise contour maps using reference noise levels, topography, point and area noise sources, mobile noise sources, and intervening structures. Modeled noise levels are based on reference noise levels

found in the San Jose Loading Dock Noise Study (Charles M. Salter Associates 2014). Noise levels are referenced from this study and then used to estimate noise levels expected with the Project's non-transportation noise sources, specifically the onsite maneuvering of heavy-duty trucks and the use of their back-up alarms. The study provides a loudness level of 79.0 dB at a distance of 30 feet, which is equivalent to a sound power of 106.3 dB. The reference noise levels are used to represent a worst-case noise environment as noise levels from area sources can vary throughout the day. Onsite stationary source noise levels associated with parking at the eastern front entrance of the Project have been calculated using the FTA's reference Sound Exposure Level (SEL) for park & ride lots at 50 feet (FTA 2018). Transportation-source noise levels associated with the Project were analyzed with trip generation rates provided by K2 Traffic Engineering, Inc. (2021).

## **5.3 Impact Analysis**

### **5.3.1 Would the Project Result in Short-Term Construction-Generated Noise in Excess of City Standards?**

#### **5.3.1.1 Onsite Construction Noise**

Construction noise associated with the Proposed Project would be temporary and would vary depending on the specific nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., site preparation, excavation, paving). Noise generated by construction equipment, including earth movers, pile drivers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive land uses in the vicinity of the construction site.

The City does not promulgate a numeric threshold pertaining to the noise associated with construction. This is due to the fact that construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. However, as previously described, the City only allows construction activities generating disturbing noise from 7:00 a.m. to 5:30 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays from October 1<sup>st</sup> through April 30<sup>th</sup>. From May 1<sup>st</sup> to September 30<sup>th</sup>, construction activities generating disturbing noise are only permitted from 6:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays (Municipal Code Chapter 9.50). In order to remain compliant with the City's regulations, the Proposed Project would be required to follow these construction guidelines.

A previous Fifth District of Appeal decision held that the use of an absolute noise threshold for evaluating all ambient noise impacts violated CEQA because it did not provide a "complete picture" of the noise impacts that may result from implementation of the ordinance. As such, the Proposed Project's construction noise is estimated and then added to the highest recorded ambient noise level on the Project Site as determined by the baseline noise survey conducted by ECORP Consulting, Inc. (see Table 3-

1). As previously described, the dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. For instance, when combining two separate sources where one of the noise sources is 10 dB or more greater than the other noise source, the noise contribution of the quieter source is virtually completely obscured by the louder source.

The nearest existing noise-sensitive land uses to the Project Site are two schools located north of the Project Site across W. Rialto Avenue. To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptors and in order to evaluate the potential adverse effects from construction noise, the construction equipment noise levels were calculated using the Federal Highway Administration's Roadway Noise Construction Model and compared against the construction-related noise level threshold established in the FTA's Transit Noise and Vibration Impact Assessment Manual. The FTA identifies a noise level threshold based on the loudness. The FTA construction-related noise level threshold is set at 80 dBA. For the purposes of this analysis, this threshold of 80 dBA  $L_{eq}$  is used as an acceptable threshold for construction noise at the nearby sensitive receptors.

It is acknowledged that the majority of construction equipment is not situated at any one location during construction activities but rather spread throughout the Project Site and at various distances from sensitive receptors. Therefore, this analysis employs FTA guidance for calculating construction noise, which recommends measuring construction noise produced by all construction equipment simultaneously from the center of the Project Site (FTA 2018), which in this case is approximately 500 feet from the schools located north of the Project Site across W. Rialto Avenue. The anticipated short-term construction noise levels generated for the necessary equipment for each phase of construction are presented in Table 5-1.

<b>Table 5-1. Construction Average (dBA) Noise Levels at Nearest Receptors</b>					
<b>Construction Phase</b>	<b>Ambient Noise Level* (dBA L<sub>eq</sub>)</b>	<b>Exterior Construction Noise Level @ Closest Noise Sensitive Receptor (dBA L<sub>eq</sub>)</b>	<b>Existing Ambient Noise + Exterior Construction Noise Levels (dBA L<sub>eq</sub>)</b>	<b>Construction Noise Standard (dBA L<sub>eq</sub>)</b>	<b>Exceeds Standards?</b>
Demolition	61.0	67.9	68.7	80	No
Site Preparation		65.0	66.5	80	No
Grading		66.0	67.2	80	No
Building Construction, Paving, Painting		69.0	69.6	80	No

Notes: dBA = A-weighted decibels; FHWA = Federal Highway Administration; FTA = Federal Transit Administration

\*Ambient noise levels of the Project Site are estimated using the highest recorded L<sub>eq</sub> measurement that is also at the closest sensitive receptor as identified in Table 3-1. As shown in Table 3-1, ST-2 is the offsite measurement location at a sensitive receptor with the highest L<sub>eq</sub>.

L<sub>eq</sub> is the equivalent energy noise level; it is the average acoustic energy content of noise for a stated period of time. Thus, the L<sub>eq</sub> of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

Construction equipment used during construction derived from the California Emissions Estimator Model (CalEEMod). CalEEMod is designed to calculate air pollutant emissions from construction activity but contains default construction equipment and usage parameters for typical construction projects based on several construction surveys conducted in order to identify such parameters. Consistent with FTA recommendations for calculating construction noise, construction noise was measured from the center of the Project Site (FTA 2018), which is 500 feet from the nearest sensitive receptor.

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Appendix B for Model Data Outputs.

As shown in Table 5-1, the Project’s contribution of construction noise combined with the ambient noise environment would not exceed the 80 dBA FTA construction noise threshold during any phase of construction at the nearby noise-sensitive receptors. It is noted that construction noise was modeled on a worst-case basis and is considered in addition to ambient noise levels currently experienced on the Project Site. It is very unlikely that all pieces of construction equipment would be operating at the same time for the various phases of Project construction.

