# Appendix M
## Acoustical Assessment

# Acoustical Assessment
# 2720 Willow Avenue
# Warehouse Project
# City of Rialto, California


Prepared by:

**Kimley-Horn and Associates, Inc.**
1100 W. Town and Country Road, Suite 700
Orange, California 92868
*Contact: Ms. Danielle Millar*
714.939.1030


February 2024

# TABLE OF CONTENTS

## LIST OF ABBREVIATED TERMS

| | |
|---|---|
| ADT | average daily traffic |
| BNL | basic noise level |
| CEQA | California Environmental Quality Act |
| CL | centerline |
| CNEL | community equivalent noise level |
| dB | decibel |
| dBA | A-weighted sound level |
| EPA | Environmental Protection Agency |
| FHWA | Federal Highway Administration |
| Ft | foot/feet |
| FTA | Federal Transit Administration |
| HVAC | heating ventilation and air conditioning |
| Hz | hertz |
| in/sec | inches per second |
| $L_{\%}$ | exceeded/percent noise level |
| $L_{dn}$ | day-night noise level |
| $L_{eq}$ | equivalent noise level |
| $L_{max}$ | maximum noise level |
| $L_{min}$ | minimum noise level |
| mph | miles per hour |
| PPV | peak particle velocity |
| RMS | root mean square |
| µPa | micropascals |
| VdB | vibration velocity level |

# 1 INTRODUCTION

The purpose of this Acoustical Assessment is to evaluate the potential construction and operational noise and vibration levels associated with the 2720 Willow Avenue Project (Project), located in the City of Rialto, California.

## 1.1 Project Location

The Project site is located at 2720 Willow Avenue in the City of Rialto (City), San Bernardino County, California. The Project site encompasses approximately 5.63 acres and is generally bound by industrial uses to the north; Willow Avenue to the east; industrial uses to the south; and vacant land to the west; refer to **Exhibit 1: Regional Vicinity** and **Exhibit 2: Site Vicinity**. The Project site is zoned Medium Industrial (Agua Mansa Industrial Corridor Specific Plan) and located within the General Industrial land use designation in the City's General Plan.

## 1.2 Project Description

The Project site is currently occupied by two warehouse buildings totaling approximately 44,500 square feet, as well as a vacant field covering approximately 1.68 acres. The Project proposes to demolish the existing warehouse buildings to construct an approximate 118,000 square foot warehouse building with potential office space, parking, and landscaping; refer to **Exhibit 3: Site Plan**. The warehouse building would include 111,000 square feet of warehouse space and 7,000 sf of ancillary office space, the latter on two levels, and 16 dock doors. Employee parking and landscaping would be provided along the property boundaries and building frontages. The Project would provide 89 parking stalls. Trucks and passenger vehicles would access the Project site from two driveways, both of which are located on Willow Avenue.

**Hours of Operation**

The tenant(s) of the warehouse facility has not been identified; therefore, the precise nature of facility operations cannot be determined at this time. Any future occupant would be required to adhere to the pertinent City regulations. For the purposes of this analysis, the hours of operation are assumed to be 7 days a week, 24 hours per day.

**Off-Site Improvements**

Project implementation would require construction of new on-site utility infrastructure. The Project would connect utilities to existing utility infrastructure in adjacent roadways, with the final sizing and design of on-site facilities occurring during final building design and plan check. The Project would also complete the remaining half-width improvements of Willow Avenue along the Project frontage, consistent with the Specific Plan cross-section for Collector Streets. This would include two 11-foot lanes and a 4-foot sidewalk.

**Construction Activities**

Construction of the Project is anticipated to begin in September 2024 with a construction duration of approximately 11 months. Construction of the Project would require the following phases: demolition site preparation, grading, infrastructure improvements, paving, building construction, and architectural coatings. Earthwork would be balanced on-site.


**EXHIBIT 1:** Regional Vicinity
2720 Willow Avenue Warehouse Project
*City of Rialto*

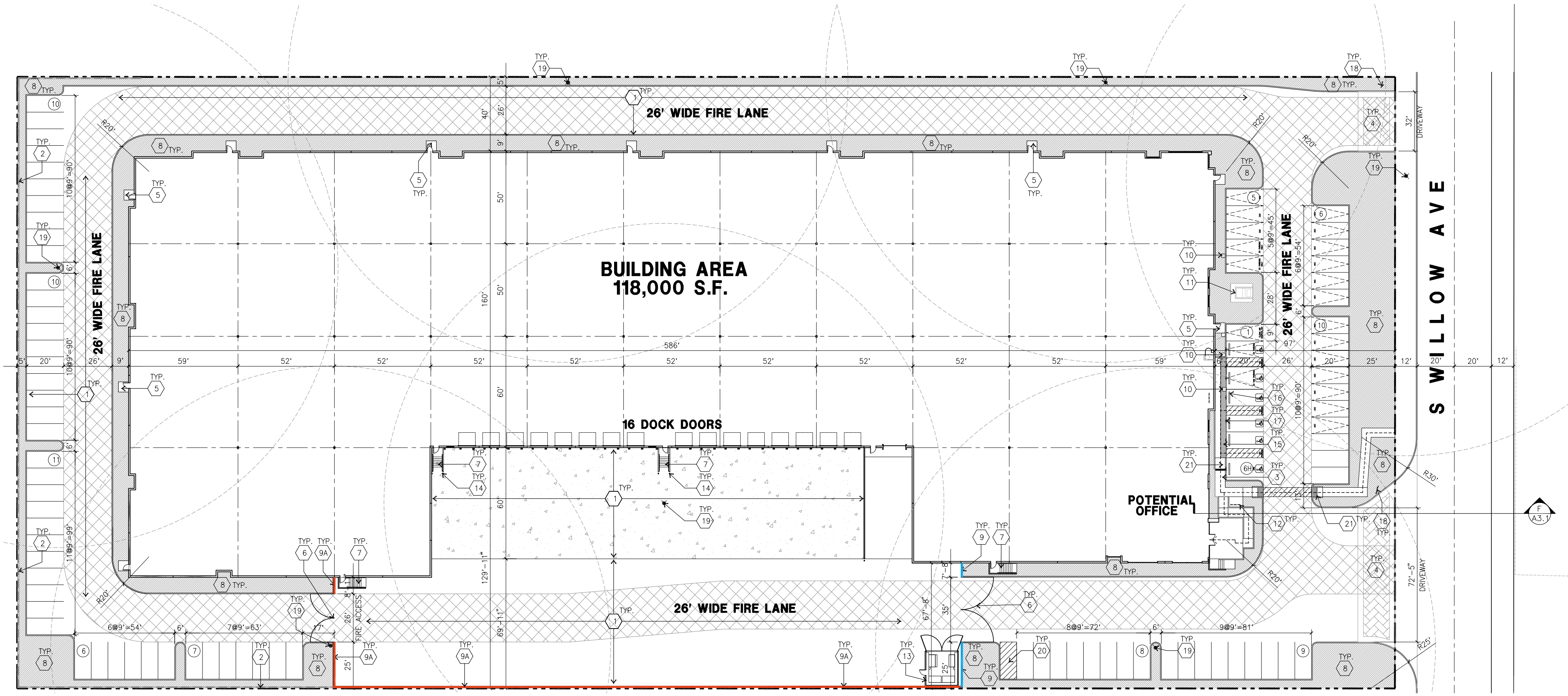
Not to Scale

Kimley»Horn
Expect More. Experience Better.


**EXHIBIT 2:** Site Vicinity
2720 Willow Avenue Warehouse Project
*City of Rialto*

Not to Scale

Kimley»Horn
Expect More. Experience Better.




## SITE LEGEND

- LANDSCAPED AREA
- STANDARD PARKING STALL (9' X 20')
- CONCRETE PAVING SEE "C" DRWGS. FOR THICKNESS
- HANDICAP PARKING STALL (9' X 20') VANPOOL (12' X 20')
- 26' FIRE WIDE FIRELANE
- PATH OF TRAVEL
- ELECTRIC VEHICLE PARKING WITH EVSE (9' X 20')
- CLEAN AIR/VAN POOL/EV STALL (9' X 20')
- FIRE HYDRANTS

## FENCE/WALL LEGEND

- 9 — 14' CONCRETE TILT UP SCREEN WALL
- 9A — 8' HIGH STEEL FENCE

**EXHIBIT 3:** Site Plan
2720 Willow Avenue Warehouse Project
*City of Rialto*

Not to Scale

Kimley»Horn
Expect More. Experience Better.

# 2 ACOUSTIC FUNDAMENTALS

## 2.1 Sound and Environmental Noise

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

Noise is defined as loud, unexpected, or annoying sound. The fundamental acoustics model consists of a noise source, a receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. The sound from individual local sources is superimposed on this background noise. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (μPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. **Table 1: Typical Noise Levels**, provides typical noise levels.

**Table 1: Typical Noise Levels**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| | – 110 – | Rock Band |
| Jet fly-over at 1,000 feet | | |
| | – 100 – | |
| Gas lawnmower at 3 feet | | |
| | – 90 – | |
| Diesel truck at 50 feet at 50 mph | | Food blender at 3 feet |
| | – 80 – | Garbage disposal at 3 feet |
| Noisy urban area, daytime | | |
| Gas lawnmower, 100 feet | – 70 – | Vacuum cleaner at 10 feet |
| Commercial area | | Normal Speech at 3 feet |
| Heavy traffic at 300 feet | – 60 – | |
| | | Large business office |
| Quiet urban daytime | – 50 – | Dishwasher in next room |
| Quiet urban nighttime | – 40 – | Theater, large conference room (background) |
| Quiet suburban nighttime | | |
| | – 30 – | Library |
| Quiet rural nighttime | | Bedroom at night, concert hall (background) |
| | – 20 – | |
| | | Broadcast/recording studio |
| | – 10 – | |
| Lowest threshold of human hearing | – 0 – | Lowest threshold of human hearing |

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

## Noise Descriptors

The dB 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. Most commonly, environmental sounds are described in terms of $L_{eq}$ that has the same acoustical energy as the summation of all the time-varying events. While $L_{eq}$ represents the continuous sound pressure level over a given period, the day-night noise level ($L_{dn}$) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Each is applicable to this analysis and defined in **Table 2: Definitions of Acoustical Terms**.

