Beaumont Pointe

Noise and Vibration Analysis

City of Beaumont

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12398-18 Noise Study

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-15	Interstate 15
INCE	Institute of Noise Control Engineering
ISEE	International Society of Explosives Engineer's
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Beaumont Pointe
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
USBM	U.S. Bureau of Mines
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Beaumont Pointe development ("Project"). The Project site is located south of the SR-60 Freeway and west of Jack Rabbit Trail, in the City of Beaumont.

The Project would allow for the development on the Project site of a maximum of 246,000 square feet (sf) of general commercial uses in addition to a 125-room hotel (90,000 sf) and a maximum of 4,995,000 sf of industrial uses. The Project would provide 128.8 acres of open space to accommodate landscaped manufactured slopes, fuel modification areas, and natural open space as a buffer to adjacent conservation area and 134.7 acres of open space – conservation. The open space – conservation area would be preserved as natural habitat as required by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Associated improvements to the Project site would include, but are not limited to, paved roads, paved parking areas, drive aisles, truck courts, utility infrastructure, landscaping, water quality basins, signage, lighting, property walls, gates, and fencing, including perimeter fencing for the Project site.

The Project is proposed to be constructed in three phases (described in this report as Phase 1, Phase 2, and Buildout). This noise study includes a conservative analysis of the proposed Project uses. This study has been prepared to satisfy applicable City of Beaumont standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) The off-site traffic noise impact analysis is based on the land use assumptions and trip generation outlined in the *Beaumont Pointe Specific Plan Traffic Analysis* prepared by Urban Crossroads, Inc. (2) Therefore, the off-site Project traffic impacts evaluated in this noise impact analysis account for any minor changes that may occur as part of the final land use plan.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Beaumont Pointe Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Potentially Significant*	*Significant and Unavoidable*
Stationary Operational Noise	9	*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-
Blasting Noise	10	*Less Than Significant*	-
Blasting Vibration		*Less Than Significant*	-

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Beaumont Pointe ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise as well as short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Beaumont Pointe site is located south of the SR-60 Freeway and west of Jack Rabbit Trail, in the City of Beaumont, as shown on Exhibit 1-A. Existing land uses near the site consist mostly of vacant land, an industrial project under construction to the east of the site and nearby residential homes located north across State Route 60. The nearest noise sensitive residential receiver is located approximately 417 feet south of the Project site near the Hoy Ranch property.

1.2 PROJECT DESCRIPTION

As shown in Exhibit 1-B, the Project is proposed to consist of a maximum of 246,000 square feet (sf) of general commercial uses in addition to a 125-room hotel (90,000 sf) and a maximum of 4,995,000 sf of industrial uses. The Project would provide 128.8 acres of open space to accommodate landscaped manufactured slopes, fuel modification areas, and natural open space as a buffer to adjacent conservation area and 134.7 acres of open space – conservation. The open space – conservation area would be preserved as natural habitat as required by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Associated improvements to the Project site would include, but are not limited to, paved roads, paved parking areas, drive aisles, truck courts, utility infrastructure, landscaping, water quality basins, signage, lighting, property walls, gates, and fencing, including perimeter fencing for the Project site.

In addition, this noise analysis describes Project-related noise level associated with typical stationary operational activities at the Project site. The typical Project-related stationary operational noise sources are expected to include: loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity. This report assumes the Project-related operational noise source activity will function 24-hours daily for seven days per week. The Project is proposed to be constructed in three phases (described in this report as Phase 1, Phase 2, and Buildout). It is expected that the noise generated by the Project construction equipment will include a combination of crawler tractors, excavators, graders, dozers, scrapers, forklifts, generator sets, welders, paving equipment, and air compressors that when combined can reach high levels. In addition, rock blasting may be required during grading operations to support Project construction, therefore, this analysis considers the potential blasting noise and vibration levels at the nearest noise sensitive receiver locations. Rock blasting would occur infrequently on the site, required if at all approximately once per week.

EXHIBIT 1-A: LOCATION MAP

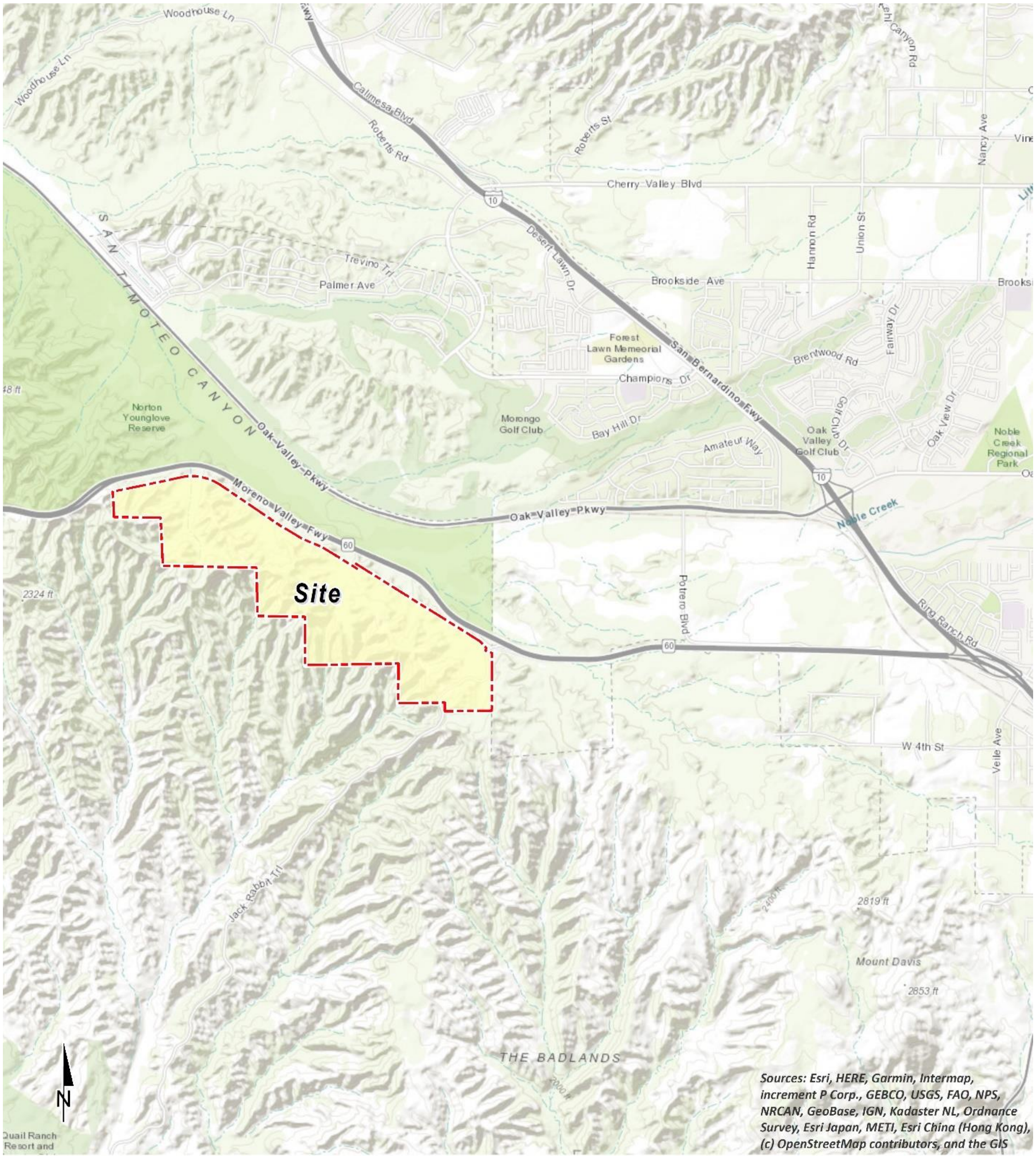
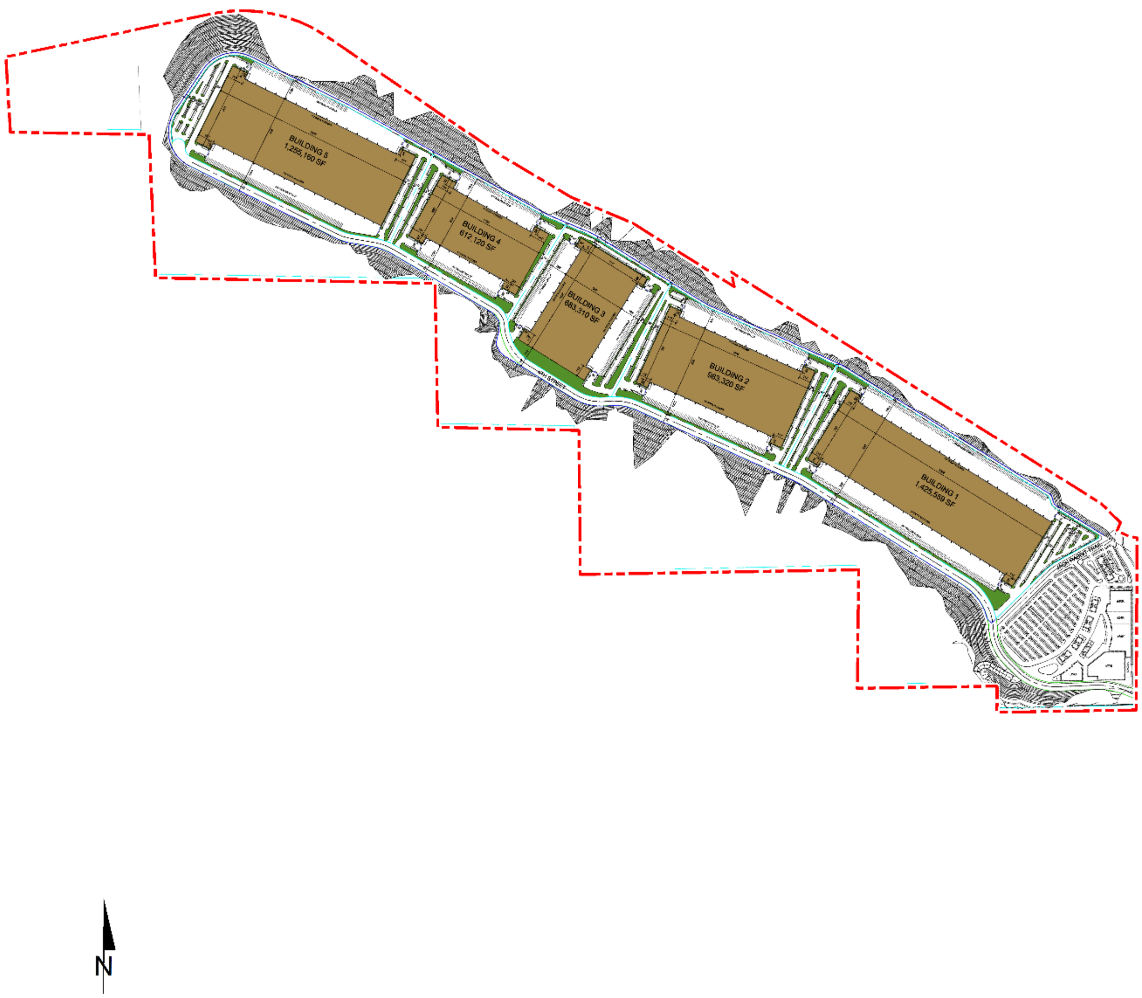


EXHIBIT 1-B: CONCEPTUAL SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (3) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort. (4) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the “energy average” noise levels within the environment.

To describe the time-varying character of environmental noise, the City of Beaumont relies on the $L_{25,}$ $L_{8,}$ L_2 and L_{max}, percentile noise levels to describe the stationary source noise level limits. The percentile noise descriptors are the noise levels equaled or exceeded during 25 percent, 8 percent, and 2 percent of a stated time. Sound levels associated with the L_8 typically describe transient or short-term events, while levels associated with the L_{25} describe the base or typical noise conditions. The City of Beaumont relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{25} describes the noise levels occurring 25 percent of the time, the L_{eq} accounts for the equivalent or energy average observed for the entire hour.

Peak hour or equivalent noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Beaumont relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. Based on guidance from the U.S. Department of Transportation, Federal Highway Administration (FHWA), Office of Environment and Planning, Noise and Air Quality Branch, the way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (3)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (5)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (3)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (5) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (5)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area’s desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

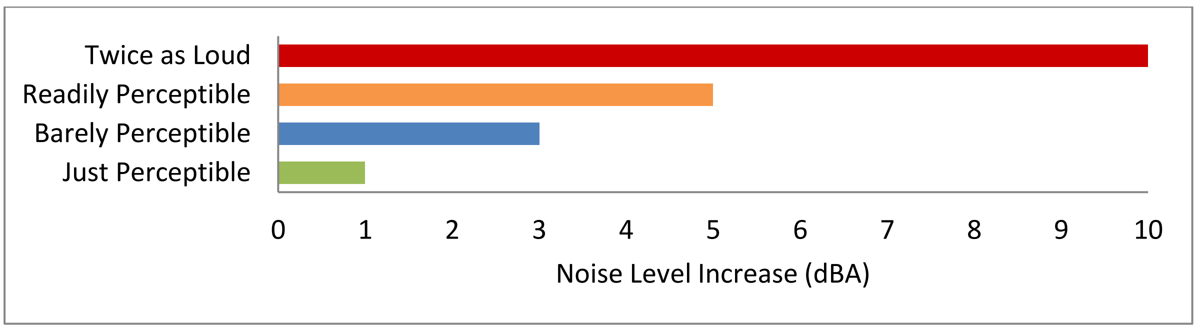
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise varies depending upon everyone’s susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities.
- Socio-economic status and educational level.
- Perception that those affected are being unfairly treated.
- Attitudes regarding the usefulness of the noise-producing activity.
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (7) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (7) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



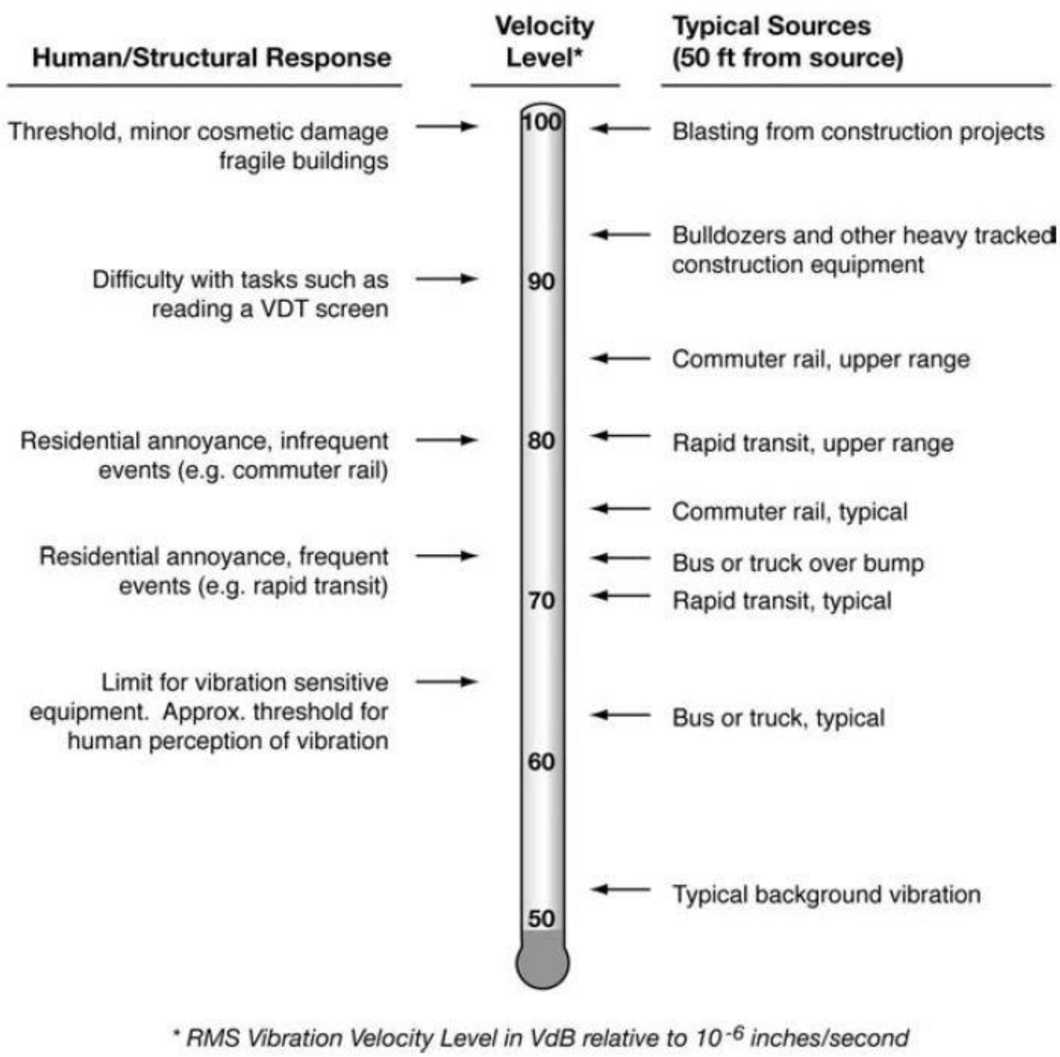
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



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

2.9 BLASTING

Rock blasting is used when large boulders must be broken into smaller sizes for handling. Blasts typically occur for only a few seconds. As further discussed in Appendix 2.1, air overpressure, or "airblast," levels generated by blasting can travel up to 1,100 feet per second, depending on the size of the blast, distance from the blast, and amount of charge confinement. (9) For safety purposes, during blasting, no other construction equipment is operated on a site.

The intensity of the noise and vibration impacts associated with rock blasting depends on location, size, material, shape of the rock, and the methods used to crack it. While a blasting contractor can design the blasts to stay below a given vibration level that could cause damage to nearby structures, it is virtually impossible to design blasts that are not perceptible by people in the vicinity. (10) The noise produced by blasting activities is referred to as air overpressure, or an "airblast," which is generated when explosive energy in the form of gases escape from the detonating blast holes. Much like a point source, airblasts radiate outward in a spherical pattern and attenuate with each doubling of distance from the blast location, depending on the design of the blast and amount of containment.

Blasting activities generally include: the pre-drilling of holes in the hard rock area; preparation and placement of the charges in the drilled holes; a pre-blast horn signal; additional pre-blast horn signals immediately prior to the blast; and the blast itself. An additional horn signal is sounded to indicate the "all clear" after the blast and the blasting contractor has inspected the blasting area. The noise from the blast itself starts with a cracking sound from the detonator, located at a distance from the charges, and ends with the low crackling sound from each charge as they are subsequently set off.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (11) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 CITY OF BEAUMONT GENERAL PLAN NOISE ELEMENT

The City of Beaumont has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of City of Beaumont from excessive exposure to noise. (12) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Noise Element identifies several policies to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect City of Beaumont residents from excessive noise, the Noise Element contains the following noise programs related to the Project:

N1: Requirement for Acoustical Studies. Amend development application requirements so that projects that could result in noise environments above normally acceptable noise ranges or all new development complete acoustical studies prepared by qualified professionals to ensure that the noise levels are at acceptable levels, per the Municipal Code.

N3: Project Design Guidelines. Integrate project design guidelines that integrate features into new developments that minimize impacts associated with the operation of air conditioning and heating equipment, on-site traffic, and use of parking, loading, and trash storage facilities.

N7: Stationary Equipment. Enforce requirements that all stationary construction equipment shall be operated with closed engine doors, equipped with properly operating and maintained mufflers, and placed so that emitted noise is directed away from the nearest sensitive receptors.

N8: Equipment Staging Areas. Require that equipment staging shall be in areas that will create the greatest distance feasible between construction-related noise sources and noise-sensitive receptors.

N9: Additional Noise Attenuation Techniques. Require that temporary sound barriers are installed and maintained between the construction site and the sensitive receptors during the clearing, earth moving, grading, and foundation/conditioning phases of construction. Temporary sound barriers shall consist of sound blankets affixed to construction fencing along all sides of the construction site boundary facing potentially sensitive receptors.

N10: Vehicle and Equipment Idling. Establish requirements that construction vehicles and equipment are not left idling for longer than five minutes when not in use.

3.3 City of Beaumont General Plan Noise Element Environmental Impact Report

To support the General Plan Noise Element, the City of Beaumont adopted a Program Environmental Impact Report (EIR). (13) Section 5.12 of the EIR outlines the *regulations and polices intended to protect the community from excessive noise and vibration to ensure quality of life for residents and workers in the City*. In addition, Section 5.12.4 presents thresholds of significance for vibration and increases in off-site traffic noise levels. The CEQA significance thresholds outlined in the EIR that are used in this Noise and Vibration Analysis are presented in Section 4.

3.4 City of Beaumont Municipal Code Standards

To analyze noise impacts originating from a designated fixed location or private property such as the Beaumont Pointe Project, stationary-source (operational) noise levels such as the expected loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity, and noise from construction activities are typically evaluated against standards established under the City's Municipal Code included in Appendix 3.1.

3.4.1 Stationary Operational Noise Standards

For noise-sensitive residential properties, the City of Beaumont Municipal Code, Section 9.02.050, identifies base ambient noise level (BANL) stationary-source noise level limits for the daytime (7:00 a.m. to 10:00 p.m.) hours of 55 dBA L_{eq} and 45 dBA L_{eq} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. For industrial and commercial land uses, the BANL established by the City's Municipal Code is 75 dBA L_{eq} for the daytime hours and of 50 dBA L_{eq} during the nighttime hours. Section 9.40.050 states *that actual decibel measurements exceeding the levels set forth hereinabove at the times and within the zones corresponding thereto shall be employed as the "base ambient noise level".* In effect, when the ambient noise levels exceed the base exterior noise level limits, the noise level standard shall be adjusted as appropriate to encompass or reflect the ambient noise level. The noise level limit adjustments for the City of Beaumont noise standards are shown on Table 3-1.

TABLE 3-1: CITY OF BEAUMONT STATIONARY OPERATIONAL NOISE STANDARDS

Receiving Land Use	Time Period	Base Ambient Noise Level (dBA L_{eq})[1]	Exterior Noise Standards (dBA)[2]			
			L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (0 min)
Residential	Daytime	55	60	65	70	75
	Nighttime	45	50	55	60	65
Industrial and Commercial	Daytime	75	-[3]	-[3]	-[3]	-[3]
	Nighttime	50	-[3]	-[3]	-[3]	-[3]

[1] Section 9.02.050 base ambient noise level of the City of Beaumont Municipal Code.
[2] Noise levels shall not exceed for the duration periods specified in Section 9.02.070 City of Beaumont Municipal Code.
[3] No exterior noise level shall exceed the base ambient noise levels for nonresidential land uses Section 9.02.090 City of Beaumont Municipal Code.
The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{25} is the noise level exceeded 25% of the time. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

The City of Beaumont percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project stationary operational activities, the (base exterior noise level limit) or the average L_{eq} noise level metric best describes the loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity. The equivalent L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, a review of the existing ambient noise level measurements shows that the L_{eq} is generally greater than the L_{25}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project stationary operational noise levels.