**5.3.1.2 Offsite Construction Worker Trips**

Project construction would result in additional traffic on adjacent roadways over the period that construction occurs. According to the California Emissions Estimator Model, which is used to predict the number of construction-related automotive trips, the maximum number of Project construction trips traveling to and from the Project Site during a single construction phase would not be expected to exceed 23 daily trips in total (22 construction worker trips and 1 vendor trip). According to Caltrans Technical

Noise Supplement to the Traffic Noise Analysis Protocol (2013), a doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). The Project Site would be accessible on S. Larch Avenue via W. Rialto Avenue during construction. According to the City's General Plan, W. Rialto Avenue is considered a major arterial street. Major arterial streets are generally the largest of the local surface street roadways, linking freeways with local streets to accommodate larger volumes of through traffic moving at higher speeds than local streets. These facilities carry high traffic volumes and are primary thoroughfares that connect Rialto with adjacent cities and the regional highway system. Therefore, the Project's construction trips would not result in a doubling of traffic on the local transportation network, as W. Rialto Avenue accommodates more than 23 daily trips. Therefore, its contribution to existing traffic noise would not be perceptible. Additionally, it is noted that construction is temporary, and construction-related trips would cease upon completion of construction.

### **5.3.2 Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of City Standards during Operations?**

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise-sensitive and may warrant unique measures for protection from intruding noise. The Proposed Project is surrounded by industrial uses (i.e., building supply stores and warehouses to the north, east, south, and west) and the immediate Project Area is devoid of sensitive receptors. The nearest sensitive receptors to the Project Site include two schools located north of the Project Site across W. Rialto Avenue, specifically Rialto Middle School and Charlotte N. Werner Elementary School. Charlotte N. Werner Elementary School is nearer to the Proposed Project, at approximately 425 feet distant.

#### **5.3.2.1 Operational Offsite Traffic Noise**

The Proposed Project's contribution to traffic noise levels throughout the Project vicinity have been modeled based on the traffic predicted to be generated by the Project as provided by K2 Traffic Engineering, Inc. (2021). According to the Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013), a doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). According to K2 Traffic Engineering, Inc., the Project is expected to generate 40 trips daily. The Project Site would be accessible on S. Larch Avenue via W. Rialto Avenue during construction. According to the City's General Plan, W. Rialto Avenue is considered a major arterial street. Major arterial streets are generally the largest of the local surface street roadways, linking freeways with local streets to accommodate larger volumes of through traffic moving at higher speeds than local streets. These facilities carry high traffic volumes and are primary thoroughfares that connect Rialto with adjacent cities and the regional highway system. The Project's operational trips would not result in a doubling of traffic on the local transportation network, as W. Rialto Avenue accommodates more than 40 daily trips. Therefore, its contribution to existing traffic noise would not be perceptible and would not influence or otherwise contribute to the existing ambient noise environment.

**5.3.2.2 Operational Onsite Noise**

The Project is proposing construction and operation of a 6,522 square-foot warehouse, a 500 square-foot office and associated parking. The Project would contain onsite noise sources, primarily noise generated by parking lot activity as well as heavy-duty truck loading and unloading.

Parking lot activity noise for the 9 parking spots outside of the lobby was calculated using the FTA’s reference SEL for park & ride lots at 50 feet (FTA 2018). SEL is a measure of energy that considers both received levels of noise and the duration of noise exposure. This reference level is converted to a  $L_{eq}$  using the conversion formula outlined in Table 5-2, which details the conversion of SEL to  $L_{eq}$  for parking lot noise. The table illustrates how to calculate  $L_{eq}$  at a distance of 50 feet from the parking lot, based on vehicle noise and traffic volume.

<b>Table 5-2. Conversion of SEL to <math>L_{eq}</math> for Park &amp; Ride Lot Noise at 50 Feet</b>		
<b>Description</b>	<b>Input Values</b>	<b>Calculated Values</b>
Reference Sound Exposure Level (SELref)	101 dB	–
Average number of automobiles per hour ( $N_A$ )	9	–
Average number of buses per hour ( $N_B$ )	0	–
Volume Adjustment (CN)	$10\log_{10}((9/1000)+(0/24))$	-23.5 dBA $L_{eq}$
Calculated Parking Lot $L_{eq}$ at 50 feet	$101\text{ dB} + (-23.5\text{ dB}) - 35.6\text{ dB}$	41.9 dBA $L_{eq}$

Notes: dB = decibels;  $L_{eq}$  = Equivalent Noise Level  
 CN is calculated using the logarithmic scale to adjust the SEL based on traffic volume per hour. The final  $L_{eq}$  reflects the adjusted noise level considering both traffic volume and standard noise attenuation over distance.

Equation:  $L_{eq}$  at 50 = SELref + CN – 35.6

Source: Federal Transit Administration 2018

The Project Site Plan includes 9 total parking stalls. The nearest receptor is a school north of the 9 parking stalls, across W. Rialto Avenue. For this assessment, a worst-case scenario is assumed, with each stall experiencing one turnover per hour, resulting in a volume of 9 automobiles per hour. Based on the calculations in Table 5-2, noise levels would reach up to 41.9 dBA  $L_{eq}$  at a distance of 50 feet. The nearest noise-sensitive receptor is located approximately 425 feet from the parking lot boundary which results in an attenuated noise level of 23.3 dBA  $L_{eq}$ .

The nearest short-term noise measurement to the proposed unenclosed parking spaces, located at the nearest sensitive receptor, Charlotte N. Werner Elementary School (1050 W. Rialto Avenue), is ST-2, which measured a noise level of 61.0 dBA (see Table 3-1 above). The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. For instance, when combining two separate sources where one of the noise sources is 10 dB or more greater than then other noise source, the noise contribution of the quieter source is virtually completely obscured by the louder source. The attenuated noise from the proposed unenclosed parking stalls at the front entrance of the Proposed Project combined with the existing ambient daytime noise level would result in an

imperceptible increase in noise at the nearest sensitive receptor ( $23.3 \text{ dBA } L_{\text{eq}} + 61.0 \text{ dBA } L_{\text{eq}} = 61.0 \text{ dBA } L_{\text{eq}}$ ). Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference).