**Table 2: Definitions of Acoustical Terms**

| Term | Definitions |
|---|---|
| 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 µPa (or 20 micronewtons per square meter), where 1 pascals 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 dB 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 µPa). Sound pressure level is the quantity that is directly measured by a sound level meter. |
| Frequency (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 sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz. |
| A-Weighted Sound Level (dBA) | The sound pressure level in dB as 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. |
| Maximum Noise Level ($L_{max}$)<br>Minimum Noise Level ($L_{min}$) | The maximum and minimum dBA during the measurement period. |
| Exceeded Noise Levels<br>($L_{01}$, $L_{10}$, $L_{50}$, $L_{90}$) | The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period. |
| Day-Night Noise Level ($L_{dn}$) | 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 at 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 AM 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. 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. |

Because sound levels can vary markedly over a short period of time, a method for describing either the sound's average character ($L_{eq}$) or the variations' statistical behavior must be utilized. The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The predicted models' accuracy depends on various factors, such as the distance between the noise receptor and noise source, the character of the ground surface (e.g., hard or soft), and the presence or absence of structures (e.g., walls or buildings) or topography, and how well model inputs reflect these conditions.

**A-Weighted Decibels**

The perceived loudness of sound is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of dBA, but are expressed as dB, unless otherwise noted.

**Addition of Decibels**

The 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.[1] When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness.[2] 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 3 dBA higher than one source under the same conditions.[3] Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.[4]

**Sound Propagation and Attenuation**

Sound spreads (propagates uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source.[5] Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.[6] 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 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed in this report.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the noise receptor and noise source reduces the noise level by about 5 dBA, while a solid wall or berm can

[1] California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] Ibid.

reduce noise levels by 5 to 15 dBA.[7] 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. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

**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 is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA.[8] 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.[9] 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 dBA, the following relationships should be noted[10]:

- 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.

**Effects of Noise on People**

<u>Hearing Loss</u>

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

---

7 Federal Highway Administration, Highway Traffic and Construction Noise - Problem and Response**,** April 2006.

8 Compiled from James P. Cowan, *Handbook of Environmental Acoustics,* 1994, and Cyril M. Harris, *Handbook of Noise Control*, 1979.

9 Compiled from James P. Cowan, *Handbook of Environmental Acoustics,* 1994 and Cyril M. Harris, Handbook of Noise Control, 1979.

10 Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and FHWA, *Noise Fundamentals,* 2017.

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 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

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 for 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 of 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. A noise level of about 55 dBA $L_{dn}$ is the threshold at which a substantial percentage of people begin to report annoyance.[11]

## 2.2 Groundborne Vibration

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made 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 and is expressed in terms of inches-per-second (in/sec). The RMS velocity is defined as the average of the squared amplitude of the signal and is expressed in terms of velocity decibels (VdB). The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

**Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations**, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in **Table 3** 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 individual's sensitivity. 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.

[11] Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

**Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations**

| Maximum PPV (in/sec) | Vibration Annoyance Potential Criteria | Vibration Damage Potential Threshold Criteria | FTA Vibration Damage Criteria |
|---|---|---|---|
| 0.008 | -- | Extremely fragile historic buildings, ruins, ancient monuments | -- |
| 0.01 | Barely Perceptible | -- | -- |
| 0.04 | Distinctly Perceptible | -- | -- |
| 0.10 | Strongly Perceptible | Fragile buildings | -- |
| 0.12 | -- | -- | Buildings extremely susceptible to vibration damage |
| 0.2 | -- | -- | Non-engineered timber and masonry buildings |
| 0.25 | -- | Historic and some old buildings | -- |
| 0.3 | -- | Older residential structures | Engineered concrete and masonry (no plaster) |
| 0.4 | Severe | -- | -- |
| 0.5 | -- | New residential structures, Modern industrial/commercial buildings | Reinforced-concrete, steel or timber (no plaster) |
| PPV = peak particle velocity; in/sec = inches per second; FTA = Federal Transit Administration | | | |
| Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020 and Federal Transit Administration, *Transit Noise and Vibration Assessment Manual*, 2018. | | | |

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. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of in/sec is used to evaluate construction-generated vibration for building damage and human complaints.

# 3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

## 3.1 State of California

**California Government Code**

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

**Title 24 – Building Code**

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

## 3.2 Local

**City of Rialto General Plan**

The City of Rialto General Plan (General Plan) is a roadmap that encompasses the hopes, aspirations, values, and dreams of the community. The General Plan specifies exterior noise guidelines for land uses in the Safety and Noise chapter. The City requires that new developments be designed to meet these guidelines[12]. Noise compatibility can be achieved by avoiding the location of conflicting land uses adjacent to one another, incorporating buffers and noise control techniques including setbacks, landscaping, building transitions, site design, and building construction techniques. Selection of the appropriate noise control technique would vary depending on the level of noise that needs to be reduced as well as the location and intended land use. General Plan policies that directly address reducing and avoiding noise or vibration impacts include the following:

[12] City of Rialto, *General Plan Chapter 5,* 2010.

Goal 5-10: Minimize the impact of point source and ambient noise levels throughout the community.

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 Rialto Municipal Code (Municipal Code) and noise standards contained in Exhibit 5-5.

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.

Policy 5-11.4: Develop a program for monitoring noise levels and investigating complaints.

The City of Rialto is largely built out and the street system is well established, creating challenges for separating noise-sensitive land uses from primary noise sources. Thus, the Safety and Noise chapter of the General Plan establishes policies guarding against new noise or land use conflicts to minimize the impact of existing noise sources on the community. **Table 4: Rialto Noise Guidelines for Land Use Planning** presents the City's exterior noise guidelines for land use planning. It should also be noted that the Safety and Noise chapter of the General Plan mentions sound levels exceeding 40 to 45 dBA are generally considered to cause sleep interference within a residence. The General Plan also references Title 24 of the California Health and Safety Code stipulating a maximum of 45 dBA for interior residential noise levels.

**Table 4: Rialto Noise Guidelines for Land Use Planning**

| Land Use Category | Community Noise Exposure ($L_{dn}$ or CNEL, dBA) | | | |
|---|---|---|---|---|
| | Normally Acceptable | Conditionally Acceptable | Normally Unacceptable | Clearly Unacceptable |
| R2 - Residential 2, R6 - Residential 6 | 50 – 60 | 60 – 65 | 65 – 70 | 70 – 85 |
| R12 - Residential 12 | 50 – 60 | 60 – 65 | 65 – 70 | 70 – 85 |
| R21 - Residential 21, R45 - Residential 45 | 50 – 60 | 60 – 70 | 70 – 75 | 75 – 85 |
| DMU - Downtown Mixed-Use | 50 – 60 | 60 – 75 | 75 – 80 | 80 – 85 |
| CC - Community Commercial | 50 – 65 | 65 – 75 | 75 – 80 | 80 – 85 |
| GC - General Commercial | 50 – 65 | 65 – 75 | 75 – 80 | 80 – 85 |

**Table 4: Rialto Noise Guidelines for Land Use Planning**

| Land Use Category | Community Noise Exposure ($L_{dn}$ or CNEL, dBA) | | | |
|---|---|---|---|---|
| | Normally Acceptable | Conditionally Acceptable | Normally Unacceptable | Clearly Unacceptable |
| BP - Business Park, O - Office | 50 – 65 | 65 – 75 | 75 – 80 | 80 – 85 |
| LI - Light Industrial | 50 – 70 | 70 – 75 | 75 – 80 | 80 – 85 |
| GI - General Industrial | 50 – 75 | 75 – 85 | NA | NA |
| P - Public Facility, P - School Facility | 50 – 60 | 60 – 65 | 65 – 70 | 70 – 85 |
| OSRC - Open Space - Recreation | 50 – 75 | NA | 75 – 80 | 80 – 85 |
| OSRS - Open Space - Resources | 50 – 75 | NA | 75 – 80 | 80 – 85 |

NA: Not Applicable; dBA: Decibel

Notes:
Normally Acceptable – Specified land use is satisfactory, assuming buildings are of conventional construction.
Conditionally Acceptable – New development should be undertaken only after detailed analysis of noise reduction requirements are made.
Normally Unacceptable – New development should be discouraged, or 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 Chapter 5*, 2010.

### City of Rialto Code of Ordinances

A noise ordinance is intended to control unnecessary, excessive, and annoying sounds from stationary, non-transportation noise sources. Noise ordinance requirements are not applicable to mobile noise sources such as heavy trucks traveling on public roadways. Federal and State laws preempt control of mobile noise sources on public roads. Noise ordinance standards generally apply to industrial and commercial noise sources, as well as parks and schools affecting residential areas. The Municipal Code prohibits the production of excessive noise, and is applied to future development within the City to determine potential noise impacts.

The City has also instated permitted hours for disturbances specifically from construction activity under Municipal Code Section 9.50.070. This code states that no person shall be engaged in any type of work relating to construction, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours provided in **Table 5: Permitted Hours of Construction Work** below. However, Section 9.50.060 of the Municipal Code indicates exclusions from the provisions of this specific chapter of the Municipal Code. As described in Section 9.50.060(L) of the Municipal Code, noise sources associated with construction, repair, or excavation, are exempt so long as there is a valid written agreement with the City or any of its political subdivisions that provides for noise mitigation measures.