In addition, the City of Beaumont Municipal Code, Section 9.02.110.G states that *it shall be unlawful for any person to operate, cause to operate or permit the operation of any machinery, equipment, device, pump, fan, compressor, air conditioning apparatus or similar mechanical device, including but not limited to the use of any steam shovel, pneumatic hammer, derrick, steam or electric hoist, blower or power fan, or any internal combustion engine, the operation of which causes noise due to the explosion of operating gases or fluids, or other appliance, in any manner so as to create any noise which would cause the noise level at the property line of the property upon which the equipment or machinery is operated to exceed the base ambient noise level by five dB(A).*

3.4.2 CONSTRUCTION NOISE STANDARDS

The City of Beaumont has set restrictions to control noise impacts associated with the construction of the proposed Project. These restrictions are generally limited to the nearby noise sensitive receiver locations that may be impacted by the short-term construction noise activities. The City's Municipal Code identifies the following construction noise provisions in Section 9.02.110.F.1: *It shall be unlawful for any person to engage in or permit the generation of noise related to landscape maintenance, construction including erection, excavation, demolition, alteration or repair of any structure or improvement, at such sound levels, as measured at the* *property line of the nearest adjacent occupied property, as to be in excess of the sound levels permitted under this Chapter, at other times than between the hours of 7:00 a.m. and 6:00 p.m. The person engaged in such activity is hereby permitted to exceed sound levels otherwise set forth in this Chapter for the duration of the activity during the above-described hours for purposes of construction. However, nothing contained herein shall permit any person to cause sound levels to at any time exceed 55 dB(A) for intervals of more than 15 minutes per hour as measured in the interior of the nearest occupied residence or school*.

Section 9.02.110.F.3 of the Municipal Code indicates that *Construction related noise…may take place outside the time period set forth therein and above the relative sound levels in case of urgent necessity in the interest of public health and safety, and then only with the prior permission of the building inspector. Such permit may be granted for a period not to exceed three days or until the emergency ends, whichever is less. The permit may be renewed for periods of three days while the emergency continues.*

Project construction noise level standards are typically described as exterior noise level limits to assess the potential impacts. Therefore, to describe the Project construction noise levels at off-site sensitive receiver locations, an exterior construction-related noise level threshold of 75 dBA L_{eq} is used. This exterior construction noise level standard represents the combination of the City of Beaumont 55 dBA L_{eq} interior noise level limit and the Noise Reduction (NR) of approximately 20 dBA for typical buildings with "windows closed" (5 p. 31)). Therefore, an unmitigated exterior noise level standard of 75 dBA L_{eq} when measured at the building façade is used to assess the construction noise levels for the nearest noise sensitive residential uses.

3.5 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. (8) Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity.

To analyze vibration impacts originating from the construction of the Beaumont Pointe, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Beaumont does not identify specific vibration level limits and instead relies on the Federal Transit Administration (FTA) methodology. (8) The FTA *Transit Noise and Vibration Impact Assessment* methodology provides guidelines for the maximum-acceptable vibration criteria for different types of land uses. Consistent with the thresholds of significance outlined in the City of Beaumont General Plan EIR (13), these guidelines allow 90 VdB for industrial (workshop) use, 84 VdB for office use and 78 VdB for daytime residential uses and 72 VdB for nighttime uses in buildings where people normally sleep. (8 p. 131)

3.6 BLASTING

The blasting contractor is required to obtain blasting permit(s) from the State, and to notify Riverside County Sheriff's Department within 24 hours prior to the planned blasting events. Air overpressure regulations are identified by the USBM and the International Society of Explosives Engineer's (ISEE) Blasters' Handbook. (9) To analyze blasting impacts originating from the construction of the Beaumont Pointe Project, vibration-generating rock blasting activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Beaumont does not identify specific blasting noise or vibration level limits. Therefore, this analysis relies on the following criteria to assess potential temporary construction-related impacts at adjacent receiver locations.

3.6.1 BLASTING NOISE LIMITS

Based on Table 26.17 *Typical Air Overpressure Damage Criteria* of the Blasters' Handbook, an air overpressure of 133 dB is identified as a perception-based criteria level for blasting. As such, the Project blasting-related vibration and airblast levels are based on the 133 dB criteria for airblasts identified by the ISEE and USBM.

3.6.2 BLASTING VIBRATION LIMITS

The Caltrans *Transportation and Construction Vibration Guidance Manual*, (10 p. 38) Table 19, vibration criteria are used in this noise study to assess potential temporary construction-related impacts at adjacent receiver locations. Since most of the buildings near the Project site can best be described as "older residential buildings", Caltrans guidance identifies a maximum acceptable transient peak-particle-velocity (PPV) vibration threshold of 0.5 inches per second (in/sec). Therefore, the 0.5 PPV (in/sec) vibration threshold is used to evaluate the potential blasting-related vibration levels experienced at the nearby residential homes.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Off-site traffic noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach *recognizes that there is no single noise increase that renders the noise impact significant.* (14) Table 5.12-G of in the City of Beaumont General Plan Noise Element EIR outlines the allowable noise exposure increases that are derived from the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual.* To describe the amount to which a given noise level increase is considered acceptable, the FTA criteria is used to evaluate the incremental noise level increase and establishes a method for comparing future project noise with existing ambient conditions under CEQA Significance Threshold A. In effect, the amount to which a given noise level increase is considered acceptable is reduced based on existing ambient noise conditions. Consistent with the City of Beaumont Municipal Code, Section 9.02.110[G], the stationary operational Project noise source activities shall not create any noise which would cause the noise level at the property line to exceed the base ambient noise level by 5 dBA.

4.2 VIBRATION (THRESHOLD B)

The vibration impacts originating from the construction of the Beaumont Pointe are appropriately evaluated using the thresholds of significance outlined in the City of Beaumont General Plan EIR. (13) These guidelines allow 90 VdB for industrial (workshop) use, 84 VdB for office use and 78 VdB for daytime residential uses and 72 VdB for nighttime uses in buildings where people normally sleep. (8)

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest major airport is the March Air Reserve Base located roughly 12 miles west of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site Traffic[1]	If ambient is < 50 dBA CNEL	≥ 7 dBA CNEL Project increase	
	If ambient is 50 - 55 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 55 - 60 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 2 dBA CNEL Project increase	
	If ambient is 65 - 75 dBA CNEL	≥ 1 dBA CNEL Project increase	
	If ambient is > 75 dBA CNEL	0 dBA CNEL Project increase	
Stationary Operational	Base Exterior Noise Level[2]	55 dBA L_{eq}	45 dBA L_{eq}
	Base Ambient Noise Level[3]	≥ 5 dBA L_{eq} Project increase	
Construction	Permitted between 7:00 a.m. to 6:00 p.m.[4]		
	Noise Level Threshold[5]	75 dBA L_{eq}	n/a
	Vibration Level Threshold[6]	78 VdB	n/a
Blasting	Airblast Threshold[7]	133 dBA L_{eq}	n/a
	Vibration Level Threshold[8]	0.5 PPV (in/sec)	n/a

[1] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, consistent with the City of Beaumont General Plan DEIR.
[2] City of Beaumont General Plan Municipal Code, Section 9.02.050
[3] City of Beaumont General Plan Municipal Code, Section 9.02.110[G]
[4] City of Beaumont General Plan Municipal Code, Section 9.02.110[F]
[5] Acceptable exterior construction noise level threshold based on the City of Beaumont 55 dBA L_{eq} interior noise level limit and the 20 dBA noise reduction associated with typical building construction.
[6] Federal Transit Administration, Transit Noise and Vibration Impact Assessment.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.
[7] ISEE's Blasters' Handbook, Table 26.17 Typical Air Overpressure Damage Criteria, and U.S. Bureau of Mines standards.
[8] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five noise sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, April 22, 2020. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (15)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (3) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the hourly energy average sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

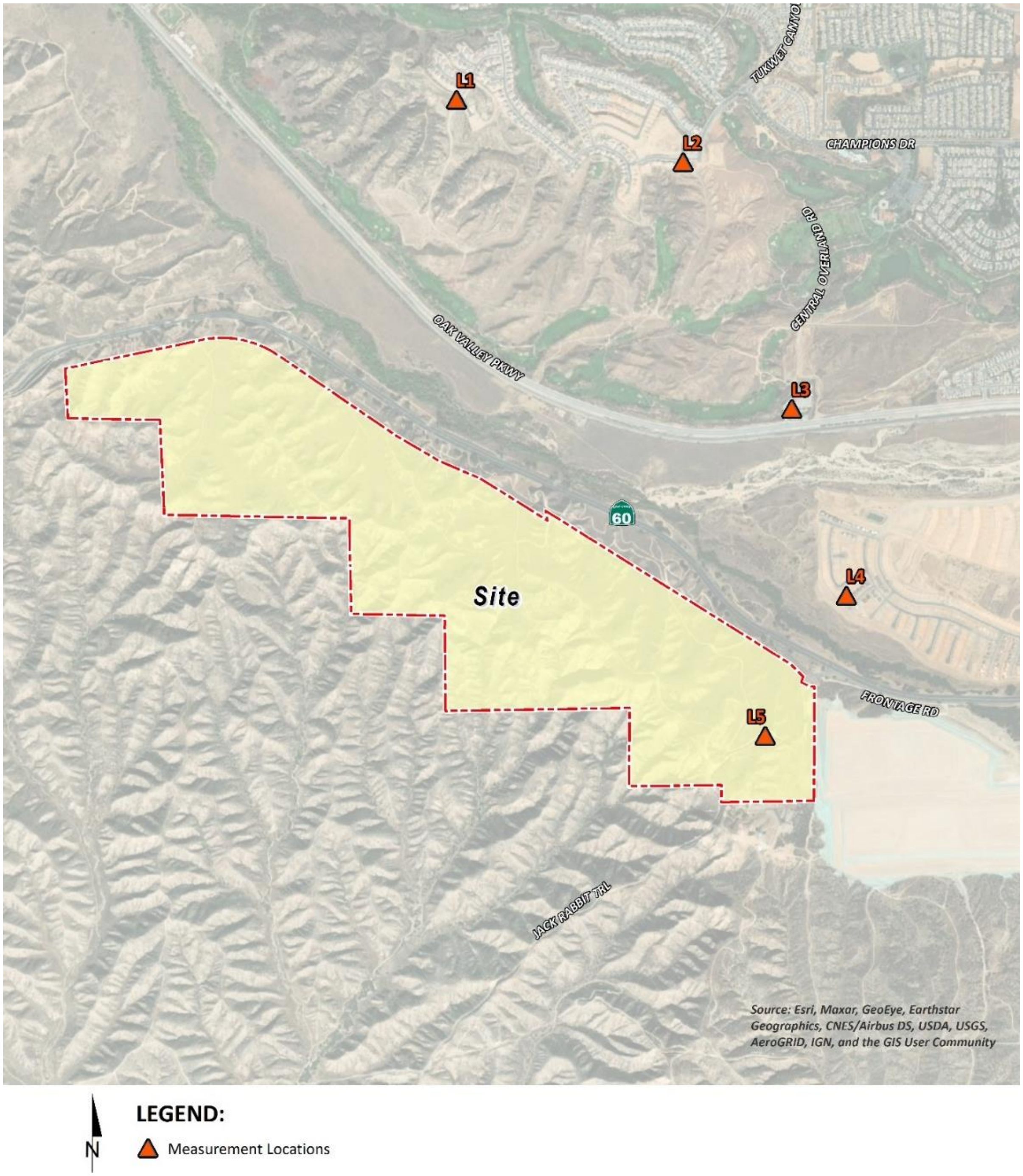
TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located north of the Project site on Roberts Place near existing single-family residential home at 34945 Roberts Place.	45.0	45.2	51.8
L2	Located north of the Project site on Mickelson Drive near existing single-family residential homes.	62.7	51.4	62.3
L3	Located northeast of the Project site by Oak Valley Parkway near the Tukwet Canyon Golf Course.	64.3	60.8	68.8
L4	Located northeast of the Project site on Olivewood near the Olivewood housing community	52.9	46.9	55.1
L5	Located in the southeast portion of the Project site on Jack Rabbit Trail just outside the Hoy Ranch Property.	44.9	39.4	48.1

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each of the daytime and nighttime hours.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA Traffic Noise Prediction Model

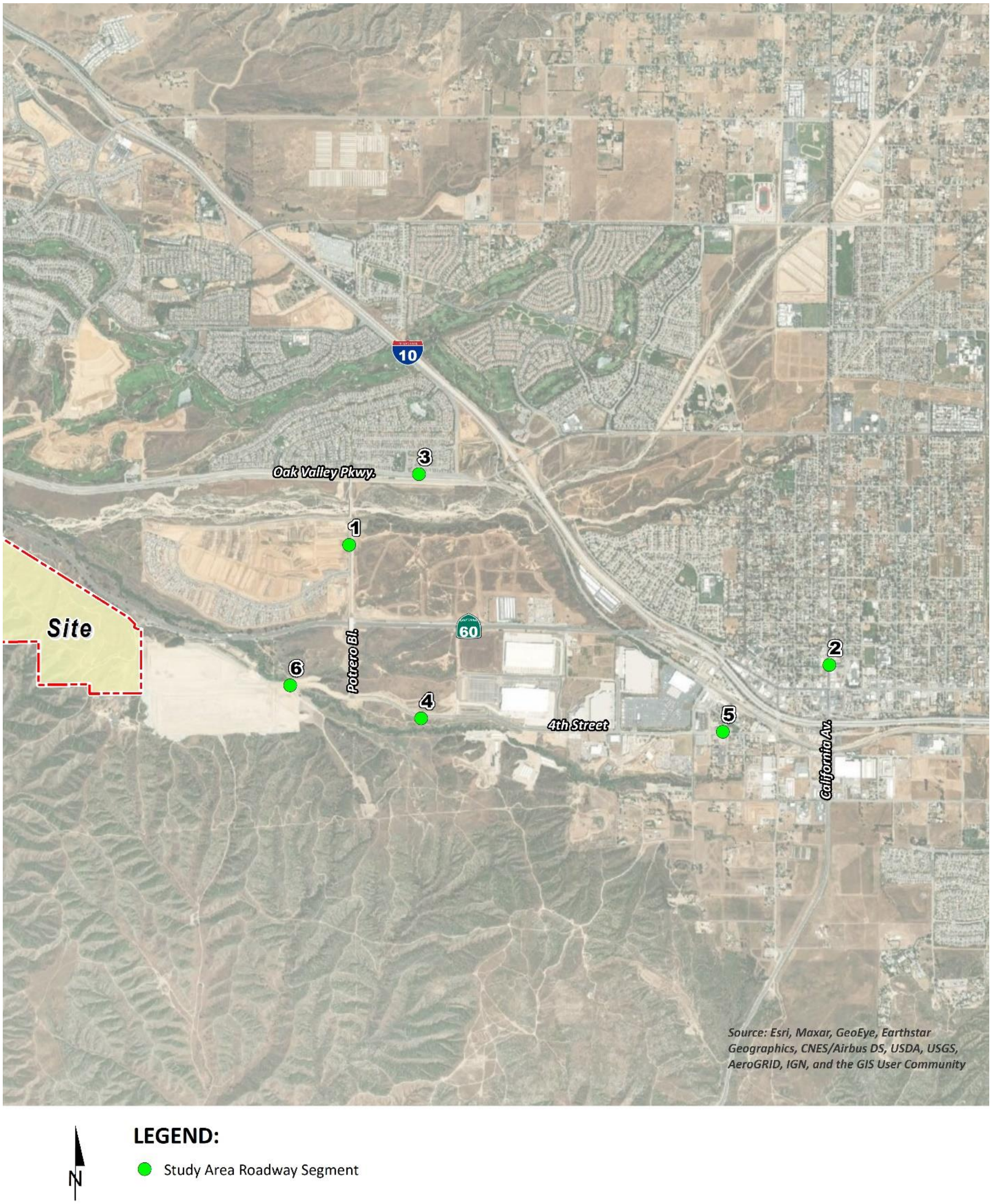
The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (16) This methodology is commonly used to describe the off-site traffic noise levels throughout southern California and is consistent with the County of Riverside Office of Industrial Hygiene *Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures*, which specifically requires the FHWA RD-77-108 model to be used in analysis within the County's jurisdiction. (17)

The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (18) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (19)

6.2 Off-Site Traffic Noise Prediction Model Inputs

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the six study area roadway segments shown on Exhibit 6-A, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Beaumont General Plan Circulation Element, and the posted vehicle speeds.

EXHIBIT 6-A: OFF-SITE STUDY AREA ROADWAY SEGMENTS



Consistent with *Beaumont Pointe Traffic Analysis* prepared by Urban Crossroads, Inc., the analysis below provides off-site roadway segment analysis for the following traffic scenarios.

- Existing (2020) Conditions
- Existing plus Project (E+P) Conditions – Phase 1
- Existing plus Project (E+P) Conditions – Phase 1 + Phase 2
- Existing plus Project (E+P) Conditions – Project Buildout
- Opening Year Cumulative (2023) Without Project Conditions
- Opening Year Cumulative (2023) With Project (Phase1) Conditions
- Opening Year Cumulative (2025) Without Project Conditions
- Opening Year Cumulative (2025) With Project (Phase 1 + Phase 2) Conditions
- Opening Year Cumulative (2027) Without Project Conditions
- Opening Year Cumulative (2027) With Project (Project Buildout) Conditions
- Horizon Year (2045) Without Project Conditions
- Horizon Year (2045) With Project (Project Buildout) Conditions

The ADT volumes used in this study area presented on Table 6-2 are based on the *Beaumont Pointe Specific Plan Traffic Analysis*, prepared by Urban Crossroads, Inc. The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. In addition, the off-site traffic noise analysis maintains a peak hour to average daily traffic (peak-to-daily) relationship of approximately 8.33%. (2) To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Potrero Bl.	s/o Oak Valley Pkwy.	Urban Arterial	67'	40
2	California Av.	n/o 6th St.	Collector	33'	40
3	Oak Valley Pkwy.	e/o Potrero Bl.	Urban Arterial Frontage Road	60'	50
4	4th St.	e/o Potrero Bl.	Major	59'	40
5	4th St.	e/o Veile Av.	Secondary	44'	40
6	4th St.	w/o Potrero Bl.	Secondary	33'	40

[1] County of Riverside General Plan Circulation Element.
[2] Distance to receiving land use is based upon the right-of-way distances.
[3] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]											
			Existing 2020				OYC 2023		OYC 2025		OYC 2027		Horizon Year (HY) 2045	
			Without Project	With Ph. 1	With Ph. 1+2	With Project	Without Project	With Ph. 1	Without Project	With Ph. 1+2	Without Project	With Project	Without Project	With Project
1	Potrero Bl.	s/o Oak Valley Pkwy.	2,232	2,836	4,689	5,739	3,314	3,917	3,814	6,271	5,264	8,770	23,682	27,188
2	California Av.	n/o 6th St.	1,908	2,029	2,399	2,609	2,258	2,379	2,440	2,931	2,858	3,559	1,737	2,439
3	Oak Valley Pkwy.	e/o Potrero Bl.	4,788	5,392	7,245	8,295	7,389	7,992	8,583	11,040	12,094	15,600	19,233	22,739
4	4th St.	e/o Potrero Bl.	3,744	4,972	8,794	10,474	6,154	7,382	7,249	8,723	10,532	17,262	10,969	17,700
5	4th St.	e/o Veile Av.	1,746	3,100	12,228	16,428	3,767	6,233	4,663	16,706	7,476	25,374	6,094	27,890
6	4th St.	w/o Potrero Bl.	162	3,922	15,577	19,777	3,295	7,055	4,640	20,054	9,108	29,898	11,624	32,414

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-11 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	91.81%	2.52%	5.67%	100.00%

Based on an existing vehicle count taken at Veile Avenue and 4th Street (Beaumont Pointe Specific Plan Traffic Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-5: EXISTING 2020 WITH PROJECT PHASE 1 VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	93.55%	1.98%	4.46%	100.00%
2	California Av.	n/o 6th St.	92.30%	2.37%	5.33%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	92.73%	2.24%	5.03%	100.00%
4	4th St.	e/o Potrero Bl.	88.56%	4.15%	7.29%	100.00%
5	4th St.	e/o Veile Av.	90.36%	3.52%	6.12%	100.00%
6	4th St.	w/o Potrero Bl.	82.67%	7.36%	9.97%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EXISTING WITH PROJECT PHASE 1 + PHASE 2 VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	96.10%	1.20%	2.70%	100.00%
2	California Av.	n/o 6th St.	93.49%	2.00%	4.51%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	94.59%	1.67%	3.75%	100.00%
4	4th St.	e/o Potrero Bl.	83.78%	6.91%	9.32%	100.00%
5	4th St.	e/o Veile Av.	88.71%	4.83%	6.46%	100.00%
6	4th St.	w/o Potrero Bl.	81.57%	8.42%	10.00%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: EXISTING WITH PROJECT BUILDOUT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	96.81%	0.98%	2.21%	100.00%
2	California Av.	n/o 6th St.	94.01%	1.84%	4.15%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	95.27%	1.45%	3.27%	100.00%
4	4th St.	e/o Potrero Bl.	86.38%	5.80%	7.82%	100.00%
5	4th St.	e/o Veile Av.	91.11%	3.80%	5.09%	100.00%
6	4th St.	w/o Potrero Bl.	86.28%	6.27%	7.45%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-8: OYC 2023 WITH PROJECT PHASE 1 VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	93.07%	2.13%	4.80%	100.00%
2	California Av.	n/o 6th St.	92.23%	2.39%	5.38%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	92.43%	2.33%	5.24%	100.00%
4	4th St.	e/o Potrero Bl.	89.62%	3.62%	6.76%	100.00%
5	4th St.	e/o Veile Av.	90.96%	3.10%	5.93%	100.00%
6	4th St.	w/o Potrero Bl.	87.26%	4.93%	7.81%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-9: OYC 2025 WITH PROJECT PHASE 1 + PHASE 2 VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	95.02%	1.53%	3.45%	100.00%
2	California Av.	n/o 6th St.	93.18%	2.10%	4.72%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	93.63%	1.96%	4.41%	100.00%
4	4th St.	e/o Potrero Bl.	93.19%	2.09%	4.71%	100.00%
5	4th St.	e/o Veile Av.	93.78%	1.91%	4.31%	100.00%
6	4th St.	w/o Potrero Bl.	84.32%	6.84%	8.84%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-10: OYC 2027 WITH PROJECT BUILDOUT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	95.09%	1.51%	3.40%	100.00%
2	California Av.	n/o 6th St.	93.42%	2.02%	4.55%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	93.65%	1.95%	4.40%	100.00%
4	4th St.	e/o Potrero Bl.	88.52%	4.51%	6.98%	100.00%
5	4th St.	e/o Veile Av.	91.40%	3.26%	5.33%	100.00%
6	4th St.	w/o Potrero Bl.	88.23%	4.95%	6.82%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-11: HY 2040 WITH PROJECT BUILDOUT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Potrero Bl.	s/o Oak Valley Pkwy.	92.87%	2.19%	4.94%	100.00%
2	California Av.	n/o 6th St.	94.17%	1.80%	4.04%	100.00%
3	Oak Valley Pkwy.	e/o Potrero Bl.	93.07%	2.13%	4.80%	100.00%
4	4th St.	e/o Potrero Bl.	88.60%	4.46%	6.94%	100.00%
5	4th St.	e/o Veile Av.	91.36%	3.35%	5.30%	100.00%
6	4th St.	w/o Potrero Bl.	88.56%	4.73%	6.72%	100.00%

[1] Beaumont Pointe Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE IMPACTS

As described in Section 4.1, the off-site traffic noise impacts are evaluated based on noise level increases resulting from the Project. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. To describe the amount to which a given noise level increase is considered substantial (Threshold A), the City of Beaumont General Plan EIR (13) outlines criteria to evaluate the incremental noise level increase and establishes a method for comparing future project noise with existing ambient conditions under CEQA Significance Noise Threshold A. Based on off-site traffic noise level increase criteria, the City of Beaumont General Plan EIR (13) indicates that *with implementation of proposed Project policies and implementation actions, increases in roadway noise at existing noise sensitive receptors would be reduced to the degree feasible.* However, the EIR determined that *future noise levels could still exceed thresholds* and the *impacts from permanent noise are considered significant and unavoidable.*

According to the *Beaumont Pointe Specific Plan Traffic Analysis* prepared by Urban Crossroads, Inc. (2), at Project Buildout the Project is expected to generate a total of approximately 16,266 trip-ends per day (actual vehicles) and includes 2,240 truck trip-ends per day. To describe the off-site Project-related traffic noise levels, this noise study relies on the actual Project automobile and truck trips established in the *Traffic Analysis* (as opposed to the passenger car equivalents) to accurately account for the effect of individual car and truck trips on the study area roadway network.