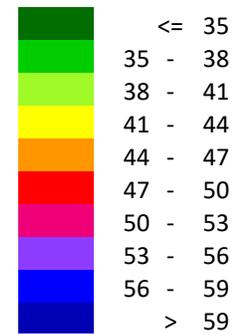
On-site noise associated with the heavy-duty truck activity, specifically the sound of truck maneuver and associated back-up alarm, has been calculated using the SoundPLAN 3D noise model and based on the noise source locations identified on the Project Site Plan. SoundPLAN 3D noise model generates computer simulations of noise situations based on the site's features. Further, SoundPLAN creates noise contour maps using reference noise levels, topography, point and area noise source, mobile noise sources, and intervening structures. Table 5-3 shows the predicted Project noise levels at two noise-sensitive locations in the Project vicinity during daytime activity, in combination with existing ambient noise, as predicted by SoundPLAN. Only daytime noise was analyzed, as the only sensitive receptors in the area are schools that operate exclusively in the daytime. Additionally, a noise contour graphic (Figure 5-1) has been prepared to provide a visual depiction of the predicted noise levels in the Project vicinity from Project operations.

**Figure 5-1:  
Modeled Operational  
Noise Levels**

Signs and symbols

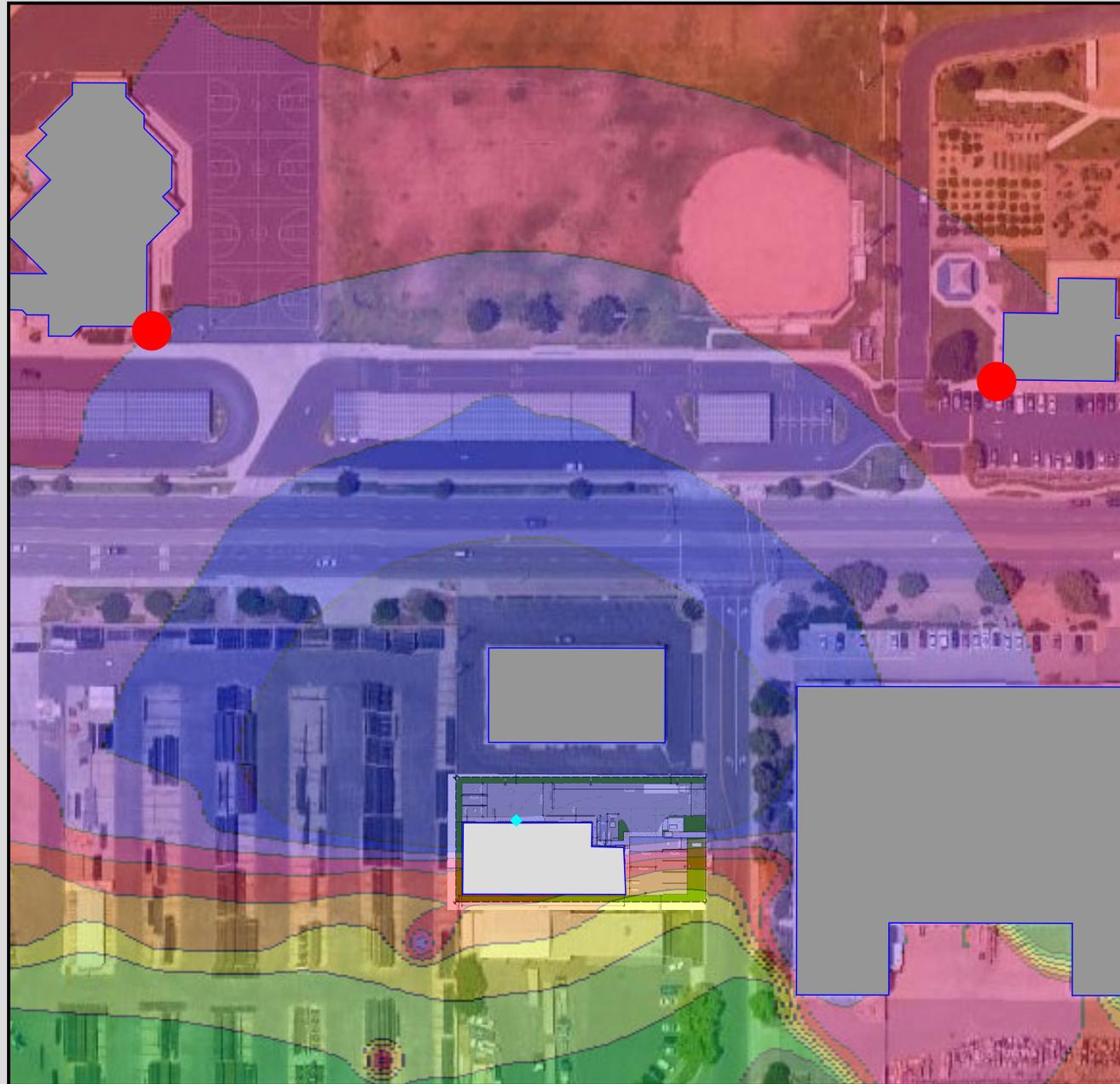
- Noise Receptors
- Proposed Building
- ◆ Back-Up Alarm
- Existing Buildings

**Noise Level  
Scale in dB(A)  
Leq**



Scale 1:129

Map Date: 6/9/2025  
2025-057: Larch Avenue Industrial Project



<b>Table 5-3. Non-Transportation Source Operational Noise Levels</b>					
<b>No.</b>	<b>Location</b>	<b>Noise Attributed to the Project Predicted by SoundPLAN (dBA L<sub>eq</sub>)</b>	<b>Existing Noise Level on Project Site (dBA L<sub>eq</sub>)*</b>	<b>Existing Ambient Noise + Exterior Operational Noise Levels (dBA L<sub>eq</sub>)</b>	<b>Change</b>
1	Rialto Middle School	53.0	61.0 (ST-2)	61.6	+0.6
2	Charlotte N. Werner Elementary School	51.2	61.0 (ST-2)	61.4	+0.4

Notes: dBA = A-weighted decibels; L<sub>eq</sub> = Equivalent Noise Level

\* Short-term measurements collected by ECORP Consulting, Inc. on June 4, 2025. The loudest short-term measurement recorded near a receptor is applied as the representative existing noise level at the sensitive receptors. Refer to Appendix C for onsite noise modeling assumptions and results.

