

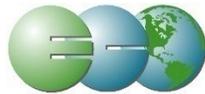
Noise Impact Assessment for the Pepper Development Project

Colton, California

Prepared For:

City of Colton
650 N. La Cadena Drive
Colton, CA 92324

Prepared By:



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

3838 Camino del Rio North, Suite 370
San Diego, CA 92108

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LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disability Act
APN	Assessor’s Parcel Number
Caltrans	California Department of Transportation
CHCCSP	Colton’s Hub City Centre Specific Plan
CNEL	Community Noise Equivalent Level
City	City of Colton
County	San Bernardino County
dB	Decibel
dba	Decibel is A-weighted
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
Hz	Hertz
L _{dn}	Day-night average sound level
L _{eq}	Measure of ambient noise
L _{max}	The maximum A-weighted noise level during the measurement period
L _{min}	The minimum A-weighted noise level during the measurement period
NIOSH	National Institute for Occupational Safety and Health
OPR	Office of Planning and Research
OSHA	Federal Occupational Safety and Health Administration
PPV	Peak particle velocity
Project	Pepper Development Project
RCNM	Roadway Construction Noise Model
RMS	Root mean square
SEL	Sound Exposure Level
sf	Square feet
STC	Sound Transmission Class
USGS	United States Geological Survey
VdB	Vibration Velocity Level

1.0 INTRODUCTION

This report documents the results of a Noise Impact Assessment completed for the Pepper Development Project (Project), which proposes would include construction and operation of a three-story 60,000 square foot medical office clinic, a five-story 71,000 square foot hotel, a three-story parking structure, additional unenclosed parking, and associated site improvements in the City of Colton (City) in San Bernardino County (County). This report was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the City of Colton General Plan Noise Element and Municipal Code. The purpose of this report is to estimate Project-generated noise and to determine the level of impact the Project would have on the environment.

1.1 Location and Setting

The Proposed Project is located on an approximately 9-acre (389,336 square feet [sf]) vacant parcel in the City of Colton in San Bernardino County, California (Figure 1-1, Project Location). The Project is located on the west side of North Pepper Avenue and approximately 625 feet south of West San Bernardino Avenue. The Project Area is composed of one parcel (Assessor's Parcel Number [APN] 0254-071-10) designated as Office/Mixed Use per the City's Colton Hub City Centre Specific Plan (CHCCSP) (City of Colton 2014a). As depicted on the U.S. Geological Survey (USGS) 7.5-minute "San Bernardino South, California" topographic quadrangle, the Proposed Project is located within Section 24, Township 1 South, Range 5 West, San Bernardino Principal Meridian.

1.2 Project Location and Description

The Project Applicant proposes to construct a three-story 60,000 sf medical office clinic, a five-story 71,000 sf commercial hotel, a three-story parking structure, surface parking areas, and associated site improvements such as curb and gutter, utilities, and landscaping on approximately 3.83 acres of the site. The remaining 5.1 acres in the western portion of the Project parcel is proposed to be a dedicated conservation area for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) consistent with the conservation strategy identified within the West Valley Habitat Conservation Plan (City of Colton 2014b).

The proposed three-story medical clinic would be built-to-suit and complement the nearby Arrowhead Regional Medical Center located across North Pepper Avenue. The proposed five-story hotel would be branded as a Home2 Suites by Hilton and would provide 112 guest rooms and guest amenities such as a pool. The proposed structures would be supported by a conventional slab-on-grade foundation system with perimeter-spread footings and isolated interior footings. Other improvements include concrete and asphalt pavement, hardscape, and landscaping.

The proposed parking structure and surface parking areas would service both the medical clinic and the hotel. Approximately 321 parking stalls, including Americans with Disability Act (ADA)-compliant stalls, would be provided. This exceeds the 300-parking stall requirement for a medical office of the proposed size.

Construction activities would involve the removal of vegetation; grading to finished design elevations; excavation to allow construction of building foundations, utilities, roadways, parking areas, sidewalks, and landscaping. Equipment used during construction may include, but is not limited to, tractors, loaders, backhoes, excavators, graders, scrapers, cranes, forklifts, generator sets, welders, pavers, paving equipment, rollers, and air compressors.



Location: N:\2024\2024-179.01 Colton Medical_Hotel Development\MAPS\Location_Vicinity\CWHD LnV.aprx - Colton Medical Hotel Development Location 20240827 (lgalvez - 9/5/2024)

Map Date: 9/5/2024
Sources: Esri World Imagery, County of San Bernardino (2023)

Figure 1-1. Project Location

2.0 ENVIRONMENTAL NOISE AND GROUND BORNE VIBRATION ANALYSIS

2.1 Fundamentals of Noise and Environmental Sound

2.1.1 Addition of Decibels

The decibel (dB) scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be three dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by three dB). Under the decibel scale, three sources of equal loudness together would produce an increase of five dB.

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

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

Source: California Department of Transportation (Caltrans) 2020

2.1.2 Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB (dBA) for each doubling of distance from a stationary or point source (Federal Highway Administration [FHWA] 2017). Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dBA for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (FHWA 2017). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. For line sources, an overall attenuation rate of three dB per doubling of distance is assumed (FHWA 2011).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about five dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. 2021). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend lengthwise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (California Department of Transportation [Caltrans] 2002). The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. [HMMH] 2006). Generally, in exterior noise environments ranging from 60 dBA Community Noise Equivalent Level (CNEL) to 65 dBA CNEL, interior noise levels can typically be maintained below 45 dBA, a typical residential interior noise standard, with the incorporation of an adequate forced air mechanical ventilation system in each residential building, and standard thermal-pane residential windows/doors with a minimum rating of Sound Transmission Class (STC) 28 (STC is an integer rating of how well a building partition attenuates airborne sound. In the U.S., it is widely used to rate interior partitions, ceilings, floors, doors, windows, and exterior wall configurations). In exterior noise environments of 65 dBA CNEL or greater, a combination of forced-air mechanical ventilation and sound-rated construction methods is often required to meet the interior noise level limit. Attaining the necessary noise reduction from exterior to interior spaces is readily achievable in noise environments less than 75 dBA CNEL with proper wall construction techniques following California Building Code methods, the selections of proper windows and doors, and the incorporation of forced-air mechanical ventilation systems.

2.1.3 Noise Descriptors

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

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

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

Table 2-1. Common Acoustical Descriptors	
Descriptor	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels is measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	A 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn} .
Community Noise Equivalent Level, CNEL	A 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

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

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

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

2.1.4 Human Response to Noise

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

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

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

2.1.5 Effects of Noise on People

2.1.5.1 Hearing Loss

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

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

2.1.5.2 Annoyance

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

2.2 Fundamentals of Environmental Groundborne Vibration

2.2.1 Vibration Sources and Characteristics

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

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

PPV is generally accepted as the most appropriate descriptor for evaluating the potential for building damage. For human response, however, an average vibration amplitude is more appropriate because it takes time for the human body to respond to the excitation (the human body responds to an average vibration amplitude, not a peak amplitude). Because the average particle velocity over time is zero, the RMS amplitude is typically used to assess human response. The RMS value is the average of the amplitude squared over time, typically a 1- sec. period (FTA 2018).

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

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

Table 2-2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

Peak Particle Velocity (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Threshold at which there is a risk of architectural damage to extremely fragile historic buildings, ruins, ancient monuments
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Threshold at which there is a risk of architectural damage to fragile buildings. Virtually no risk of architectural damage to normal buildings
0.25	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to historic and some old buildings
0.3	96	Vibrations may begin to feel severe to people in buildings	Threshold at which there is a risk of architectural damage to older residential structures
0.5	103	Vibrations considered unpleasant by people subjected to continuous vibrations	Threshold at which there is a risk of architectural damage to new residential structures and Modern industrial/commercial buildings

Source: Caltrans 2020b

3.0 EXISTING ENVIRONMENTAL NOISE SETTING

3.1 Noise Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. The City of Colton's Municipal Code states that sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, residential uses, and convalescent homes (City of Colton 2023). Additional land uses such as historic sites, cemeteries, and certain recreation areas are often considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive receptors to the Project Area include the Arrowhead Regional Medical Center directly adjacent to the east of the Project Site, the California University of Science and Medicine campus located towards the northeast of the Project Site, the Colton Golf Course and West Valley Park located to the west of the Project Site, and the residences to the north of the Project Site.

3.1.1 Existing Ambient Noise Environment

The City of Colton is impacted by various noise sources. It is subject to typical urban noise such as noise generated by traffic, heavy machinery, and day-to-day outdoor activities as well as noise generated from the various land uses (i.e., residential, commercial, institutional, and recreational/park activities) throughout the City that generate stationary source noise. The noise environment in Colton is composed of several major sources which are considered in the City's Noise Element of the General Plan and include: (1) primary arterials and major local streets, (2) passenger and freight on-line railroad operations, (3) highways and freeways, and (4) airport operations. Within the Proposed Project Area, the most common and significant noise sources are associated with traffic on W San Bernardino Avenue and N Pepper Avenue, highway noise from Interstate 10, and other typical residential noises like dogs barking, radios, and landscaping equipment. As shown in Table 3-1 below, the ambient recorded noise levels range 55.3 dBA to 72.4 dBA L_{eq} on and in the vicinity of the Project Site.

3.1.2 Existing Ambient Noise Measurements

In order to quantify existing ambient noise levels in the Project Area, ECORP Consulting, Inc. conducted a 24-hour (long-term) noise measurement starting on October 3, 2024, and extending into October 4. This 24-hour noise measurement is representative of typical existing noise exposure on the Project Site during a typical 24-hour day. Additionally, ECORP conducted four short-term (approximately 15-minute) noise measurements on October 4, 2024. These short-term noise measurements are representative of typical existing noise exposure within and immediately adjacent to the Project Site during the daytime (See Attachment A for a visual representation of the measurement locations). The average noise levels at each location are listed in Table 3-1.

Table 3-1. Existing Ambient Noise Measurements						
15-Minute Noise Measurements						
Location Number	Location	CNEL dBA	L_{eq} dBA	L_{min} dBA	L_{max} dBA	Time
ST 1	Southeast corner of W San Bernardino Avenue and N Iron Horse Drive	N/A	68.4	50.7	86.1	10:39 a.m. – 10:54 a.m.
ST 2	Corner of Violet Street and N Pepper Avenue	N/A	71.2	50.0	97.6	11:00 a.m. – 11:18 a.m.
ST 3	On Parkway West of Green Circle Drive	N/A	55.3	50.5	82.6	11:21 a.m. – 11:36 a.m.
ST 4	Northeast corner of Eucalyptus Avenue and Valley Boulevard	N/A	72.4	56.3	98.1	11:44 a.m. – 12:00 p.m.
24-Hour Noise Measurement						
Location Number	Location	CNEL dBA	L_{eq} dBA	L_{min} dBA	L_{max} dBA	Time
LT 1	75 feet south of the southwest corner of W San Bernardino Avenue and N Iron Horse Drive	60.0	56.9	45.8	98.9	10:26 a.m. – 10:26 a.m.