**Table 5: Permitted Hours of Construction Work**

| Days of Week | Time[1,2] |
|---|---|
| October 1st through April 30th | |
| Monday – Friday | 7:00 a.m. to 5:30 p.m. |
| Saturday | 8:00 a.m. to 5:00 p.m. |
| Sunday | No Permissible Hours |
| State Holidays | No Permissible Hours |
| May 1st through September 30th | |

**Table 5: Permitted Hours of Construction Work**

| Days of Week | Time[1,2] |
|---|---|
| Monday – Friday | 6:00 a.m. to 7:00 p.m. |
| Saturday | 8:00 a.m. to 5:00 p.m. |
| Sunday | No Permissible Hours |
| State Holidays | No Permissible Hours |

Notes:
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.
Source: City of Rialto, *Code of Ordinances*, Section 9.50.070, 2018.

The Project would be subject to the limitations imposed by the City regarding construction noise as depicted in **Table 5**.

The following section of the Municipal Code noise ordinance is relevant for operational noise.

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 a.m. and 8:00 p.m. in all zones.

A. Operate or permit the use of powered model vehicles and planes;

B. 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;

C. 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;

D. 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;

E. 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;

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

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

H. Perform ground maintenance on golf course grounds and tennis courts contiguous to golf courses that creates a noise disturbance across a residential or commercial property line;

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;

J. Repair, rebuild, reconstruct or dismantle any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines.

Additionally, Section 9.50.060(O) of the Municipal Code states that sounds generated in commercial and industrial zones that are necessary and incidental to the uses permitted therein are exempt from the Controlled Hours of Operation.

# 4 EXISTING CONDITIONS

## 4.1 Existing Noise Levels

The City is impacted by various noise sources. Mobile sources of noise, especially cars, trucks, and trains are the most common and significant sources of noise. Other noise sources are the various land uses (e.g. residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise. The existing mobile noise sources in the Project area are generated by motor vehicles traveling on Willow Avenue. The primary sources of stationary noise in the Project vicinity are those associated with the industrial uses to the north, east, and south. Industrial stationary noise sources may include mechanical equipment (use of heating, ventilation, and air conditioning [HVAC] units, etc.) and parking lot activities (cars parking, open and closing doors, etc.). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

## 4.2 Sensitive Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. The nearest sensitive receptors to the Project site are the single-family residences located approximately 550 feet to the south.

## 4.3 Noise Measurements

To quantify existing ambient noise levels in the Project area, Kimley-Horn conducted two short-term noise measurements on August 10, 2022, see **Appendix A: Existing Ambient Noise Measurements**. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site, see **Exhibit 4: Noise Measurement Locations**. The 10-minute measurements were taken between 3:16 p.m. and 4:05 p.m. Short-term $L_{eq}$ measurements are considered representative of the noise levels throughout the day. The average noise levels and measurement location are listed in **Table 6: Existing Noise Measurements**.

**Table 6: Existing Noise Measurements**

| Site # | Location | $L_{eq}$ (dBA) | Time |
|---|---|---|---|
| 1 | Northeast boundary of Project site, along Willow Avenue. | 65.5 | 3:16 p.m. |
| 2 | Approximately 500 feet south of Project site boundary, along Willow Avenue. | 65.6 | 3:32 p.m. |
| 3 | Along of Jurupa Avenue, south of Project site. | 61.0 | 3:49 p.m. |
| 4 | Along Lilac Street, southwest of Project site. | 60.8 | 4:05 p.m. |

Source: Noise measurements taken by Kimley-Horn and Associates August 10, 2022. See **Appendix A** for noise measurement results.


**EXHIBIT 4:** Noise Measurement Locations
2720 Willow Avenue Warehouse Project
*City of Rialto*

Not to Scale

Kimley»Horn
Expect More. Experience Better.

# 5 SIGNIFICANCE CRITERIA AND METHODOLOGY

## 5.1 CEQA Thresholds

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains analysis guidelines related to noise impacts. These guidelines have been used by the City to develop thresholds of significance for this analysis. A Project would create a significant environmental impact if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive groundborne vibration or groundborne noise levels; and
- 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, expose people residing or working in the Project area to excessive noise levels.

## 5.2 Methodology

**Construction Noise**

Construction noise levels were based on typical noise levels generated by construction equipment published by the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA). Construction noise is assessed in dBA $L_{eq}$. This unit is appropriate because $L_{eq}$ can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.

Construction noise modeling was conducted using the FHWA Roadway Construction Noise Model (RCNM). Reference noise levels are used to estimate operational noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise. The City of Rialto does not establish quantitative construction noise standards. Therefore, this analysis conservatively uses the FTA's threshold of 80 dBA (8-hour $L_{eq}$) for residential uses and 90 dBA (8-hour $L_{eq}$) for non-residential uses to evaluate construction noise impacts.

**Operational Noise**

Reference noise level data are used to estimate the Project operational noise impacts from stationary sources. Noise levels are collected from field noise measurements and other published sources from similar types of activities are used to estimate noise levels expected with the Project's stationary sources. The reference noise levels are used to represent a worst-case noise environment as noise level from stationary sources can vary throughout the day. Operational noise is evaluated based on the standards within the Municipal Code and General Plan.

A qualitative analysis was conducted of the Project's potential effect on traffic noise conditions at off-site land uses. The Project-generated daily trips were compared to existing conditions to determine potential traffic noise impacts.

**Vibration**

Ground-borne vibration levels associated with construction activities for the Project were evaluated utilizing typical ground-borne vibration levels associated with construction equipment, obtained from FTA published data for construction equipment. Potential ground-borne vibration impacts related to building/structure damage and interference with sensitive existing operations were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance.

# 6 POTENTIAL IMPACTS AND MITIGATION

## 6.1 Acoustical Impacts

**Threshold 6.1 Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

**Construction**

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods near the construction site. The nearest sensitive receptors to the Project site are the single-family residences located approximately 550 feet to the south. As construction would occur up to the Project boundary line, construction activities may occur as close as 550 feet from the nearest sensitive receptors. However, it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the sensitive receptors.

Construction activities would include demolition, site preparation, grading, infrastructure improvements, building construction, paving, and architectural coating applications. Such activities would require concrete saws, excavators, and dozers during demolition; dozers and tractors during site preparation; excavators, graders, dozers, and tractors during grading; excavators, dozers, and tractors during infrastructure improvements; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, and paving equipment during paving; and air compressors during architectural coating applications. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Construction noise was calculated accounting for each piece of equipment's usage factor, or fraction of time that the equipment would be in use at full power over a specific period of time.[13] 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). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment when operating at full power are listed in **Table 7: Typical Construction Noise Levels**.

**Table 7: Typical Construction Noise Levels**

| Equipment | Typical Noise Level (dBA $L_{max}$) at 50 feet from Source |
|---|---|
| Air Compressor | 80 |
| Backhoe | 80 |
| Compactor | 82 |
| Concrete Mixer | 85 |
| Concrete Pump | 82 |
| Concrete Vibrator | 76 |
| Crane, Derrick | 88 |

[13] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

| Table 7: Typical Construction Noise Levels | |
|---|---|
| **Equipment** | **Typical Noise Level (dBA $L_{max}$) at 50 feet from Source** |
| Crane, Mobile | 83 |
| Dozer | 85 |
| Generator | 82 |
| Grader | 85 |
| Impact Wrench | 85 |
| Jack Hammer | 88 |
| Loader | 80 |
| Paver | 85 |
| Pneumatic Tool | 85 |
| Pump | 77 |
| Roller | 85 |
| Saw | 76 |
| Scraper | 85 |
| Shovel | 82 |
| Truck | 84 |

1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20Log(d_1/d_2)$
Where: $dBA_2$ = estimated noise level at receptor; $dBA_1$ = reference noise level; $d_1$ = reference distance; $d_2$ = receptor location distance
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

The FHWA Roadway Construction Noise Model (RCNM) was used to calculate the worst-case construction noise levels at nearby sensitive receptors surrounding the Project site during construction. The modeled receptor locations represent the closest existing receiving land uses to Project construction activities. Noise levels at other sensitive receptors surrounding the Project site would be located further away and would experience lower construction noise levels than the closest receptors modeled.

The Municipal Code does not establish quantitative exterior construction noise standards. While the Municipal Code does not establish quantitative construction noise standards, this analysis conservatively uses the FTA's threshold of 80 dBA (8-hour $L_{eq}$) for residential uses and 90 dBA (8-hour $L_{eq}$) for non-residential uses to evaluate construction noise impacts.[14]

The noise levels calculated in **Table 8: Project Construction Noise Levels** show estimated exterior noise levels for the worst-case construction noise scenario without accounting for attenuation from intervening barriers, structures, or topography. The nearest noise sensitive receptors to the Project site are the residences located approximately 550 feet to the south and the nearest non-residential receptors are the industrial uses located adjacent to the north and south of the Project site. Noise levels at other receptors in the Project vicinity would be located further away and would experience lower construction noise levels than the closest receptors modeled. Because grading, building construction, paving, and architectural coating activities are anticipated to overlap, the equipment from these phases have been combined. All construction equipment for each individual phase was assumed to operate simultaneously to represent a worst-case noise scenario as construction activities would routinely be spread throughout the construction site and would operate at different intervals.

[14] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, Table 7-3, Page 179, September 2018.