The maximum change in noise due to Proposed Project onsite operational activities as experienced at the nearest noise sensitive receptors would be an increase of 0.6 dBA. Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference. Therefore, Proposed Project operations, as modeled by SoundPLAN, would not result in a perceptible increase for residents in the surrounding community.

### **5.3.3 Would the Project Expose Structures to Substantial Groundborne Vibration during Construction?**

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Project would be primarily associated with short-term construction-related activities. Construction on the Project Site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. Vibration decreases rapidly with distance, and it is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in Table 5-4.

<b>Table 5-4. Representative Vibration Source Levels for Construction Equipment</b>	
<b>Equipment Type</b>	<b>Peak Particle Velocity at 25 Feet (inches per second)</b>
Large Bulldozer	0.089
Pile Driver	0.170
Loaded Haul Trucks	0.076
Hoe Ram	0.089
Jackhammer	0.035
Small Bulldozer/Tractor	0.003
Vibratory Roller	0.210

Source: Federal Transit Administration 2018

The City does not regulate or have a numeric threshold associated with construction vibrations. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020b) recommended standard of 0.3 inches per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. The nearest structure of concern to the construction site is a school north of the Project Site approximately 425 feet distant.

Based on the representative vibration levels presented for various construction equipment types in Table 5-4 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the potential Project construction vibration levels. The FTA provides the following equation:

$$[PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}]$$

Construction vibration was measured from the edge of the Project Site. Table 5-5 presents the expected Project related vibration levels at a distance of 425 feet.

<b>Table 5-5 Construction Vibration Levels at 425 Feet</b>							
<b>Receiver PPV Levels (inches/second)<sup>1</sup></b>					<b>Peak Vibration</b>	<b>Threshold</b>	<b>Exceed Threshold?</b>
<b>Large Bulldozer, Caisson Drilling, &amp; Hoe Ram</b>	<b>Loaded Trucks</b>	<b>Jackhammer</b>	<b>Pile Driver</b>	<b>Vibratory Roller</b>			
0.001	0.001	0.001	0.002	0.003	0.003	0.3	No

Notes: PPV = Peak Particle Velocity

<sup>1</sup>Based on the Vibration Source Levels of Construction Equipment included on Table 5-2 (Federal Transit Administration 2018). Distance to the nearest structure of concern is approximately 425 feet measured from Project Site construction.

As shown in Table 5-5, vibration as a result of onsite construction activities on the Project Site would not exceed 0.3 PPV at the nearest structure of concern. Thus, onsite Project construction would not exceed the recommended threshold.

#### **5.3.4 Would the Project Expose Structures to Substantial Groundborne Vibration during Operations?**

Project operations would not include the use of any stationary equipment that would result in excessive vibration levels. While the Project could accommodate heavy-duty trucks, these vehicles would not generate groundborne vibrations that would result in excessive vibration levels. Therefore, the Project would result in negligible groundborne vibration impacts during operations.

#### **5.3.5 Would the Project Expose People Residing or Working on the Project Site to Excessive Airport Noise?**

The Project Site is located approximately 2.12 miles southeast of the Rialto Municipal Airport. The Project Site is located outside of the 60 dBA CNEL noise-level contour boundary of the airport (County of San Bernardino 1991). Therefore, the Proposed Project would not expose those visiting or working on the Project Site to excessive airport noise.

## 6.0 REFERENCES

- California Department of Transportation (Caltrans). 2020a. *IS/EA Annotated Outline*.
- \_\_\_\_\_. 2020b. *Transportation and Construction Vibration Guidance Manual*.
- \_\_\_\_\_. 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*.
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## **LIST OF APPENDICES**