Source: Measurements were taken by ECORP with a Larson Davis Spartan 821 sound level meter, which satisfies the American National Standards Institute for general environmental noise measurement instrumentation. Prior to the measurements, the Spartan 821 sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. See Attachment A for noise measurement outputs.

Notes: L_{eq} is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. L_{min} is the minimum noise level during the measurement period and L_{max} is the maximum noise level during the measurement period. CNEL is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

As shown in Table 3-1, the ambient recorded noise level during the span of the 24-hour noise measurement was 60.0 dBA CNEL. The ambient recorded noise levels range from 55.3 dBA to 72.4 dBA L_{eq} over the course of the four short-term noise measurements taken in the Project vicinity in October of 2024. The most common noise in the Project vicinity is produced by automotive vehicles (e.g., cars, trucks, buses, motorcycles) on the local surrounding roadways such as W San Bernardino Avenue and N Pepper Avenue.

3.1.3 Existing Roadway Noise Levels

Existing roadway noise levels were taken from the CHCCSP’s Draft EIR, which contains calculations of the existing noise levels along roadway segments in the Project vicinity (City of Colton 2014c). The average daily noise levels along roadway segments adjacent to the Proposed Project Site are presented in Table 3-2.

Table 3-2. Existing Roadway Noise Levels		
Roadway Segment	Surrounding Uses	CNEL at 100 feet from Centerline of Roadway
Pepper Avenue		
Between Violet Street and Hospital Entrance	Medical & Commercial	69.2
Between Hospital Entrance to Valley Boulevard	Medical & Commercial	69.6
San Bernardino Avenue		
Between N Eucalyptus Avenue to Pepper Avenue	Residential	62.6

Source: Traffic noise levels were provided in the CHCCSP’s Draft EIR from May of 2014. The most relevant roadway segments were chosen to match the roadway segments included by HW Lochner (2024) in the traffic assessment for the Proposed Project.

As shown, the existing traffic-generated noise level on Project-vicinity roadways currently ranges from 62.6 to 69.6 dBA CNEL at a distance of 100 feet from the centerline. As previously described, CNEL is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively. It should be noted that the modeled noise levels depicted in Table 3-2 may differ from measured levels in Table 3-1 because the measurements represent noise levels at different locations around the Project Area and are also reported in different noise metrics (e.g., noise measurements are the L_{eq} values and traffic noise levels from the CHCCSP’s Draft EIR are reported in CNEL).

4.0 REGULATORY FRAMEWORK

4.1 Federal

4.1.1 Occupational Safety and Health Act of 1970

OSHA regulates onsite noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 decibels with A-weighting (dBA) over an eight-hour work shift (29 Code of Regulations 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provision of hearing protection devices and testing employees for hearing loss on a periodic basis.

4.1.2 National Institute of Occupational Safety and Health

A division of the US Department of Health and Human Services, the National Institute for Occupational Safety and Health (NIOSH) has established a construction-related noise level threshold as identified in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998. NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. The intention of these thresholds is to protect people from hearing losses resulting from occupational noise exposure.

4.1.3 Federal Interagency Committee on Noise (FICON)

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

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

4.2 State

4.2.1 State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The State of California General Plan Guidelines (State of California 2003), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

4.2.2 State Office of Planning and Research Noise Element Guidelines

The State OPR *Noise Element Guidelines* include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a Land Use Compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL.

4.2.3 California Department of Transportation

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

4.3 Local

4.3.1 City of Colton General Plan Noise Element

The City of Colton General Plan Noise Element provides policy direction for minimizing noise impacts in the City. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noise, noise considerations influence the general distribution, location, and intensity of future land use. The result is that effective land use planning and mitigation can alleviate the majority of noise problems. The City of Colton General Plan land use compatibility table identifies ambient noise levels of 65 dBA CNEL as acceptable for hotel (transient lodging) uses and ambient noise levels of 70 dBA CNEL as acceptable for office building uses (City of Colton 1987).

Additionally, the City of Colton General Plan Noise Element lists several standards applicable to the Proposed Project. Per the Noise Element, exterior noise levels at sensitive receptors should not exceed 65

dBa during the day or 55 dBA at night. The City has not adopted interior noise/land use compatibility standards for commercial uses.

4.3.2 City of Colton Municipal Code

The City of Colton's regulation with respect to noise is included in Title 18 (Zoning) Chapter 18.42 of the Municipal Code. The Noise Regulation provides a noise standard within the City. Sections 18.42.040 and 18.42.050 outline regulations for noise and vibration. The Municipal Code Noise Regulation states that the maximum sound level radiated by any Use of Facility, when measured at the boundary line of the Property on which the sound is generated, shall not be obnoxious by reason of its intensity, pitch or dynamic characteristics as determined by the City and shall not exceed 65 dBA. Section 18.42.050 qualitatively regulates vibration within the City, stating that it is unlawful for equipment other than vehicles, trains, or by temporary construction or demolition, to generate ground vibration that is perceptible without instruments by the average person at or beyond any lot line of the lot containing the activities.

5.0 IMPACT ASSESSMENT

5.1 Thresholds of Significance

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

- 1) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- 2) Generation of excessive groundborne vibration or groundborne noise levels.
- 3) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

For the purposes of this analysis, Project construction noise is compared to the allowable hours of construction mandated by the City as well as the NIOSH standard of 85 dBA for more than 8 hours per day, since construction work for the Proposed Project is anticipated to span a typical workday of 8 hours daily. The City does not regulate vibrations associated with construction, but the City's Municipal Code establishes qualitative standards for vibrational annoyance. A discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020b) recommended construction vibration standard of 0.3 inch per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. The Project would not be a source of groundborne vibration during operations. The increase in transportation-related noise is assessed by comparing existing traffic noise levels to modeled traffic noise levels from the Proposed Project. Onsite noise generated as a result of Project operations is compared to City's exterior noise standards of 65 dBA during the daytime and 55 dBA during the nighttime.

5.2 Methodology

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

Transportation-source noise levels associated with the Project were calculated using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) with trip generation rates from the Traffic Impact Analysis Report (HW Lochner 2024). Onsite stationary source noise levels associated with the Project have been calculated with

the SoundPLAN 3D noise model, which predicts noise propagation from a noise source based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings and barriers. SoundPLAN allows computer simulations of noise situations, and creates noise contours maps using reference noise levels, topography, point and area noise sources, mobile noise sources, and intervening structures. Modeled noise levels are based on reference noise levels. Noise levels are collected from field noise measurements and other published sources from similar types of activities and are then used to estimate noise levels expected with the Project's non-transportation noise sources. The reference noise levels are used to represent a worst-case noise environment as noise levels from area and point sources (e.g., parking lot activity, truck unloading) can vary throughout the day.

5.3 Impact Analysis

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

Onsite Construction Noise

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

The nearest sensitive receptors to the Project Area include the Arrowhead Regional Medical Center located to the east of the Project Site, the California University of Science and Medicine campus located towards the northeast of the Project Site, the Colton Golf Course and West Valley Park located to the west of the Project Site, and the residences to the north of the Project Site. The City does not promulgate a numeric threshold pertaining to the noise associated with construction. This is due to the fact that construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. Additionally, construction would occur through the Project site and would not be concentrated at one point.

Recent case law has held that the use of an absolute noise threshold for evaluating all ambient noise impacts violated CEQA because it did not provide a "complete picture" of the noise impacts that may result from implementation of the ordinance. As such, the Proposed Project's construction noise is estimated and then added to the average daily ambient noise level in the Project Area as determined by the baseline noise survey conducted by ECORP Consulting (see Table 3-1). As previously described, the dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. For

example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by three dB). Furthermore, when combining two separate sources where one of the noise sources is 10 dB or greater than other noise sources, the noise contribution of the quieter source is completely obscured by the louder source.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptor and in order to evaluate the potential health-related effects (physical damage to the ear) from construction noise, the construction equipment noise levels were calculated using the RCNM and compared against the construction-related noise level threshold established in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998 by NIOSH. A division of the US Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors.

It is acknowledged that the majority of construction equipment is not situated at any one location during construction activities, but rather spread throughout the Project Site and at various distances from sensitive receptors. Therefore, this analysis employs FTA guidance for calculating construction noise, which recommends measuring construction noise produced by all construction equipment simultaneously from the center of the Project Site (FTA 2018), which in this case is approximately 600 feet from the pick-up/drop-off area for the Arrowhead Regional Medical Center to the east of the Proposed Project Site, along N. Pepper Avenue. The anticipated short-term construction noise levels generated for the necessary equipment for each phase of construction are presented in Table 5-1.

Table 5-1. Construction Average (dBA) Noise Levels at Nearest Receptors					
Construction Phase	Average Ambient Noise Level* (dBA L_{eq})	Exterior Construction Noise Level @ Closest Noise Sensitive Receptor (dBA L_{eq})	Existing Ambient Noise + Exterior Construction Noise Levels (dBA L_{eq})	Construction Noise Standard (dBA L_{eq})	Exceeds Standards?
Site Preparation	66.8	66.0	69.6	85	No
Grading		65.7	69.2	85	No
Building Construction, Paving, and Painting		68.3	71.8	85	No

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

Notes: *Average ambient noise levels of the Project Area were estimated using the average L_{eq} of the four short term noise measurement taken on October 4, 2024, and identified in Table 3-1.

Construction equipment used during construction derived from the California Emissions Estimator Model (CalEEMod). CalEEMod is designed to calculate air pollutant emissions from construction activity and contains default construction equipment and usage parameters for typical construction projects based on several construction surveys conducted in order to identify such parameters. Consistent with FTA recommendations for calculating construction noise, construction noise was measured from the center of the Project Site (FTA 2018), which is 600 feet from the nearest sensitive receptor.

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

As shown in Table 5-1, the Project’s contribution of construction noise combined with the ambient noise environment would not exceed the 85 dBA NIOSH construction noise threshold during any phase of construction at the nearby noise-sensitive receptors. It is noted that construction noise was modeled on a worst-case basis and is considered in addition to ambient noise levels currently experienced in the Project Area. It is very unlikely that all pieces of construction equipment would be operating at the same time for the various phases of Project construction as well as at the point closest to residences.

Offsite Construction Worker Trips

Project construction would result in additional traffic on adjacent roadways over the period that construction occurs. According to the California Emissions Estimator Model, which is used to predict the number of construction-related automotive trips, the maximum number of Project construction trips traveling to and from the Project Site during a single construction phase would not be expected to exceed 156 daily trips in total. The Proposed Project Site would be accessible from N. Pepper Avenue. According to the City of Colton’s General Plan Mobility Element, Pepper Avenue is classified as a major arterial roadway (City of Colton 2013). Major arterial roadways are designed to move large traffic volumes of traffic, linking freeways with local streets and providing access between cities and subregions. They carry high traffic volumes and are designed for high speeds. According to Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013), a doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). The Proposed

Project's construction trips would not result in a doubling of traffic on the local transportation network, and therefore its contribution to existing traffic noise would not be perceptible. Additionally, it is noted that construction is temporary, and these trips would cease upon completion of the Project.