**Table 8: Project Construction Noise Levels**

| Construction Phase | Land Use | Receptor Location | | | Noise Threshold [2] (dBA $L_{eq}$) | Exceeded? |
|---|---|---|---|---|---|---|
| | | Direction | Distance (feet) | Worst Case Modeled Exterior Noise Level (dBA $L_{eq}$) | | |
| Demolition | Residential | South | 715 | 63.3 | 80 | **No** |
| | Industrial | North/ South | 295 | 71.0 | 90 | **No** |
| Site Preparation | Residential | South | 715 | 64.5 | 80 | **No** |
| | Industrial | North/ South | 295 | 72.2 | 90 | **No** |
| Grading | Residential | South | 715 | 64.2 | 80 | **No** |
| | Industrial | North/ South | 295 | 71.9 | 90 | **No** |
| Infrastructure Improvements | Residential | South | 715 | 63.0 | 80 | **No** |
| | Industrial | North/ South | 295 | 70.7 | 90 | **No** |
| Building Construction | Residential | South | 715 | 63.1 | 80 | **No** |
| | Industrial | North/ South | 295 | 70.8 | 90 | **No** |
| Paving | Residential | South | 715 | 58.5 | 80 | **No** |
| | Industrial | North/ South | 295 | 66.2 | 90 | **No** |
| Architectural Coating | Residential | South | 715 | 50.6 | 80 | **No** |
| | Industrial | North/ South | 295 | 58.3 | 90 | **No** |
| Grading/ Building Construction/ Paving/ Architectural Coating | Residential | South | 715 | 63.6 | 80 | **No** |
| | Industrial | North/ South | 295 | 71.3 | 90 | **No** |

1. Per the methodology described in the FTA *Transit Noise and Vibration Impact Assessment Manual* (September 2018), distances are measured from the nearby buildings to the center of the Project construction site.
2. The City does not have a quantitative noise threshold for construction and only limits the hours of the construction activities. Therefore, FTA's construction noise threshold are conservatively used for this analysis (FTA, *Transit Noise and Vibration Impact Assessment Manual*, September 2018).

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to **Appendix B** for noise modeling results.

As shown in **Table 8**, the worst-case scenario construction noise levels would not exceed the applicable FTA construction thresholds. The highest exterior noise level at residential receptors would occur during the site preparation phase and would be 64.5 dBA which is below the FTA's 80 dBA threshold. Additionally, the highest exterior noise level at non-residential (industrial) receptors would also occur during the site preparation phase and would be 72.2 dBA which is below the FTA's 90 dBA threshold. Construction equipment would operate throughout the Project site and the associated noise levels would not occur at a fixed location for extended periods of time. Although sensitive uses may be exposed to elevated noise levels during Project construction, these noise levels would be acoustically dispersed throughout the Project site and not concentrated in one area near surrounding sensitive uses.

The City has set restrictions on construction hours to control noise impacts from construction activities. Municipal Code Section 9.50.070 states that construction activities may only take place between the hours of 7:00 a.m. and 5:30 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays from October 1 through April 30 and shall only occur between 6:00 a.m. and 7:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays from May 1 through September 30. Although the Municipal Code limits the hours of construction, it does not provide specific noise level performance standards for construction. By following the City's standards, construction noise impacts would be less than significant.

**Operations**

Implementation of the proposed Project would create new sources of noise in the Project vicinity. The major noise sources associated with the Project that would potentially impact existing and future nearby residences include the following:

- Mechanical equipment;
- Slow moving trucks on the Project site, approaching and leaving the loading areas;
- Activities at the loading areas (i.e., maneuvering and idling trucks, equipment noise);
- Parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); and
- Off-site traffic.

Mechanical Equipment

Mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[15] HVAC units would be installed on the roof of the proposed structure. Sound levels decrease by 6 dBA for each doubling of distance from the source.[16] The nearest sensitive receptors (residential uses to the south) would be located as close as 610 feet from the HVAC equipment at the Project site. At this distance, mechanical equipment noise levels would be approximately 30.3 dBA, which is well below the City's normally acceptable residential exterior noise standard (60 dBA). Further, intervening structures are located between the proposed warehouse structure and the receptors to the south, which would further attenuate HVAC noise levels. Operation of mechanical equipment would not increase ambient noise levels beyond the acceptable compatible land use noise levels. Therefore, the proposed Project would result in a less than significant impact related to mechanical equipment noise levels.

Truck and Loading Dock Noise

During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting/braking activities; backing up toward the docks; dropping down the dock ramps; and maneuvering away from the docks. Loading/unloading activities would occur on the south side of the Project site.

Typically, heavy truck and loading dock operations generate a noise level of 68 dBA at a distance of 30 feet. The closest sensitive receptors would be the single-family residences located approximately 680 feet south of the loading dock areas. At this distance, heavy truck and loading dock noise levels would be 40.9 dBA, which would not exceed the City's normally acceptable residential exterior noise standard (60 dBA). Heavy truck and loading dock noise levels at the nearest sensitive receptors would be further attenuated

[15] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
[16] Cyril M. Harris, *Noise Control in Buildings*, 1994.

by intervening structures. Additionally, loading dock doors would be surrounded with protective aprons, gaskets, or similar improvements that, when a trailer is docked, would serve as a noise barrier between the interior warehouse activities and the exterior loading area. This would attenuate noise emanating from interior activities, and as such, interior loading and associated activities would be permissible during all hours of the day. As described above, noise levels associated with trucks and loading/unloading activities would not exceed the City's standards and impacts would be less than significant.

Back-Up Alarms

Medium and heavy-duty trucks reversing into loading docks would produce noise from back-up alarms (also known as back-up beepers). Back-up beepers produce a typical volume of 97 dBA at one meter (3.28 feet) from the source. The property line of the nearest sensitive receptor would be located approximately 680 feet south of the loading dock areas where trucks could be reversing and maneuvering. At this distance, exterior noise levels from back-up beepers would be approximately 50.7 dBA, which is below the City's normally acceptable residential exterior noise standard (60 dBA). Therefore, back-up alarm noise impacts would be less than significant.

Parking Noise

The proposed Project would provide 89 surface parking spaces. Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 60 to 63 dBA and may be an annoyance to adjacent noise-sensitive receptors. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal speech to 50 dBA at 50 feet for very loud speech. It should be noted that parking lot noises are instantaneous noise levels compared to noise standards in the hourly $L_{eq}$ metric, which are averaged over the entire duration of a time period.

Actual noise levels over time resulting from parking lot activities would be far lower than the reference levels identified above. Parking lot noise would occur within the surface parking lot on-site. It is also noted that parking lot noise occurs at the Project site and surrounding industrial uses under existing conditions. Parking lot noise would be consistent with the existing noise in the vicinity and would be partially masked by background noise from traffic along surrounding roadways. As surface parking lot areas would be located up to the Project boundary line, sensitive receptors to the south would be located approximately 550 feet from the nearest parking area. Noise attenuation based strictly on distance and not taking into account intervening barriers or structures would reduce parking lot noise to 42.2 dBA. Noise associated with parking lot activities is not anticipated to exceed the City's noise standards during operation. Therefore, noise impacts from parking lots would be less than significant.

Off-Site Traffic Noise

Project implementation would result in an increase of traffic trips to Project area roadways. According to the *Vehicles Miles Traveled Memorandum for 2720 Willow Avenue Warehouse Project* (VMT Memo) prepared by Kimley-Horn (dated October 17, 2022), the Project would generate 205 daily vehicle trips. In general a 3-dBA increase in traffic noise is barely perceptible to people, while a 5-dBA increase is readily noticeable. Traffic volumes on Project area roadways would have to approximately double for the resulting traffic noise levels to generate a barely perceptible 3-dBA increase.[17] Project access would be provided via two driveways along Willow Avenue, which has existing average daily traffic (ADT) of 2,070 vehicles. The proposed Project would result in approximately 205 daily trips, which is not enough to double the existing traffic volumes on roadways surrounding the Project site. Therefore, the proposed Project would not generate enough traffic to result in a noticeable 3-dBA increase in ambient noise levels. Impacts would be less than significant.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** Less than significant impact.

**Threshold 6.2 Would the Project expose persons to or generate excessive ground borne vibration or ground borne noise levels?**

Once operational, the Project would not be a source of groundborne vibration. Increases in groundborne vibration levels attributable to the proposed 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.

The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The City does not provide numerical vibration standards for construction activities. Therefore, this impact discussion uses the FTA and Caltrans standard of 0.20 in/sec PPV with respect to the prevention of structural damage for normal buildings and human annoyance.

The FTA has published standard vibration velocities for construction equipment operations. **Table 9: Typical Construction Equipment Vibration Levels**, lists vibration levels for typical construction equipment. It should be noted that the Project would not require the use of pile drivers. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in **Table 9**, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.210 in/sec PPV at 25 feet from the source of activity.

The nearest structure to any construction activity is an industrial building located approximately 62 feet to the south. Vibration velocities from construction equipment would range from less than 0.001 to 0.054 in/sec PPV at the nearest structure, which would not exceed the structural damage or human annoyance criteria of 0.2 in/sec PPV; refer to **Table 9**. It is also acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest structure

[17] According to the California Department of Transportation, *Technical Noise Supplement to Traffic Noise Analysis Protocol* (September 2013), it takes a doubling of traffic to create a noticeable (i.e., 3 dBA) noise increase.

or sensitive receptor. Therefore, vibration impacts associated with the proposed Project would be less than significant.

**Table 9: Typical Construction Equipment Vibration Levels**

| Equipment | Peak Particle Velocity at 25 Feet (in/sec) | Peak Particle Velocity at 62 Feet (in/sec)[1] |
|---|---|---|
| Vibratory Roller | 0.210 | 0.054 |
| Large Bulldozer | 0.089 | 0.023 |
| Loaded Trucks | 0.076 | 0.019 |
| Jackhammer | 0.035 | 0.009 |
| Small Bulldozer/Tractors | 0.003 | 0.001 |

Notes:
1. Calculated using the following formula:
$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$
where: $PPV_{equip}$ = the peak particle velocity in in/sec of the equipment adjusted for the distance
$PPV_{ref}$ = the reference vibration level in in/sec from Table 12-2 of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, 2006.
D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, 2006.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** Less than significant impact.

**Threshold 6.3 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?**

The public airport nearest to the Project site is the San Bernardino International Airport, located approximately 4.5 miles to the southwest. As such, the Project would not be located within two miles of a public airport or within an airport land use plan. Additionally, there are no private airstrips located within the Project vicinity. Therefore, the Project would not expose people residing or working in the Project area to excessive airport- or airstrip-related noise levels and no impact would occur.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** No impact.

## CUMULATIVE NOISE IMPACTS

Noise by definition is a localized phenomenon, and drastically reduces as distance from the source increases. Cumulative noise impacts involve development of the proposed Project in combination with ambient growth and other related development projects. As noise levels decrease as distance from the source increases, only projects in the nearby area could combine with the proposed Project to potentially result in cumulative noise impacts.