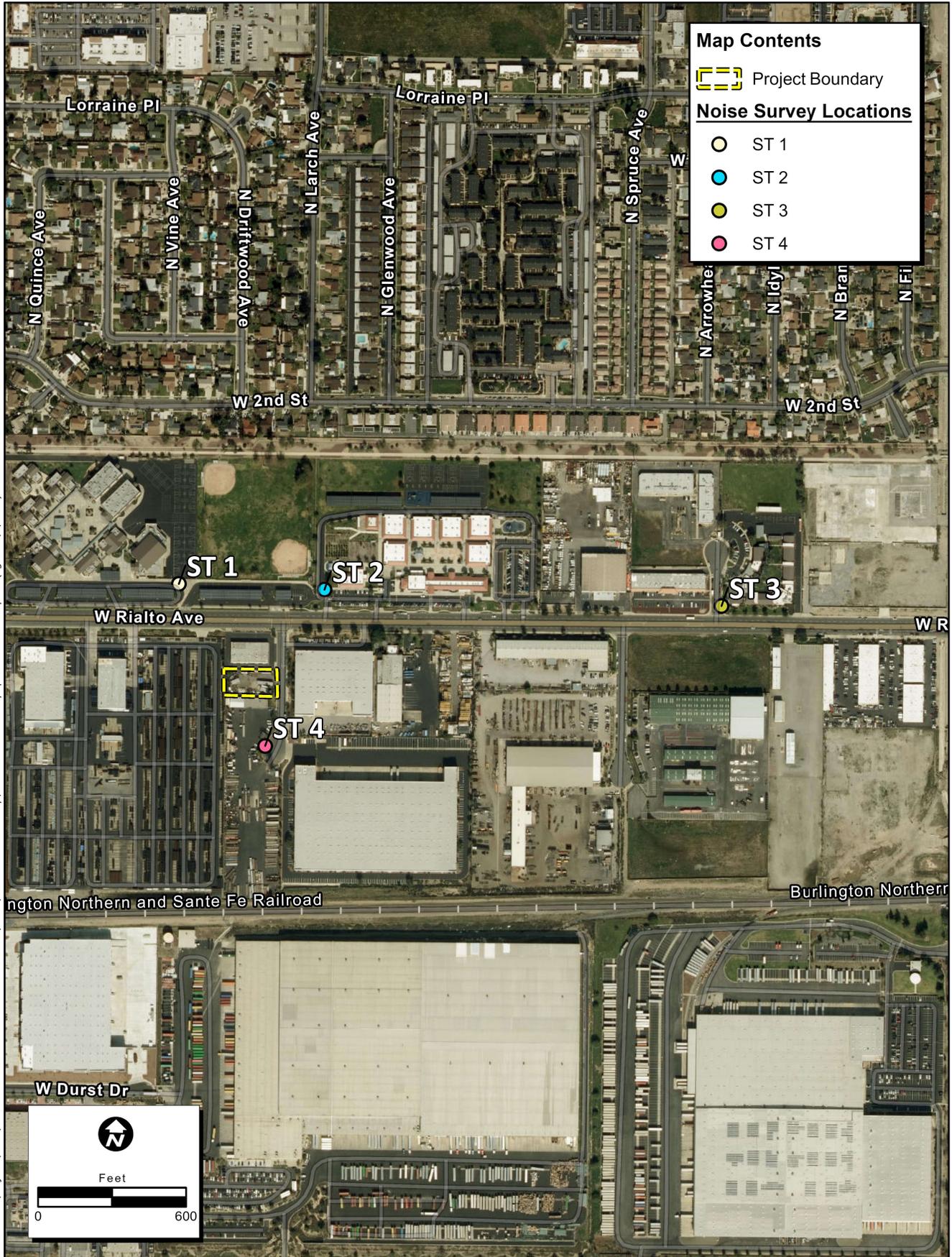
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Appendix A – Baseline (Existing) Noise Measurements – Project Site and Vicinity

Appendix B – Federal Highway Administration Roadway Construction Noise Model Outputs –  
Project Construction

Appendix C – SoundPLAN Onsite Noise Generation

Baseline (Existing) Noise Measurements – Project Site and Vicinity



Location: W:\Projects\2025-057 Larch Avenue Industrial - Rialto Noise Survey\Baseline Noise Survey.aprx - Portrait Template (agne - 6/5/2025)

**Short-Term 15-Minute Noise Measurement Field Data Sheet**

<b>Recorded By: C. Uminski</b>				<b>Date: 6/4/2025</b>		
<b>Site Number: ST-1</b>				<b>Job Number: 2025-057</b>		
<b>Start Time: 4:03 p.m.</b>				<b>End Time: 4:18 p.m.</b>		
<b>Location/Address: Rialto Middle School</b>						
<b>Primary Noise Source: Rialto Avenue traffic.</b>						
<b>Secondary Noise Source: Yard south of Rialto Ave (State Pipe supply)</b>						
Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0006133	10/01/2024	
	Microphone	Larson Davis	377B02	346688	10/01/2024	
	Preamp	Larson Davis	PRMLxT1L	069947	09/30/2024	
	Calibrator	Larson Davis	CAL200	17325	10/03/2024	
Calibration Data						
<b>Offset Before Measurement Period</b>				<b>Offset After Measurement Period</b>		
<b>Calibration Time: 2:49 p.m.</b>				<b>Calibration Time: 4:21 p.m.</b>		
<b>Calibration Offset (+-): -0.06</b>				<b>Calibration Offset (+-): -0.01</b>		
Weather Data						
Est.	<b>Sky Conditions: Clear/sunny</b>					
	<b>Avg Wind Speed (mph)</b>	<b>Max Wind Speed</b>	<b>Temperature ° F</b>	<b>Humidity %</b>		
	4.7	10.7	81.4	54.4		

Noise Meter Data Outputs (dBA)			
Leq	Lmin	Lmax	Ln
59.1	47.8	72.8	

**Photo(s) of Measurement Location**



# Measurement Report

## Report Summary

Meter's File Name	LxT_Data.050.s	Computer's File Name	LxT_0006133-20250604 160324-LxT_Data.050.ldbin		
Meter	LxT1 0006133	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2025-06-04 16:03:24	Duration	0:15:00.0		
End Time	2025-06-04 16:18:24	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-06-04 14:49:08	Post-Calibration	None	Calibration Deviation	---

## Results

### Overall Metrics

LA <sub>eq</sub>	59.1 dB		
LAE	88.6 dB	SEA	--- dB
EA	81.3 μPa²h		
EA8	2.6 mPa²h		
EA40	13.0 mPa²h		
LA <sub>Speak</sub>	84.8 dB	2025-06-04 16:11:16	
LA <sub>Smax</sub>	72.8 dB	2025-06-04 16:11:16	
LA <sub>Smin</sub>	47.8 dB	2025-06-04 16:15:42	
LA <sub>eq</sub>	59.1 dB		
LC <sub>eq</sub>	69.7 dB	LC <sub>eq</sub> - LA <sub>eq</sub>	10.6 dB
LA <sub>Ieq</sub>	60.2 dB	LA <sub>Ieq</sub> - LA <sub>eq</sub>	1.1 dB

### Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LASpk > 135.0 dB	0	0:00:00.0
LASpk > 137.0 dB	0	0:00:00.0
LASpk > 140.0 dB	0	0:00:00.0