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

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise-sensitive and may warrant unique measures for protection from intruding noise. The nearest sensitive receptors to the Project Area include the Arrowhead Regional Medical Center to the east of the Project Site, the California University of Science and Medicine campus located towards the northeast of the Project Site, the Colton Golf Course and West Valley Park located to the west of the Project Site, and the residences to the north of the Project Site.

Project Land Use Compatibility

The Project is proposing construction of a three-story 60,000 sf medical office clinic, a five-story 71,000 sf commercial hotel, a three-story parking structure, surface parking areas, and associated site improvements such as curb and gutter, utilities, and landscaping on approximately 3.83 acres of the site. As the Project is proposing the development of new noise-sensitive land uses within the existing noise environment a discussion of land use compatibility is needed in order to establish Project consistency with the Colton General Plan. The predominant source of noise in the Project Area is traffic noise generated from vehicles traveling on W San Bernardino Avenue located north of the Project Site and N Pepper Avenue located east of the Project Site. The City of Colton General Plan land use compatibility table identifies ambient noise levels of 65 dBA CNEL as acceptable for hotel (transient lodging) uses and ambient noise levels of 70 dBA CNEL as acceptable for office building uses (City of Colton 1987).

ECORP conducted a 24-hour (long-term) noise measurement starting on October 3, 2024, and extending into October 4. This 24-hour noise measurement site is representative of typical existing noise exposure on the Project Site during a typical 24-hour day. The CNEL was calculated using the average noise levels from every hour of the long-term noise measurement. The calculated CNEL was 60.0 dBA. Thus, the Project Site can be classified as an acceptable location for noise-sensitive land uses such as hotels/transient lodging and office/commercial use which has noise level limits of 65 dBA CNEL and 70 dBA CNEL, respectively. Furthermore, the Project proposes to position commercial uses that double as sensitive noise receptors in the direct vicinity of other commercial uses that are sensitive to noise making the Project conducive within the existing noise environment.

Operational Offsite Traffic Noise

Future traffic noise levels throughout the Project vicinity for the Proposed Project were modeled based on the traffic volumes identified HW Lochner (2024) to determine the noise levels along Project vicinity roadways. To compare the Proposed Project related traffic noise impact to the existing traffic noise environment, the CHCCSP Draft EIR was utilized (City of Colton 2014c). City of Colton does not regulate

noise from transportation sources for commercial projects and does not have noise standards for such sources. Table 5-2 compares the calculated offsite roadway noise levels to existing levels of traffic noise.

Table 5-2. Proposed Project Predicted Traffic Noise Levels Compared to Existing Traffic Noise Levels from CHCCSP Draft EIR				
Roadway Segment with Existing Traffic Noise from CHCCSP Draft EIR	Roadway Segment Modeled with FHWA and HW Lochner Data	Surrounding Uses	dBA CNEL at 100 feet from Centerline of Roadway	
			Existing¹	Project²
W San Bernardino Avenue				
Between Violet Street and the Hospital Entrance	N. Pepper Avenue South of Violet Street	Commercial	69.2	53.0
	N. Pepper Avenue North of Proposed Project Driveway			53.0
	N. Pepper Avenue South of Proposed Project Driveway			58.4
	Proposed Project Driveway West of N. Pepper Avenue			46.4
	Proposed Project Driveway East of N. Pepper Avenue			36.4
	N. Pepper Avenue North of Blue Drive			57.8
N Pepper Avenue				
Between the Hospital Entrance and Valley Boulevard	N. Pepper Avenue South of Blue Drive	Commercial	69.6	56.7
	Blue Drive West of N. Pepper Avenue			46.2
	Blue Drive East of N. Pepper Avenue			-
	N. Pepper Avenue North of W. Valley Blvd.			56.6
Between N Eucalyptus Avenue and Pepper Avenue	W. San Bernardino Avenue West of N. Pepper Avenue	Residential	62.6	42.8

Source: Existing traffic noise levels were based on the CHCCSP’s Draft EIR (City of Colton 2014c). Project traffic volumes were provided by HW Lochner (2024) to inform the modeling calculations of offsite operational traffic noise levels. Traffic noise levels were calculated by ECORP Consulting using the FHWA Traffic Noise model. Refer to Attachment C for Model Data Outputs.

Notes: ¹Existing traffic noise is referenced from the City of Colton Hub City Centre Specific Plan Draft EIR (2014c).

²The Proposed Project’s contribution to traffic noise is calculated using the FHWA Traffic Noise model coupled with trip generation rates identified by HW Lochner (2024).

As shown in Table 5-2, none of the Project vicinity roadway segments would experience an incremental increase of traffic noise in excess of the existing traffic noise levels. The Proposed Project’s modeled traffic

noise on each segment of roadway in the Project vicinity is lower than the existing traffic noise measurements collected for the purposes of the CHCCSP's Draft EIR. As previously described, the dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. When the standard logarithmic decibel is A-weighted, which is the case for both the existing traffic noise measurements and the modeled traffic noise segments, an increase of 10 dBA is generally perceived as a doubling in loudness. Furthermore, when combining two separate sources where one of the noise sources is 10 dB or greater than the other noise source, the noise contribution of the quieter source is completely obscured by the louder source. As shown in Table 5-2, the Project's contribution of traffic noise is not within 10 dB of the existing traffic noise on any vicinity roadway segment and therefore the Project's contribution of traffic noise would not increase existing traffic noise levels. The Proposed Project's operational offsite traffic would not influence the ambient noise levels of the area and existing traffic noise levels ranging from 62.6 to 69.6 dBA would remain the same.

Operational Onsite Noise

The Project is proposing construction of a three-story 60,000 sf medical office clinic, a five-story 71,000 sf commercial hotel, a three-story parking structure, surface parking areas, and associated site improvements such as curb and gutter, utilities, and landscaping on approximately 3.83 acres of the site. On-site noise associated with the Proposed Project has been calculated using the SoundPLAN 3D noise model using Project Site Plans provided by the Project proponent. SoundPLAN 3D noise model generates computer simulations of noise situations based on the site's features. Further, SoundPLAN creates noise contour maps using reference noise levels, topography, point and area noise source, mobile noise sources, and intervening structures.

To estimate the noise generated by the proposed parking garage, the FTA's reference level of 92 SEL (Sound Exposure Level) is utilized. To estimate the noise generated by the proposed unenclosed parking areas, the FTA's reference level of 101 SEL is utilized. The Proposed Project's medical facility land use would primarily operate during daytime hours (7:00 a.m. – 10:00 p.m.). As such, the modeling has accounted for parking lot activity noise during the hours of 7:00 a.m. – 10:00 p.m. at the parking garage and at the unenclosed parking surrounding the medical facility. The FTA reference levels are converted to an L_{eq} level using the conversion equation detailed in Attachment D. Attachment D also demonstrates how to calculate an L_{eq} at 50 feet from a parking garage and a parking lot, based on vehicle noise and traffic volume. The total number of parking stalls in the parking garage is inferred from the Proposed Project's Site Plan by subtracting the number of unenclosed parking spaces from the total number of 321 parking spaces. The unenclosed parking spaces are split into two separate area sources to account for the difference in operational time for the medical facility land use (which operates during normal business hours) and the hotel land use (which operates beyond normal business hours). In this assessment, a worst-case scenario is considered where every parking stall turns over at the same rate as the peak hour for volume traffic, as identified by the 2024 HW Lochner Traffic Report.

Table 5-3 shows the predicted Project noise levels at twenty-five noise-sensitive locations in the Project vicinity, including nearby residences to the north, the Arrowhead Regional Medical Center to the east, the California University of Science and Medicine campus located towards the northeast, and the Colton Golf Course and West Valley Park located to the west, as predicted by SoundPLAN. As shown in Table 5-3, noise

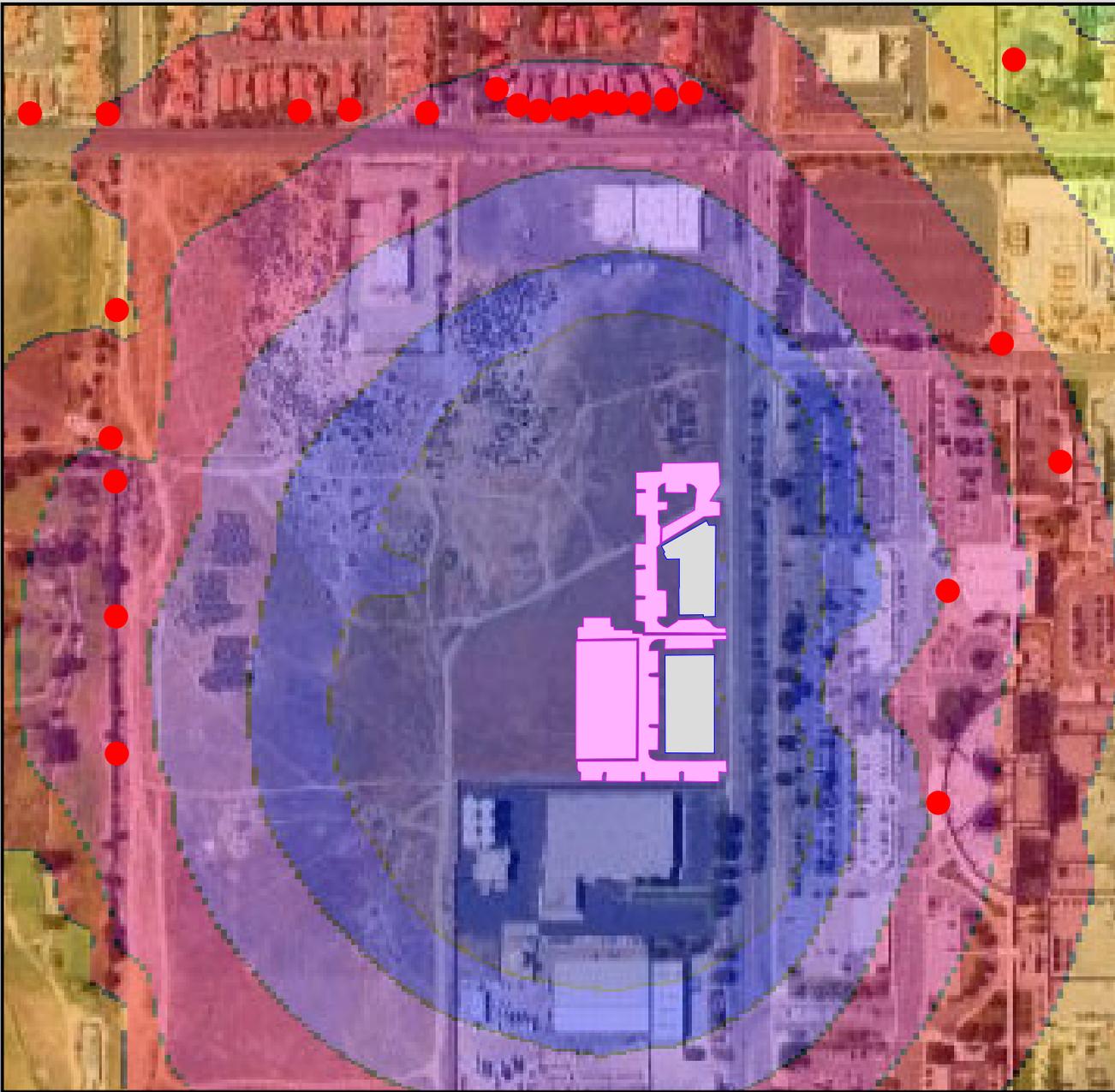
levels would be up to 56.6 dBA L_{eq} during the day and up to 53.4 dBA L_{eq} during the night at the loudest, as experienced at the nearest sensitive receptors. This would not exceed the exterior daytime and nighttime noise standards of 65 and 55 dBA L_{eq} , respectively. Additionally, noise contour graphics (see Figures 5-1 and 5-2) have been prepared to provide a visual depiction of the predicted noise levels in the Project vicinity from Project operations.