7.1 TRAFFIC NOISE CONTOURS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the Beaumont Pointe *Traffic Analysis*. (2) Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios. Tables 7-1 through 7-12 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation. Roadway segments are analyzed in each of the following timeframes:

- Existing (2020) Conditions
- Existing plus Project (E+P) Conditions – Phase 1
- Existing plus Project (E+P) Conditions – Phase 1 + Phase 2
- Existing plus Project (E+P) Conditions – Project Buildout
- Opening Year Cumulative (OYC) (2023) Without Project Conditions

- Opening Year Cumulative (OYC) (2023) With Project (Phase1) Conditions
- Opening Year Cumulative (OYC) (2025) Without Project Conditions
- Opening Year Cumulative (OYC) (2025) With Project (Phase 1 + Phase 2) Conditions
- Opening Year Cumulative (OYC) (2027) Without Project Conditions
- Opening Year Cumulative (OYC) (2027) With Project (Project Buildout) Conditions
- Horizon Year (HY) (2045) Without Project Conditions
- Horizon Year (2045) With Project (Project Buildout) Conditions

TABLE 7-1: EXISTING 2020 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	61.9	RW	RW	90
2	California Av.	n/o 6th St.	64.6	RW	RW	66
3	Oak Valley Pkwy.	e/o Potrero Bl.	68.4	RW	100	216
4	4th St.	e/o Potrero Bl.	64.2	RW	RW	113
5	4th St.	e/o Veile Av.	62.8	RW	RW	68
6	4th St.	w/o Potrero Bl.	53.9	RW	RW	RW

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING 2020 WITH PROJECT PHASE 1 NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	62.2	RW	RW	94
2	California Av.	n/o 6th St.	64.6	RW	RW	67
3	Oak Valley Pkwy.	e/o Potrero Bl.	68.5	RW	103	222
4	4th St.	e/o Potrero Bl.	66.4	RW	73	157
5	4th St.	e/o Veile Av.	65.3	RW	46	99
6	4th St.	w/o Potrero Bl.	68.8	RW	59	128

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EXISTING 2020 WITH PROJECT PHASE 1 + PHASE 2 NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	63.0	RW	RW	107
2	California Av.	n/o 6th St.	64.9	RW	RW	70
3	Oak Valley Pkwy.	e/o Potrero Bl.	69.0	RW	112	240
4	4th St.	e/o Potrero Bl.	69.8	RW	124	267
5	4th St.	e/o Veile Av.	69.0	RW	81	175
6	4th St.	w/o Potrero Bl.	74.9	70	151	325

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EXISTING 2020 WITH PROJECT BUILDOUT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	63.5	RW	RW	114
2	California Av.	n/o 6th St.	65.0	RW	33	71
3	Oak Valley Pkwy.	e/o Potrero Bl.	69.3	RW	116	250
4	4th St.	e/o Potrero Bl.	70.0	59	127	273
5	4th St.	e/o Veile Av.	69.3	RW	85	182
6	4th St.	w/o Potrero Bl.	75.1	72	156	336

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: OYC 2023 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	63.6	RW	RW	117
2	California Av.	n/o 6th St.	65.3	RW	35	74
3	Oak Valley Pkwy.	e/o Potrero Bl.	70.2	62	134	289
4	4th St.	e/o Potrero Bl.	66.4	RW	73	157
5	4th St.	e/o Veile Av.	66.1	RW	52	113
6	4th St.	w/o Potrero Bl.	66.9	RW	44	96

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: OYC 2023 WITH PROJECT PHASE 1 NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	63.8	RW	RW	120
2	California Av.	n/o 6th St.	65.4	RW	35	75
3	Oak Valley Pkwy.	e/o Potrero Bl.	70.4	63	136	294
4	4th St.	e/o Potrero Bl.	67.8	RW	91	195
5	4th St.	e/o Veile Av.	67.5	RW	64	138
6	4th St.	w/o Potrero Bl.	70.9	38	82	176

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: OYC 2025 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	64.2	RW	RW	128
2	California Av.	n/o 6th St.	65.6	RW	36	78
3	Oak Valley Pkwy.	e/o Potrero Bl.	70.9	69	148	319
4	4th St.	e/o Potrero Bl.	67.1	RW	81	175
5	4th St.	e/o Veile Av.	67.1	RW	60	130
6	4th St.	w/o Potrero Bl.	68.4	RW	56	120

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: OYC 2025 WITH PROJECT PHASE 1 + PHASE 2 NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	64.9	RW	RW	143
2	California Av.	n/o 6th St.	65.9	RW	38	81
3	Oak Valley Pkwy.	e/o Potrero Bl.	71.3	73	157	339
4	4th St.	e/o Potrero Bl.	67.3	RW	84	181
5	4th St.	e/o Veile Av.	67.4	RW	64	138
6	4th St.	w/o Potrero Bl.	75.7	80	172	370

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-9: OYC 2027 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	65.6	RW	74	159
2	California Av.	n/o 6th St.	66.3	RW	40	87
3	Oak Valley Pkwy.	e/o Potrero Bl.	72.4	86	186	401
4	4th St.	e/o Potrero Bl.	68.7	RW	104	224
5	4th St.	e/o Veile Av.	69.1	RW	83	178
6	4th St.	w/o Potrero Bl.	71.4	41	87	189

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-10: OYC 2027 WITH PROJECT BUILDOUT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	66.4	RW	82	178
2	California Av.	n/o 6th St.	66.6	RW	42	91
3	Oak Valley Pkwy.	e/o Potrero Bl.	72.8	92	198	427
4	4th St.	e/o Potrero Bl.	71.7	76	165	355
5	4th St.	e/o Veile Av.	71.7	57	123	264
6	4th St.	w/o Potrero Bl.	76.6	91	197	423

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-11: HY 2045 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	72.2	93	201	433
2	California Av.	n/o 6th St.	64.2	RW	RW	62
3	Oak Valley Pkwy.	e/o Potrero Bl.	74.4	118	254	546
4	4th St.	e/o Potrero Bl.	68.9	RW	107	231
5	4th St.	e/o Veile Av.	68.2	RW	72	156
6	4th St.	w/o Potrero Bl.	72.4	48	103	222

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-12: HY 2045 WITH PROJECT BUILDOUT NOISE CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Potrero Bl.	s/o Oak Valley Pkwy.	72.3	96	206	444
2	California Av.	n/o 6th St.	64.6	RW	RW	67
3	Oak Valley Pkwy.	e/o Potrero Bl.	74.6	122	264	568
4	4th St.	e/o Potrero Bl.	71.8	77	167	360
5	4th St.	e/o Veile Av.	71.2	53	114	246
6	4th St.	w/o Potrero Bl.	77.0	96	207	446

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING WITH PROJECT PHASE 1 TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in the *Beaumont Pointe Traffic Analysis*. This scenario is analyzed to show the potential impacts of the Project using the existing baseline consistent with the Project Traffic Analysis. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 53.9 to 68.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project Phase 1 conditions will range from 62.2 to 68.8 dBA CNEL. Table 7-13 shows that the Project off-site traffic noise level impacts will range from 0.0 to 14.9 dBA CNEL.

7.3 EXISTING WITH PROJECT PHASE 1 + PHASE 2 TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in *Beaumont Pointe Traffic Analysis*. This condition is provided solely for informational purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 53.9 to 68.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-3 shows the Existing with Project Phase 1 + Phase 2 conditions will range from 63.0 to 74.9 dBA CNEL. Table 7-14 shows that the Project off-site traffic noise level impacts will range from 0.3 to 21.0 dBA CNEL.

7.4 EXISTING WITH PROJECT BUILDOUT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in *Beaumont Pointe Traffic Analysis*. This scenario is analyzed to show the potential impacts of the Project using the existing baseline consistent with the Project Traffic Analysis. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 53.9 to 68.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Existing with Project Buildout conditions will range from 63.5 to 75.1 dBA CNEL. Table 7-15 shows that the Project off-site traffic noise level impacts will range from 0.4 to 21.2 dBA CNEL.

7.5 OYC (2023) WITH PROJECT PHASE 1 TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Opening Year Cumulative (2023) without Project conditions CNEL noise levels. The Opening Year Cumulative (2023) without Project exterior noise levels are expected to range from 63.6 to 70.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the Opening Year Cumulative (2023) with Project Phase 1 conditions will range from 63.8 to 70.9 dBA CNEL. Table 7-16 shows that the Project off-site traffic noise level increases will range from 0.1 to 4.0 dBA CNEL.

7.6 OYC (2025) WITH PROJECT PHASE 1 + PHASE 2 TRAFFIC NOISE LEVEL INCREASES

Table 7-7 presents the Opening Year Cumulative (2025) without Project conditions CNEL noise levels. The Opening Year Cumulative (2025) without Project exterior noise levels are expected to range from 64.2 to 70.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-8 shows the Opening Year Cumulative (2025) with Project Phase 1 + Phase 2 conditions will range from 64.9 to 75.7 dBA CNEL. Table 7-17 shows that the Project off-site traffic noise level increases will range from 0.2 to 7.3 dBA CNEL.

7.7 OYC (2027) WITH PROJECT BUILDOUT TRAFFIC NOISE LEVEL INCREASES

Table 7-9 presents the Opening Year Cumulative (2027) without Project conditions CNEL noise levels. The Opening Year Cumulative (2027) without Project exterior noise levels are expected to range from 65.6 to 72.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-10 shows the Opening Year Cumulative (2027) with Project Buildout conditions will range from 66.4 to 76.6 dBA CNEL. Table 7-18 shows that the Project off-site traffic noise level increases will range from 0.3 to 5.2 dBA CNEL.

7.8 HY (2045) WITH PROJECT BUILDOUT TRAFFIC NOISE LEVEL INCREASES

To evaluate the long-range Horizon Year 2045 w and without Project traffic noise levels, this section describes the off-site traffic noise levels consistent with the Project Traffic Analysis. Table 7-11 presents the Horizon Year (2045) without Project conditions CNEL noise levels. The Horizon Year (2045) without Project exterior noise levels are expected to range from 64.2 to 74.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-12 shows the Horizon Year (2045) with Project Buildout conditions will range from 64.6 to 77.0 dBA CNEL. Table 7-19 shows that the Project off-site traffic noise level increases will range from 0.1 to 4.6 dBA CNEL.

TABLE 7-13: EXISTING WITH PROJECT PHASE 1 TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	61.9	62.2	0.3
2	California Av.	n/o 6th St.	Sensitive	64.6	64.6	0.0
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	68.4	68.5	0.1
4	4th St.	e/o Potrero Bl.	Non-Sensitive	64.2	66.4	2.2
5	4th St.	e/o Veile Av.	Non-Sensitive	62.8	65.3	2.5
6	4th St.	w/o Potrero Bl.	Non-Sensitive	53.9	68.8	14.9

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-14: EXISTING WITH PROJECT PHASE 1 + PHASE 2 TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	61.9	63.0	1.1
2	California Av.	n/o 6th St.	Sensitive	64.6	64.9	0.3
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	68.4	69.0	0.6
4	4th St.	e/o Potrero Bl.	Non-Sensitive	64.2	69.8	5.6
5	4th St.	e/o Veile Av.	Non-Sensitive	62.8	69.0	6.2
6	4th St.	w/o Potrero Bl.	Non-Sensitive	53.9	74.9	21.0

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-15: EXISTING WITH PROJECT BUILDOUT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	61.9	63.5	1.6
2	California Av.	n/o 6th St.	Sensitive	64.6	65.0	0.4
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	68.4	69.3	0.9
4	4th St.	e/o Potrero Bl.	Non-Sensitive	64.2	70.0	5.8
5	4th St.	e/o Veile Av.	Non-Sensitive	62.8	69.3	6.5
6	4th St.	w/o Potrero Bl.	Non-Sensitive	53.9	75.1	21.2

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-16: OYC (2023) WITH PROJECT PHASE 1 TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	63.6	63.8	0.2
2	California Av.	n/o 6th St.	Sensitive	65.3	65.4	0.1
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	70.2	70.4	0.2
4	4th St.	e/o Potrero Bl.	Non-Sensitive	66.4	67.8	1.4
5	4th St.	e/o Veile Av.	Non-Sensitive	66.1	67.5	1.4
6	4th St.	w/o Potrero Bl.	Non-Sensitive	66.9	70.9	4.0

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-17: OYC (2025) WITH PROJECT PHASE 1 + PHASE 2 TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	64.2	64.9	0.7
2	California Av.	n/o 6th St.	Sensitive	65.6	65.9	0.3
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	70.9	71.3	0.4
4	4th St.	e/o Potrero Bl.	Non-Sensitive	67.1	67.3	0.2
5	4th St.	e/o Veile Av.	Non-Sensitive	67.1	67.4	0.3
6	4th St.	w/o Potrero Bl.	Non-Sensitive	68.4	75.7	7.3

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-18: OYC (2027) WITH PROJECT BUILDOUT TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	65.6	66.4	0.8
2	California Av.	n/o 6th St.	Sensitive	66.3	66.6	0.3
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	72.4	72.8	0.4
4	4th St.	e/o Potrero Bl.	Non-Sensitive	68.7	71.7	3.0
5	4th St.	e/o Veile Av.	Non-Sensitive	69.1	71.7	2.6
6	4th St.	w/o Potrero Bl.	Non-Sensitive	71.4	76.6	5.2

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

TABLE 7-19: HY (2045) WITH PROJECT BUILDOUT TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]		
				No Project	With Project	Project Addition
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	72.2	72.3	0.1
2	California Av.	n/o 6th St.	Sensitive	64.2	64.6	0.4
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	74.4	74.6	0.2
4	4th St.	e/o Potrero Bl.	Non-Sensitive	68.9	71.8	2.9
5	4th St.	e/o Veile Av.	Non-Sensitive	68.2	71.2	3.0
6	4th St.	w/o Potrero Bl.	Non-Sensitive	72.4	77.0	4.6

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

7.9 OFF-SITE TRAFFIC NOISE IMPACTS

Table 7-20 presents a summary of the cumulative and project incremental noise level increases for each of the six-study area roadway segments. The cumulative traffic noise level increase increment describes the difference between the future Horizon Year 2045 With Project conditions and the Existing (baseline) conditions. The Project increment represents the difference between the Existing (baseline) conditions and the Existing plus Project Buildout conditions. Based on the significance criteria for off-site traffic noise presented in Table 4-1, Table 7-20 shows that four of the study area roadway segments are shown to experience *potentially significant* off-site traffic noise level increases due to the added Project traffic. The segments are described below.

- Potrero Boulevard south of Oak Valley Parkway (Segment #1).
- 4th Street east of Potrero Boulevard. (Segment #4).
- 4th Street east of Veile Avenue (Segment #5).
- 4th Street west of Potrero Boulevard. (Segment #6).

Segments #1, #4, #5, and #6 are in industrial areas and are not located immediately adjacent to any noise sensitive land uses. This is consistent with the City's General Plan EIR that determined that buildout of the City's General Plan could result in new vehicular traffic which could exceed the FHWA thresholds and could substantially increase the ambient noise levels in the city and its sphere of influence. The City's General Plan recognizes that an increase in noise levels will occur in industrial areas due to truck traffic.

The City's General Plan goals and policies, therefore, are focused on protecting noise sensitive receivers from road noise, while encouraging timely and efficient goods movement that does not significantly contribute to noise in the City. The Project is located adjacent to the SR-60, which is identified as a Truck Priority roadway in General Plan Figure 4.9, and truck trips would be routed through an industrial area to Potrero Boulevard, also identified as a City Truck Priority roadway.

The City incorporated a number of General Plan policies and implementation programs to reduce traffic-related noise impacts, including the following polices: 10.1.2 (enforce noise standards), 10.1.3 (protect noise sensitive uses), 10.1.4 (require noise mitigation in the design of new development), 10.1.5 (require to new development to implement measures to normally compatible range), 10.1.8 (promote effective enforcement of federal, State, and City noise standards), 10.2.1 (work with Caltrans and FHA), 10.2.2 (enforce speed limits to reduce noise and enforce truck and bus routes), 10.2.3 (prohibit truck routes through neighborhoods with sensitive receptors), 10.2.4 (reduce roadway noise), 10.2.5 (traffic calming measures), 10.2.6 (encourage noise-reducing paving materials), and 10.2.7 (reduce noise generated from City-owned vehicles). Applicable implementation actions include: N2 (requirement for acoustical studies) and N5 (traffic noise assessments). Compliance would the City's General Plan policies and implementation actions would reduce impacts to the furthest extent feasible, but the potential off-site Project related traffic noise level increases on three study area roadway segments would remain significant and unavoidable.

Section 7.10 describes the off-site traffic noise mitigation measures considered in this analysis. The noise sensitive receiving land uses adjacent to roadway segment #2 and #3 and other roadway segments would not experience noise level increases under Existing with Project conditions that would exceed the established thresholds of significance.

7.10 OFF-SITE TRAFFIC NOISE MITIGATION

The off-site Traffic Noise Analysis shows that Project traffic noise level increases on four study area roadway segments will exceed the incremental noise level increase thresholds identified in the City of Beaumont General Plan DEIR and shown on Table 4-1. To reduce the *potentially significant* Project traffic noise level increases on the four study area roadway segments potential noise mitigation measures were considered in this analysis. Potential mitigation measures discussed below include rubberized asphalt hot mix pavement and off-site noise barriers for the existing noise sensitive residential land uses adjacent to impacted roadway segments.

7.10.1 RUBBERIZED ASPHALT

Due to the potential noise attenuation benefits, rubberized asphalt is considered as a mitigation measure for the off-site Project-related traffic noise level increases. To reduce traffic noise levels at the noise source, Caltrans research has shown that rubberized asphalt can provide noise attenuation of approximately 4 dBA for automobile traffic noise levels. (21) Changing the pavement type of a roadway has been shown to reduce the amount of tire/pavement noise produced at the source under both near-term and long-term conditions. Traffic noise is generated primarily by the interaction of the tires and pavement, the engine, and exhaust systems. For automobiles noise, as much as 75 to 90-percent of traffic noise is generated by the interaction of the tires and pavement, especially when traveling at higher and constant speeds. (3) According to research conducted by Caltrans (21) and(18) the Canadian Ministry of Transportation and Highways (22) a 4 dBA reduction in tire/pavement noise is attainable using rubberized asphalt under typical operating conditions.

The effectiveness of reducing traffic noise levels is higher on roadways with low percentages of heavy trucks, since the heavy truck engine and exhaust noise is not affected by rubberized alternative pavement due to the truck engine and exhaust stack height above the pavement itself. (21) Per Caltrans guidance a truck stack height is modeled using a height of 11.5 feet above the road. (5) (23) With the primary off-site traffic noise source consisting of heavy trucks with a stack height of 11.5 feet off the ground, the tire/pavement noise reduction benefits associated rubberized asphalt will be primarily limited to autos.

While the off-site Project-related traffic noise level increases would theoretically be reduced with the 4 dBA reduction provided by rubberized asphalt, the reduction would not provide reliable benefits for the noise levels generated by heavy truck traffic. This is, as previously stated, due to the noise source height difference between automobiles and trucks. While rubberized asphalt will provide some noise reduction, this noise study recognizes that this is only effective for tire-on-pavement noise at higher speeds and would not reduce truck-related off-site traffic noise levels associated with truck engine and exhaust stacks to less than significant levels. Since the use of rubberized asphalt would not lower the off-site traffic noise levels below a level of significance, rubberized asphalt is not proposed as mitigation for the Project and the off-site Project-related traffic noise level increases at adjacent land uses under Existing Conditions would remain *significant.*

7.10.2 OFF-SITE NOISE BARRIERS

Since existing and future noise-sensitive receiving land uses are located adjacent to the impacted roadway segments in the Project study area, off-site noise barriers were considered in this analysis as a potential traffic noise mitigation measure to reduce the impacts. Off-site noise barriers are estimated to provide a *readily perceptible* 5 dBA reduction which, according to the FHWA, is *simple* to attain when blocking the line-of-sight from the noise source to the receiver. (5) As previously discussed, Caltrans guidance in the Highway Design Manual, Section 1102.3(3), indicates that for design purposes, *the noise barrier should intercept the line of sight from the exhaust stack of a truck to the receptor*, and an 11.5-foot-high truck stack height is assumed to represent the truck engine and exhaust noise source. (23) Therefore, any exterior noise barriers at receiving noise sensitive land uses experiencing Project-related traffic noise level increases would need to be high enough and long enough to block the line-of-sight from the noise source (at 11.5 feet high per Caltrans) to the receiver (at 5 feet high per FHWA guidance) in order to provide a 5 dBA reduction per FHWA guidance. (23)

As such, off-site noise barriers would not be feasible and would not lower the off-site traffic noise levels below a level of significance, and therefore, noise barriers are not proposed as mitigation for the Project.