### Community Noise

<b>L<sub>DN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Night</sub></b>		
59.1 dB	59.1 dB	0.0 dB		
<b>L<sub>DEN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Eve</sub></b>	<b>L<sub>Night</sub></b>	
59.1 dB	59.1 dB	--- dB	--- dB	

### Any Data

	<b>A</b>		<b>C</b>		<b>Z</b>	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L <sub>eq</sub>	59.1 dB		--- dB		--- dB	
L <sub>S(max)</sub>	72.8 dB	2025-06-04 16:11:16	--- dB	None	--- dB	None
L <sub>S(min)</sub>	47.8 dB	2025-06-04 16:15:42	--- dB	None	--- dB	None
L <sub>Peak(max)</sub>	84.8 dB	2025-06-04 16:11:16	--- dB	None	--- dB	None

### Overloads

<b>Count</b>	<b>Duration</b>
0	0:00:00.0

### Statistics

LAS 2.0	64.7 dB
LAS 8.0	62.7 dB
LAS 16.7	61.3 dB
LAS 25.0	60.2 dB
LAS 50.0	57.2 dB
LAS 90.0	51.4 dB

**Short-Term 15-Minute Noise Measurement Field Data Sheet**

<b>Recorded By: C. Uminski</b>				<b>Date: 6/4/2025</b>		
<b>Site Number: ST-2</b>				<b>Job Number: 2025-057</b>		
<b>Start Time: 3:41 p.m.</b>				<b>End Time: 3:56 p.m.</b>		
<b>Location/Address: Charlotte N. Werner Elementary School</b>						
<b>Primary Noise Source: Rialto Avenue traffic.</b>						
<b>Secondary Noise Source: Yard south of Rialto Ave (State Pipe supply)</b>						
Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0006133	10/01/2024	
	Microphone	Larson Davis	377B02	346688	10/01/2024	
	Preamp	Larson Davis	PRMLxT1L	069947	09/30/2024	
	Calibrator	Larson Davis	CAL200	17325	10/03/2024	
Calibration Data						
<b>Offset Before Measurement Period</b>				<b>Offset After Measurement Period</b>		
<b>Calibration Time: 2:49 p.m.</b>				<b>Calibration Time: 4:21 p.m.</b>		
<b>Calibration Offset (+-): -0.06</b>				<b>Calibration Offset (+-): -0.01</b>		
Weather Data						
Est.	<b>Sky Conditions: Clear/sunny</b>					
	<b>Avg Wind Speed (mph)</b>	<b>Max Wind Speed</b>	<b>Temperature ° F</b>	<b>Humidity %</b>		
	4.7	10.7	81.4	54.4		

Noise Meter Data Outputs (dBA)			
Leq	Lmin	Lmax	Ln
61.0	51.7	77.3	

**Photo(s) of Measurement Location**



# Measurement Report

## Report Summary

Meter's File Name	LxT_Data.049.s	Computer's File Name	LxT_0006133-20250604 154127-LxT_Data.049.lddbin		
Meter	LxT1 0006133	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2025-06-04 15:41:27	Duration	0:15:00.0		
End Time	2025-06-04 15:56:27	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-06-04 14:49:08	Post-Calibration	None	Calibration Deviation	---

## Results

### Overall Metrics

LA <sub>eq</sub>	61.0 dB		
LAE	90.5 dB	SEA	--- dB
EA	125.9 μPa²h		
EA8	4.0 mPa²h		
EA40	20.1 mPa²h		
LA <sub>Speak</sub>	93.8 dB	2025-06-04 15:55:13	
LA <sub>Smax</sub>	77.3 dB	2025-06-04 15:55:13	
LA <sub>Smin</sub>	51.7 dB	2025-06-04 15:51:14	
LA <sub>eq</sub>	61.0 dB		
LC <sub>eq</sub>	70.5 dB	LC <sub>eq</sub> - LA <sub>eq</sub>	9.5 dB
LA <sub>Ieq</sub>	62.9 dB	LA <sub>Ieq</sub> - LA <sub>eq</sub>	1.9 dB

### Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LASpk > 135.0 dB	0	0:00:00.0
LASpk > 137.0 dB	0	0:00:00.0
LASpk > 140.0 dB	0	0:00:00.0

### Community Noise

<b>L<sub>DN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Night</sub></b>		
61.0 dB	61.0 dB	0.0 dB		
<b>L<sub>DEN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Eve</sub></b>	<b>L<sub>Night</sub></b>	
61.0 dB	61.0 dB	--- dB	--- dB	

### Any Data

	<b>A</b>		<b>C</b>		<b>Z</b>	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L <sub>eq</sub>	61.0 dB		--- dB		--- dB	
L <sub>S(max)</sub>	77.3 dB	2025-06-04 15:55:13	--- dB	None	--- dB	None
L <sub>S(min)</sub>	51.7 dB	2025-06-04 15:51:14	--- dB	None	--- dB	None
L <sub>Peak(max)</sub>	93.8 dB	2025-06-04 15:55:13	--- dB	None	--- dB	None

### Overloads

<b>Count</b>	<b>Duration</b>
0	0:00:00.0

### Statistics

LAS 2.0	68.1 dB
LAS 8.0	65.0 dB
LAS 16.7	62.8 dB
LAS 25.0	61.3 dB
LAS 50.0	58.0 dB
LAS 90.0	53.4 dB