Table 5-3. Modeled Operational Noise Levels				
#	Location	Daytime/Nighttime Noise Attributed to the Project (dBA L_{eq})	Daytime/Nighttime Exterior Noise Standards (dBA L_{eq})	Exceed Daytime or Nighttime Exterior Standard?
1	1000 Agua Caliente Avenue	55.3 / 52.1	65 / 55	No
2	1002 N Eucalyptus Avenue	53.0 / 48.5	65 / 55	No
3	1009 Whistle Stop Drive	55.4 / 52.5	65 / 55	No
4	1011 Whistle Stop Drive	55.7 / 52.9	65 / 55	No
5	1013 Whistle Stop Drive	55.9 / 53.1	65 / 55	No
6	1015 Whistle Stop Drive	55.9 / 53.1	65 / 55	No
7	1017 Whistle Stop Drive	55.8 / 53.2	65 / 55	No
8	1019 Whistle Stop Drive	55.7 / 53.1	65 / 55	No
9	1021 Whistle Stop Drive	55.7 / 53.2	65 / 55	No
10	1023 Whistle Stop Drive	55.7 / 53.1	65 / 55	No
11	1025 Whistle Stop Drive	55.5 / 53.0	65 / 55	No
12	1027 Whistle Stop Drive	55.2 / 52.8	65 / 55	No
13	1471 W San Bernardino Avenue	49.8 / 48.9	65 / 55	No
14	1838 W De Anza Drive	54.6 / 51.1	65 / 55	No
15	1868 W De Anza Drive	54.4 / 58.8	65 / 55	No
16	1920 N Martinez Lane	52.4 / 47.7	65 / 55	No
17	Arrowhead Regional Medical Center Facility 1	56.2 / 50.1	65 / 55	No
18	Arrowhead Regional Medical Center Facility 2	56.6 / 53.4	65 / 55	No
19	Arrowhead Regional Medical Center Facility 3	53.3 / 50.9	65 / 55	No
20	California University of Science and Medicine	53.6 / 52.6	65 / 55	No
21	Colton Golf Course 1	54.4 / 48.0	65 / 55	No
22	Colton Golf Course 2	56.4 / 50.0	65 / 55	No
23	Colton Golf Course 3	56.2 / 49.5	65 / 55	No
24	West Valley Park 1	53.4 / 47.1	65 / 55	No
25	West Valley Park 2	50.6 / 45.1	65 / 55	No

Source: SoundPLAN v 9.0. Refer to Attachment D for Model Data Outputs.

As shown in Table 5-3, Project operational noise would not exceed the City's exterior noise standards for daytime or nighttime at any location. It is important to note that the SoundPLAN scenario's results presented in Table 5-3 are presenting worst case scenario noise levels since the peak hour traffic volume was assumed to occur for every hour of the day at the hotel unenclosed parking lot and for every daytime hour at the unenclosed medical facility parking lot and parking garage structure.

As previously discussed, the average daily ambient noise of the area surrounding the Project Site is approximately 66.8 dBA. This noise level is based on the average of the short-term ambient noise measurements taken in the area by ECORP on October 4, 2024, and is generally representative of the existing noise environment. As shown above in Table 5-3, the Proposed Project would contribute noise levels of approximately 49.8 to 56.6 dBA L_{eq} to the existing ambient environment during the daytime. The existing ambient noise environment of 66.8 dBA is already over the city standard for commercial daytime noise limits of 65 dBA. The existing ambient noise level of 66.8 dBA would remain, and the Project on-site activities would not influence the ambient noise levels of the area. As previously described, the dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. For example, when combining two separate sources where one of the noise sources is 10 dB or greater than the other noise source, the noise contribution of the quieter source is completely obscured by the louder source. In this instance, the average daytime noise level collected by ECORP was 66.8 dBA and the maximum modeled noise contribution from the Proposed Project was 56.6 dBA. Since these values differ by a factor greater than 10 dB, the ambient noise environment would therefore be expected to remain 66.8 dBA.



**Figure 5-1.
Modeled Operational Noise Levels:
Pepper Development Project
Daytime Activity**

Signs and symbols

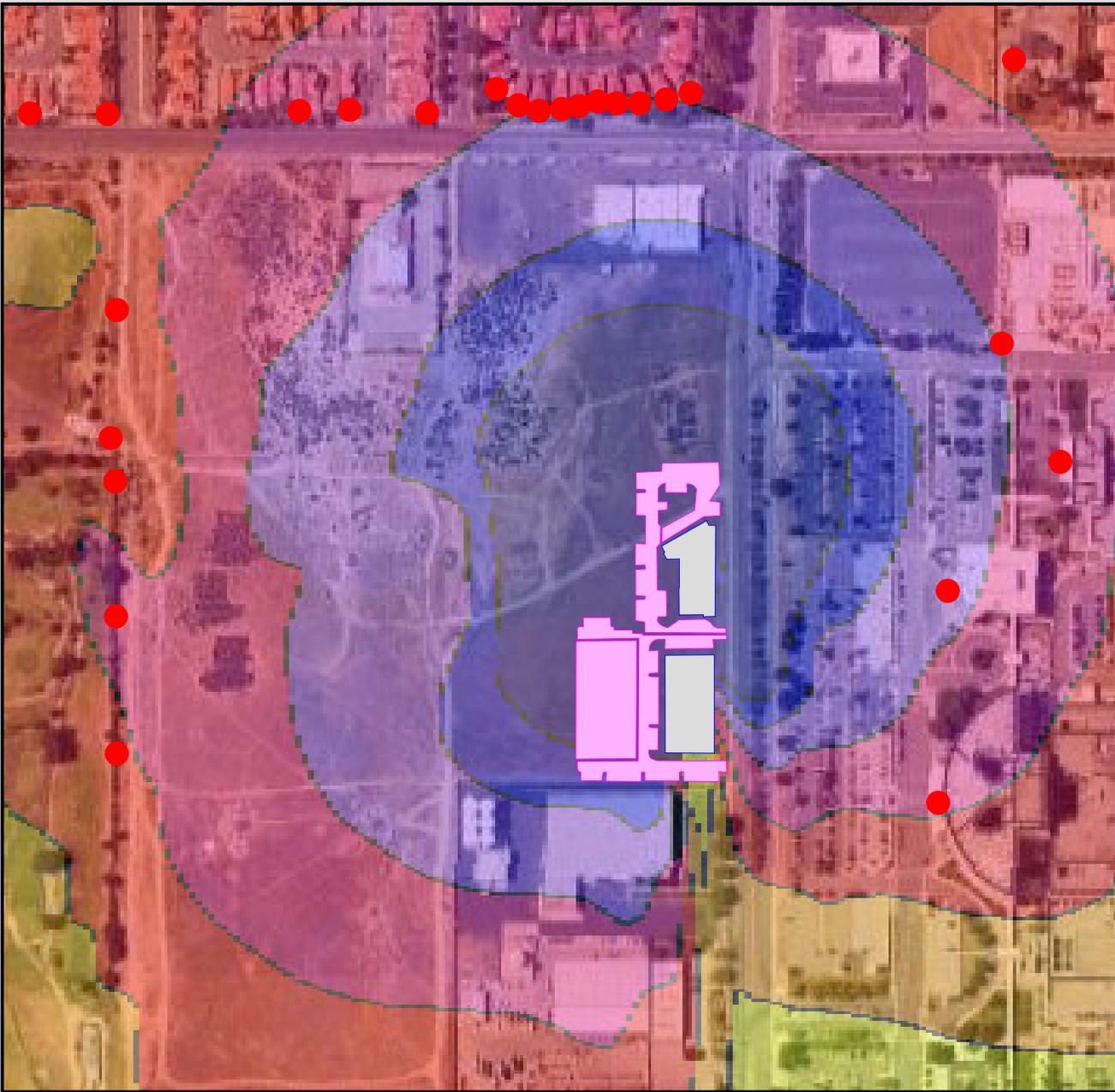
- Noise Receptors
- Daytime Activity
- Proposed Building

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

	≤ 45
	45 - 47
	47 - 49
	49 - 51
	51 - 53
	53 - 55
	55 - 57
	57 - 59
	59 - 61
	> 61



Scale 1:320



**Figure 5-1.
Modeled Operational Noise Levels:
Pepper Development Project
Nighttime Activity**

Signs and symbols

- Noise Receptors
- Nighttime Activity
- Proposed Building

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

	<= 35
	35 - 38
	38 - 41
	41 - 44
	44 - 47
	47 - 50
	50 - 53
	53 - 56
	56 - 59
	> 59



Scale 1:320

5.3.3 Would the Project Expose Structures to Substantial Groundborne Vibration During Construction?

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

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

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

Source: FTA 2018; Caltrans 2020b

The City does not regulate or have a numeric threshold associated with construction vibrations. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020b) recommended standard of 0.3 inches per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. Consistent with FTA recommendations for calculating construction vibration, construction vibration was measured from the center of the Project Site (FTA 2018). The nearest structure of concern to the construction site is the Arrowhead Regional Medical Center east of the Project Site and is approximately 600 feet from the center of the Site.

Based on the representative vibration levels presented for various construction equipment types in Table 5-4 and the construction vibration assessment methodology published by the FTA (2018), it is possible to estimate the potential project construction vibration levels. The FTA provides the following equation:

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

Table 5-5 presents the expected Project related vibration levels at a distance of 600 feet.