**Cumulative Construction Noise**

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. Construction noise would be periodic and temporary noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction project noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant following the City of Rialto Municipal Code.

Construction activities at other planned and approved projects near the Project site would be required to comply with applicable City rules related to noise and would take place during daytime hours on the days permitted by the applicable Municipal Code, and projects requiring discretionary City approvals would be required to evaluate construction noise impacts, comply with the City's standard conditions of approval, and implement mitigation, if necessary, to minimize noise impacts. Construction noise impacts are by nature localized. Based on the fact that noise dissipates as it travels away from its source, noise impacts would be limited to the Project site and vicinity. Therefore, Project construction would not result in a cumulatively considerable contribution to significant cumulative impacts, assuming such a cumulative impact existed, and impacts in this regard are not cumulatively considerable.

**Cumulative Operational Noise**

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of the Project-generated traffic on local roadways in combination with cumulative projects in the vicinity. However, noise from generators and other stationary sources could also generate cumulative noise levels.

<u>Cumulative Stationary Noise</u>

As discussed above, impacts from the Project's operational stationary noise would be less than significant. Due to site distance, intervening land uses, and the fact that noise dissipates as it travels away from its source, noise impacts from on-site activities and other stationary sources would be limited to the Project site and vicinity. No known past, present, or reasonably foreseeable projects would compound or increase the operational noise levels generated by the Project. Thus, cumulative operational noise impacts from related projects, in conjunction with Project-specific noise impacts, would not be cumulatively significant.

<u>Cumulative Traffic Noise</u>

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts generally occur as a result of increased traffic on local roadways due to buildout of the proposed Project and other projects in the vicinity. However, the Project is projected to result in 205 daily vehicular trips and would not increase noise associated with off-site traffic. Therefore, the proposed Project's contribution would not be cumulatively considerable.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** Less than significant impact.

# 7 REFERENCES


1. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020.
2. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
3. City of Rialto, *City of Rialto General Plan*, 2010.
4. City of Rialto, *A Codification of the General Ordinances of Rialto, California*, codified through Ordinance No. 1669*,* passed November 4, 2022.
5. Cyril M. Harris, *Noise Control in Buildings*, 1994.
6. Cyril M. Harris, *Handbook of Noise Control*, 1979.
7. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
8. James P. Cowan, *Handbook of Environmental Acoustics,* 1994.
9. Federal Highway Administration, *Highway Traffic and Construction Noise - Problem and Response*, April 2006.
10. Federal Highway Administration, *Noise Fundamentals*, 2017.
11. Federal Highway Administration, *Roadway Construction Noise Model*, 2006.
12. Federal Highway Administration, *Roadway Construction Noise Model User's Guide Final Report*, 2006.
13. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.
14. Federal Transit Administration, *Transit Noise and Vibration Assessment Manual*, 2018.
15. HPA Architects, *Conceptual Site Plan,* 2022.

# Appendix A

## Existing Ambient Noise Measurements

## Noise Measurement Field Data

| | | | |
|---|---|---|---|
| **Project:** | Rialto Scannell Warehouse | **Job Number:** | 194361005 |
| **Site No.:** | ST-1 | **Date:** | 8/10/2022 |
| **Analyst:** | Daisy Pineda and Steven Yu | **Time:** | 3:16 - 3:26 PM |
| **Location:** | Northeast boundary of project site, along Willow Avenue. | | |
| **Noise Sources:** | Car traffic, machinery, large trucks, wind | | |
| **Comments:** | Noise meter placed under a tree | | |

**Results (dBA):**

| | Leq: | Lmin: | Lmax: | Peak: |
|---|---|---|---|---|
| Measurement 1: | 65.5 | 50.8 | 82.4 | 101.5 |

| Equipment | |
|---|---|
| **Sound Level Meter:** | LD SoundExpert LxT |
| **Calibrator:** | CAL200 |
| **Response Time:** | Slow |
| **Weighting:** | A |
| **Microphone Height:** | 5 feet |

| Weather | |
|---|---|
| **Temp. (degrees F):** | 99° |
| **Wind (mph):** | 14 |
| **Sky:** | Clear |
| **Bar. Pressure:** | 29.91 inHg |
| **Humidity:** | 25% |

**Photo:**

Kimley»Horn

## Summary

| | |
|---|---|
| **File Name on Meter** | Rialto_.001.s |
| **File Name on PC** | LxTse_0007061-20220810 151659-Rialto_.001.ldbin |
| **Serial Number** | 0007061 |
| **Model** | SoundExpert® LxT |
| **Firmware Version** | 2.404 |
| **User** | |
| **Location** | |
| **Job Description** | |
| **Note** | |

## Measurement

| | |
|---|---|
| **Description** | |
| **Start** | 2022-08-10 15:16:59 |
| **Stop** | 2022-08-10 15:26:59 |
| **Duration** | 00:10:00.0 |
| **Run Time** | 00:10:00.0 |
| **Pause** | 00:00:00.0 |
| | |
| **Pre-Calibration** | 2022-08-09 16:01:04 |
| **Post-Calibration** | None |
| **Calibration Deviation** | --- |

## Overall Settings

| | | | | |
|---|---|---|---|---|
| **RMS Weight** | A Weighting | | | |
| **Peak Weight** | A Weighting | | | |
| **Detector** | Slow | | | |
| **Preamplifier** | Direct | | | |
| **Microphone Correction** | FF:90 2116 | | | |
| **Integration Method** | Linear | | | |
| **OBA Range** | Normal | | | |
| **OBA Bandwidth** | 1/1 and 1/3 | | | |
| **OBA Frequency Weighting** | A Weighting | | | |
| **OBA Max Spectrum** | At LMax | | | |
| **Overload** | 119.8 dB | | | |
| | **A** | **C** | **Z** | |
| **Under Range Peak** | **76.0** | 73.0 | 78.0 | dB |
| **Under Range Limit** | **12.0** | 10.5 | 14.8 | dB |
| **Noise Floor** | 2.8 | 1.3 | 5.6 | dB |
| | | | | |
| | **First** | **Second** | **Third** | |
| **Instrument Identification** | ıley-Horn and Associates | Town&Country Rd, #700 | Orange, CA 92868 | |

## Results

| | | | |
|---|---|---|---|
| **LAeq** | 65.5 | dB | |
| **LAE** | 93.3 | dB | |
| **EA** | 236.542 | µPa²h | |
| **LApeak (max)** | 2022-08-10 15:26:26 | 101.5 | dB |
| **LASmax** | 2022-08-10 15:26:26 | 82.4 | dB |
| **LASmin** | 2022-08-10 15:18:55 | 50.8 | dB |
| **SEA** | -99.9 | dB | |

| | **Exceedance Counts** | **Duration** |
|---|---|---|
| **LAS > 85.0 dB** | 0 | 0.0 s |
| **LAS > 115.0 dB** | 0 | 0.0 s |
| **LApeak > 135.0 dB** | 0 | 0.0 s |
| **LApeak > 137.0 dB** | 0 | 0.0 s |
| **LApeak > 140.0 dB** | 0 | 0.0 s |

| **Community Noise** | **Ldn** | **LDay 07:00-22:00** | **LNight 22:00-07:00** | **Lden** | **LDay 07:00-19:00** | **LEvening 19:00-22:00** |
|---|---|---|---|---|---|---|
| | 65.5 | 65.5 | -99.9 | 65.5 | 65.5 | -99.9 |

| | | |
|---|---|---|
| **LCeq** | 72.7 | dB |
| **LAeq** | 65.5 | dB |
| **LCeq - LAeq** | 7.2 | dB |
| **LAIeq** | 68.0 | dB |
| **LAeq** | 65.5 | dB |
| **LAIeq - LAeq** | 2.5 | dB |

| | **A** | | **C** | | **Z** | |
|---|---|---|---|---|---|---|
| | **dB** | **Time Stamp** | **dB** | **Time Stamp** | **dB** | **Time Stamp** |
| **Leq** | 65.5 | | 72.7 | | | |
| **LS(max)** | 82.4 | 2022/08/10 15:26:26 | | | | |
| **LS(min)** | 50.8 | 2022/08/10 15:18:55 | | | | |
| **LPeak(max)** | 101.5 | 2022/08/10 15:26:26 | | | | |

| | |
|---|---|
| **Overload Count** | 0 |
| **Overload Duration** | 0.0 s |
| **OBA Overload Count** | 0 |
| **OBA Overload Duration** | 0.0 s |

## Statistics

| | | |
|---|---|---|
| **LA 5.00** | 71.5 | dB |
| **LA 10.00** | 69.2 | dB |
| **LA 33.30** | 62.1 | dB |
| **LA 50.00** | 58.4 | dB |
| **LA 66.60** | 55.7 | dB |
| **LA 90.00** | 52.8 | dB |

## Calibration History

| **Preamp** | **Date** | **dB re. 1V/Pa** | **6.3** | **8.0** | **10.0** |
|---|---|---|---|---|---|
| **PRMLxT1L** | 2022-08-09 16:00:21 | -28.86 | 51.28 | 58.57 | 50.94 |
| **PRMLxT1L** | 2022-08-03 10:37:30 | -28.67 | 77.56 | 66.31 | 69.99 |
| **PRMLxT1L** | 2022-08-02 14:52:32 | -29.25 | 63.71 | 67.15 | 67.78 |
| **PRMLxT1L** | 2022-07-27 11:29:48 | -28.66 | 66.62 | 59.22 | 92.15 |
| **PRMLxT1L** | 2022-07-27 11:13:44 | -28.62 | 27.52 | 36.01 | 53.09 |
| **PRMLxT1L** | 2022-07-26 16:22:40 | -28.86 | 56.89 | 60.40 | 57.01 |
| **PRMLxT1L** | 2022-07-26 15:57:58 | -28.79 | 50.34 | 59.71 | 53.18 |
| **PRMLxT1L** | 2022-07-13 14:24:01 | -28.77 | 53.68 | 50.25 | 47.40 |
| **PRMLxT1L** | 2022-06-29 07:27:55 | -28.80 | 46.55 | 59.38 | 50.34 |
| **PRMLxT1L** | 2022-06-28 08:39:41 | -28.80 | 95.39 | 89.08 | 90.47 |
| **PRMLxT1L** | 2022-06-15 14:25:38 | -28.72 | 60.53 | 66.22 | 57.72 |