**Short-Term 15-Minute Noise Measurement Field Data Sheet**

<b>Recorded By: C. Uminski</b>				<b>Date: 6/4/2025</b>		
<b>Site Number: ST-3</b>				<b>Job Number: 2025-057</b>		
<b>Start Time: 3:17 p.m.</b>				<b>End Time: 3:32 p.m.</b>		
<b>Location/Address: Bob Murphy Community School</b>						
<b>Primary Noise Source: Rialto Avenue traffic.</b>						
<b>Secondary Noise Source: Business park traffic.</b>						
Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0006133	10/01/2024	
	Microphone	Larson Davis	377B02	346688	10/01/2024	
	Preamp	Larson Davis	PRMLxT1L	069947	09/30/2024	
	Calibrator	Larson Davis	CAL200	17325	10/03/2024	
Calibration Data						
<b>Offset Before Measurement Period</b>				<b>Offset After Measurement Period</b>		
<b>Calibration Time: 2:49 p.m.</b>				<b>Calibration Time: 4:21 p.m.</b>		
<b>Calibration Offset (+-): -0.06</b>				<b>Calibration Offset (+-): -0.01</b>		
Weather Data						
Est.	<b>Sky Conditions: Clear/sunny</b>					
	<b>Avg Wind Speed (mph)</b>	<b>Max Wind Speed</b>	<b>Temperature ° F</b>	<b>Humidity %</b>		
	4.7	10.7	81.4	54.4		

Noise Meter Data Outputs (dBA)			
Leq	Lmin	Lmax	Ln
61.2	46.0	77.9	

**Photo(s) of Measurement Location**



# Measurement Report

## Report Summary

Meter's File Name	LxT_Data.048.s	Computer's File Name	LxT_0006133-20250604 151731-LxT_Data.048.ldbin		
Meter	LxT1 0006133	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2025-06-04 15:17:31	Duration	0:15:00.0		
End Time	2025-06-04 15:32:31	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-06-04 14:49:08	Post-Calibration	None	Calibration Deviation	---

## Results

### Overall Metrics

LA <sub>eq</sub>	61.2 dB		
LAE	90.7 dB	SEA	--- dB
EA	131.8 μPa²h		
EA8	4.2 mPa²h		
EA40	21.1 mPa²h		
LA <sub>Speak</sub>	91.4 dB	2025-06-04 15:18:31	
LA <sub>Smax</sub>	77.9 dB	2025-06-04 15:18:32	
LA <sub>Smin</sub>	46.0 dB	2025-06-04 15:28:17	
LA <sub>eq</sub>	61.2 dB		
LC <sub>eq</sub>	70.2 dB	LC <sub>eq</sub> - LA <sub>eq</sub>	9.0 dB
LA <sub>Ieq</sub>	63.6 dB	LA <sub>Ieq</sub> - LA <sub>eq</sub>	2.4 dB

### Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LASpk > 135.0 dB	0	0:00:00.0
LASpk > 137.0 dB	0	0:00:00.0
LASpk > 140.0 dB	0	0:00:00.0

### Community Noise

<b>L<sub>DN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Night</sub></b>	
61.2 dB	61.2 dB	0.0 dB	
<b>L<sub>DEN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Eve</sub></b>	<b>L<sub>Night</sub></b>
61.2 dB	61.2 dB	--- dB	--- dB

### Any Data

	<b>A</b>		<b>C</b>		<b>Z</b>	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L <sub>eq</sub>	61.2 dB		--- dB		--- dB	
L <sub>S(max)</sub>	77.9 dB	2025-06-04 15:18:32	--- dB	None	--- dB	None
L <sub>S(min)</sub>	46.0 dB	2025-06-04 15:28:17	--- dB	None	--- dB	None
L <sub>Peak(max)</sub>	91.4 dB	2025-06-04 15:18:31	--- dB	None	--- dB	None

### Overloads

<b>Count</b>	<b>Duration</b>
0	0:00:00.0

### Statistics

LAS 2.0	68.5 dB
LAS 8.0	65.4 dB
LAS 16.7	63.3 dB
LAS 25.0	61.8 dB
LAS 50.0	57.1 dB
LAS 90.0	49.5 dB

**Short-Term 15-Minute Noise Measurement Field Data Sheet**

<b>Recorded By: C. Uminski</b>				<b>Date: 6/4/2025</b>		
<b>Site Number: ST-4</b>				<b>Job Number: 2025-057</b>		
<b>Start Time: 2:54 p.m.</b>				<b>End Time: 3:09 p.m.</b>		
<b>Location/Address: S. Larch Avenue Cul-de-sac</b>						
<b>Primary Noise Source: State pipe supply</b>						
<b>Secondary Noise Source: Metrolink and distant traffic.</b>						
Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	LxT SE	0006133	10/01/2024	
	Microphone	Larson Davis	377B02	346688	10/01/2024	
	Preamp	Larson Davis	PRMLxT1L	069947	09/30/2024	
	Calibrator	Larson Davis	CAL200	17325	10/03/2024	
Calibration Data						
<b>Offset Before Measurement Period</b>				<b>Offset After Measurement Period</b>		
<b>Calibration Time: 2:49 p.m.</b>				<b>Calibration Time: 4:21 p.m.</b>		
<b>Calibration Offset (+-): -0.06</b>				<b>Calibration Offset (+-): -0.01</b>		
Weather Data						
Est.	<b>Sky Conditions: Clear/sunny</b>					
	<b>Avg Wind Speed (mph)</b>	<b>Max Wind Speed</b>	<b>Temperature ° F</b>	<b>Humidity %</b>		
	4.7	10.7	81.4	54.4		

Noise Meter Data Outputs (dBA)			
Leq	Lmin	Lmax	Ln
56.7	47.4	72.3	

**Photo(s) of Measurement Location**



# Measurement Report

## Report Summary

Meter's File Name	LxT_Data.047.s	Computer's File Name	LxT_0006133-20250604 145349-LxT_Data.047.ldbin		
Meter	LxT1 0006133	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2025-06-04 14:53:49	Duration	0:15:00.0		
End Time	2025-06-04 15:08:49	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-06-04 14:49:08	Post-Calibration	None	Calibration Deviation	---