Table 5-5 Construction Vibration Levels at 600 Feet							
Receiver PPV Levels (in/sec) ¹					Peak Vibration	Threshold	Exceed Threshold?
Large Bulldozer, Caisson Drilling, & Hoe Ram	Loaded Trucks	Jackhammer	Pile Driver	Vibratory Roller			
0.0008	0.0006	0.0003	0.0014	0.0018	0.0018	0.3	No

Notes: ¹Based on the Vibration Source Levels of Construction Equipment included on Table 5-3 (FTA 2018). Distance to the nearest structure of concern is approximately 600 feet measured from Project Site center.

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

5.3.4 Would the Project Expose Structures to Substantial Groundborne Vibration During Operations?

Project operations would not include the use of any stationary equipment that would result in excessive vibration levels. The Project would not attract large numbers of heavy-duty trucks or include heavy-duty stationary equipment. Therefore, the Project would result in negligible groundborne vibration impacts during operations.

5.3.5 Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise?

The Project Site is located approximately 6.3 miles southwest of the San Bernardino International Airport. According to the City of Colton General Plan Noise Element, the Project site is located outside of the 65 dBA CNEL airport noise contours (City of Colton 1987). While aircraft noise may be occasionally audible on the Project site from aircraft flyovers, aircraft noise associated with nearby airport activity would not expose future hotel staff/guests or medical office staff/guests to excessive noise levels. Therefore, implementation of the Proposed Project would not expose people to noise levels from airport activity that would be in excess of normally acceptable standards for the proposed land use development, and no impact would occur.

6.0 REFERENCES

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- HW Lochner. 2024. Traffic Impact Analysis Report for Pepper Development Project (2024).
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- Western Electro-Acoustic Laboratory, Inc. 2021. Sound Transmission Sound Test Laboratory Report No. TL 21-227.

LIST OF ATTACHMENTS

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

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

Attachment C – Federal Highway Noise Prediction Model (FHWA-RD-77-108) Outputs – Project
Traffic Noise

Attachment D – SoundPLAN Onsite Noise Generation

Baseline (Existing) Noise Measurements – Project Site and Vicinity



Location: W:\Projects\2024\179.01 Pepper Development Project - Colton\Noise\Baseline Noise Survey\Baseline Noise Map.aprx - Portrait Template (agne - 10/22/2024)

Map Date: 10/16/2024
Sources: Esri 2024

Baseline Noise Measurement Map

Site Number: 1			
Recorded By: Lindsay Buck			
Job Number: 2024-179.01			
Date: 10/4/2024			
Time: 10:39 a.m.			
Location: Northeast corner of San Bernardino Avenue and W. Iron Horse Drive			
Source of Peak Noise: Vehicles traversing San Bernardino Avenue			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
68.4	49.7	84.4	95.9

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	Spartan 821	30100	05/22/2024	
	Microphone	Larson Davis	377B02	352537	04/12/2024	
	Preamp	Larson Davis	PRM821	001679	04/26/2024	
	Calibrator	Larson Davis	CAL200	226638	05/20/2024	
Weather Data						
Est.	Duration: 15 min			Sky: clear		
	Note: dBA Offset = 0.1			Sensor Height (ft): 3.5		
	Wind Ave Speed (mph)		Temperature (degrees Fahrenheit)		Barometer Pressure (hPa)	
	3		86		29.91	

Photo of Measurement Location





LARSON DAVIS

A PCB DIVISION

Spartan 821 Summary:

2024-10-04 16:05:01

User:

Location:

Job Description:

Notes: Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Meter General Information

	Model	Serial
Meter	Spartan 821	30100
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00A:00007594:66FFC5EF:000006E5	

Overall Measurement

Start Date & Time	2024-10-04 10:39:43		
Stop Date & Time	2024-10-04 10:54:44		
Run Time	00:15:01		
Pre-Calibration			
Date/Time	2024-09-09 11:14:53		
Calibrator Level	114.0 dB		
Meter Sensitivity	-26.10 dB re 1V/Pa		
Post-Calibration			
Date/Time	---		
Calibrator Level	---		
Meter Sensitivity	---		
Sensitivity Delta	---		
L _A eq	71.5 dB		
	A	C	Z
L _w eq	68.4	75.2	76.9
L _w pk	95.9 dB	103.2 dB	103.6 dB
	2024-10-04 10:44:06	2024-10-04 10:54:35	2024-10-04 10:54:35
L _w Smin	49.7 dB	66.6 dB	70.0 dB
	2024-10-04 10:46:54	2024-10-04 10:51:24	2024-10-04 10:51:24
L _w Smax	79.7 dB	92.2 dB	92.5 dB
	2024-10-04 10:44:10	2024-10-04 10:54:35	2024-10-04 10:54:35
L _w Fmin	48.9 dB	64.0 dB	67.7 dB
	2024-10-04 10:40:33	2024-10-04 10:49:24	2024-10-04 10:51:24
L _w Fmax	84.4 dB	95.0 dB	95.3 dB
	2024-10-04 10:44:06	2024-10-04 10:54:35	2024-10-04 10:54:35
L _w lmin	50.7 dB	68.8 dB	72.6 dB
	2024-10-04 10:46:50	2024-10-04 10:51:24	2024-10-04 10:51:24
L _w lmax	86.1 dB	95.8 dB	96.0 dB
	2024-10-04 10:44:09	2024-10-04 10:54:35	2024-10-04 10:54:35

w = frequency weighting (A, C or Z)

Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

LAS 5.0	74.0 dB
LAS 10.0	72.6 dB
LAS 33.3	67.8 dB
LAS 50.0	64.9 dB
LAS 66.6	61.0 dB
LAS 90.0	53.6 dB

Virtual Dosimeters

	1	2	3	4
Configuration	OSHA-PEL	OSHA-HC	ACGIH	NIOSH
Dose	0.0%	0.0%	0.0%	0.0%
Projected Dose	0.0%	0.0%	0.0%	0.0%
Lavg	--- dB	--- dB	--- dB	--- dB
TWA(8)	--- dB	--- dB	--- dB	--- dB
Projected TWA(8)	--- dB	--- dB	--- dB	--- dB
Criterion Level	90.0 dB	90.0 dB	85.0 dB	85.0 dB
Threshold Level	90.0 dB	80.0 dB	80.0 dB	80.0 dB
Exchange Rate	5 dB	5 dB	3 dB	3 dB
LEP'd/Lex,8h	53.4 dB	53.4 dB	53.4 dB	53.4 dB
Projected LEP'd/Lex,8h	68.4 dB	68.4 dB	68.4 dB	68.4 dB
Shift Time	8 hours	8 hours	8 hours	8 hours

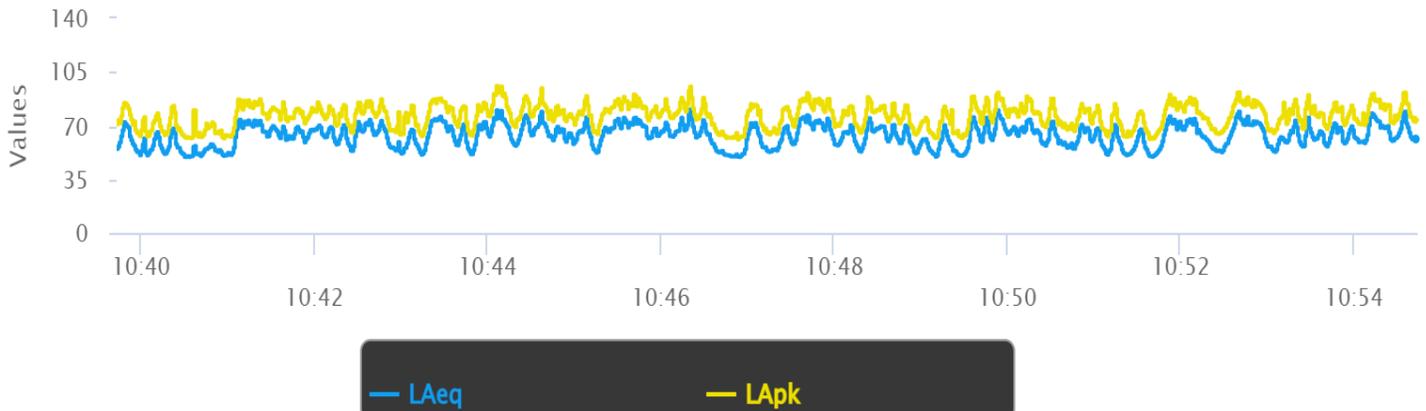
Exceedances

	Count	Duration
LAS > 85 dB	0	0
LAS > 95 dB	0	0
LCpk > 135 dB	0	0
LCpk > 137 dB	0	0
LCpk > 140 dB	0	0

Sound Exposure

SELA	98.0 dB
EA (Pa²s)	2.5 Pa ² s
EA,8 h (Pa²s)	80.3 Pa ² s
EA,40 h (Pa²s)	401.3 Pa ² s
EA (Pa²h)	0.0 Pa ² h
EA,8 h (Pa²h)	0.0 Pa ² h
EA,40 h (Pa²h)	0.1 Pa ² h

Time History



Site Number: 2			
Recorded By: Lindsay Buck			
Job Number: 2024-179.01			
Date: 10/4/2024			
Time: 11:00 a.m.			
Location: Corner of Violet Street and Pepper Avenue			
Source of Peak Noise: Vehicles traversing Pepper Avenue			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
71.2	49.0	94.4	107.9

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	Spartan 821	30100	05/22/2024	
	Microphone	Larson Davis	377B02	352537	04/12/2024	
	Preamp	Larson Davis	PRM821	001679	04/26/2024	
	Calibrator	Larson Davis	CAL200	226638	05/20/2024	
Weather Data						
Est.	Duration: 18 min			Sky: clear		
	Note: dBA Offset = 0.1			Sensor Height (ft): 3.5		
	Wind Ave Speed (mph)		Temperature (degrees Fahrenheit)		Barometer Pressure (hPa)	
	3		88		29.91	

Photo of Measurement Location





LARSON DAVIS

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Spartan 821 Summary:

2024-10-04 16:03:00

User:

Location:

Job Description:

Notes: Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Meter General Information

	Model	Serial
Meter	Spartan 821	30100
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00A:00007594:66FFCACB:000006EC	