## Noise Measurement Field Data

| | | | |
|---|---|---|---|
| **Project:** | Rialto Scannell Warehouse | **Job Number:** | 194361005 |
| **Site No.:** | ST-2 | **Date:** | 8/10/2022 |
| **Analyst:** | Daisy Pineda and Steven Yu | **Time:** | 3:32 - 3:42 PM |
| **Location:** | Approximately 500 feet south of project site boundary, along Willow Avenue. | | |
| **Noise Sources:** | Cars passing, trucks, loading materials | | |
| **Comments:** | Slight wind, lots of trucks | | |

**Results (dBA):**

| | Leq: | Lmin: | Lmax: | Peak: |
|---|---|---|---|---|
| Measurement 1: | 65.6 | 49.2 | 76.4 | 93.0 |

| Equipment | |
|---|---|
| **Sound Level Meter:** | LD SoundExpert LxT |
| **Calibrator:** | CAL200 |
| **Response Time:** | Slow |
| **Weighting:** | A |
| **Microphone Height:** | 5 feet |

| Weather | |
|---|---|
| **Temp. (degrees F):** | 99° |
| **Wind (mph):** | 15 |
| **Sky:** | Clear |
| **Bar. Pressure:** | 29.91 inHg |
| **Humidity:** | 25% |

**Photo:**

Kimley»Horn

## Summary

| | | | |
|---|---|---|---|
| **File Name on Meter** | Rialto_.002.s | | |
| **File Name on PC** | LxTse_0007061-20220810 153216-Rialto_.002.ldbin | | |
| **Serial Number** | 0007061 | | |
| **Model** | SoundExpert® LxT | | |
| **Firmware Version** | 2.404 | | |
| **User** | | | |
| **Location** | | | |
| **Job Description** | | | |
| **Note** | | | |

## Measurement

| | | | |
|---|---|---|---|
| **Description** | | | |
| **Start** | 2022-08-10 15:32:16 | | |
| **Stop** | 2022-08-10 15:42:16 | | |
| **Duration** | 00:10:00.0 | | |
| **Run Time** | 00:10:00.0 | | |
| **Pause** | 00:00:00.0 | | |
| | | | |
| **Pre-Calibration** | None | | |
| **Post-Calibration** | None | | |
| **Calibration Deviation** | --- | | |

## Overall Settings

| | | | |
|---|---|---|---|
| **RMS Weight** | A Weighting | | |
| **Peak Weight** | A Weighting | | |
| **Detector** | Slow | | |
| **Preamplifier** | Direct | | |
| **Microphone Correction** | FF:90 2116 | | |
| **Integration Method** | Linear | | |
| **OBA Range** | Normal | | |
| **OBA Bandwidth** | 1/1 and 1/3 | | |
| **OBA Frequency Weighting** | A Weighting | | |
| **OBA Max Spectrum** | At LMax | | |
| **Overload** | 119.8 dB | | |
| | **A** | **C** | **Z** |
| **Under Range Peak** | **76.0** | 73.0 | 78.0 dB |
| **Under Range Limit** | **12.0** | 10.5 | 14.8 dB |
| **Noise Floor** | 2.8 | 1.3 | 5.6 dB |
| | | | |
| | **First** | **Second** | **Third** |
| **Instrument Identification** | ıley-Horn and Associates | Town&Country Rd, #700 | Orange, CA 92868 |

## Results

| | | | |
|---|---|---|---|
| **LAeq** | 65.6 dB | | |
| **LAE** | 93.4 dB | | |
| **EA** | 242.052 µPa²h | | |
| **LApeak (max)** | 2022-08-10 15:38:21 | 93.0 dB | |
| **LASmax** | 2022-08-10 15:35:46 | 76.4 dB | |
| **LASmin** | 2022-08-10 15:37:08 | 49.2 dB | |
| **SEA** | -99.9 dB | | |

| | Exceedance Counts | Duration |
|---|---|---|
| **LAS > 85.0 dB** | 0 | 0.0 s |
| **LAS > 115.0 dB** | 0 | 0.0 s |
| **LApeak > 135.0 dB** | 0 | 0.0 s |
| **LApeak > 137.0 dB** | 0 | 0.0 s |
| **LApeak > 140.0 dB** | 0 | 0.0 s |

| **Community Noise** | **Ldn** | **LDay 07:00-22:00** | **LNight 22:00-07:00** | **Lden** | **LDay 07:00-19:00** | **LEvening 19:00-22:00** |
|---|---|---|---|---|---|---|
| | 65.6 | 65.6 | -99.9 | 65.6 | 65.6 | -99.9 |

| | | |
|---|---|---|
| **LCeq** | 77.7 | dB |
| **LAeq** | 65.6 | dB |
| **LCeq - LAeq** | 12.1 | dB |
| **LAIeq** | 67.3 | dB |
| **LAeq** | 65.6 | dB |
| **LAIeq - LAeq** | 1.7 | dB |

| | **A** | | **C** | | **Z** | |
|---|---|---|---|---|---|---|
| | **dB** | **Time Stamp** | **dB** | **Time Stamp** | **dB** | **Time Stamp** |
| **Leq** | 65.6 | | 77.7 | | | |
| **LS(max)** | 76.4 | 2022/08/10 15:35:46 | | | | |
| **LS(min)** | 49.2 | 2022/08/10 15:37:08 | | | | |
| **LPeak(max)** | 93.0 | 2022/08/10 15:38:21 | | | | |

| | |
|---|---|
| **Overload Count** | 0 |
| **Overload Duration** | 0.0 s |
| **OBA Overload Count** | 0 |
| **OBA Overload Duration** | 0.0 s |

## Statistics

| | |
|---|---|
| **LA 5.00** | 72.2 dB |
| **LA 10.00** | 69.9 dB |
| **LA 33.30** | 64.2 dB |
| **LA 50.00** | 61.3 dB |
| **LA 66.60** | 58.3 dB |
| **LA 90.00** | 52.7 dB |

## Calibration History

| **Preamp** | **Date** | **dB re. 1V/Pa** | **6.3** | **8.0** | **10.0** |
|---|---|---|---|---|---|
| **PRMLxT1L** | 2022-08-09 16:00:21 | -28.86 | 51.28 | 58.57 | 50.94 |
| **PRMLxT1L** | 2022-08-03 10:37:30 | -28.67 | 77.56 | 66.31 | 69.99 |
| **PRMLxT1L** | 2022-08-02 14:52:32 | -29.25 | 63.71 | 67.15 | 67.78 |
| **PRMLxT1L** | 2022-07-27 11:29:48 | -28.66 | 66.62 | 59.22 | 92.15 |
| **PRMLxT1L** | 2022-07-27 11:13:44 | -28.62 | 27.52 | 36.01 | 53.09 |
| **PRMLxT1L** | 2022-07-26 16:22:40 | -28.86 | 56.89 | 60.40 | 57.01 |
| **PRMLxT1L** | 2022-07-26 15:57:58 | -28.79 | 50.34 | 59.71 | 53.18 |
| **PRMLxT1L** | 2022-07-13 14:24:01 | -28.77 | 53.68 | 50.25 | 47.40 |
| **PRMLxT1L** | 2022-06-29 07:27:55 | -28.80 | 46.55 | 59.38 | 50.34 |
| **PRMLxT1L** | 2022-06-28 08:39:41 | -28.80 | 95.39 | 89.08 | 90.47 |
| **PRMLxT1L** | 2022-06-15 14:25:38 | -28.72 | 60.53 | 66.22 | 57.72 |

## Noise Measurement Field Data

| | | | |
|---|---|---|---|
| **Project:** | Rialto Scannell Warehouse | **Job Number:** | 194361005 |
| **Site No.:** | ST-3 | **Date:** | 8/10/2022 |
| **Analyst:** | Daisy Pineda and Steven Yu | **Time:** | 3:49 - 3:59 PM |
| **Location:** | Along of Jurupa Avenue, south of project site. | | |
| **Noise Sources:** | Car and truck traffic | | |
| **Comments:** | Not a lot of human activity | | |

**Results (dBA):**

| | Leq: | Lmin: | Lmax: | Peak: |
|---|---|---|---|---|
| Measurement 1: | 61.0 | 8.1 | 74.6 | 99.7 |

| Equipment | |
|---|---|
| **Sound Level Meter:** | LD SoundExpert LxT |
| **Calibrator:** | CAL200 |
| **Response Time:** | Slow |
| **Weighting:** | A |
| **Microphone Height:** | 5 feet |

| Weather | |
|---|---|
| **Temp. (degrees F):** | 98° |
| **Wind (mph):** | 15 |
| **Sky:** | Clear |
| **Bar. Pressure:** | 29.90 inHg |
| **Humidity:** | 25% |