## Results

### Overall Metrics

LA <sub>eq</sub>	56.7 dB		
LAE	86.2 dB	SEA	--- dB
EA	46.8 μPa²h		
EA8	1.5 mPa²h		
EA40	7.5 mPa²h		
LA <sub>Speak</sub>	87.0 dB		2025-06-04 15:03:14
LA <sub>Smax</sub>	72.3 dB		2025-06-04 14:58:29
LA <sub>Smin</sub>	47.4 dB		2025-06-04 15:06:38
LA <sub>eq</sub>	56.7 dB		
LC <sub>eq</sub>	67.2 dB	LC <sub>eq</sub> - LA <sub>eq</sub>	10.5 dB
LA <sub>Ieq</sub>	60.0 dB	LA <sub>Ieq</sub> - LA <sub>eq</sub>	3.3 dB

### Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LASpk > 135.0 dB	0	0:00:00.0
LASpk > 137.0 dB	0	0:00:00.0
LASpk > 140.0 dB	0	0:00:00.0

### Community Noise

<b>L<sub>DN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Night</sub></b>		
56.7 dB	56.7 dB	0.0 dB		
<b>L<sub>DEN</sub></b>	<b>L<sub>Day</sub></b>	<b>L<sub>Eve</sub></b>	<b>L<sub>Night</sub></b>	
56.7 dB	56.7 dB	--- dB	--- dB	

### Any Data

	<b>A</b>		<b>C</b>		<b>Z</b>	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L <sub>eq</sub>	56.7 dB		--- dB		--- dB	
L <sub>S(max)</sub>	72.3 dB	2025-06-04 14:58:29	--- dB	None	--- dB	None
L <sub>S(min)</sub>	47.4 dB	2025-06-04 15:06:38	--- dB	None	--- dB	None
L <sub>Peak(max)</sub>	87.0 dB	2025-06-04 15:03:14	--- dB	None	--- dB	None

### Overloads

<b>Count</b>	<b>Duration</b>
0	0:00:00.0

### Statistics

LAS 2.0	66.2 dB
LAS 8.0	62.1 dB
LAS 16.7	56.0 dB
LAS 25.0	52.8 dB
LAS 50.0	50.6 dB
LAS 90.0	48.6 dB

Highway Administration Roadway Construction Noise Model Outputs – Project Construction

## Roadway Construction Noise Model (RCNM),Version 1.1

**Report date:** 6/2/2025  
**Case Description:** Larch Avenue Industrial

**Description**      **Land Use**  
 Demolition      Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Concrete Saw	No	20		89.6	425	0
Dozer	No	40		81.7	425	0
Tractor	No	40	84		425	0
Tractor	No	40	84		425	0

### Results

Calculated (dBA)

Equipment	*Lmax	Leq
Concrete Saw	71	64
Dozer	63.1	59.1
Tractor	65.4	61.4
Tractor	65.4	61.4
<b>Total</b>	<b>71</b>	<b>67.9</b>

\*Calculated Lmax is the Loudest value.

**Roadway Construction Noise Model (RCNM),Version 1.1**

**Report date:** 6/2/2025  
**Case Description:** Larch Avenue Industrial

**Description**      **Land Use**  
 Site Preparation      Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		425	0
Tractor	No	40	84		425	0

**Results**

Calculated (dBA)

Equipment	*Lmax	Leq
Grader	66.4	62.4
Tractor	65.4	61.4
<b>Total</b>	<b>66.4</b>	<b>65</b>

\*Calculated Lmax is the Loudest value.

## Roadway Construction Noise Model (RCNM),Version 1.1

**Report date:** 6/2/2025  
**Case Description:** Larch Avenue Industrial

**Description**      **Land Use**  
 Grading              Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		425	0
Dozer	No	40		81.7	425	0
Tractor	No	40	84		425	0

### Results

Calculated (dBA)

Equipment	*Lmax	Leq
Grader	66.4	62.4
Dozer	63.1	59.1
Tractor	65.4	61.4
<b>Total</b>	<b>66.4</b>	<b>66</b>

\*Calculated Lmax is the Loudest value.

## Roadway Construction Noise Model (RCNM), Version 1.1

**Report date:** 6/2/2025  
**Case Description:** Larch Avenue Industrial

**Description**      **Land Use**  
 Building            Residential  
 Construction,  
 Paving & Painting

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	425	0
Front End Loader	No	40		79.1	425	0
Front End Loader	No	40		79.1	425	0
Tractor	No	40	84		425	0
Tractor	No	40	84		425	0
Concrete Mixer Truck	No	40		78.8	425	0
Concrete Mixer Truck	No	40		78.8	425	0
Concrete Mixer Truck	No	40		78.8	425	0
Concrete Mixer Truck	No	40		78.8	425	0
Paver	No	50		77.2	425	0
Roller	No	20		80	425	0
Tractor	No	40	84		425	0
Compressor (air)	No	40		77.7	425	0

### Results

Calculated (dBA)

Equipment	*Lmax	Leq
Crane	62	54
Front End Loader	60.5	56.5
Front End Loader	60.5	56.5
Tractor	65.4	61.4
Tractor	65.4	61.4
Concrete Mixer Truck	60.2	56.2
Concrete Mixer Truck	60.2	56.2
Concrete Mixer Truck	60.2	56.2
Concrete Mixer Truck	60.2	56.2
Paver	58.6	55.6

Roller	61.4	54.4
Tractor	65.4	61.4
Compressor (air)	59.1	55.1
<b>Total</b>	<b>65.4</b>	<b>69</b>

\*Calculated Lmax is the Loudest value.

SoundPLAN Onsite Noise Generation

**SoundPLAN**  
**Output Source Information**

<b>Receiver</b>	<b>Location</b>	<b>Daytime Noise Level at Ground Floor (dBA)</b>
1	Rialto Middle School	53
2	Charlotte N. Werner Elementary School	51.2

<b>Citation</b>	<b>Level at Source (dBA)</b>
1 City of San Jose 2014 Midpoint at 237 Loading Dock Noise Study - Internal Truck Circulation	106.3

**SoundPLAN**  
**Output Source Information**