Overall Measurement

Start Date & Time	2024-10-04 11:00:27		
Stop Date & Time	2024-10-04 11:18:33		
Run Time	00:18:06		
Pre-Calibration			
Date/Time	2024-09-09 11:14:53		
Calibrator Level	114.0 dB		
Meter Sensitivity	-26.10 dB re 1V/Pa		
Post-Calibration			
Date/Time	---		
Calibrator Level	---		
Meter Sensitivity	---		
Sensitivity Delta	---		
L _A eq	74.0 dB		
	A	C	Z
L _w eq	71.2	77.7	79.2
L _w pk	107.9 dB	108.6 dB	109.0 dB
	2024-10-04 11:03:32	2024-10-04 11:03:32	2024-10-04 11:03:32
L _w Smin	49.0 dB	65.3 dB	69.8 dB
	2024-10-04 11:05:20	2024-10-04 11:05:22	2024-10-04 11:05:26
L _w Smax	94.4 dB	96.7 dB	96.7 dB
	2024-10-04 11:03:33	2024-10-04 11:03:33	2024-10-04 11:03:33
L _w Fmin	48.1 dB	63.6 dB	67.1 dB
	2024-10-04 11:05:19	2024-10-04 11:05:22	2024-10-04 11:05:22
L _w Fmax	96.4 dB	98.9 dB	98.9 dB
	2024-10-04 11:03:32	2024-10-04 11:03:32	2024-10-04 11:03:32
L _w lmin	50.0 dB	67.8 dB	72.9 dB
	2024-10-04 11:05:20	2024-10-04 11:05:22	2024-10-04 11:05:26
L _w lmax	97.6 dB	100.2 dB	100.2 dB
	2024-10-04 11:03:32	2024-10-04 11:03:32	2024-10-04 11:03:32

w = frequency weighting (A, C or Z)

Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

LAS 5.0	72.6 dB
LAS 10.0	71.4 dB
LAS 33.3	68.4 dB
LAS 50.0	66.3 dB
LAS 66.6	63.4 dB
LAS 90.0	57.7 dB

Virtual Dosimeters

	1	2	3	4
Configuration	OSHA-PEL	OSHA-HC	ACGIH	NIOSH
Dose	0.0%	0.0%	0.1%	0.1%
Projected Dose	0.4%	0.7%	2.3%	2.3%
Lavg	50.2 dB	54.0 dB	68.5 dB	68.5 dB
TWA(8)	26.6 dB	30.3 dB	54.3 dB	54.3 dB
Projected TWA(8)	50.2 dB	54.0 dB	68.5 dB	68.5 dB
Criterion Level	90.0 dB	90.0 dB	85.0 dB	85.0 dB
Threshold Level	90.0 dB	80.0 dB	80.0 dB	80.0 dB
Exchange Rate	5 dB	5 dB	3 dB	3 dB
LEP'd/Lex,8h	56.9 dB	56.9 dB	56.9 dB	56.9 dB
Projected LEP'd/Lex,8h	71.2 dB	71.2 dB	71.2 dB	71.2 dB
Shift Time	8 hours	8 hours	8 hours	8 hours

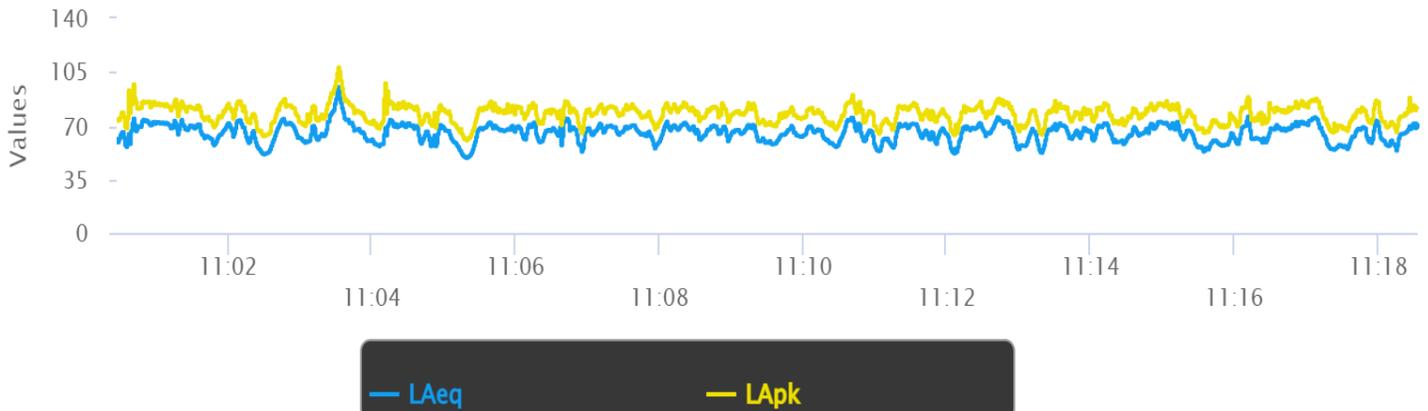
Exceedances

	Count	Duration
LAS > 85 dB	1	7
LAS > 95 dB	0	0
LCpk > 135 dB	0	0
LCpk > 137 dB	0	0
LCpk > 140 dB	0	0

Sound Exposure

SELA	101.5 dB
EA (Pa²s)	5.7 Pa ² s
EA,8 h (Pa²s)	151.2 Pa ² s
EA,40 h (Pa²s)	755.8 Pa ² s
EA (Pa²h)	0.0 Pa ² h
EA,8 h (Pa²h)	0.0 Pa ² h
EA,40 h (Pa²h)	0.2 Pa ² h

Time History



Site Number: 3			
Recorded By: Lindsay Buck			
Job Number: 2024-179.01			
Date: 10/4/2024			
Time: 11:21 a.m.			
Location: On parkway west of Green Circle Drive.			
Source of Peak Noise: Vehicles traversing Green Circle Drive and Parking Lot Noise			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
55.3	49.7	69.6	97.6

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	Spartan 821	30100	05/22/2024	
	Microphone	Larson Davis	377B02	352537	04/12/2024	
	Preamp	Larson Davis	PRM821	001679	04/26/2024	
	Calibrator	Larson Davis	CAL200	226638	05/20/2024	
Weather Data						
Est.	Duration: 15 min			Sky: overcaste		
	Note: dBA Offset = 0.1			Sensor Height (ft): 3.5		
	Wind Ave Speed (mph)		Temperature (degrees Fahrenheit)		Barometer Pressure (hPa)	
	3		89		29.91	

Photo of Measurement Location





LARSON DAVIS

A PCB DIVISION

Spartan 821 Summary:

2024-10-04 16:03:31

User:

Location:

Job Description:

Notes: Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Meter General Information

	Model	Serial
Meter	Spartan 821	30100
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00A:00007594:66FFCFB8:000006F2	

Overall Measurement

Start Date & Time	2024-10-04 11:21:28		
Stop Date & Time	2024-10-04 11:36:28		
Run Time	00:15:00		
Pre-Calibration			
Date/Time	2024-09-09 11:14:53		
Calibrator Level	114.0 dB		
Meter Sensitivity	-26.10 dB re 1V/Pa		
Post-Calibration			
Date/Time	---		
Calibrator Level	---		
Meter Sensitivity	---		
Sensitivity Delta	---		
L _A eq	60.0 dB		
	A	C	Z
L _w eq	55.3	70.7	75.1
L _w pk	97.6 dB	99.2 dB	99.1 dB
	2024-10-04 11:35:23	2024-10-04 11:35:23	2024-10-04 11:35:23
L _w Smin	49.7 dB	66.5 dB	70.6 dB
	2024-10-04 11:35:37	2024-10-04 11:27:37	2024-10-04 11:22:29
L _w Smax	69.6 dB	77.2 dB	82.4 dB
	2024-10-04 11:35:23	2024-10-04 11:36:13	2024-10-04 11:36:04
L _w Fmin	48.7 dB	64.5 dB	67.8 dB
	2024-10-04 11:35:20	2024-10-04 11:26:16	2024-10-04 11:22:27
L _w Fmax	77.4 dB	79.2 dB	84.9 dB
	2024-10-04 11:35:23	2024-10-04 11:36:23	2024-10-04 11:36:02
L _w lmin	50.5 dB	69.2 dB	73.3 dB
	2024-10-04 11:26:18	2024-10-04 11:27:32	2024-10-04 11:24:20
L _w lmax	82.6 dB	83.8 dB	87.4 dB
	2024-10-04 11:35:23	2024-10-04 11:35:23	2024-10-04 11:36:04

w = frequency weighting (A, C or Z)

Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

LAS 5.0	59.1 dB
LAS 10.0	57.3 dB
LAS 33.3	54.5 dB
LAS 50.0	53.3 dB
LAS 66.6	52.3 dB
LAS 90.0	50.8 dB

Virtual Dosimeters

	1	2	3	4
Configuration	OSHA-PEL	OSHA-HC	ACGIH	NIOSH
Dose	0.0%	0.0%	0.0%	0.0%
Projected Dose	0.0%	0.0%	0.0%	0.0%
Lavg	--- dB	--- dB	--- dB	--- dB
TWA(8)	--- dB	--- dB	--- dB	--- dB
Projected TWA(8)	--- dB	--- dB	--- dB	--- dB
Criterion Level	90.0 dB	90.0 dB	85.0 dB	85.0 dB
Threshold Level	90.0 dB	80.0 dB	80.0 dB	80.0 dB
Exchange Rate	5 dB	5 dB	3 dB	3 dB
LEP'd/Lex,8h	40.3 dB	40.3 dB	40.3 dB	40.3 dB
Projected LEP'd/Lex,8h	55.3 dB	55.3 dB	55.3 dB	55.3 dB
Shift Time	8 hours	8 hours	8 hours	8 hours

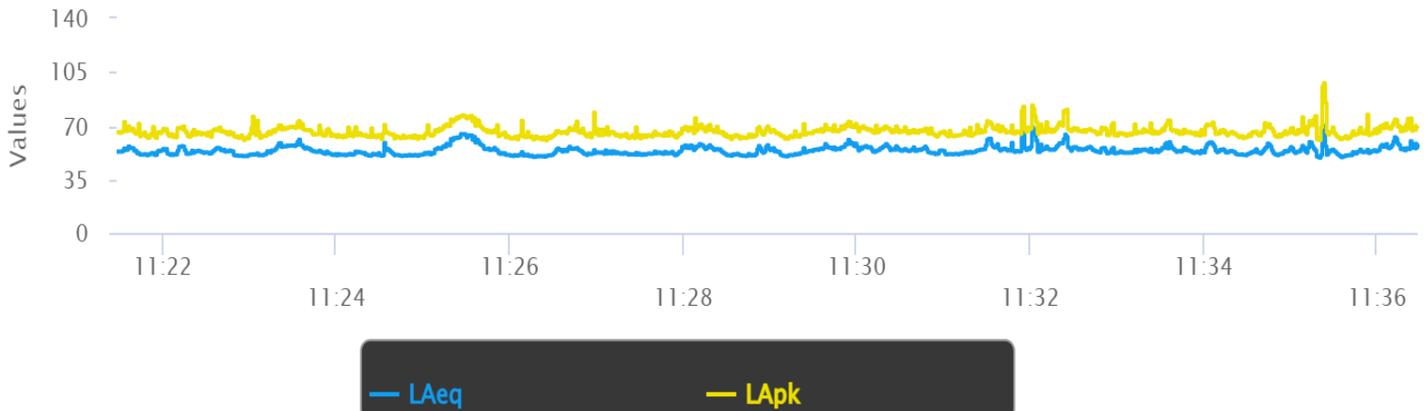
Exceedances

	Count	Duration
LAS > 85 dB	0	0
LAS > 95 dB	0	0
LCpk > 135 dB	0	0
LCpk > 137 dB	0	0
LCpk > 140 dB	0	0