7.10.3 SIGNIFICANT OFF-SITE TRAFFIC NOISE IMPACTS

Both rubberized asphalt and off-site noise barriers are considered as potential noise mitigation measures to reduce the *potentially significant* off-site traffic noise level increases shown on Table 7-20. However, due the reasons outlined about neither form of mitigation is recommended for implementation since they would not eliminate the off-site traffic noise level increases at the adjacent land uses to the impacted roadway segments. Therefore, the Project-related off-site traffic noise level increases at adjacent noise-sensitive land uses are considered a *significant and unavoidable* impact.

TABLE 7-20: OFF-SITE TRAFFIC INCREMENTAL NOISE LEVEL INCREASE SUMMARY

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]					
				Existing No Project	Future With Project	Cumulative Increment	Project Increment	Cumulative Limit	Cumulative Impact?
1	Potrero Bl.	s/o Oak Valley Pkwy.	Non-Sensitive	61.9	72.3	10.4	**1.6**	1	**Yes**
2	California Av.	n/o 6th St.	Sensitive	64.6	64.6	0.0	0.4	2	No
3	Oak Valley Pkwy.	e/o Potrero Bl.	Sensitive	68.4	74.6	6.2	0.9	1	No
4	4th St.	e/o Potrero Bl.	Non-Sensitive	64.2	71.8	7.6	**5.8**	1	**Yes**
5	4th St.	e/o Veile Av.	Non-Sensitive	62.8	71.2	8.4	**6.5**	1	**Yes**
6	4th St.	w/o Potrero Bl.	Non-Sensitive	53.9	77.0	23.1	**21.2**	0	**Yes**

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria in Section 4.1?

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8 RECEIVER LOCATIONS

To assess the potential for long-term stationary operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas.

Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2.

Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

To describe the potential off-site Project noise levels, five receiver locations in the vicinity of the Project site were identified. In addition, receiver locations BIO-1, BIO-2 and BIO-3 represent the existing open space areas and potential sensitive receiver locations for further consideration in the biology report for the Project. The nearest noise sensitive residential receiver is located approximately 417 feet south of the Project site near the Hoy Ranch property. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site.

R1: Location R1 represents the existing noise sensitive residence at 34945 Roberts Place, approximately 4,402 feet north of the Project site. R1 is placed at the backyard property line facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive residence at 35339 Stewart Street, approximately 4,347 feet north of the Project site. R2 is placed at the backyard yard property line facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing Tukwet Canyon Golf Course, approximately 3,123 feet north of the Project site. Since there are no private outdoor living areas facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive residence at 14157 Bosana Lane, approximately 1,159 feet north of the Project site. R4 is placed at the backyard property line facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

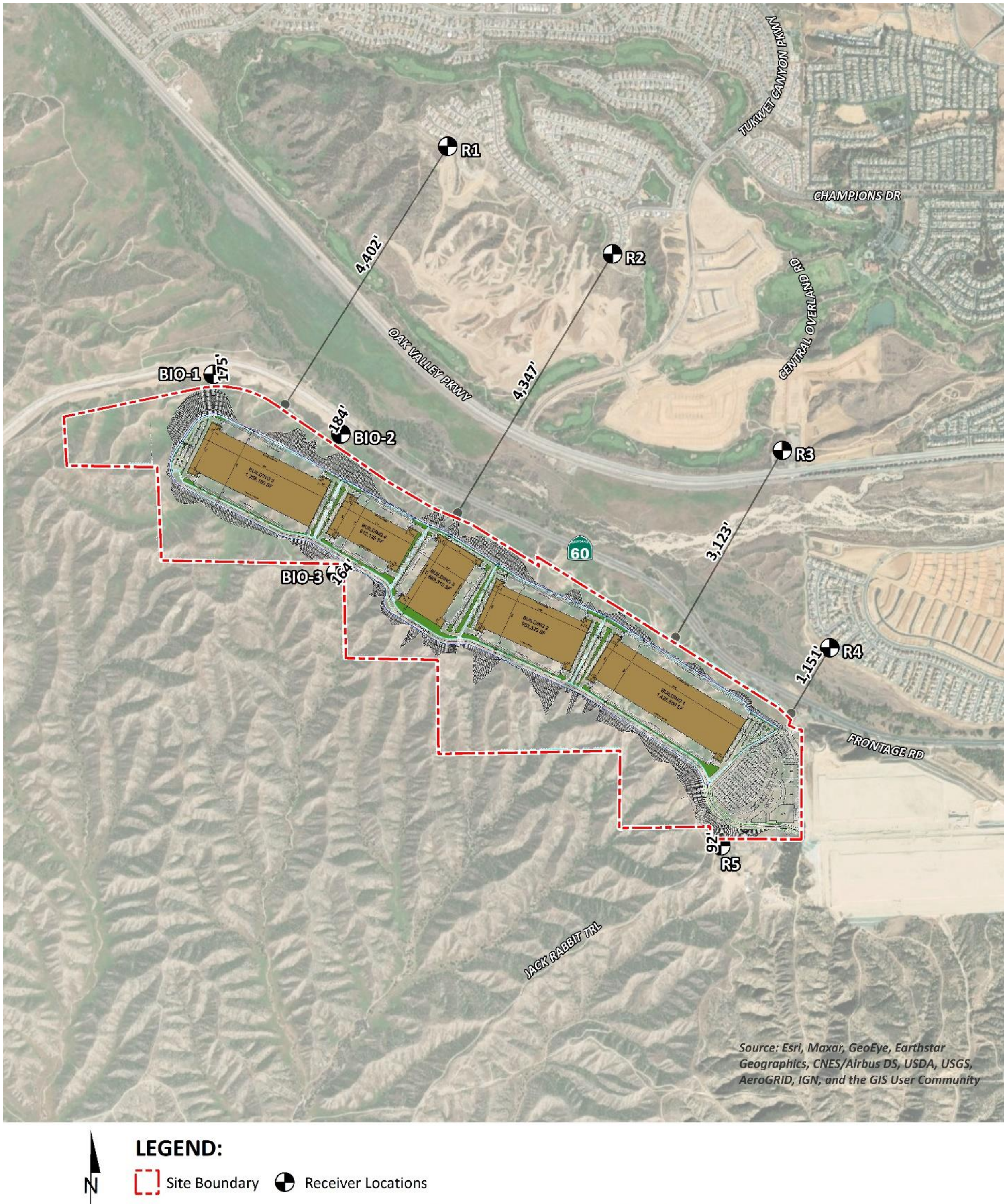
R5: Location R5 represents the existing noise sensitive residence at 13270 Jack Rabbit Trail (Hoy Ranch), approximately 92 feet south of the Project site. R2 is placed at the private outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

BIO-1: Location BIO-1 represents the existing open space area near the wildlife underpass of the State Route 60, approximately 175 feet north of the Project site.

BIO-2: Location BIO-2 represents the existing open space area near the State Route 60, approximately 184 feet northeast of the Project site.

BIO-3: Location BIO-3 represents the existing open space area approximately 164 feet southwest of the Project site opposite the planned loading dock area of Building 4..

EXHIBIT 8-A: RECEIVER LOCATIONS



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9 STATIONARY OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source (i.e., on-site) operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the stationary operation of the proposed Beaumont Pointe Project. Exhibit 9-A identifies the noise source locations used to assess the hourly average L_{eq} stationary operational noise levels consistent with the City of Beaumont General Plan Noise Element Policy N 4.1.

9.1 STATIONARY OPERATIONAL NOISE SOURCES

This stationary operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movements, parking lot activities, as well as loading and unloading of trucks and vans at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity.

9.2 REFERENCE NOISE LEVELS

To estimate the Project stationary operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a description of the reference noise level measurements shown on Table 9-1 used to estimate the Project stationary operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity all operating continuously, 24 hours per day, seven days per week. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (15)

EXHIBIT 9-A: STATIONARY OPERATIONAL NOISE SOURCE LOCATIONS

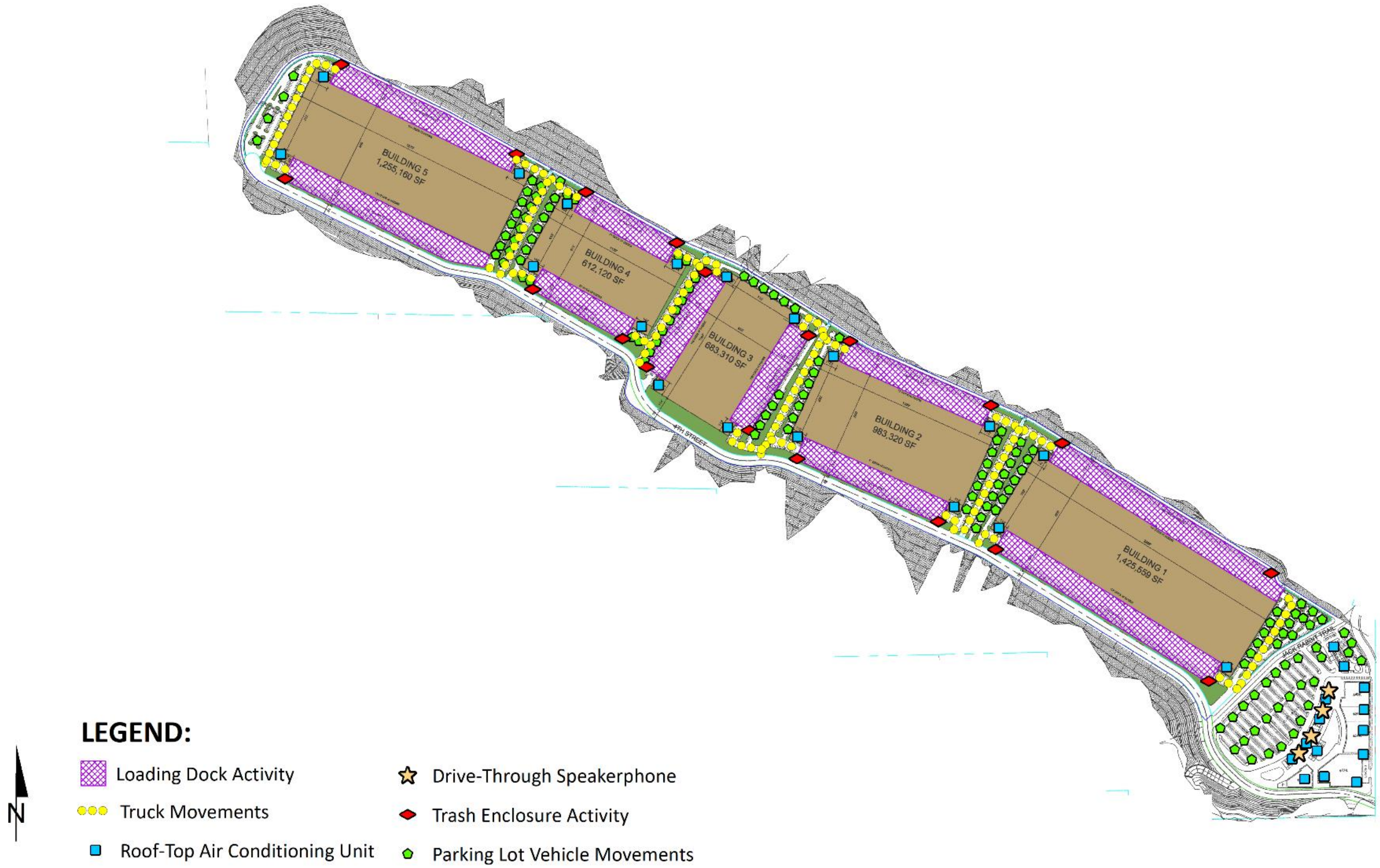


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Level (dBA L_{eq}) @ 50 feet	Sound Power Level (dBA)[3]
		Day	Night		
Loading Dock Activity	8'	60	60	76.2	111.5
Truck Movements	8'	60	60	59.8	93.2
Roof-Top Air Conditioning	5'	39	28	57.2	88.9
Parking Lot Vehicle Movements	5'	60	60	56.1	87.8
Drive-Through Speakerphone Activity	3'	60	60	50.0	84.0
Trash Enclosure Activity	5'	10	10	57.3	89.0

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.
[4] Truck Movements are calculated based on the number of events by time of day (See Table 9-2).

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical stationary operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 65.7 dBA L_{eq}.

The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck.

9.2.3 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represents multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area. Consistent with the *Beaumont Pointe Traffic Analysis*, the Project is expected to generate a total of approximately 16,266 trips per day (actual vehicles) and includes 2,240 truck trips per day. (2) This noise study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network.

9.2.4 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity a reference noise level of 56.1 dBA L_{eq} at 50 feet is used. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination doors opening and closing and alarm or car horn locking announcements.

9.2.6 DRIVE-THROUGH SPEAKERPHONE ACTIVITY

To describe the potential noise level impacts associated with the planned drive-thru speakerphones, this analysis relies on the drive-through intercom system manufactured by HME. This type of system is commonly used by the quick service restaurant (QSR) industry for drive-thru communications. The HME SPP2 speaker post intercom system produces a maximum noise level of 84 dBA at one foot from the speaker post. The system may also be equipped with an automatic volume control that can automatically reduce the sound levels as the ambient noise level decreases. The reference speakerphone noise level describes continuous drive-through operations and does not include any periods of inactivity.

9.2.7 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior stationary operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The stationary operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. The ground attenuation factor accounts for the ground absorption characteristics on the intervening topography and vegetation between the Project site and the nearest noise sensitive receiver locations. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project stationary operational noise levels presented in this section.

9.4 PROJECT STATIONARY OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, delivery van activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity, Urban Crossroads, Inc. calculated the stationary source operational noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-2 shows the Project stationary operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 32.1 to 43.0 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT STATIONARY OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)							
	R1	R2	R3	R4	R5	BIO-1	BIO-2	BIO-3
Loading Dock Activity	30.6	32.7	34.1	37.5	37.5	40.9	44.6	49.1
Truck Movements	22.3	25.0	25.8	29.1	33.2	33.6	37.0	41.0
Roof-Top Air Conditioning	18.5	20.6	24.1	29.5	34.2	27.2	29.9	31.4
Parking Lot Vehicle Movements	23.6	25.9	28.5	35.1	39.7	31.5	37.9	39.3
Drive-Through Speakerphone Activity	0.0	0.0	6.3	8.2	11.0	0.0	0.0	0.0
Trash Enclosure Activity	10.7	12.8	14.2	17.4	18.7	23.1	26.1	29.0
Total (All Noise Sources)	**32.1**	**34.3**	**36.0**	**40.3**	**43.0**	**42.2**	**46.2**	**50.2**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Tables 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 32.0 to 42.7 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity (Table 9-1). Appendix 9.1 includes the detailed noise model inputs.

TABLE 9-3: NIGHTTIME PROJECT STATIONARY OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)							
	R1	R2	R3	R4	R5	BIO-1	BIO-2	BIO-3
Loading Dock Activity	30.6	32.7	34.1	37.5	37.5	40.9	44.6	49.1
Truck Movements	22.3	25.0	25.8	29.1	33.2	33.6	37.0	41.0
Roof-Top Air Conditioning	16.1	18.2	21.7	27.1	31.8	24.8	27.5	29.0
Parking Lot Vehicle Movements	23.6	25.9	28.5	35.1	39.7	31.5	37.9	39.3
Drive-Through Speakerphone Activity	0.0	0.0	6.3	8.2	11.0	0.0	0.0	0.0
Trash Enclosure Activity	9.7	11.9	13.3	16.4	17.7	22.1	25.2	28.0
Total (All Noise Sources)	**32.0**	**34.2**	**35.8**	**40.1**	**42.7**	**42.2**	**46.1**	**50.2**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT STATIONARY OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only stationary operational noise levels are evaluated against exterior noise level thresholds based on the City of Beaumont exterior noise level standards at the nearest noise-sensitive receiver locations. Based on the CadnaA noise prediction model results that account for the noise attenuation due to distance from the noise source activities, Table 9-5 shows the stationary operational noise levels associated with the Beaumont Pointe Project will satisfy the City of Beaumont 55 dBA L_{eq} daytime and 45 dBA L_{eq} nighttime exterior noise level standards at the nearest receiver locations. Therefore, the stationary operational noise impacts are considered *less than significant* at the nearest noise-sensitive receiver locations. Potential stationary operational noise level impacts at associated receiver locations BIO-1, BIO-2 and BIO-3 are analyzed in the biology report for the Project.

TABLE 9-4: STATIONARY OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA L_{eq})[2]		Noise Level Standards (dBA L_{eq})[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	32.1	32.0	55	45	No	No
R2	34.3	34.2	55	45	No	No
R3	36.0	35.8	55	45	No	No
R4	40.3	40.1	55	45	No	No
R5	43.0	42.7	55	45	No	No
BIO-1	42.2	42.2	-[5]	-[5]	-[5]	-[5]
BIO-2	46.2	46.1	-[5]	-[5]	-[5]	-[5]
BIO-3	50.2	50.2	-[5]	-[5]	-[5]	-[5]

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards for residential land use, as shown on Table 4-2.
[4] Do the estimated Project stationary operational noise source activities exceed the noise level standards?
[5] Receiver location and Project operational noise levels provided for informational purposes. Potential impacts analyzed in the Bio report for the Project.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

9.6 PROJECT STATIONARY OPERATIONAL NOISE LEVEL INCREASES

To describe the Project stationary operational noise level increases, the Project stationary operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (3) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project stationary operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively. As indicated on Tables 9-5, the Project will generate a daytime stationary operational noise level increases ranging from 0.0 to 3.6 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime stationary operational noise level increases ranging from 0.0 to 4.2 dBA L_{eq} at the nearest receiver locations.

Based on the significance criteria presented in Table 4-1, the Project-related stationary operational noise level increases will satisfy the operational noise level increase criteria at the nearest sensitive receiver locations and the impact will be *less than significant.*

TABLE 9-5: DAYTIME PROJECT STATIONARY OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	32.1	L1	45.0	45.2	0.2	5	No
R2	34.3	L2	62.7	62.7	0.0	5	No
R3	36.0	L3	64.3	64.3	0.0	5	No
R4	40.3	L4	52.9	53.1	0.2	5	No
R5	43.0	L5	44.9	47.0	2.1	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-2.

TABLE 9-6: NIGHTTIME STAITONARY OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	32.0	L1	45.2	45.4	0.2	5	No
R2	34.2	L2	51.4	51.5	0.1	5	No
R3	35.8	L3	60.8	60.8	0.0	5	No
R4	40.1	L4	46.9	47.7	0.8	5	No
R5	42.7	L5	39.4	44.4	5.0	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-2.

10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8. To prevent high levels of construction noise from impacting noise-sensitive land uses, Section 9.02.110(F) of the City of Beaumont Municipal Code limits construction activities to the hours of 7:00 a.m. and 6:00 p.m.

Construction trips would occur throughout the construction period and would be associated with the delivery of building materials, supplies, and concrete to the Project Site. The construction trips will consist mostly of individual worker vehicles. However, it is expected that the individual worker vehicle construction noise source activities will be overshadowed by the construction noise source activities outlined below.

10.1 CONSTRUCTION ACTIVITIES

Noise generated by the Project construction equipment will include a combination of crawler tractors, excavators, graders, dozers, scrapers, forklifts, generator sets, welders, paving equipment and air compressors that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Grading
- Building Construction
- Paving
- Architectural Coating

In addition, rock blasting may be required to support Project construction, therefore, this analysis considers the potential blasting noise and vibration levels at the nearest noise sensitive receiver locations. Construction is expected to commence in May 2022 and will last through January 2027.

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (21). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 10-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (22) to describe the construction activities for each stage of Project construction.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

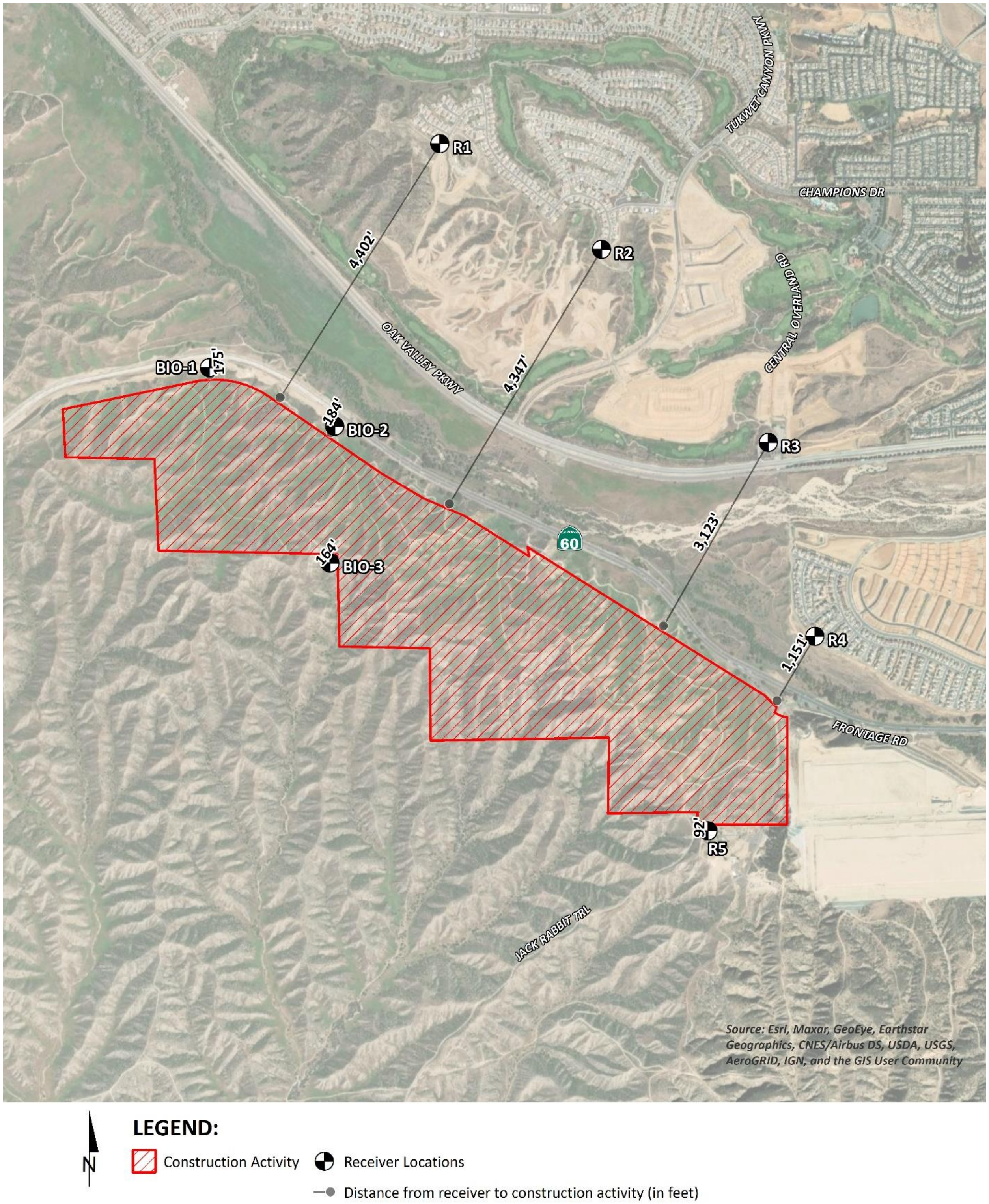


TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Highest Reference Noise Level (dBA L_{eq})
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

[1] Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) expressed in hourly average L_{eq} based on estimated usage factors from the FHWA Roadway Construction Noise Model (RCNM).