**Photo:**

Kimley»Horn

| Summary | | | |
|---|---|---|---|
| **File Name on Meter** | Rialto_.003.s | | |
| **File Name on PC** | LxTse_0007061-20220810 154926-Rialto_.003.ldbin | | |
| **Serial Number** | 0007061 | | |
| **Model** | SoundExpert® LxT | | |
| **Firmware Version** | 2.404 | | |
| **User** | | | |
| **Location** | | | |
| **Job Description** | | | |
| **Note** | | | |

| Measurement | |
|---|---|
| **Description** | |
| **Start** | 2022-08-10 15:49:26 |
| **Stop** | 2022-08-10 15:59:26 |
| **Duration** | 00:10:00.0 |
| **Run Time** | 00:10:00.0 |
| **Pause** | 00:00:00.0 |
| | |
| **Pre-Calibration** | None |
| **Post-Calibration** | None |
| **Calibration Deviation** | --- |

| Overall Settings | | | |
|---|---|---|---|
| **RMS Weight** | A Weighting | | |
| **Peak Weight** | A Weighting | | |
| **Detector** | Slow | | |
| **Preamplifier** | Direct | | |
| **Microphone Correction** | FF:90 2116 | | |
| **Integration Method** | Linear | | |
| **OBA Range** | Normal | | |
| **OBA Bandwidth** | 1/1 and 1/3 | | |
| **OBA Frequency Weighting** | A Weighting | | |
| **OBA Max Spectrum** | At LMax | | |
| **Overload** | 119.8 dB | | |
| | **A** | **C** | **Z** |
| **Under Range Peak** | **76.0** | 73.0 | 78.0 dB |
| **Under Range Limit** | **12.0** | 10.5 | 14.8 dB |
| **Noise Floor** | 2.8 | 1.3 | 5.6 dB |
| | | | |
| | **First** | **Second** | **Third** |
| **Instrument Identification** | ıley-Horn and Associates | Town&Country Rd, #700 | Orange, CA 92868 |

## Results

| | | | |
|---|---|---|---|
| **LAeq** | 61.0 dB | | |
| **LAE** | 88.8 dB | | |
| **EA** | 83.928 µPa²h | | |
| **LApeak (max)** | 2022-08-10 15:54:45 | 99.7 dB | |
| **LASmax** | 2022-08-10 15:53:43 | 74.6 dB | |
| **LASmin** | 2022-08-10 15:55:58 | 8.1 dB | |
| **SEA** | -99.9 dB | | |

| | Exceedance Counts | Duration |
|---|---|---|
| **LAS > 85.0 dB** | 0 | 0.0 s |
| **LAS > 115.0 dB** | 0 | 0.0 s |
| **LApeak > 135.0 dB** | 0 | 0.0 s |
| **LApeak > 137.0 dB** | 0 | 0.0 s |
| **LApeak > 140.0 dB** | 0 | 0.0 s |

| **Community Noise** | **Ldn** | **LDay 07:00-22:00** | **LNight 22:00-07:00** | **Lden** | **LDay 07:00-19:00** | **LEvening 19:00-22:00** |
|---|---|---|---|---|---|---|
| | 61.0 | 61.0 | -99.9 | 61.0 | 61.0 | -99.9 |

| | | |
|---|---|---|
| **LCeq** | 68.6 | dB |
| **LAeq** | 61.0 | dB |
| **LCeq - LAeq** | 7.6 | dB |
| **LAIeq** | 64.8 | dB |
| **LAeq** | 61.0 | dB |
| **LAIeq - LAeq** | 3.8 | dB |

| | **A** | | **C** | | **Z** | |
|---|---|---|---|---|---|---|
| | **dB** | **Time Stamp** | **dB** | **Time Stamp** | **dB** | **Time Stamp** |
| **Leq** | 61.0 | | 68.6 | | | |
| **LS(max)** | 74.6 | 2022/08/10 15:53:43 | | | | |
| **LS(min)** | 8.1 | 2022/08/10 15:55:58 | | | | |
| **LPeak(max)** | 99.7 | 2022/08/10 15:54:45 | | | | |

| | |
|---|---|
| **Overload Count** | 0 |
| **Overload Duration** | 0.0 s |
| **OBA Overload Count** | 0 |
| **OBA Overload Duration** | 0.0 s |

## Statistics

| | |
|---|---|
| **LA 5.00** | 69.0 dB |
| **LA 10.00** | 66.4 dB |
| **LA 33.30** | 52.6 dB |
| **LA 50.00** | 46.9 dB |
| **LA 66.60** | 33.9 dB |
| **LA 90.00** | 10.9 dB |

## Calibration History

| **Preamp** | **Date** | **dB re. 1V/Pa** | **6.3** | **8.0** | **10.0** |
|---|---|---|---|---|---|
| **PRMLxT1L** | 2022-08-09 16:00:21 | -28.86 | 51.28 | 58.57 | 50.94 |
| **PRMLxT1L** | 2022-08-03 10:37:30 | -28.67 | 77.56 | 66.31 | 69.99 |
| **PRMLxT1L** | 2022-08-02 14:52:32 | -29.25 | 63.71 | 67.15 | 67.78 |
| **PRMLxT1L** | 2022-07-27 11:29:48 | -28.66 | 66.62 | 59.22 | 92.15 |
| **PRMLxT1L** | 2022-07-27 11:13:44 | -28.62 | 27.52 | 36.01 | 53.09 |
| **PRMLxT1L** | 2022-07-26 16:22:40 | -28.86 | 56.89 | 60.40 | 57.01 |
| **PRMLxT1L** | 2022-07-26 15:57:58 | -28.79 | 50.34 | 59.71 | 53.18 |
| **PRMLxT1L** | 2022-07-13 14:24:01 | -28.77 | 53.68 | 50.25 | 47.40 |
| **PRMLxT1L** | 2022-06-29 07:27:55 | -28.80 | 46.55 | 59.38 | 50.34 |
| **PRMLxT1L** | 2022-06-28 08:39:41 | -28.80 | 95.39 | 89.08 | 90.47 |
| **PRMLxT1L** | 2022-06-15 14:25:38 | -28.72 | 60.53 | 66.22 | 57.72 |

## Noise Measurement Field Data

| | | | |
|---|---|---|---|
| **Project:** | Rialto Scannell Warehouse | **Job Number:** | 194361005 |
| **Site No.:** | ST-4 | **Date:** | 8/10/2022 |
| **Analyst:** | Daisy Pineda and Steven Yu | **Time:** | 4:05 - 4:15 PM |
| **Location:** | Along Lilac Street, southwest of project site. | | |
| **Noise Sources:** | Birds chirping, vehicular traffic (cars, trucks) | | |
| **Comments:** | Lots of trucks passing by | | |

**Results (dBA):**

| | Leq: | Lmin: | Lmax: | Peak: |
|---|---|---|---|---|
| Measurement 1: | 60.8 | 7.8 | 80.7 | 100.3 |

| Equipment | |
|---|---|
| **Sound Level Meter:** | LD SoundExpert LxT |
| **Calibrator:** | CAL200 |
| **Response Time:** | Slow |
| **Weighting:** | A |
| **Microphone Height:** | 5 feet |

| Weather | |
|---|---|
| **Temp. (degrees F):** | 98° |
| **Wind (mph):** | 15 |
| **Sky:** | Clear |
| **Bar. Pressure:** | 29.90 inHg |
| **Humidity:** | 25% |

**Photo:**

Kimley»Horn

## Summary

| | | | |
|---|---|---|---|
| **File Name on Meter** | Rialto_.004.s | | |
| **File Name on PC** | LxTse_0007061-20220810 160521-Rialto_.004.ldbin | | |
| **Serial Number** | 0007061 | | |
| **Model** | SoundExpert® LxT | | |
| **Firmware Version** | 2.404 | | |
| **User** | | | |
| **Location** | | | |
| **Job Description** | | | |
| **Note** | | | |

## Measurement

| | | | |
|---|---|---|---|
| **Description** | | | |
| **Start** | 2022-08-10 16:05:21 | | |
| **Stop** | 2022-08-10 16:15:21 | | |
| **Duration** | 00:10:00.0 | | |
| **Run Time** | 00:10:00.0 | | |
| **Pause** | 00:00:00.0 | | |
| | | | |
| **Pre-Calibration** | None | | |
| **Post-Calibration** | None | | |
| **Calibration Deviation** | --- | | |

## Overall Settings

| | | | |
|---|---|---|---|
| **RMS Weight** | A Weighting | | |
| **Peak Weight** | A Weighting | | |
| **Detector** | Slow | | |
| **Preamplifier** | Direct | | |
| **Microphone Correction** | FF:90 2116 | | |
| **Integration Method** | Linear | | |
| **OBA Range** | Normal | | |
| **OBA Bandwidth** | 1/1 and 1/3 | | |
| **OBA Frequency Weighting** | A Weighting | | |
| **OBA Max Spectrum** | At LMax | | |
| **Overload** | 119.8 dB | | |
| | **A** | **C** | **Z** |
| **Under Range Peak** | **76.0** | 73.0 | 78.0 dB |
| **Under Range Limit** | **12.0** | 10.5 | 14.8 dB |
| **Noise Floor** | 2.8 | 1.3 | 5.6 dB |
| | | | |
| | **First** | **Second** | **Third** |
| **Instrument Identification** | ıley-Horn and Associates | Town&Country Rd, #700 | Orange, CA 92868 |

## Results

| | | | |
|---|---|---|---|
| **LAeq** | 60.8 dB | | |
| **LAE** | 88.6 dB | | |
| **EA** | 80.151 µPa²h | | |
| **LApeak (max)** | 2022-08-10 16:06:46 | 100.3 dB | |
| **LASmax** | 2022-08-10 16:09:56 | 80.7 dB | |
| **LASmin** | 2022-08-10 16:06:32 | 7.8 dB | |
| **SEA** | -99.9 dB | | |

| | Exceedance Counts | Duration |
|---|---|---|
| **LAS > 85.0 dB** | 0 | 0.0 s |
| **LAS > 115.0 dB** | 0 | 0.0 s |
| **LApeak > 135.0 dB** | 0 | 0.0 s |
| **LApeak > 137.0 dB** | 0 | 0.0 s |
| **LApeak > 140.0 dB** | 0 | 0.0 s |

| **Community Noise** | Ldn | LDay 07:00-22:00 | LNight 22:00-07:00 | Lden | LDay 07:00-19:00 | LEvening 19:00-22:00 |
|---|---|---|---|---|---|---|
| | 60.8 | 60.8 | -99.9 | 60.8 | 60.8 | -99.9 |

| | |
|---|---|
| **LCeq** | 70.1 dB |
| **LAeq** | 60.8 dB |
| **LCeq - LAeq** | 9.3 dB |
| **LAIeq** | 64.0 dB |
| **LAeq** | 60.8 dB |
| **LAIeq - LAeq** | 3.2 dB |

| | A | | C | | Z | |
|---|---|---|---|---|---|---|
| | dB | Time Stamp | dB | Time Stamp | dB | Time Stamp |
| **Leq** | 60.8 | | 70.1 | | | |
| **LS(max)** | 80.7 | 2022/08/10 16:09:56 | | | | |
| **LS(min)** | 7.8 | 2022/08/10 16:06:32 | | | | |
| **LPeak(max)** | 100.3 | 2022/08/10 16:06:46 | | | | |

| | |
|---|---|
| **Overload Count** | 0 |
| **Overload Duration** | 0.0 s |
| **OBA Overload Count** | 0 |
| **OBA Overload Duration** | 0.0 s |