Sound Exposure

SELA	84.9 dB
EA (Pa²s)	0.1 Pa ² s
EA,8 h (Pa²s)	3.9 Pa ² s
EA,40 h (Pa²s)	19.7 Pa ² s
EA (Pa²h)	0.0 Pa ² h
EA,8 h (Pa²h)	0.0 Pa ² h
EA,40 h (Pa²h)	0.0 Pa ² h

Time History



Site Number: 4			
Recorded By: Lindsay Buck			
Job Number: 2024-179.01			
Date: 10/4/2024			
Time: 11:44 a.m.			
Location: Northeast corner of Eucalyptus Avenue and Valley Boulevard			
Source of Peak Noise: Vehicles traversing Valley Boulevard			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
72.4	55.5	94.7	111.3

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	Spartan 821	30100	05/22/2024	
	Microphone	Larson Davis	377B02	352537	04/12/2024	
	Preamp	Larson Davis	PRM821	001679	04/26/2024	
	Calibrator	Larson Davis	CAL200	226638	05/20/2024	
Weather Data						
Est.	Duration: 15 min			Sky: Partly cloudy		
	Note: dBA Offset = 0.1			Sensor Height (ft): 3.5		
	Wind Ave Speed (mph)		Temperature (degrees Fahrenheit)		Barometer Pressure (hPa)	
	3		89		29.92	

Photo of Measurement Location





LARSON DAVIS

A PCB DIVISION

Spartan 821 Summary:

2024-10-04 16:03:46

User:

Location:

Job Description:

Notes: Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Meter General Information

	Model	Serial
Meter	Spartan 821	30100
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00A:00007594:66FFD520:000006FA	

Overall Measurement

Start Date & Time	2024-10-04 11:44:32		
Stop Date & Time	2024-10-04 12:00:06		
Run Time	00:15:34		
Pre-Calibration			
Date/Time	2024-09-09 11:14:53		
Calibrator Level	114.0 dB		
Meter Sensitivity	-26.10 dB re 1V/Pa		
Post-Calibration			
Date/Time	---		
Calibrator Level	---		
Meter Sensitivity	---		
Sensitivity Delta	---		
L _A eq	76.4 dB		
	A	C	Z
L _w eq	72.4	79.6	81.8
L _w pk	111.3 dB	119.2 dB	122.9 dB
	2024-10-04 11:54:25	2024-10-04 11:44:40	2024-10-04 11:44:40
L _w Smin	55.5 dB	69.9 dB	73.2 dB
	2024-10-04 11:47:20	2024-10-04 11:56:12	2024-10-04 11:56:11
L _w Smax	94.7 dB	99.2 dB	102.9 dB
	2024-10-04 11:54:26	2024-10-04 11:54:26	2024-10-04 11:44:40
L _w Fmin	54.4 dB	67.8 dB	70.7 dB
	2024-10-04 11:47:37	2024-10-04 11:57:12	2024-10-04 11:56:11
L _w Fmax	96.8 dB	106.4 dB	111.3 dB
	2024-10-04 11:54:25	2024-10-04 11:44:40	2024-10-04 11:44:40
L _w lmin	56.3 dB	72.1 dB	76.2 dB
	2024-10-04 11:47:19	2024-10-04 11:56:12	2024-10-04 11:56:11
L _w lmax	98.1 dB	110.3 dB	115.4 dB
	2024-10-04 11:54:25	2024-10-04 11:44:40	2024-10-04 11:44:40

w = frequency weighting (A, C or Z)

Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

LAS 5.0	76.4 dB
LAS 10.0	73.8 dB
LAS 33.3	69.0 dB
LAS 50.0	66.3 dB
LAS 66.6	63.9 dB
LAS 90.0	58.8 dB

Virtual Dosimeters

	1	2	3	4
Configuration	OSHA-PEL	OSHA-HC	ACGIH	NIOSH
Dose	0.0%	0.0%	0.1%	0.1%
Projected Dose	0.4%	1.0%	2.8%	2.8%
Lavg	50.3 dB	56.8 dB	69.5 dB	69.5 dB
TWA(8)	25.5 dB	32.1 dB	54.6 dB	54.6 dB
Projected TWA(8)	50.3 dB	56.8 dB	69.5 dB	69.5 dB
Criterion Level	90.0 dB	90.0 dB	85.0 dB	85.0 dB
Threshold Level	90.0 dB	80.0 dB	80.0 dB	80.0 dB
Exchange Rate	5 dB	5 dB	3 dB	3 dB
LEP'd/Lex,8h	57.6 dB	57.6 dB	57.6 dB	57.6 dB
Projected LEP'd/Lex,8h	72.4 dB	72.4 dB	72.4 dB	72.4 dB
Shift Time	8 hours	8 hours	8 hours	8 hours

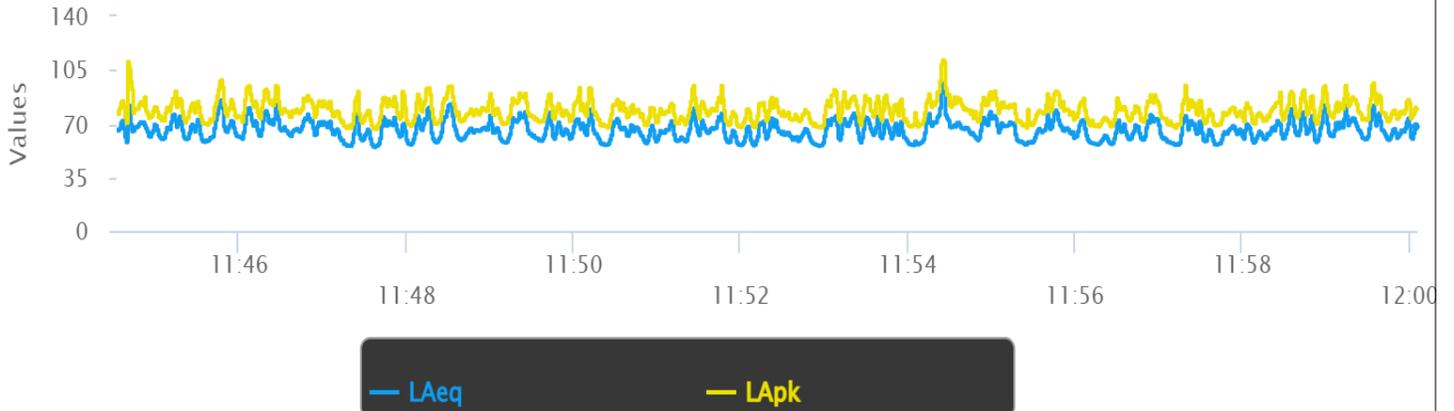
Exceedances

	Count	Duration
LAS > 85 dB	1	5
LAS > 95 dB	0	0
LCpk > 135 dB	0	0
LCpk > 137 dB	0	0
LCpk > 140 dB	0	0

Sound Exposure

SELA	102.2 dB
EA (Pa ² s)	6.6 Pa ² s
EA,8 h (Pa ² s)	202.4 Pa ² s
EA,40 h (Pa ² s)	1012.2 Pa ² s
EA (Pa ² h)	0.0 Pa ² h
EA,8 h (Pa ² h)	0.1 Pa ² h
EA,40 h (Pa ² h)	0.3 Pa ² h

Time History



Site Number: Long Term			
Recorded By: Lindsay Buck			
Job Number: 2024-179.01			
Date: October 3 – 4, 2024			
Time: 10:26 a.m. (Oct 3) – 10:26 a.m. (Oct 4)			
Location: Northeast corner of Eucalyptus Avenue and Valley Boulevard			
Source of Peak Noise: Vehicles traversing Valley Boulevard			
Noise Data			
CNEL (dB)	Leq (dB)	Lmin (dB)	Lmax (dB)
60.0	56.9	43.4	89.6

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Larson Davis	Spartan 821	30100	05/22/2024	
	Microphone	Larson Davis	377B02	352537	04/12/2024	
	Preamp	Larson Davis	PRM821	001679	04/26/2024	
	Calibrator	Larson Davis	CAL200	226638	05/20/2024	
Weather Data						
Est.	Duration: 24 Hours			Sky: Clear		
	Note: dBA Offset = 0.1			Sensor Height (ft): 3.5		
	Wind Ave Speed (mph)		Temperature (degrees Fahrenheit)		Barometer Pressure (hPa)	
	3		87		29.91	

Photo of Measurement Location





LARSON DAVIS

A PCB DIVISION

Spartan 821 Summary:

2024-10-04 16:00:20

User:

Location:

Job Description:

Notes: Could not parse section, making sure you have the latest G4 installed may resolve this issue.

Meter General Information

	Model	Serial
Meter	Spartan 821	30100
Preamp	PRM821	
Microphone	377B02	
Unique File Id	00A:00007594:66FE7147:000006DE	

Overall Measurement

Start Date & Time	2024-10-03 10:26:15		
Stop Date & Time	2024-10-04 10:26:15		
Run Time	24:00:00		
Pre-Calibration			
Date/Time	2024-09-09 11:14:53		
Calibrator Level	114.0 dB		
Meter Sensitivity	-26.10 dB re 1V/Pa		
Post-Calibration			
Date/Time	---		
Calibrator Level	---		
Meter Sensitivity	---		
Sensitivity Delta	---		
L _A eq	61.0 dB		
	A	C	Z
L _w eq	56.9	70.0	72.6
L _w pk	113.0 dB	114.0 dB	115.4 dB
	2024-10-04 09:43:53	2024-10-04 09:43:53	2024-10-04 09:43:53
L _w Smin	44.3 dB	62.5 dB	65.8 dB
	2024-10-04 00:42:30	2024-10-03 21:23:52	2024-10-03 21:23:55
L _w Smax	89.6 dB	95.9 dB	96.7 dB
	2024-10-04 09:43:53	2024-10-04 09:44:13	2024-10-04 09:44:13
L _w Fmin	43.4 dB	60.2 dB	63.5 dB
	2024-10-04 00:42:20	2024-10-04 02:26:39	2024-10-04 03:19:15
L _w Fmax	96.3 dB	102.1 dB	102.8 dB
	2024-10-04 09:43:53	2024-10-04 09:43:53	2024-10-04 09:44:12
L _w lmin	45.8 dB	64.8 dB	68.3 dB
	2024-10-04 00:42:28	2024-10-03 21:23:51	2024-10-04 02:25:53
L _w lmax	98.9 dB	105.6 dB	106.3 dB
	2024-10-04 09:43:53	2024-10-04 09:44:12	2024-10-04 09:44:12

w = frequency weighting (A, C or Z)