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the construction equipment noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-2, the highest construction noise levels are expected to range from 61.2 to 77.7 dBA L_{eq} at the nearest receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

10.4 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearby receiver locations, a construction-related noise level threshold of 75 dBA L_{eq} is used as acceptable thresholds to assess construction noise level impacts. This exterior construction noise level standard represents the combination of the City of Beaumont 55 dBA L_{eq} interior noise level limit and the Noise Reduction (NR) of approximately 20 dBA for typical buildings with "windows closed" (5 p. 31)). The construction noise analysis shows that the impacts on nearby residential receiver locations will fall below the 75 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})				
	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	61.2	54.2	52.2	49.2	61.2
R2	62.3	55.3	53.3	50.3	62.3
R3	64.7	57.7	55.7	52.7	64.7
R4	68.7	61.7	59.7	56.7	68.7
R5	73.4	66.4	64.4	61.4	73.4
BIO-1	74.4	67.4	65.4	62.4	74.4
BIO-2	75.2	68.2	66.2	63.2	75.2
BIO-3	77.7	70.7	68.7	65.7	77.7

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	61.2	75	No
R2	62.3	75	No
R3	64.7	75	No
R4	68.7	75	No
R5	73.4	75	No
BIO-1	74.4	-[5]	-[5]
BIO-2	75.2	-[5]	-[5]
BIO-3	77.7	-[5]	-[5]

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 10-2).
[3] Acceptable exterior construction noise level thresholds based on the City of Beaumont 55 dBA Leq interior noise level limit and the 20 dBA noise reduction associated with typical building construction.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?
[5] Receiver location and Project operational noise levels provided for informational purposes. Potential impacts analyzed in the biology report.

Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations. Potential construction noise level impacts associated receiver locations BIO-1, BIO-2 and BIO-3 are analyzed in the biology report for the Project.

10.5 Nighttime Concrete Pour Noise Analysis

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building area as shown on Exhibit 10-B. Since the nighttime concrete pours will take place outside the permitted City of Beaumont Municipal Code 9.02.110.F.1 hours of 7:00 a.m. to 6:00 p.m., the Project Applicant will be required to obtain authorization for nighttime work from the City of Beaumont. Any nighttime construction noise activities are evaluated against the City of Beaumont exterior construction noise level threshold of 75 dBA L_{eq}.

10.5.1 Nighttime Concrete Pour Reference Noise Level Measurements

To estimate the noise levels due to nighttime concrete pour activities, sample reference noise level measurements were taken during a nighttime concrete pour at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling.

To describe the nighttime concrete pour noise levels associated with the construction of the Beaumont Pointe, this analysis relies on reference sound pressure level of 67.7 dBA L_{eq} at 50 feet representing a sound power level of 100.3 dBA L_w. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA L_w is used to describe the expected Project nighttime concrete pour noise activities.

10.5.2 Nighttime Concrete Pour Noise Level Compliance

As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 26.8 to 45.4 dBA $L_{eq.}$ The analysis shows that the unmitigated nighttime concrete pour activities will not exceed the construction noise level threshold at all the nearest noise sensitive receiver locations. Therefore, the noise impacts due to Project construction nighttime concrete pour noise activity are considered *less than significant* at all receiver locations with prior authorization for nighttime work from the City of Beaumont. Appendix 10.2 includes the CadnaA nighttime concrete pour noise model inputs.

EXHIBIT 10-B: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS

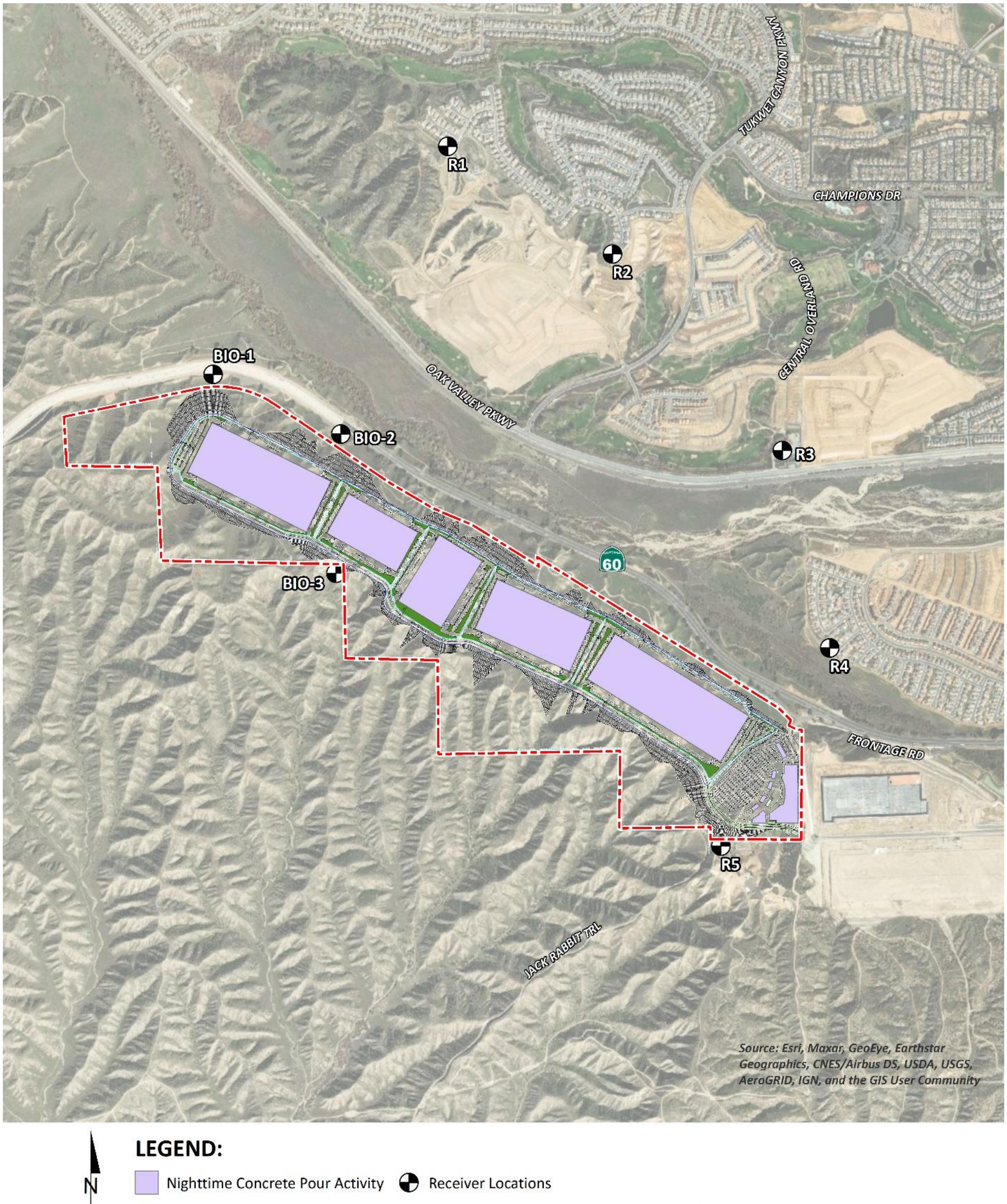


TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Concrete Pour Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	26.8	75	No
R2	28.5	75	No
R3	33.9	75	No
R4	40.9	75	No
R5	45.4	75	No
BIO-1	36.3	-[5]	-[5]
BIO-2	39.8	-[5]	-[5]
BIO-3	42.9	-[5]	-[5]

[1] Concrete pour noise source and receiver locations are shown on Exhibit 10-B.
[2] Highest concrete pour noise level operating at the Project site boundary to nearby receiver locations.
[3] Acceptable exterior construction noise level thresholds based on the City of Beaumont 55 dBA Leq interior noise level limit and the 20 dBA noise reduction associated with typical building construction.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?
[5] Receiver location and Project operational noise levels provided for informational purposes. Potential impacts analyzed in the biology report.

10.6 CONSTRUCTION VIBRATION LEVELS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected receivers and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The human response (annoyance) to ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA) (8).

Ground vibration levels associated with various types of construction equipment are summarized on Table 10-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $L_{VdB}(D) = L_{VdB}(25\text{ ft}) - 30\log(D/25)$

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-6 presents the expected construction equipment vibration levels at the nearest receiver locations. At distances ranging from 92 feet to 4,402 feet from Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 19.6 to 70.0 VdB and will remain below the FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria of 78 VdB for daytime residential uses at all receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during construction activities at the Project site. Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

TABLE 10-6: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold VdB[3]	Threshold Exceeded?[4]
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Levels		
R1	4,402'	0.0	11.6	18.6	19.6	19.6	78	No
R2	4,347'	0.0	11.8	18.8	19.8	19.8	78	No
R3	3,123'	0.0	16.1	23.1	24.1	24.1	78	No
R4	1,151'	8.1	29.1	36.1	37.1	37.1	78	No
R5	92'	41.0	62.0	69.0	70.0	70.0	78	No

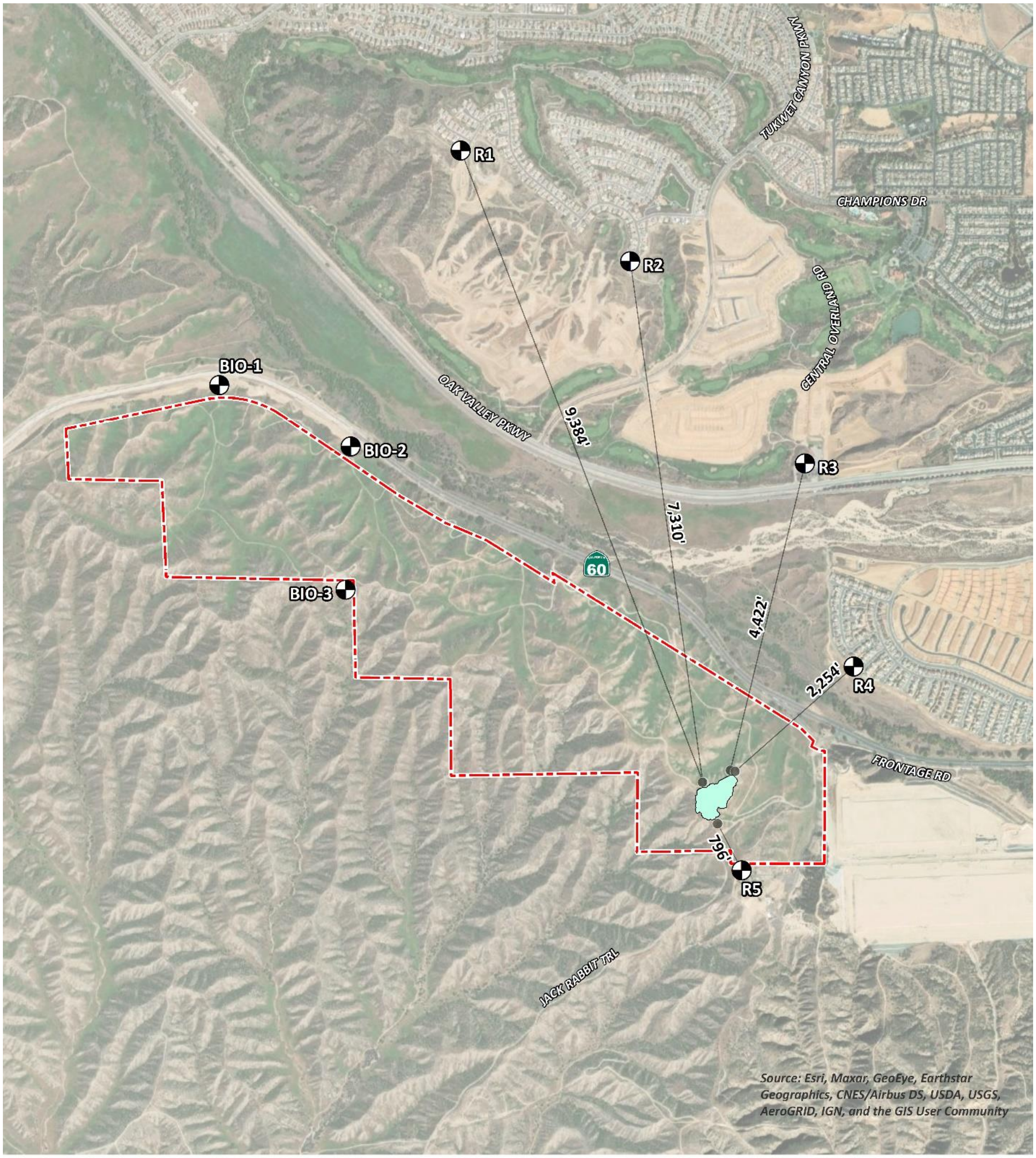
[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 10-4.
[3] FTA Transit Noise and Vibration Impact Assessment maximum acceptable vibration criteria as shown in Section 3.5.
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

10.7 BLASTING IMPACTS

If blasting is determined to be required during excavation and grading, the blasting contractor is required to obtain blasting permit(s) from the State, and to notify Riverside County Sheriff's Department within 24 hours of planned blasting events. According to the Project team, blasting at the site is unlikely. However, if blasting is needed it is expected to be limited to the east ridgeline cut area as shown on Exhibit 10-C. Recognizing that it is unfeasible to foresee all the variables that may be encountered on various project sites, a site-specific blasting plan shall be developed for the project. Blasting shall only be conducted by a licensed blaster. Further, the licensed blaster is required to design all blasts such that they remain below the significance thresholds identified by the USBM in addition to the permitting requirements of the State of California and Riverside County Sheriff's Department.

As outlined in Section 3.6, air overpressure regulations are identified by the U.S. Bureau of Mines (USBM) and the ISEE's Blasters' Handbook. (9) To analyze blasting impacts originating from the construction of the Beaumont Pointe Project, vibration-generating rock blasting activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Beaumont does not identify specific blasting noise or vibration level limits. Therefore, this analysis relies on the following criteria to assess potential temporary construction-related impacts at adjacent receiver locations.

EXHIBIT 10-C: BLASTING NOISE SOURCE LOCATIONS



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LEGEND:

Site Boundary | Receiver Locations

Blasting Activity | Distance from receiver to blasting activity (in feet)

10.7.1 AIRBLAST NOISE LEVELS

Due to the short-term instantaneous nature of blasting, the Project blasting-related airblast levels are based on the 133 dB criteria identified by the USBM and ISEE. The blasting airblast impacts described below represent the worst-case (closest) blast locations describing the potential impacts when measured from the edge of the nearest blast area to the nearest receiver location. When measured at greater distances, the blasts will result in lower airblast noise levels. The blasting calculations are included in Appendix 10.3.

The airblast levels from Project blasts are based on the ISEE's Blasters' Handbook equation for partially and substantially confined construction blasts, determined based on the anticipated depth of hard rock in each location. This analysis describes partially confined airblast levels since they are calculated using the Blasters' Handbook equation for general construction blasting activities. Table 10-7 shows that the calculated airblast levels from the worst-case (closest) Project blasting activities are expected to range from 88 to 111 dB. The Project airblast levels are shown to satisfy the 133 dB airblast threshold at the nearest noise sensitive residential receiver locations. Therefore, the Project-related airblast noise level impacts are considered *less than significant* during construction activities at the Project site.

TABLE 10-7: PROJECT BLASTING AND COMPLIANCE SUMMARY

Receiver Location[1]	Distance to Construction Activity (Feet)	Blasting Levels[2]		Threshold[3]		Threshold Exceeded?[4]	
		Airblast (dB)	Vibration (PPV)	Airblast (dB)	Vibration (PPV)	Airblast (dB)	Vibration (PPV)
R1	9,384'	88	0.00	133	0.5	No	No
R2	7,310'	90	0.00	133	0.5	No	No
R3	4,422'	95	0.00	133	0.5	No	No
R4	2,254'	101	0.01	133	0.5	No	No
R5	796'	111	0.05	133	0.5	No	No

[1] Blasting noise source and receiver locations are shown on Exhibit 10-C.
[2] Based on input data provided by California Drilling & Blasting. Calculations are provided in Appendix A for each blast location.
[3] Sources: Vibration threshold obtained from the Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19. Airblast threshold is based on ISEE's Blasters' Handbook, Table 26.17 Typical Air Overpressure Damage Criteria, and U.S. Bureau of Mines standards.
[4] Do the blast-related airblast and vibration levels exceed the thresholds?

10.7.2 BLASTING VIBRATION

The vibration criteria used in this noise study to assess potential temporary construction-related building damage impacts at adjacent receiver locations are based on the Caltrans *Transportation and Construction Vibration Guidance Manual*, (10 p. 38) Table 19. The blasting vibration impacts described below represent the worst-case (closest) blast locations describing the potential impacts when measured from the edge of the nearest blast area to the nearest receiver location. When measured at greater distances, the blasts will result in lower vibration levels. The blasting calculations are included in Appendix 10.2. Since most of the buildings near the Project site can best be described as "older residential buildings", Caltrans guidance identifies a maximum acceptable transient peak-particle-velocity (PPV) vibration threshold of 0.5 inches per second (in/sec). Therefore, the 0.5 PPV (in/sec) vibration threshold is used to evaluate the potential blasting-related vibration levels experienced at the nearby residential homes.

Table 10-7 shows the calculated vibration levels for the worst-case (closest) blast locations near the adjacent residential homes north and west of the Project site. The vibration levels of Project blasts are expected to range from 0.00 to 0.05 in/sec PPV. Table 10-7 shows that the Project blasting vibration levels will remain below the maximum acceptable transient peak-particle-velocity (PPV) vibration threshold 0.5 PPV (in/sec) all the nearby noise sensitive residential receiver locations, and therefore, represent a *less than significant* impact.

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11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **Urban Crossroads, Inc.** *Beaumont Point Specific Plan Traffic Analysis.* July 2020.
3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
4. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
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14. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
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20. **California Department of Transportation Environmental Program.** *I-80 Davis OGAC Pavement Noise Study.* September 2001.

21. **Canadian Ministry of Transportation and Highways, Highway Environment Branch.** *Open-Graded Asphalt 'Quiet Pavement' - Assessment of Traffic Noise Reduction Performance.* November 1995.
22. **California Department of Transportation.** *Highway Design Manual, Chapter 1100 Highway Traffic Noise Abatement.* November 2017.
23. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.
24. **FHWA.** *Roadway Construction Noise Model.* January 2006.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Beaumont Pointe Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018
Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF BEAUMONT MUNICIPAL CODE

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Chapter 9.02 - NOISE CONTROL

Footnotes:

*--- (**1**) ---*

Editor's note— *Ord. No. 1067, § 1(Exh. A), adopted Jan. 19, 2016 , amended Ch. 9.02 in its entirety to read as herein set out. Former Ch. 9.02, §§ 9.02.010—9.02.110, pertained to similar subject matter, and derived from Ord. No. 914, § 1, adopted July 3, 2007; Ord. 997, adopted May 3, 2011.*

9.02.010 - Purpose.

The purpose of this Chapter is to establish criteria and standards for the regulation of noise levels within the City and to implement the noise provisions contained in the City's General Plan.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.020 - Findings.

It is hereby found and declared that:

A. The making, creation or maintenance of excessive, unnecessary, unnatural or unusually loud noises which are prolonged, unusual and unnatural in their time, place and use, affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the City; and

B. The necessity for the provisions and prohibitions hereinafter contained and enacted is hereby declared as a matter of legislative determination and public policy. It is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the City.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.030 - Definitions.

"Ambient noise" shall mean the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding any intrusive noise.

"Capital improvement" shall mean major construction, acquisition or maintenance/repair projects. Examples of capital improvements include street improvements, park development and construction of public buildings or structures, treatment plants. Structures include lighting, sewer and water pipelines and other related utility structures including treatment plants, gas, electric and other infrastructure, landscaping and drainage facilities and all other public infrastructure. "Acquisitions" include the acquisition of land or interest in land. Major maintenance/repairs may include street resurfacing and modifications to public buildings and structures.

"Commercial purpose" shall mean the use, operation or maintenance of any sound-amplifying equipment for the purpose of advertising any business, goods or services and/or for the purpose of advertising or attracting the attention of the public to or soliciting patronage for any performance, entertainment, exhibition or event, or for the purpose of demonstrating any such sound equipment.

"Cumulative time period" shall mean a period of time composed of individual time segments which may be continuous or interrupted.

"Decibel (dB)" shall mean a measurement unit of sound pressure level which denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio of two amounts of power is ten times the logarithm to the base ten of this ratio.

"Governmental agency" shall mean the United States (federal government), the State of California, the County of Riverside, the City of Beaumont, the school district and any special district within Riverside County or any combination of these agencies.

"Impact noise" shall mean the sound produced by the impact or collision of one moving object or mass with a second object or mass that is stationary or moving.

"Intrusive noise" shall mean a sound which intrudes over and above the existing ambient noise level at a given location.

"Motor-driven vehicle" shall include, but not be limited to, any automobile, truck, van, bus, motorcycle, minibike, go-cart or other self-propelled vehicle, on or off road, and aircraft.

"Noise" shall mean any sound that is loud or disturbing or that interferes with one's ability to hear some other sound.

"Noise level" shall mean the "A" weighted sound pressure level in decibels audible to humans obtained by using a sound level meter. The unit of noise level measurement shall be designated as dB(A).

"Person" shall mean a person, firm, association, partnership, joint venture, corporation or any entity, public or private in nature.

"Public property" shall mean property that is owned by any governmental agency as indicated in this section or held by the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Simple tone noise" shall mean a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

"Sound pressure level of a sound, in decibels" shall mean 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated.

As used in Section 9.02.110(H), "public nuisance'' is defined by Civil Code Section 3479.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.040 - Noise level measurement criteria.

A. Any noise level measurement, made pursuant to the provisions of this Chapter, shall be determined by using a sound level meter that meets the minimum requirements of the American National Standard Institute for sound level meters, or by using an instrument with associated recording and analyzing equipment that will provide equivalent data.
B. The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

1. The sound level of the objectionable noise;
2. The sound level of the ambient noise;
3. The proximity of the noise to residential sleeping facilities;
4. The nature and zoning of the area within which the noise emanates;
5. The number of persons affected by the noise source;
6. The time of day or night the noise occurs;
7. The duration of the noise and its tonal, informational or musical content;
8. Whether the noise is produced by a commercial or noncommercial activity.