## Statistics

| | |
|---|---|
| **LA 5.00** | 64.0 dB |
| **LA 10.00** | 58.1 dB |
| **LA 33.30** | 47.7 dB |
| **LA 50.00** | 24.6 dB |
| **LA 66.60** | 8.7 dB |
| **LA 90.00** | 7.9 dB |

## Calibration History

| **Preamp** | **Date** | **dB re. 1V/Pa** | **6.3** | **8.0** | **10.0** |
|---|---|---|---|---|---|
| **PRMLxT1L** | 2022-08-09 16:00:21 | -28.86 | 51.28 | 58.57 | 50.94 |
| **PRMLxT1L** | 2022-08-03 10:37:30 | -28.67 | 77.56 | 66.31 | 69.99 |
| **PRMLxT1L** | 2022-08-02 14:52:32 | -29.25 | 63.71 | 67.15 | 67.78 |
| **PRMLxT1L** | 2022-07-27 11:29:48 | -28.66 | 66.62 | 59.22 | 92.15 |
| **PRMLxT1L** | 2022-07-27 11:13:44 | -28.62 | 27.52 | 36.01 | 53.09 |
| **PRMLxT1L** | 2022-07-26 16:22:40 | -28.86 | 56.89 | 60.40 | 57.01 |
| **PRMLxT1L** | 2022-07-26 15:57:58 | -28.79 | 50.34 | 59.71 | 53.18 |
| **PRMLxT1L** | 2022-07-13 14:24:01 | -28.77 | 53.68 | 50.25 | 47.40 |
| **PRMLxT1L** | 2022-06-29 07:27:55 | -28.80 | 46.55 | 59.38 | 50.34 |
| **PRMLxT1L** | 2022-06-28 08:39:41 | -28.80 | 95.39 | 89.08 | 90.47 |
| **PRMLxT1L** | 2022-06-15 14:25:38 | -28.72 | 60.53 | 66.22 | 57.72 |

# Appendix B

**Noise Model Output Files**

**Project:** 2720 Willow Avenue Warehouse Project

**Construction Noise Impact on Sensitive Receptors**

*Parameters*

| | | |
|---|---|---|
| **Construction Hours:** | Daytime hours (7 am to 7 pm) | 8 |
| | Evening hours (7 pm to 10 pm) | 0 |
| | Nighttime hours (10 pm to 7 am) | 0 |
| **Leq to L10 factor** | | 3 |

| | Receptor (Land Use) | Distance (feet) | Shielding | Direction |
|---|---|---|---|---|
| 1 | Single-Family Residential | 715 | 0 | S |
| 2 | Industrial | 295 | 0 | N/S |
| 3 | - | - | - | - |
| 4 | - | - | - | - |
| 5 | - | - | - | - |
| 6 | - | - | - | - |
| 7 | - | - | - | - |

| | | | | | RECEPTOR 1 | | RECEPTOR 2 | |
|---|---|---|---|---|---|---|---|---|
| **Construction Phase** | **Equipment Type** | **No. of Equip.** | **Acoustical Usage Factor** | **Reference Noise Level at 50ft per Unit, Lmax** | **Noise Level at Receptor 1, Lmax** | **Noise Level at Receptor 1, Leq** | **Noise Level at Receptor 2, Lmax** | **Noise Level at Receptor 2, Leq** |
| **Demolition** | | | | | | | | |
| | Concrete Saw | 1 | 20% | 90 | 66.5 | 59.5 | 74.2 | 67.2 |
| | Excavator | 3 | 40% | 81 | 62.4 | 58.4 | 70.1 | 66.1 |
| | Dozer | 2 | 40% | 82 | 61.6 | 57.6 | 69.3 | 65.3 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **63.3** | | **71.0** |
| **Site Preparation** | | | | | | | | |
| | Dozer | 3 | 40% | 82 | 63.4 | 59.4 | 71.1 | 67.1 |
| | Tractor | 4 | 40% | 84 | 66.9 | 62.9 | 74.6 | 70.6 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **64.5** | | **72.2** |
| **Grading** | | | | | | | | |
| | Excavator | 1 | 40% | 81 | 57.6 | 53.6 | 65.3 | 61.3 |
| | Graders | 1 | 40% | 85 | 61.9 | 57.9 | 69.6 | 65.6 |
| | Dozer | 1 | 40% | 82 | 58.6 | 54.6 | 66.3 | 62.3 |
| | Tractor | 3 | 40% | 84 | 65.7 | 61.7 | 73.4 | 69.4 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **64.2** | | **71.9** |
| **Infrastructure Improvements** | | | | | | | | |
| | Excavator | 1 | 40% | 81 | 57.6 | 53.6 | 65.3 | 61.3 |
| | Dozer | 1 | 40% | 82 | 58.6 | 54.6 | 66.3 | 62.3 |
| | Tractor | 3 | 40% | 84 | 65.7 | 61.7 | 73.4 | 69.4 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **63.0** | | **70.7** |

| Construction Phase | Equipment Type | No. of Equip. | Acoustical Usage Factor | Reference Noise Level at 50ft per Unit, Lmax | Noise Level at Receptor 1, Lmax | Noise Level at Receptor 1, Leq | Noise Level at Receptor 2, Lmax | Noise Level at Receptor 2, Leq |
|---|---|---|---|---|---|---|---|---|
| **Paving** | | | | | | | | |
| | Pavers | 2 | 50% | 77 | 57.1 | 54.1 | 64.8 | 61.8 |
| | Paving Equipment | 2 | 50% | 77 | 57.1 | 54.1 | 64.8 | 61.8 |
| | Rollers | 2 | 20% | 80 | 59.9 | 52.9 | 67.6 | 60.6 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **58.5** | | **66.2** |
| **Building Construction** | | | | | | | | |
| | Crane | 1 | 16% | 81 | 57.5 | 49.5 | 65.2 | 57.2 |
| | Forklifts | 3 | 40% | 74 | 56.0 | 52.0 | 63.7 | 59.7 |
| | Generator | 1 | 50% | 81 | 57.5 | 54.5 | 65.2 | 62.2 |
| | Tractor | 3 | 40% | 84 | 65.7 | 61.7 | 73.4 | 69.4 |
| | Welder/Torch | 1 | 40% | 74 | 50.9 | 46.9 | 58.6 | 54.6 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **63.1** | | **70.8** |
| **Architectural Coating** | | | | | | | | |
| | Compressor (air) | 1 | 40% | 78 | 54.6 | 50.6 | 62.3 | 58.3 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **50.6** | | **58.3** |
| **Combined Grading, Building Construction, Paving, Architectural Coating** | | | | | | | | |
| | Excavator | 1 | 40% | 81 | 57.6 | 53.6 | 65.3 | 61.3 |
| | Graders | 1 | 40% | 85 | 61.9 | 57.9 | 69.6 | 65.6 |
| | Dozer | 1 | 40% | 82 | 58.6 | 54.6 | 66.3 | 62.3 |
| | Tractor | 1 | 40% | 84 | 60.9 | 56.9 | 68.6 | 64.6 |
| | Crane | 1 | 16% | 81 | 57.5 | 49.5 | 65.2 | 57.2 |
| | Forklifts | 1 | 40% | 74 | 51.2 | 47.2 | 58.9 | 54.9 |
| | Generator | 1 | 50% | 81 | 57.5 | 54.5 | 65.2 | 62.2 |
| | Pavers | 1 | 50% | 77 | 54.1 | 51.1 | 61.8 | 58.8 |
| | Roller | 1 | 20% | 80 | 56.9 | 49.9 | 64.6 | 57.6 |
| | | | #N/A | #N/A | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| | USER DEFINED | | | | 0.0 | 0.0 | 0.0 | 0.0 |
| **Combined LEQ** | | | | | | **63.6** | | **71.3** |

Source for Ref. Noise Levels: RCNM, 2005

| Receptor | Phase | Direction | Distance to Center of Site | Ambient (dBA Leq) | Project Construction Noise Level dBA Leq | Threshold | Exceeds Threshold? |
|---|---|---|---|---|---|---|---|
| 1 Single-Family Residential | Demolition | S | 715 | 65.5 | 63.3 | 80.0 | No |
| | Site Preparation | | | | 64.5 | | No |
| | Grading | | | | 64.2 | | No |
| | Infrastructure Improvements | | | | 63.0 | | No |
| | Paving | | | | 58.5 | | No |
| | Building Construction | | | | 63.1 | | No |
| | Architectural Coating | | | | 50.6 | | No |
| | Combined Grading, Building Construction, Paving, Architectural Coating | | | | 63.6 | | No |
| 2 Industrial | Demolition | N/S | 295 | 61.0 | 71.0 | 90.0 | No |
| | Site Preparation | | | | 72.2 | | No |
| | Grading | | | | 71.9 | | No |
| | Infrastructure Improvements | | | | 70.7 | | No |
| | Paving | | | | 66.2 | | No |
| | Building Construction | | | | 70.8 | | No |
| | Architectural Coating | | | | 58.3 | | No |
| | Combined Grading, Building Construction, Paving, Architectural Coating | | | | 71.3 | | No |