Overload Count	0		
Overload Duration	00:00:00		
	A	C	Z
Under Range Peak	50.0 dB	50.0 dB	62.0 dB
Under Range Limit	24.0 dB	27.0 dB	37.0 dB
Noise Floor	17.0 dB	18.0 dB	25.0 dB

Ln Percentiles

LAS 5.0	60.2 dB
LAS 10.0	58.5 dB
LAS 33.3	54.7 dB
LAS 50.0	53.2 dB
LAS 66.6	51.8 dB
LAS 90.0	49.2 dB

Virtual Dosimeters

	1	2	3	4
Configuration	OSHA-PEL	OSHA-HC	ACGIH	NIOSH
Dose	0.0%	0.0%	0.1%	0.1%
Projected Dose	0.0%	0.0%	0.0%	0.0%
Lavg	--- dB	25.6 dB	48.6 dB	48.6 dB
TWA(8)	-92.0 dB	33.5 dB	53.3 dB	53.3 dB
Projected TWA(8)	--- dB	25.6 dB	48.6 dB	48.6 dB
Criterion Level	90.0 dB	90.0 dB	85.0 dB	85.0 dB
Threshold Level	90.0 dB	80.0 dB	80.0 dB	80.0 dB
Exchange Rate	5 dB	5 dB	3 dB	3 dB
LEP'd/Lex,8h	61.7 dB	61.7 dB	61.7 dB	61.7 dB
Projected LEP'd/Lex,8h	56.9 dB	56.9 dB	56.9 dB	56.9 dB
Shift Time	8 hours	8 hours	8 hours	8 hours

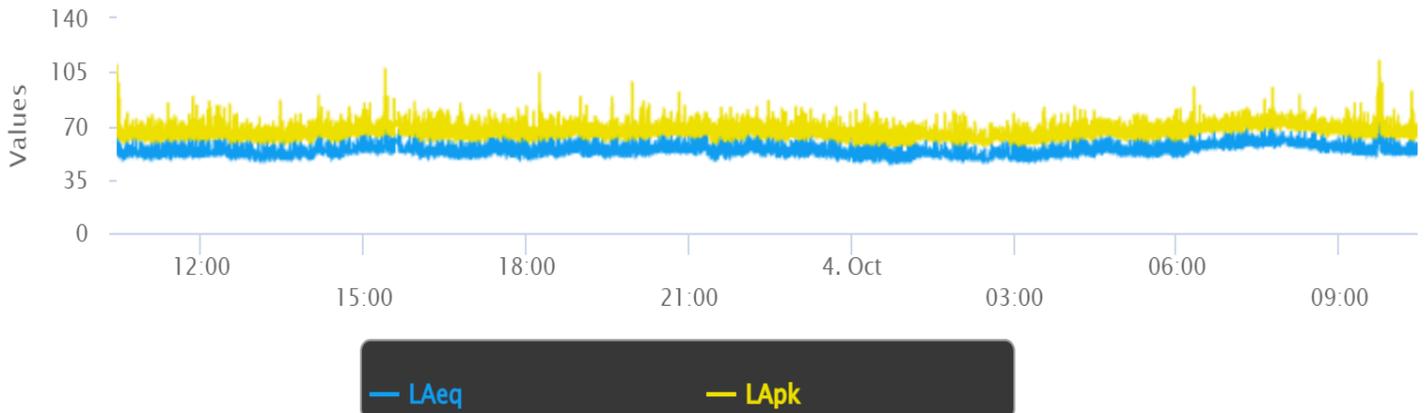
Exceedances

	Count	Duration
LAS > 85 dB	4	6
LAS > 95 dB	0	0
LCpk > 135 dB	0	0
LCpk > 137 dB	0	0
LCpk > 140 dB	0	0

Sound Exposure

SELA	106.2 dB
EA (Pa²s)	16.8 Pa ² s
EA,8 h (Pa²s)	5.6 Pa ² s
EA,40 h (Pa²s)	28.1 Pa ² s
EA (Pa²h)	0.0 Pa ² h
EA,8 h (Pa²h)	0.0 Pa ² h
EA,40 h (Pa²h)	0.0 Pa ² h

Time History



ATTACHMENT B

Federal Highway Administration Roadway Construction Noise Model Outputs – Project
Construction

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/11/2024

Case Description: **Pepper Development Project: Site Preparation**

Description **Affected Land Use**
 Site Preparation Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
			Dozer	No		
Dozer	No	40		81.7	600	0
Dozer	No	40		81.7	600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Dozer	60.1	56.1
Dozer	60.1	56.1
Dozer	60.1	56.1
Tractor	62.4	58.4
Total	62.4	66

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/11/2024
Case Description: **Pepper Development Project: Grading**

Description **Affected Land Use**
 Grading Residential

Description	Impact		Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		600	0
Excavator	No	40		80.7	600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Dozer	No	40		81.7	600	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Grader	63.4	59.4
Excavator	59.1	55.1
Tractor	62.4	58.4
Tractor	62.4	58.4
Tractor	62.4	58.4
Dozer	60.1	56.1
Total	63.4	65.7

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/11/2024

Case Description: **Development Project: Building Construction, Paving, Painting**

Description **Affected Land Use**

Building Constructor Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	600	0
Gradall	No	40		83.4	600	0
Gradall	No	40		83.4	600	0
Gradall	No	40		83.4	600	0
Generator	No	50		80.6	600	0
Welder / Torch	No	40		74	600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Tractor	No	40	84		600	0
Concrete Mixer Truck	No	40		78.8	600	0
Drum Mixer	No	50		80	600	0
Paver	No	50		77.2	600	0
Paver	No	50		77.2	600	0
Paver	No	50		77.2	600	0
Roller	No	20		80	600	0
Roller	No	20		80	600	0
Compressor (air)	No	40		77.7	600	0

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/11/2024

Case Description: **Development Project: Building Construction, Paving, Painting**

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Crane	59	51
Gradall	61.8	57.8
Gradall	61.8	57.8
Gradall	61.8	57.8
Generator	59	56
Welder / Torch	52.4	48.4
Tractor	62.4	58.4
Concrete Mixer Truck	57.2	53.2
Drum Mixer	58.4	55.4
Paver	55.6	52.6
Paver	55.6	52.6
Paver	55.6	52.6
Roller	58.4	51.4
Roller	58.4	51.4
Compressor (air)	56.1	52.1
Total	62.4	68.3

*Calculated Lmax is the Loudest value.

Federal Highway Noise Prediction Model (FHWA-RD-77-108) Outputs – Project Traffic Noise

Background Information

Analysis Scenario(s): **Existing**
 Source of Traffic Volumes: HW Lochner
 Community Noise Descriptor: L_{dn}: CNEL: X

		Inputs											Outputs						
													100 feet			distance to CNEL Contour			
Roadway	Segment	ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Receiver	L _{eq-24hr}	L _{dn}	CNEL	70 dBA	65 dBA	60 dBA
W. San Bernardino Ave.	W. San Bernardino Ave. West of N. Pepper Ave.	108	35	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	3	Soft	100	39.3	42.1	42.8	2	3	7
N. Pepper Ave.	N. Pepper Ave. South of Violet St.	639	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	49.6	52.4	53.0	7	16	34
N. Pepper Ave.	N. Pepper Ave. North of Proposed Project Dwy	639	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	49.6	52.4	53.0	7	16	34
N. Pepper Ave.	N. Pepper Ave. South of Proposed Project Dwy	2,169	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	54.9	57.7	58.4	17	36	78
Proposed Project Dwy	Proposed Project Dwy West of N. Pepper Ave.	1,701	10	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	2	Soft	100	42.9	45.7	46.4	3	6	12
Proposed Project Dwy	Proposed Project Dwy East of N. Pepper Ave.	171	10	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	2	Soft	100	32.9	35.7	36.4	1	1	3
N. Pepper Ave.	N. Pepper Ave. North of Blue Dr.	1,917	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	54.3	57.1	57.8	15	33	72
N. Pepper Ave.	N. Pepper Ave. South of Blue Dr.	1,485	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	53.2	56.0	56.7	13	28	60
Blue Dr.	Blue Dr. West of N. Pepper Ave.	432	25	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	4	Soft	100	42.7	45.5	46.2	3	6	12
Blue Dr.	Blue Dr. East of N. Pepper Ave.	0	25	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	4	Soft	100	-	-	-	-	-	-
N. Pepper Ave.	N. Pepper Ave. North of W. Valley Blvd.	1,449	45	0.0%	94.3%	3.5%	2.2%	75.0%	15.0%	10.0%	6	Soft	100	53.1	55.9	56.6	13	28	59

ATTACHMENT D

SoundPLAN Onsite Noise Generation

SoundPLAN
Output Source Information

Reciever	Location	Daytime/Nighttime Level at Ground Floor (dBA)
1	1000 Agua Caliente Ave.	55.3 / 52.1
2	1002 N Eucalyptus Avenue	53.0 / 48.5
3	1009 Whistle Stop Drive	55.4 / 52.5
4	1011 Whistle Stop Drive	55.7 / 52.9
5	1013 Whistle Stop Drive	55.9 / 53.1
6	1015 Whistle Stop Drive	55.9 / 53.1
7	1017 Whistle Stop Drive	55.8 / 53.2
8	1019 Whistle Stop Drive	55.7 / 53.1
9	1021 Whistle Stop Drive	55.7 / 53.2
10	1023 Whistle Stop Drive	55.7 / 53.1
11	1025 Whistle Stop Drive	55.5 / 53.0
12	1027 Whistle Stop Drive	55.2 / 52.8
13	1471 W San Bernardino Avenue	49.8 / 48.9
14	1838 W De Anza Dr.	54.6 / 51.1
15	1868 W De Anza Drive	54.4 / 50.8
16	1920 N Martinez Lane	52.4 / 47.7
17	Arrowhead Regional Medical Center Facility 1	56.2 / 50.1
18	Arrowhead Regional Medical Center Facility 2	56.6 / 53.4
19	Arrowhead Regional Medical Center Facility 3	53.3 / 50.9

**SoundPLAN
Output Source Information**

20	California University of Science and Medicine	53.6 / 52.6
21	Colton Golf Course 1	54.4 / 48.0
22	Colton Golf Course 2	56.4 / 50.0
23	Colton Golf Course 3	56.2 / 49.5
24	West Valley Park 1	53.4 / 47.1
25	West Valley Park 2	50.6 / 45.1

	Citation	Level at Source (dBA)
1	Parking Garage Noise - Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment.	42.3
2	Parking Noise Attributed to Medical Facility - Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment.	49.2
3	Parking Noise Attributed to Hotel USe - Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment.	48.3