C. The above factors shall be considered in addition to the noise levels set forth in this section in determining a violation. However, noises do not necessarily need to exceed those noise level limits to be considered unnecessary or unusual so as to cause discomfort or annoyance to persons in the area.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.050 - Base ambient noise level.

All ambient noise measurements shall commence at the base ambient noise levels in decibels within the respective times and zones as follows:

Decibels	Time	Zone Use
45 dB(A)	10:00 p.m. — 7:00 a.m.	Residential
55 dB(A)	7:00 a.m. — 10:00 p.m.	Residential
50 dB(A)	10:00 p.m. — 7:00 a.m.	Industrial and Commercial
75 dB(A)	7:00 a.m. — 10:00 p:m.	Industrial and Commercial

Actual decibel measurements exceeding the levels set forth hereinabove at the times and within the zones corresponding thereto shall be employed as the "base ambient noise level" referred to in this Chapter. Otherwise, no ambient noise shall be deemed to be less than the above specified levels.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.060 - Exterior noise level measurement.

Except as otherwise specifically provided herein, all reference to "exterior noise" or "exterior noise levels" as used in this Chapter shall be as measured at any point relative to the closest point of the source of the noise at the property line of the complaining party. Measurements will not be made during extraordinary times, such as during the movement of a nearby train or airplane.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.070 - Maximum residential noise levels.

No noise level shall exceed the following for the duration periods specified:

Noise Level Exceeded	Maximum Duration Period
5 dB(A) above BANL	15 minutes any hour
10 dB(A) above BANL	5 minutes any hour
15 dB(A) above BANL	1 minute any hour
20 dB(A) above BANL	Not permitted

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.080 - Maximum interior noise levels.

A. No person shall operate or cause to be operated, any source of sound which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

Decibels	Time	Land Use
35 dB(A)	10:00 p.m. — 7:00 a.m.	Residential
45 dB(A)	7:00 a.m. — 10:00 p.m.	Residential
45 dB(A)	7:00 a.m. — 10:00 p.m. (while school is in session)	School
45 dB(A)	Anytime	Hospital

B. No person shall operate or cause to be operated, any source of sound which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

Noise Level Exceeded	Maximum Duration Period

5 dB(A) above interior BANL	5 minutes any hour
10 dB(A) above interior BANL	1 minutes any hour
Over 10 dB(A) above interior BANL	Not permitted

C. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.090 - Maximum nonresidential noise levels.

Any provision contained herein to the contrary notwithstanding, no exterior noise level shall exceed the base ambient noise levels (BANL) for nonresidential land uses set forth in any development agreement applicable to such development or as otherwise specifically set forth in any development standard which is by its terms enforceable by the City against the noise maker.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.100 - Exemptions.

Sound emanating from the following sources is exempt from the provisions of this Chapter:

A. Capital improvement projects of a governmental agency.
B. Maintenance and repair of public properties by a governmental agency.
C. Utility and street repairs, street sweepers, garbage services, emergency response warning noises, emergency generators and fire alarm systems are exempt from this Chapter.
D. Other public/governmental services or operations including, but not limited to trains and railway or airplanes and helicopter machinery, equipment or vehicles.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.110 - Special provisions.

A. *Sound Performances and Special Events.* Sound performances and special events not exceeding 95 dB measured at a distance of 50 feet from the loudest source are exempt from this Chapter when approval therefore has been obtained from the appropriate governmental entity.
B. *Vehicle Horns.* Vehicle horns, back-up warning devices, or other devices primarily intended to create a loud noise for warning purposes, shall be used only when the vehicle is in a situation where life, health or

property are endangered or as required by law.

C. *Alarm System.* An audible alarm system affixed to a motor vehicle shall be equipped with an automatic shutoff, which shuts off the alarm within a maximum of 15 minutes from the time of activation. Such alarm may not emit a sound similar to the sound emitted by sirens in use on emergency vehicles or to those used for civil defense purposes. For purposes of this section, any variable tone, as opposed to one steady pitch, shall be considered similar to the sound emitted by an emergency vehicle siren. The Police Department is authorized to abate the nuisance of an audible alarm system affixed to a motor vehicle, which sounds beyond 15 minutes by using any means necessary to disconnect the vehicle alarm. The expense of disconnecting the alarm shall be a lien against the motor vehicle and shall be the personal obligation of the owner thereof.

D. *Radios, Televisions, Stereos, Speakers, etc.* It shall be unlawful for any person, without special permit or as may otherwise be provided in this Chapter, to play, use, operate or permit to be played, used or operated, any radio, television, musical instrument, stereo equipment, or other machine or device used for producing, reproducing or amplifying sound at such sound levels as to cause the sound level to exceed 40 dB(A) as measured within the residence of any complaining person.

E. *Animals, Fowl, etc.* It shall be unlawful to keep or harbor any animal which emits, between the hours of 11:00 p.m. and 7:00 a.m., any unreasonable sound or cry which disturbs or may disturb the peace and comfort or repose of a reasonable person of normal sensitiveness who resides in the neighborhood or area in which such animal is located or kept. For barking dog, see limitations set forth in Section 6.04.080. This provision shall not apply to farm animals within any zone in which such farm animals are permitted under the Municipal Code.

F. *Construction, Landscape, Maintenance or Repair.*

1. It shall be unlawful for any person to engage in or permit the generation of noise related to landscape maintenance, construction including erection, excavation, demolition, alteration or repair of any structure or improvement, at such sound levels, as measured at the property line of the nearest adjacent occupied property, as to be in excess of the sound levels permitted under this Chapter, at other times than between the hours of 7:00 a.m. and 6:00 p.m. The person engaged in such activity is hereby permitted to exceed sound levels otherwise set forth in this Chapter for the duration of the activity during the above described hours for purposes of construction. However, nothing contained herein shall permit any person to cause sound levels to at any time exceed 55 dB(A) for intervals of more than 15 minutes per hour as measured in the interior of the nearest occupied residence or school.
2. Whenever a construction site is within one-quarter of a mile of an occupied residence or residences, no construction activities shall be undertaken between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May. Exceptions to these standards shall be allowed only with the written consent of the building official.
3. Construction related noise as defined in subsection (F)(1) and (2) above may take place outside the time period set forth therein and above the relative sound levels in case of urgent necessity in the interest of public health and safety, and then only with the prior permission of the building inspector.

Such permit may be granted for a period not to exceed three days or until the emergency ends, whichever is less. The permit may be renewed for periods of three days while the emergency continues.

4. Unless exempted by this Chapter, if the building official should determine that the public health and safety will not be impaired by the construction related noise, the building inspector may issue a permit for construction within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. The building official may place such conditions on the issuance of the permit that are appropriate to maintain the public health and safety, as determined by the building official.

G. *Machinery, Equipment, Fans and Air Conditioning.* It shall be unlawful for any person to operate, cause to operate or permit the operation of any machinery, equipment, device, pump, fan, compressor, air conditioning apparatus or similar mechanical device, including but not limited to the use of any steam shovel, pneumatic hammer, derrick, steam or electric hoist, blower or power fan, or any internal combustion engine, the operation of which causes noise due to the explosion of operating gases or fluids, or other appliance, in any manner so as to create any noise which would cause the noise level at the property line of the property upon which the equipment or machinery is operated to exceed the base ambient noise level by five dB(A).

H. *Motor Driven Vehicles.* It shall be unlawful for any person to operate any motor driven vehicle within the City that, due to the nature of the operation of the vehicle, or due to the operating condition of the vehicle, or due to any modification made to the vehicle, in such manner as to exceed noise levels set forth in Section 9.02.050 hereof.

1. Exhaust. It shall be unlawful for any person to discharge into the open air the exhaust of any steam engine, stationary internal combustion engine, motorboat or motor driven vehicle except through a muffler or other device which will effectively prevent loud or explosive noises there from.
2. No person shall use or operate a stereo system, radio, electronic music device, television or similar device in a vehicle on a public street which is audible to a person of normal hearing sensitivity, more than 50 feet from said vehicle.

I. Notwithstanding any other provisions of this Chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or creates a public nuisance. The standard which may be considered in determining whether a violation of the provisions of this section exists may include, but not be limited to, the following:

1. The level of noise;
2. Whether the nature of the noise is usual or unusual;
3. Whether the origin of the noise is natural or unnatural;
4. The level and intensity of the background noise, if any;
5. The proximity of the noise to residential sleeping facilities;
6. The nature of the zoning of the area within which the noise emanates;
7. The density of the inhabitation of the area within which the noise emanates;

8. The time of the day and night the noise occurs;
9. Whether the noise is recurrent, intermittent, or constant;
10. The duration of the noise; and
11. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.120 - Exception permits.

If the applicant can show to the City manager or designee, that a diligent investigation of available noise abatement techniques indicates that immediate compliance with the requirements of this Chapter would be impractical or unreasonable, a permit to allow exception from the provisions contained in this Chapter may be issued, with appropriate conditions to minimize the public detriment caused by such exceptions. Any such permit shall be of as short duration as possible, but in no case for longer than six months. These permits are renewable upon a showing of good cause, and shall be conditioned by a schedule for compliance and details of compliance methods in appropriate cases.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.130 - Application between zones.

In applying the regulations set forth in this Chapter, each source of noise shall be subject only to such regulation as shall apply to the zone, including any designated truck route, within which it is located. A use lying adjacent to a zone with a more restrictive noise requirement hereunder shall not be required to conform to that more restrictive requirement. For purposes of this subsection, "zone" shall be as utilized in Title 17 of the Beaumont Municipal Code.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.140 - Penalty for violation.

In the discretion of the Enforcement Officer, any person violating the provisions of this Chapter may be issued an Administrative Citation pursuant to Beaumont Municipal Code Chapter 1.17 or shall be guilty of an infraction pursuant to Beaumont Municipal Code Chapter 1.16. In either case, the amount of the fine shall be the appropriate amount set forth in Section 1.16.030 of this Code. Each such violation shall be deemed a separate offense as specified in Section 1.16.040.

Notwithstanding the foregoing, a first offense may be charged and prosecuted as a misdemeanor, punishable by a fine of $1,000.00, or six months in jail, or both

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.150 - Additional remedy—Injunction.

As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provision hereof and which causes discomfort or annoyance to reasonable persons of normal sensitiveness or which endangers the comfort, repose, health or peace of residents in the area shall be deemed, and is declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

9.02.160 - No mandatory duty created.

No section of this Chapter shall impose a mandatory duty on the City, or on any officer, official, agent, employee, board, council, or commission of the City. Instead, if any section purports to impose a mandatory duty of enforcement, that section shall be deemed to invest the City, and the appropriate officer, official, agent, employee, board, council, or commission with discretion to enforce the section or not to enforce it. A police officer, for example, shall have the discretion to quiet a nuisance without applying standards detailed herein.

(Ord. No. 1067, § 1(Exh. A), 1-19-2016)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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L1_E
33, 57' 19.860000", 117, 3' 2.760000"

L1_N
33, 56' 55.840000", 117, 1' 52.550000"

L1_S
33, 57' 19.850000", 117, 3' 2.810000"

L1_W
33, 57' 19.890000", 117, 3' 2.760000"

L2_E
33, 57' 11.480000", 117, 2' 25.290000"

L2_N
33, 57' 11.460000", 117, 2' 25.350000"

L2_S
33, 57' 11.470000", 117, 2' 25.320000"

L2_W
33, 57' 11.460000", 117, 2' 25.290000"

L3_E
33, 56' 37.490000", 117, 2' 7.000000"

L3_N
33, 56' 40.270000", 117, 0' 14.340000"

L3_S
33, 56' 37.540000", 117, 2' 7.030000"

L3_W
33, 56' 37.520000", 117, 2' 7.000000"

L4_E
33, 56' 11.690000", 117, 1' 7.320000"

L4_N
33, 56' 3.300000", 117, 1' 26.190000"

L4_S
33, 56' 3.300000", 117, 1' 26.190000"

L4_W
33, 56' 11.640000", 117, 1' 7.700000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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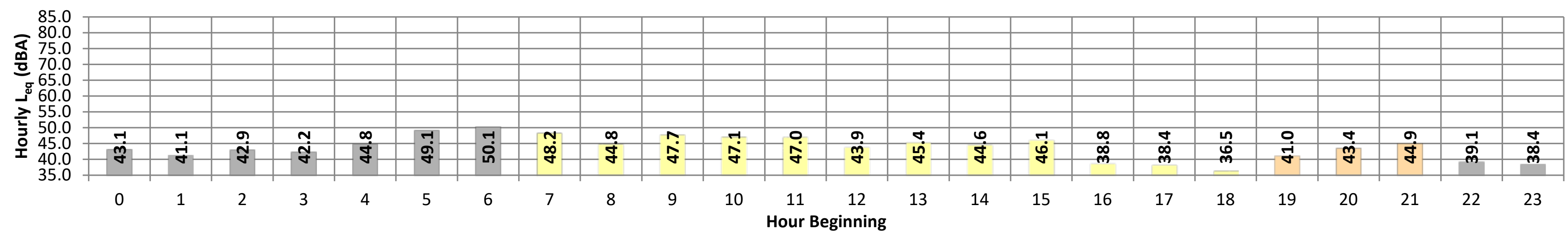
24-Hour Noise Level Measurement Summary

Date: Wednesday, April 22, 2020
Project: Jack Rabbit Trail Development
Location: L1 - Located north of the Project site on Roberts Place near existing single-family residential home at 34945 Roberts Pl.
Meter: Piccolo I
JN: 12398
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	43.1	57.6	39.3	53.0	51.0	46.0	44.0	41.0	40.0	39.0	39.0	39.0	43.1	10.0	53.1
	1	41.1	50.7	39.3	45.0	44.0	43.0	42.0	41.0	40.0	39.0	39.0	39.0	41.1	10.0	51.1
	2	42.9	54.8	39.4	48.0	48.0	46.0	45.0	43.0	41.0	40.0	40.0	40.0	42.9	10.0	52.9
	3	42.2	50.2	40.4	45.0	44.0	44.0	43.0	42.0	41.0	40.0	40.0	40.0	42.2	10.0	52.2
	4	44.8	54.7	41.0	49.0	49.0	47.0	47.0	45.0	44.0	42.0	42.0	41.0	44.8	10.0	54.8
	5	49.1	73.3	41.6	53.0	52.0	51.0	50.0	48.0	46.0	44.0	43.0	42.0	49.1	10.0	59.1
	6	50.1	69.3	43.5	56.0	55.0	54.0	53.0	50.0	48.0	45.0	45.0	44.0	50.1	10.0	60.1
Day	7	48.2	72.5	37.7	54.0	53.0	50.0	49.0	47.0	44.0	40.0	39.0	39.0	48.2	0.0	48.2
	8	44.8	64.6	37.4	54.0	51.0	49.0	47.0	43.0	41.0	39.0	38.0	37.0	44.8	0.0	44.8
	9	47.7	74.5	34.7	51.0	49.0	46.0	45.0	40.0	38.0	35.0	35.0	35.0	47.7	0.0	47.7
	10	47.1	72.3	34.7	57.0	52.0	48.0	46.0	40.0	37.0	35.0	35.0	35.0	47.1	0.0	47.1
	11	47.0	74.2	34.7	57.0	53.0	48.0	45.0	40.0	37.0	35.0	35.0	35.0	47.0	0.0	47.0
	12	43.9	67.1	34.7	53.0	48.0	46.0	44.0	41.0	38.0	35.0	35.0	35.0	43.9	0.0	43.9
	13	45.4	68.8	34.7	55.0	53.0	50.0	48.0	43.0	40.0	36.0	35.0	35.0	45.4	0.0	45.4
	14	44.6	64.3	34.7	54.0	52.0	50.0	48.0	43.0	39.0	35.0	35.0	35.0	44.6	0.0	44.6
	15	46.1	73.3	34.7	54.0	52.0	50.0	48.0	42.0	39.0	35.0	35.0	35.0	46.1	0.0	46.1
	16	38.8	53.2	34.7	47.0	45.0	43.0	42.0	38.0	35.0	35.0	35.0	35.0	38.8	0.0	38.8
	17	38.4	56.2	34.7	48.0	46.0	42.0	41.0	37.0	35.0	35.0	35.0	35.0	38.4	0.0	38.4
	18	36.5	48.2	34.7	42.0	41.0	39.0	38.0	37.0	35.0	35.0	35.0	35.0	36.5	0.0	36.5
Evening	19	41.0	55.7	35.6	48.0	46.0	44.0	43.0	41.0	39.0	37.0	37.0	37.0	41.0	5.0	46.0
	20	43.4	59.6	37.5	52.0	49.0	46.0	45.0	43.0	41.0	39.0	37.0	37.0	43.4	5.0	48.4
	21	44.9	60.7	36.4	54.0	51.0	49.0	48.0	43.0	41.0	38.0	37.0	37.0	44.9	5.0	49.9
Night	22	39.1	57.0	34.7	48.0	45.0	43.0	41.0	38.0	37.0	35.0	35.0	35.0	39.1	10.0	49.1
	23	38.4	55.0	34.7	45.0	43.0	40.0	39.0	37.0	37.0	35.0	35.0	35.0	38.4	10.0	48.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	36.5	48.2	34.7	42.0	41.0	39.0	38.0	37.0	35.0	35.0	35.0	35.0
	Max	48.2	74.5	37.7	57.0	53.0	50.0	49.0	47.0	44.0	40.0	39.0	39.0
Energy Average		45.3	Average:		52.2	49.6	46.8	45.1	40.9	38.2	35.8	35.6	35.5
Evening	Min	41.0	55.7	35.6	48.0	46.0	44.0	43.0	41.0	39.0	37.0	37.0	37.0
	Max	44.9	60.7	37.5	54.0	51.0	49.0	48.0	43.0	41.0	39.0	37.0	37.0
Energy Average		43.4	Average:		51.3	48.7	46.3	45.3	42.3	40.3	38.0	37.0	37.0
Night	Min	38.4	50.2	34.7	45.0	43.0	40.0	39.0	37.0	37.0	35.0	35.0	35.0
	Max	50.1	73.3	43.5	56.0	55.0	54.0	53.0	50.0	48.0	45.0	45.0	44.0
Energy Average		45.2	Average:		49.1	47.9	46.0	44.9	42.8	41.6	39.9	39.8	39.4

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
45.1	45.0	45.2

24-Hour CNEL (dBA)
51.8

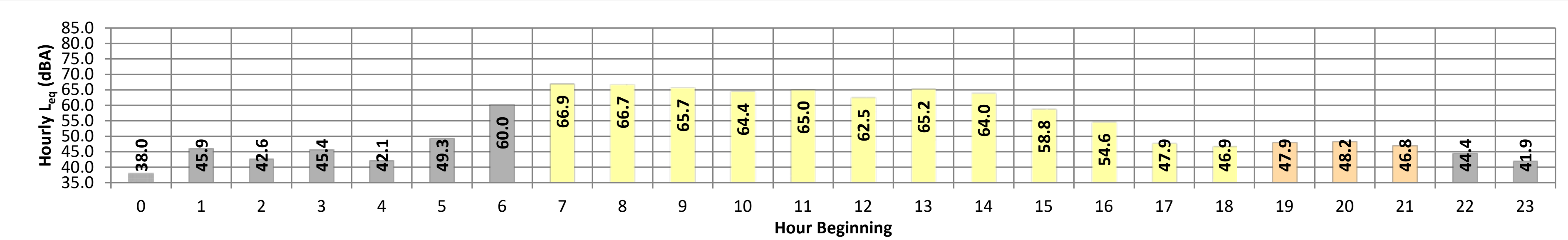
U:\UcJobs_12100-12500_12300\12398\Fieldwork\Measurements\12398_L1_B

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Wednesday, April 22, 2020
Project: Jack Rabbit Trail Development
Location: L2 - Located north of the Project site on Mickelson Drive near existing single-family residential homes.
Meter: Piccolo II
JN: 12398
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	38.0	43.8	34.3	43.4	43.1	42.1	41.4	38.5	36.6	34.8	34.6	34.4	38.0	10.0	48.0
	1	45.9	56.1	37.8	55.8	55.5	53.8	51.5	42.7	40.3	38.6	38.3	38.0	45.9	10.0	55.9
	2	42.6	51.7	37.4	50.8	49.3	47.1	46.3	42.4	39.8	37.9	37.7	37.5	42.6	10.0	52.6
	3	45.4	54.5	41.1	54.0	53.0	50.3	48.3	45.5	43.8	41.8	41.6	41.3	45.4	10.0	55.4
	4	42.1	49.4	38.2	49.0	48.5	46.7	44.9	42.3	40.6	38.8	38.6	38.3	42.1	10.0	52.1
	5	49.3	60.0	40.0	59.6	59.0	56.7	54.4	47.8	42.6	40.6	40.4	40.1	49.3	10.0	59.3
	6	60.0	68.1	54.0	67.7	67.1	65.7	64.3	60.3	57.6	55.0	54.7	54.2	60.0	10.0	70.0
Day	7	66.9	70.9	62.6	70.7	70.4	69.9	69.4	67.8	66.3	63.8	63.3	62.8	66.9	0.0	66.9
	8	66.7	71.6	62.2	71.3	71.0	70.1	69.4	67.6	66.0	63.5	63.0	62.5	66.7	0.0	66.7
	9	65.7	71.2	61.4	70.9	70.5	69.2	68.2	66.3	64.9	62.6	62.1	61.6	65.7	0.0	65.7
	10	64.4	69.6	59.8	69.3	68.9	67.8	67.2	65.4	63.5	61.1	60.7	60.1	64.4	0.0	64.4
	11	65.0	70.4	60.6	70.1	69.7	68.4	67.6	65.8	64.1	61.9	61.4	60.8	65.0	0.0	65.0
	12	62.5	67.8	58.1	67.6	67.3	66.5	65.7	63.3	61.4	59.1	58.7	58.3	62.5	0.0	62.5
	13	65.2	69.5	61.3	69.2	68.9	68.2	67.6	66.1	64.7	62.4	62.0	61.5	65.2	0.0	65.2
	14	64.0	69.2	58.9	68.9	68.6	67.6	66.9	65.0	63.0	60.2	59.7	59.1	64.0	0.0	64.0
	15	58.8	67.2	52.8	66.9	66.3	64.9	62.8	58.8	56.6	54.0	53.5	53.0	58.8	0.0	58.8
	16	54.6	67.3	40.2	66.6	65.7	63.0	59.5	50.0	45.9	41.4	40.8	40.3	54.6	0.0	54.6
	17	47.9	58.2	36.0	57.7	56.9	54.6	53.1	47.5	43.1	37.6	36.9	36.2	47.9	0.0	47.9
	18	46.9	57.3	34.5	56.7	56.1	54.5	52.7	45.9	40.9	35.6	35.2	34.6	46.9	0.0	46.9
Evening	19	47.9	57.3	37.7	56.8	56.3	54.8	53.3	47.6	43.6	39.1	38.6	37.9	47.9	5.0	52.9
	20	48.2	57.4	37.4	57.1	56.8	55.5	54.2	47.4	43.3	38.6	38.0	37.6	48.2	5.0	53.2
	21	46.8	53.7	41.4	53.3	52.8	51.7	50.6	47.7	45.0	42.4	42.0	41.5	46.8	5.0	51.8
Night	22	44.4	52.3	39.9	52.0	51.5	49.9	48.2	44.1	42.4	40.6	40.4	40.0	44.4	10.0	54.4
	23	41.9	50.5	36.2	50.0	49.5	47.8	46.4	41.8	39.1	36.8	36.6	36.3	41.9	10.0	51.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	46.9	57.3	34.5	56.7	56.1	54.5	52.7	45.9	40.9	35.6	35.2	34.6
	Max	66.9	71.6	62.6	71.3	71.0	70.1	69.4	67.8	66.3	63.8	63.3	62.8
Energy Average		63.7	Average:		67.1	66.7	65.4	64.2	60.8	58.4	55.3	54.8	54.2
Evening	Min	46.8	53.7	37.4	53.3	52.8	51.7	50.6	47.4	43.3	38.6	38.0	37.6
	Max	48.2	57.4	41.4	57.1	56.8	55.5	54.2	47.7	45.0	42.4	42.0	41.5
Energy Average		47.7	Average:		55.7	55.3	54.0	52.7	47.6	44.0	40.0	39.5	39.0
Night	Min	38.0	43.8	34.3	43.4	43.1	42.1	41.4	38.5	36.6	34.8	34.6	34.4
	Max	60.0	68.1	54.0	67.7	67.1	65.7	64.3	60.3	57.6	55.0	54.7	54.2
Energy Average		51.4	Average:		53.6	53.0	51.1	49.5	45.1	42.5	40.6	40.3	40.0

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
60.9	62.7	51.4

24-Hour CNEL (dBA)
62.3

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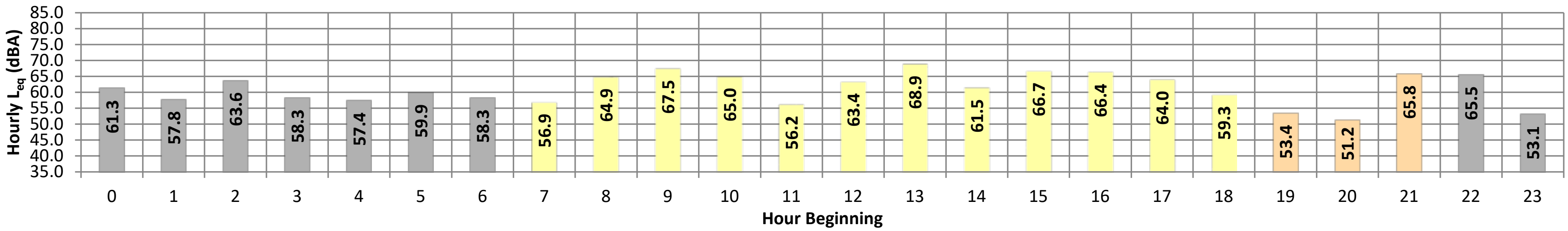
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Wednesday, April 22, 2020
Project: Jack Rabbit Trail Development
Location: L3 - Located north east of the Project site by Oak Valley Parkway near the Tukwet Canyon Golf Course.
Meter: Piccolo I
JN: 12398
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	61.3	81.3	48.6	75.0	69.0	62.0	60.0	56.0	53.0	49.0	49.0	48.0	61.3	10.0	71.3
	1	57.8	69.5	51.2	63.0	63.0	61.0	61.0	58.0	56.0	54.0	53.0	52.0	57.8	10.0	67.8
	2	63.6	79.3	49.4	76.0	74.0	69.0	66.0	59.0	54.0	51.0	51.0	50.0	63.6	10.0	73.6
	3	58.3	67.7	49.2	65.0	64.0	63.0	62.0	59.0	56.0	52.0	51.0	50.0	58.3	10.0	68.3
	4	57.4	71.9	50.2	62.0	61.0	59.0	59.0	57.0	56.0	54.0	53.0	52.0	57.4	10.0	67.4
	5	59.9	75.7	51.5	68.0	66.0	62.0	62.0	60.0	58.0	53.0	53.0	52.0	59.9	10.0	69.9
	6	58.3	75.5	50.1	66.0	65.0	63.0	62.0	57.0	55.0	52.0	51.0	50.0	58.3	10.0	68.3
Day	7	56.9	67.8	48.5	64.0	64.0	63.0	62.0	56.0	52.0	50.0	49.0	49.0	56.9	0.0	56.9
	8	64.9	80.0	48.6	75.0	73.0	71.0	70.0	62.0	54.0	50.0	49.0	49.0	64.9	0.0	64.9
	9	67.5	87.2	43.5	80.0	77.0	72.0	70.0	63.0	59.0	47.0	46.0	44.0	67.5	0.0	67.5
	10	65.0	87.2	45.0	77.0	71.0	67.0	64.0	56.0	53.0	47.0	46.0	46.0	65.0	0.0	65.0
	11	56.2	70.1	50.1	63.0	62.0	59.0	57.0	56.0	55.0	53.0	52.0	51.0	56.2	0.0	56.2
	12	63.4	80.7	43.8	74.0	72.0	71.0	70.0	57.0	55.0	49.0	47.0	45.0	63.4	0.0	63.4
	13	68.9	86.5	50.4	81.0	79.0	74.0	73.0	64.0	59.0	54.0	53.0	52.0	68.9	0.0	68.9
	14	61.5	82.1	47.7	74.0	70.0	62.0	60.0	57.0	55.0	52.0	51.0	50.0	61.5	0.0	61.5
	15	66.7	81.8	47.7	74.0	73.0	72.0	71.0	68.0	58.0	52.0	51.0	49.0	66.7	0.0	66.7
	16	66.4	82.0	51.1	73.0	73.0	72.0	71.0	66.0	64.0	57.0	54.0	52.0	66.4	0.0	66.4
	17	64.0	80.0	44.5	76.0	74.0	72.0	68.0	58.0	54.0	50.0	48.0	46.0	64.0	0.0	64.0
	18	59.3	72.5	44.7	67.0	65.0	63.0	62.0	60.0	58.0	49.0	48.0	45.0	59.3	0.0	59.3
Evening	19	53.4	74.3	43.7	62.0	60.0	57.0	55.0	50.0	47.0	44.0	44.0	43.0	53.4	5.0	58.4
	20	51.2	68.6	43.8	60.0	58.0	55.0	54.0	50.0	48.0	46.0	45.0	44.0	51.2	5.0	56.2
	21	65.8	82.2	43.7	80.0	77.0	72.0	67.0	57.0	50.0	46.0	45.0	44.0	65.8	5.0	70.8
Night	22	65.5	85.1	43.9	79.0	74.0	71.0	69.0	50.0	46.0	44.0	44.0	44.0	65.5	10.0	75.5
	23	53.1	78.1	43.7	59.0	55.0	52.0	51.0	49.0	47.0	44.0	44.0	44.0	53.1	10.0	63.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	56.2	67.8	43.5	63.0	62.0	59.0	57.0	56.0	52.0	47.0	46.0	44.0
	Max	68.9	87.2	51.1	81.0	79.0	74.0	73.0	68.0	64.0	57.0	54.0	52.0
Energy Average		64.8	Average:		73.2	71.1	68.2	66.5	60.3	56.3	50.8	49.5	48.2
Evening	Min	51.2	68.6	43.7	60.0	58.0	55.0	54.0	50.0	47.0	44.0	44.0	43.0
	Max	65.8	82.2	43.8	80.0	77.0	72.0	67.0	57.0	50.0	46.0	45.0	44.0
Energy Average		61.4	Average:		67.3	65.0	61.3	58.7	52.3	48.3	45.3	44.7	43.7
Night	Min	53.1	67.7	43.7	59.0	55.0	52.0	51.0	49.0	46.0	44.0	44.0	44.0
	Max	65.5	85.1	51.5	79.0	74.0	71.0	69.0	60.0	58.0	54.0	53.0	52.0
Energy Average		60.8	Average:		68.1	65.7	62.4	61.3	56.1	53.4	50.3	49.9	49.1

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
63.3	64.3	60.8

24-Hour CNEL (dBA)

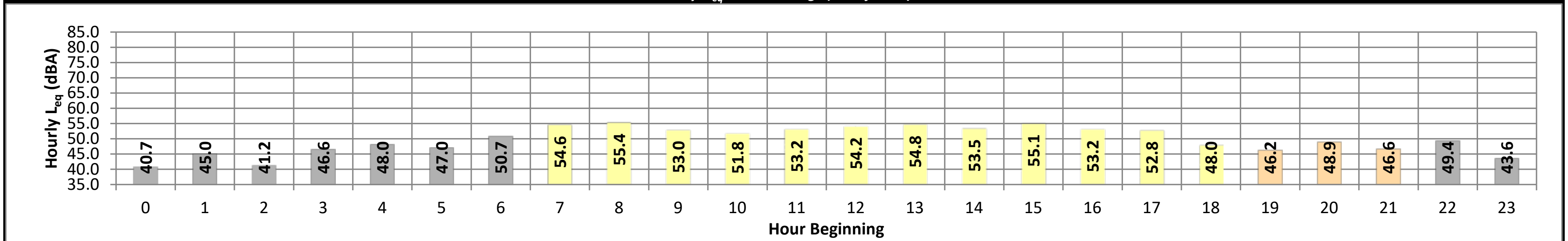
68.2

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Wednesday, April 22, 2020
Project: Jack Rabbit Trail Development
Location: L4 - located north east of the Project site on Olivewood near the Olivewood housing community.
Meter: Piccolo II
JN: 12398
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	40.7	46.4	38.3	46.1	45.6	44.0	42.8	40.9	39.8	38.7	38.5	38.3	40.7	10.0	50.7
	1	45.0	49.6	42.3	49.3	48.9	47.8	47.0	45.7	44.4	42.9	42.7	42.5	45.0	10.0	55.0
	2	41.2	48.5	38.1	48.1	47.8	45.9	44.4	40.7	39.5	38.5	38.3	38.1	41.2	10.0	51.2
	3	46.6	52.1	42.9	51.8	51.5	50.2	49.1	47.1	45.9	43.6	43.3	43.0	46.6	10.0	56.6
	4	48.0	59.5	40.6	59.3	59.0	55.8	52.8	43.7	42.1	41.0	40.8	40.7	48.0	10.0	58.0
	5	47.0	56.5	43.3	56.1	55.6	52.2	49.6	46.1	45.0	43.9	43.6	43.4	47.0	10.0	57.0
	6	50.7	61.0	45.0	60.8	60.2	57.4	55.1	49.0	47.0	45.5	45.3	45.0	50.7	10.0	60.7
Day	7	54.6	66.4	44.2	66.0	65.5	63.4	60.1	49.8	46.6	44.8	44.6	44.3	54.6	0.0	54.6
	8	55.4	65.9	43.4	65.7	65.3	63.4	61.4	52.9	47.6	44.1	43.8	43.5	55.4	0.0	55.4
	9	53.0	63.2	45.9	62.8	62.1	59.8	57.9	51.5	48.6	46.6	46.3	46.0	53.0	0.0	53.0
	10	51.8	63.5	40.1	63.1	62.3	59.8	57.1	48.4	43.9	40.9	40.7	40.3	51.8	0.0	51.8
	11	53.2	63.7	39.4	63.5	63.2	61.4	59.2	50.8	45.1	40.4	40.0	39.6	53.2	0.0	53.2
	12	54.2	64.4	39.3	64.1	63.8	62.2	60.4	52.4	46.4	41.1	40.1	39.4	54.2	0.0	54.2
	13	54.8	65.6	42.1	65.3	64.9	62.7	60.6	52.8	47.4	43.1	42.7	42.3	54.8	0.0	54.8
	14	53.5	65.0	44.6	64.5	63.7	61.0	58.2	50.7	47.9	45.5	45.2	44.7	53.5	0.0	53.5
	15	55.1	68.1	41.4	67.7	66.9	63.1	59.5	49.5	45.3	42.3	41.9	41.5	55.1	0.0	55.1
	16	53.2	65.0	40.4	64.6	64.0	62.0	59.0	48.1	44.5	41.5	41.0	40.6	53.2	0.0	53.2
	17	52.8	63.8	38.6	63.4	62.8	60.7	58.8	49.9	44.0	39.8	39.3	38.8	52.8	0.0	52.8
	18	48.0	59.7	38.2	59.2	58.4	55.4	52.7	45.7	41.9	39.1	38.7	38.3	48.0	0.0	48.0
Evening	19	46.2	54.5	41.0	54.1	53.7	52.1	50.6	45.6	43.7	41.8	41.5	41.1	46.2	5.0	51.2
	20	48.9	60.4	41.8	59.6	58.7	56.2	53.1	46.7	44.8	42.6	42.3	41.9	48.9	5.0	53.9
	21	46.6	53.7	42.7	53.3	52.6	50.7	49.2	46.9	45.4	43.5	43.2	42.8	46.6	5.0	51.6
Night	22	49.4	54.7	46.4	54.5	54.0	52.4	51.4	49.7	48.8	47.1	46.9	46.6	49.4	10.0	59.4
	23	43.6	50.5	39.4	50.2	49.7	48.0	46.7	43.8	42.3	40.1	39.9	39.5	43.6	10.0	53.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.0	59.7	38.2	59.2	58.4	55.4	52.7	45.7	41.9	39.1	38.7	38.3
	Max	55.4	68.1	45.9	67.7	66.9	63.4	61.4	52.9	48.6	46.6	46.3	46.0
Energy Average		53.6	Average:		64.1	63.6	61.2	58.7	50.2	45.8	42.4	42.0	41.6
Evening	Min	46.2	53.7	41.0	53.3	52.6	50.7	49.2	45.6	43.7	41.8	41.5	41.1
	Max	48.9	60.4	42.7	59.6	58.7	56.2	53.1	46.9	45.4	43.5	43.2	42.8
Energy Average		47.4	Average:		55.7	55.0	53.0	51.0	46.4	44.6	42.6	42.3	42.0
Night	Min	40.7	46.4	38.1	46.1	45.6	44.0	42.8	40.7	39.5	38.5	38.3	38.1
	Max	50.7	61.0	46.4	60.8	60.2	57.4	55.1	49.7	48.8	47.1	46.9	46.6
Energy Average		46.9	Average:		52.9	52.5	50.4	48.8	45.2	43.9	42.4	42.1	41.9

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
51.5	**52.9**	**46.9**

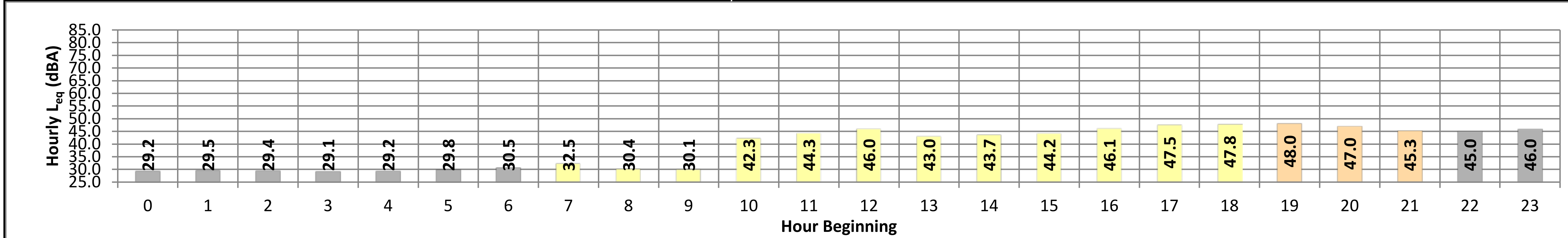
24-Hour CNEL (dBA)

55.1

24-Hour Noise Level Measurement Summary

Date: Tuesday, November 24, 2020
Project: Jack Rabbit Trail Development
Location: L5 - Located in the southeast portion of the Project site on Jack Rabbit Trail by the Hoy Ranch to the south.
Meter: Piccolo II
JN: 12398
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	29.2	29.8	28.9	29.7	29.6	29.5	29.4	29.3	29.2	29.0	28.9	28.9	29.2	10.0	39.2
	1	29.5	33.8	28.9	33.5	32.9	31.3	30.5	29.3	29.1	28.9	28.9	28.9	29.5	10.0	39.5
	2	29.4	30.4	28.8	30.2	30.1	30.0	29.9	29.7	29.3	28.9	28.9	28.9	29.4	10.0	39.4
	3	29.1	29.3	28.9	29.3	29.3	29.2	29.2	29.1	29.0	29.0	28.9	28.9	29.1	10.0	39.1
	4	29.2	29.9	29.0	29.8	29.8	29.6	29.5	29.3	29.2	29.1	29.0	29.0	29.2	10.0	39.2
	5	29.8	32.1	29.3	31.6	31.2	30.7	30.4	30.0	29.6	29.4	29.4	29.3	29.8	10.0	39.8
	6	30.5	32.8	29.7	32.4	32.1	31.7	31.3	30.7	30.3	29.9	29.9	29.8	30.5	10.0	40.5
Day	7	32.5	38.9	30.2	38.1	37.2	35.7	34.9	32.7	31.4	30.5	30.4	30.3	32.5	0.0	32.5
	8	30.4	35.7	29.5	34.6	33.5	31.8	31.3	30.5	30.0	29.6	29.6	29.5	30.4	0.0	30.4
	9	30.1	33.9	29.0	33.3	32.8	32.0	31.6	30.4	29.7	29.2	29.1	29.1	30.1	0.0	30.1
	10	42.3	50.9	34.4	50.6	50.4	49.6	48.7	40.9	37.6	35.3	35.0	34.6	42.3	0.0	42.3
	11	44.3	55.1	34.4	55.0	54.4	51.2	48.5	43.1	39.8	35.6	35.0	34.5	44.3	0.0	44.3
	12	46.0	55.1	35.0	54.6	54.1	52.5	51.1	46.4	41.9	36.2	35.6	35.1	46.0	0.0	46.0
	13	43.0	48.3	39.0	48.0	47.6	46.4	45.7	43.9	42.0	39.8	39.5	39.1	43.0	0.0	43.0
	14	43.7	52.2	39.4	51.6	51.2	48.8	46.7	43.3	42.0	40.3	39.9	39.5	43.7	0.0	43.7
	15	44.2	50.9	40.5	49.9	49.0	47.6	46.7	44.9	43.3	41.4	41.0	40.6	44.2	0.0	44.2
	16	46.1	71.2	42.6	70.8	69.6	66.4	62.0	48.5	45.4	43.5	43.1	42.8	46.1	0.0	46.1
	17	47.5	52.1	44.6	51.9	51.5	50.6	50.0	48.1	46.8	45.3	45.1	44.8	47.5	0.0	47.5
	18	47.8	52.5	44.0	52.2	51.8	50.9	50.4	48.6	47.2	45.0	44.6	44.2	47.8	0.0	47.8
Evening	19	48.0	52.2	44.9	51.9	51.7	50.8	50.1	48.6	47.4	45.7	45.4	45.0	48.0	5.0	53.0
	20	47.0	51.2	44.0	50.9	50.5	49.7	49.2	47.7	46.5	44.8	44.5	44.1	47.0	5.0	52.0
	21	45.3	49.8	41.6	49.6	49.3	48.3	47.6	46.0	44.7	42.7	42.2	41.8	45.3	5.0	50.3
Night	22	45.0	49.4	41.7	49.1	48.7	47.9	47.4	45.7	44.5	42.6	42.2	41.8	45.0	10.0	55.0
	23	46.0	52.6	41.0	52.3	52.0	50.9	50.0	46.0	44.5	42.1	41.7	41.1	46.0	10.0	56.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	30.1	33.9	29.0	33.3	32.8	31.8	31.3	30.4	29.7	29.2	29.1	29.1
	Max	47.8	71.2	44.6	70.8	69.6	66.4	62.0	48.6	47.2	45.3	45.1	44.8
Energy Average		44.2	Average:		49.2	48.6	47.0	45.6	41.8	39.8	37.6	37.3	37.0
Evening	Min	45.3	49.8	41.6	49.6	49.3	48.3	47.6	46.0	44.7	42.7	42.2	41.8
	Max	48.0	52.2	44.9	51.9	51.7	50.8	50.1	48.6	47.4	45.7	45.4	45.0
Energy Average		46.9	Average:		50.8	50.5	49.6	49.0	47.5	46.2	44.4	44.0	43.6
Night	Min	29.1	29.3	28.8	29.3	29.3	29.2	29.2	29.1	29.0	28.9	28.9	28.9
	Max	46.0	52.6	41.7	52.3	52.0	50.9	50.0	46.0	44.5	42.6	42.2	41.8
Energy Average		39.4	Average:		35.3	35.1	34.5	34.2	33.2	32.7	32.1	32.0	31.8

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
43.5	44.9	39.4

24-Hour CNEL (dBA)

48.1

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,232 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	186 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.00	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-24.62	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-21.10	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	54.5	52.7	46.7	55.3	55.9
Medium Trucks:	51.2	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	60.0	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	61.8	61.0	55.1	53.2	61.6	61.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	86	186
CNEL:	19	42	90	193

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,788 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	399 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.66	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.27	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.75	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.9	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	58.1	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	66.0	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	68.2	67.4	62.0	59.6	68.1	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	96	207	446
CNEL:	47	100	216	466

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,908 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	159 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.68	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.30	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.78	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.3	57.2	55.4	49.3	58.0	58.6
Medium Trucks:	53.9	53.2	46.8	45.3	53.7	54.0
Heavy Trucks:	62.7	62.1	53.0	54.3	62.6	62.8
Vehicle Noise:	64.4	63.7	57.7	55.9	64.3	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	64	138
CNEL:	14	31	66	143

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,744 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	312 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.76	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-22.37	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.85	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	56.8	55.1	49.0	57.6	58.2
Medium Trucks:	53.5	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	62.3	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	64.1	63.3	57.4	55.5	64.0	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	108	233
CNEL:	24	52	113	243

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: e/o Veile Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,746 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	145 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-10.07	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-25.69	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.16	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.5	55.4	53.6	47.6	56.2	56.8
Medium Trucks:	52.1	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	60.9	60.3	51.3	52.5	60.9	61.0
Vehicle Noise:	62.7	61.9	56.0	54.1	62.6	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	65	140
CNEL:	15	31	68	146

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1 — *Project Name:* Jack Rabbit Trail Develop
Road Name: Potrero Bl. — *Job Number:* 12398
Road Segment: s/o Oak Valley Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,836 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	236 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.55%
Medium Trucks:	84.8%	4.9%	10.3%	1.98%
Heavy Trucks:	86.5%	2.7%	10.8%	4.46%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.88	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-24.62	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-21.10	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	55.6	53.9	47.8	56.4	57.0
Medium Trucks:	51.2	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	60.0	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	62.1	61.3	55.8	53.5	61.9	62.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	90	194
CNEL:	20	44	94	203

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: w/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	162 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	13 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-20.40	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-36.01	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-32.49	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.6	46.4	44.7	38.6	47.2	47.9
Medium Trucks:	43.2	42.5	36.1	34.6	43.0	43.3
Heavy Trucks:	52.0	51.4	42.3	43.6	51.9	52.1
Vehicle Noise:	53.7	53.0	47.0	45.2	53.6	53.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	27
CNEL:	3	6	13	28

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1 — *Project Name:* Jack Rabbit Trail Develop
Road Name: California Av. — *Job Number:* 12398
Road Segment: n/o 6th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,029 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	169 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.30%
Medium Trucks:	84.8%	4.9%	10.3%	2.37%
Heavy Trucks:	86.5%	2.7%	10.8%	5.33%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.40	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.30	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.78	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	57.4	55.7	49.6	58.2	58.9
Medium Trucks:	53.9	53.2	46.8	45.3	53.7	54.0
Heavy Trucks:	62.7	62.1	53.0	54.3	62.6	62.8
Vehicle Noise:	64.5	63.8	57.9	56.0	64.4	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	65	139
CNEL:	14	31	67	145

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,392 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	449 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.73%
Medium Trucks:	84.8%	4.9%	10.3%	2.24%
Heavy Trucks:	86.5%	2.7%	10.8%	5.03%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.10	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.27	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.75	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.5	62.4	60.6	54.6	63.2	63.8
Medium Trucks:	58.1	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	66.0	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	68.4	67.6	62.3	59.8	68.2	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	213	458
CNEL:	48	103	222	479

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,843 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	237 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	90.36%
Medium Trucks:	84.8%	4.9%	10.3%	3.52%
Heavy Trucks:	86.5%	2.7%	10.8%	6.12%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.02	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-22.12	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.71	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	55.7	55.0	48.6	47.1	55.5	55.8
Heavy Trucks:	63.4	62.8	53.7	55.0	63.3	63.5
Vehicle Noise:	65.1	64.4	58.3	56.6	65.0	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	44	95	205
CNEL:	21	46	99	213

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,972 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	414 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.56%
Medium Trucks:	84.8%	4.9%	10.3%	4.15%
Heavy Trucks:	86.5%	2.7%	10.8%	7.29%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.68	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-18.97	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-16.53	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.9	56.1	50.1	58.7	59.3
Medium Trucks:	56.9	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	64.7	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	66.2	65.5	59.2	57.7	66.1	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	70	151	326
CNEL:	34	73	157	338

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project Phase 1
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	258 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	82.67%
Medium Trucks:	84.8%	4.9%	10.3%	7.36%
Heavy Trucks:	86.5%	2.7%	10.8%	9.97%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.03	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-18.54	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-17.22	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.9	58.8	57.0	51.0	59.6	60.2
Medium Trucks:	60.7	60.0	53.6	52.0	60.5	60.7
Heavy Trucks:	67.3	66.6	57.6	58.8	67.2	67.3
Vehicle Noise:	68.7	68.0	61.2	60.2	68.6	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	124	267
CNEL:	28	59	128	276

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,689 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	391 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.10%
Medium Trucks:	84.8%	4.9%	10.3%	1.20%
Heavy Trucks:	86.5%	2.7%	10.8%	2.70%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.58	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-24.62	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-21.10	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.9	56.2	50.1	58.7	59.3
Medium Trucks:	51.2	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	60.0	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	62.9	62.1	57.4	54.2	62.7	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	102	219
CNEL:	23	50	107	230

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,245 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	603 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.59%
Medium Trucks:	84.8%	4.9%	10.3%	1.67%
Heavy Trucks:	86.5%	2.7%	10.8%	3.75%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.73	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.27	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.75	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	58.1	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	66.0	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	68.9	68.1	63.3	60.3	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	493
CNEL:	52	112	240	518

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,399 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.49%
Medium Trucks:	84.8%	4.9%	10.3%	2.00%
Heavy Trucks:	86.5%	2.7%	10.8%	4.51%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.61	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.30	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.78	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.3	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	53.9	53.2	46.8	45.3	53.7	54.0
Heavy Trucks:	62.7	62.1	53.0	54.3	62.6	62.8
Vehicle Noise:	64.7	64.0	58.4	56.1	64.6	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	144
CNEL:	15	32	70	150

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,794 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	733 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	83.78%
Medium Trucks:	84.8%	4.9%	10.3%	6.91%
Heavy Trucks:	86.5%	2.7%	10.8%	9.32%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.45	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.29	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-12.99	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.2	60.1	58.4	52.3	60.9	61.5
Medium Trucks:	61.6	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	68.2	67.6	58.5	59.8	68.1	68.3
Vehicle Noise:	69.7	69.0	62.3	61.2	69.6	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	557
CNEL:	58	124	267	575

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2 — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: e/o Veile Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,237 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.71%
Medium Trucks:	84.8%	4.9%	10.3%	4.83%
Heavy Trucks:	86.5%	2.7%	10.8%	6.46%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.69	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-17.33	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-16.07	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	60.5	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	67.0	66.4	57.4	58.6	67.0	67.1
Vehicle Noise:	68.9	68.1	61.9	60.3	68.8	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	169	363
CNEL:	38	81	175	377

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: Potrero Bl. — *Job Number:* 12398
Road Segment: s/o Oak Valley Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,739 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	478 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.81%
Medium Trucks:	84.8%	4.9%	10.3%	0.98%
Heavy Trucks:	86.5%	2.7%	10.8%	2.21%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.67	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-24.62	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-21.10	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.0	58.8	57.1	51.0	59.6	60.3
Medium Trucks:	51.2	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	60.0	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	63.3	62.4	58.1	54.6	63.1	63.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	108	232
CNEL:	25	53	114	245

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project P1+2 — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: w/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,228 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,019 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	81.57%
Medium Trucks:	84.8%	4.9%	10.3%	8.42%
Heavy Trucks:	86.5%	2.7%	10.8%	10.00%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.13	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-11.99	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-11.24	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	67.2	66.5	60.1	58.6	67.1	67.3
Heavy Trucks:	73.2	72.6	63.6	64.8	73.2	73.3
Vehicle Noise:	74.8	74.1	67.2	66.3	74.7	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	314	677
CNEL:	70	151	325	699

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: California Av. — *Job Number:* 12398
Road Segment: n/o 6th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,609 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	217 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.01%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	4.15%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.22	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.30	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.78	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	53.9	53.2	46.8	45.3	53.7	54.0
Heavy Trucks:	62.7	62.1	53.0	54.3	62.6	62.8
Vehicle Noise:	64.8	64.1	58.7	56.3	64.7	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	68	146
CNEL:	15	33	71	153

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,295 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	691 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.27%
Medium Trucks:	84.8%	4.9%	10.3%	1.45%
Heavy Trucks:	86.5%	2.7%	10.8%	3.27%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.11	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.27	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.75	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	58.1	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	66.0	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	69.1	68.3	63.8	60.5	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	238	512
CNEL:	54	116	250	539

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,917 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.11%
Medium Trucks:	84.8%	4.9%	10.3%	3.80%
Heavy Trucks:	86.5%	2.7%	10.8%	5.09%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.54	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-17.33	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-16.07	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.0	61.9	60.2	54.1	62.7	63.4
Medium Trucks:	60.5	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	67.0	66.4	57.4	58.6	67.0	67.1
Vehicle Noise:	69.1	68.4	62.6	60.6	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	81	175	377
CNEL:	39	85	182	393

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,474 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	873 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	86.38%
Medium Trucks:	84.8%	4.9%	10.3%	5.80%
Heavy Trucks:	86.5%	2.7%	10.8%	7.82%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.55	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.29	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-12.99	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.1	61.0	59.3	53.2	61.8	62.4
Medium Trucks:	61.6	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	68.2	67.6	58.5	59.8	68.1	68.3
Vehicle Noise:	69.9	69.2	62.7	61.3	69.8	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	122	264	568
CNEL:	59	127	273	588

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project BO
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,428 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,368 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	86.28%
Medium Trucks:	84.8%	4.9%	10.3%	6.27%
Heavy Trucks:	86.5%	2.7%	10.8%	7.45%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.60	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-11.99	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-11.24	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	67.2	66.5	60.1	58.6	67.1	67.3
Heavy Trucks:	73.2	72.6	63.6	64.8	73.2	73.3
Vehicle Noise:	75.0	74.3	67.9	66.5	74.9	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	325	700
CNEL:	72	156	336	725

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,314 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	276 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.29	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-22.90	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.38	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.3	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	52.9	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	61.7	61.1	52.1	53.3	61.7	61.8
Vehicle Noise:	63.5	62.7	56.8	54.9	63.4	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	112	242
CNEL:	25	54	117	251

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,389 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	616 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.77	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.39	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.87	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	63.7	61.9	55.9	64.5	65.1
Medium Trucks:	60.0	59.3	52.9	51.4	59.9	60.1
Heavy Trucks:	67.9	67.3	58.3	59.5	67.9	68.0
Vehicle Noise:	70.1	69.3	63.9	61.5	70.0	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	128	277	596
CNEL:	62	134	289	622

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,258 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	188 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.95	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-24.57	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.05	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.9	56.1	50.1	58.7	59.3
Medium Trucks:	54.6	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	63.4	62.8	53.8	55.0	63.4	63.5
Vehicle Noise:	65.2	64.4	58.5	56.6	65.0	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	72	154
CNEL:	16	35	74	160

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,154 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	513 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.60	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-20.21	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-16.69	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.1	59.0	57.2	51.2	59.8	60.4
Medium Trucks:	55.7	55.0	48.6	47.1	55.5	55.8
Heavy Trucks:	64.5	63.9	54.8	56.1	64.4	64.6
Vehicle Noise:	66.2	65.5	59.6	57.7	66.1	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	70	151	325
CNEL:	34	73	157	338

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,767 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	314 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.73	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-22.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.82	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.9	58.8	57.0	50.9	59.6	60.2
Medium Trucks:	55.5	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	64.3	63.7	54.6	55.9	64.2	64.3
Vehicle Noise:	66.0	65.3	59.3	57.5	65.9	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	109	234
CNEL:	24	52	113	243

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,917 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	326 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.07%
Medium Trucks:	84.8%	4.9%	10.3%	2.13%
Heavy Trucks:	86.5%	2.7%	10.8%	4.80%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.50	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-22.90	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.38	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.1	57.0	55.2	49.2	57.8	58.4
Medium Trucks:	52.9	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	61.7	61.1	52.1	53.3	61.7	61.8
Vehicle Noise:	63.7	62.9	57.3	55.1	63.6	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	116	249
CNEL:	26	56	120	260

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 Without Project
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,295 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	274 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.31	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-22.93	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-19.41	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	59.5	57.8	51.7	60.3	60.9
Medium Trucks:	56.3	55.6	49.2	47.7	56.1	56.4
Heavy Trucks:	65.1	64.4	55.4	56.7	65.0	65.1
Vehicle Noise:	66.8	66.1	60.1	58.3	66.7	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	92	198
CNEL:	21	44	96	206

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,379 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	198 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.23%
Medium Trucks:	84.8%	4.9%	10.3%	2.39%
Heavy Trucks:	86.5%	2.7%	10.8%	5.38%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.71	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-24.57	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-21.05	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	58.1	56.4	50.3	58.9	59.5
Medium Trucks:	54.6	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	63.4	62.8	53.8	55.0	63.4	63.5
Vehicle Noise:	65.2	64.5	58.6	56.7	65.1	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	72	156
CNEL:	16	35	75	162

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,992 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	666 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.43%
Medium Trucks:	84.8%	4.9%	10.3%	2.33%
Heavy Trucks:	86.5%	2.7%	10.8%	5.24%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.40	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.39	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.87	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	64.1	62.3	56.3	64.9	65.5
Medium Trucks:	60.0	59.3	52.9	51.4	59.9	60.1
Heavy Trucks:	67.9	67.3	58.3	59.5	67.9	68.0
Vehicle Noise:	70.2	69.4	64.1	61.6	70.1	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	131	281	606
CNEL:	63	136	294	633

Thursday, September 2, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,864 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	405 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	90.96%
Medium Trucks:	84.8%	4.9%	10.3%	3.10%
Heavy Trucks:	86.5%	2.7%	10.8%	5.93%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.66	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-20.33	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-17.52	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.9	59.8	58.1	52.0	60.6	61.2
Medium Trucks:	57.5	56.8	50.4	48.9	57.3	57.6
Heavy Trucks:	65.6	65.0	55.9	57.2	65.5	65.7
Vehicle Noise:	67.3	66.6	60.6	58.8	67.2	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	133	287
CNEL:	30	64	138	298

Thursday, September 2, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,382 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	615 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	89.62%
Medium Trucks:	84.8%	4.9%	10.3%	3.62%
Heavy Trucks:	86.5%	2.7%	10.8%	6.76%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.91	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.85	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-15.14	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.8	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	58.1	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	66.1	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	67.7	67.0	60.7	59.1	67.6	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	87	188	406
CNEL:	42	91	195	421

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2023 With Project Phase 1
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,233 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	519 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	87.26%
Medium Trucks:	84.8%	4.9%	10.3%	4.93%
Heavy Trucks:	86.5%	2.7%	10.8%	7.81%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.76	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-17.25	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-15.25	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	62.0	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	69.2	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	70.8	70.1	63.6	62.3	70.7	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	170	367
CNEL:	38	82	176	380

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project *Project Name:* Jack Rabbit Trail Develop
Road Name: Potrero Bl. *Job Number:* 12398
Road Segment: s/o Oak Valley Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt): 3,814 vehicles
Peak Hour Percentage: 8.33%
Peak Hour Volume: 318 vehicles
Vehicle Speed: 40 mph
Near/Far Lane Distance: 78 feet

Site Data

Barrier Height: **0.0 feet**
Barrier Type (0-Wall, 1-Berm): 0.0
Centerline Dist. to Barrier: 67.0 feet
Centerline Dist. to Observer: 67.0 feet
Barrier Distance to Observer: 0.0 feet
Observer Height (Above Pad): 5.0 feet
Pad Elevation: 0.0 feet
Road Elevation: 0.0 feet
Road Grade: 0.0%
Left View: -90.0 degrees
Right View: 90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos: 15
Medium Trucks (2 Axles): 15
Heavy Trucks (3+ Axles): 15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos: 0.000
Medium Trucks: 2.297
Heavy Trucks: 8.004 *Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos: 54.708
Medium Trucks: 54.546
Heavy Trucks: 54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.68	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-22.29	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.77	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	56.8	55.1	49.0	57.6	58.2
Medium Trucks:	53.6	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	62.4	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	64.1	63.3	57.4	55.5	64.0	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	57	123	266
CNEL:	28	59	128	276

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project *Project Name:* Jack Rabbit Trail Develop
Road Name: Oak Valley Pkwy. *Job Number:* 12398
Road Segment: e/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt): 8,583 vehicles
Peak Hour Percentage: 8.33%
Peak Hour Volume: 715 vehicles
Vehicle Speed: 50 mph
Near/Far Lane Distance: 80 feet

Site Data

Barrier Height: **0.0 feet**
Barrier Type (0-Wall, 1-Berm): 0.0
Centerline Dist. to Barrier: 60.0 feet
Centerline Dist. to Observer: 60.0 feet
Barrier Distance to Observer: 0.0 feet
Observer Height (Above Pad): 5.0 feet
Pad Elevation: 0.0 feet
Road Elevation: 0.0 feet
Road Grade: 0.0%
Left View: -90.0 degrees
Right View: 90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos: 15
Medium Trucks (2 Axles): 15
Heavy Trucks (3+ Axles): 15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos: 0.000
Medium Trucks: 2.297
Heavy Trucks: 8.004 *Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos: 45.000
Medium Trucks: 44.803
Heavy Trucks: 44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.12	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.74	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.22	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	60.7	60.0	53.6	52.1	60.5	60.7
Heavy Trucks:	68.6	67.9	58.9	60.2	68.5	68.6
Vehicle Noise:	70.7	70.0	64.5	62.2	70.6	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	659
CNEL:	69	148	319	688

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project *Project Name:* Jack Rabbit Trail Develop
Road Name: California Av. *Job Number:* 12398
Road Segment: n/o 6th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt): 2,440 vehicles
Peak Hour Percentage: 8.33%
Peak Hour Volume: 203 vehicles
Vehicle Speed: 40 mph
Near/Far Lane Distance: 12 feet

Site Data

Barrier Height: **0.0 feet**
Barrier Type (0-Wall, 1-Berm): 0.0
Centerline Dist. to Barrier: 33.0 feet
Centerline Dist. to Observer: 33.0 feet
Barrier Distance to Observer: 0.0 feet
Observer Height (Above Pad): 5.0 feet
Pad Elevation: 0.0 feet
Road Elevation: 0.0 feet
Road Grade: 0.0%
Left View: -90.0 degrees
Right View: 90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos: 15
Medium Trucks (2 Axles): 15
Heavy Trucks (3+ Axles): 15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos: 0.000
Medium Trucks: 2.297
Heavy Trucks: 8.004 *Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos: 32.833
Medium Trucks: 32.562
Heavy Trucks: 32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.62	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-24.23	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-20.71	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.3	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	55.0	54.3	47.9	46.4	54.8	55.0
Heavy Trucks:	63.8	63.1	54.1	55.4	63.7	63.8
Vehicle Noise:	65.5	64.8	58.8	57.0	65.4	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	75	162
CNEL:	17	36	78	169

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. *Job Number:* 12398
Road Segment: e/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt): 7,249 vehicles
Peak Hour Percentage: 8.33%
Peak Hour Volume: 604 vehicles
Vehicle Speed: 40 mph
Near/Far Lane Distance: 48 feet

Site Data

Barrier Height: **0.0 feet**
Barrier Type (0-Wall, 1-Berm): 0.0
Centerline Dist. to Barrier: 59.0 feet
Centerline Dist. to Observer: 59.0 feet
Barrier Distance to Observer: 0.0 feet
Observer Height (Above Pad): 5.0 feet
Pad Elevation: 0.0 feet
Road Elevation: 0.0 feet
Road Grade: 0.0%
Left View: -90.0 degrees
Right View: 90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos: 15
Medium Trucks (2 Axles): 15
Heavy Trucks (3+ Axles): 15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos: 0.000
Medium Trucks: 2.297
Heavy Trucks: 8.004 *Grade Adjustment:* 0.0

Lane Equivalent Distance (in feet)

Autos: 54.129
Medium Trucks: 53.966
Heavy Trucks: 53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.89	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.50	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-15.98	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.8	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	56.4	55.7	49.3	47.8	56.3	56.5
Heavy Trucks:	65.2	64.6	55.5	56.8	65.2	65.3
Vehicle Noise:	67.0	66.2	60.3	58.4	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	168	363
CNEL:	38	81	175	377

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: e/o Veile Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,663 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	388 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-5.80	1.28	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-21.42	1.31	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.90	1.31	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	56.4	55.7	49.3	47.8	56.2	56.5
Heavy Trucks:	65.2	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	66.9	66.2	60.3	58.4	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	125	270
CNEL:	28	60	130	281

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2 — *Project Name:* Jack Rabbit Trail Develop
Road Name: Potrero Bl. — *Job Number:* 12398
Road Segment: s/o Oak Valley Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,271 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	522 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	95.02%
Medium Trucks:	84.8%	4.9%	10.3%	1.53%
Heavy Trucks:	86.5%	2.7%	10.8%	3.45%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-4.37	-0.69	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	77.72	-22.29	-0.67	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.77	-0.67	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.3	59.1	57.4	51.3	59.9	60.6
Medium Trucks:	53.6	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	62.4	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	64.8	64.0	58.9	56.2	64.6	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	29	63	136	294
CNEL:	31	66	143	308

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 Without Project — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: w/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,640 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	387 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-5.83	2.64	-1.20	*-4.52*	0.000	0.000
Medium Trucks:	77.72	-21.44	2.69	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-17.92	2.69	-1.20	*-5.69*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	61.0	59.3	53.2	61.8	62.4
Medium Trucks:	57.8	57.1	50.7	49.1	57.6	57.8
Heavy Trucks:	66.6	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	68.3	67.6	61.6	59.7	68.2	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	54	116	249
CNEL:	26	56	120	259

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2 — *Project Name:* Jack Rabbit Trail Develop
Road Name: California Av. — *Job Number:* 12398
Road Segment: n/o 6th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,931 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	244 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	93.18%
Medium Trucks:	84.8%	4.9%	10.3%	2.10%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-7.76	2.64	-1.20	*-4.52*	0.000	0.000
Medium Trucks:	77.72	-24.23	2.69	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-20.71	2.69	-1.20	*-5.69*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.2	59.1	57.3	51.3	59.9	60.5
Medium Trucks:	55.0	54.3	47.9	46.4	54.8	55.0
Heavy Trucks:	63.8	63.1	54.1	55.4	63.7	63.8
Vehicle Noise:	65.7	65.0	59.3	57.2	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	17	36	78	168
CNEL:	17	38	81	175

Thursday, September 2, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,040 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	920 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.63%
Medium Trucks:	84.8%	4.9%	10.3%	1.96%
Heavy Trucks:	86.5%	2.7%	10.8%	4.41%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.94	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.74	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.22	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.5	63.8	57.7	66.3	66.9
Medium Trucks:	60.7	60.0	53.6	52.1	60.5	60.7
Heavy Trucks:	68.6	67.9	58.9	60.2	68.5	68.6
Vehicle Noise:	71.1	70.3	65.3	62.5	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	150	324	697
CNEL:	73	157	339	731

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,137 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	511 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.91%
Heavy Trucks:	86.5%	2.7%	10.8%	4.31%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.52	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-21.42	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-17.90	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.1	61.0	59.2	53.1	61.8	62.4
Medium Trucks:	56.4	55.7	49.3	47.8	56.2	56.5
Heavy Trucks:	65.2	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	67.3	66.5	61.1	58.7	67.2	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	61	132	284
CNEL:	30	64	138	297

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,723 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	727 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.19%
Medium Trucks:	84.8%	4.9%	10.3%	2.09%
Heavy Trucks:	86.5%	2.7%	10.8%	4.71%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.02	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.50	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-15.98	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.7	60.6	58.8	52.7	61.4	62.0
Medium Trucks:	56.4	55.7	49.3	47.8	56.3	56.5
Heavy Trucks:	65.2	64.6	55.5	56.8	65.2	65.3
Vehicle Noise:	67.2	66.4	60.8	58.6	67.0	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	81	174	375
CNEL:	39	84	181	391

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2025 With Project P1+2
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,706 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,392 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	84.32%
Medium Trucks:	84.8%	4.9%	10.3%	6.84%
Heavy Trucks:	86.5%	2.7%	10.8%	8.84%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.63	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-11.54	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-10.43	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	67.7	67.0	60.6	59.0	67.5	67.7
Heavy Trucks:	74.1	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	75.6	74.9	68.2	67.1	75.5	75.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	166	358	771
CNEL:	80	172	370	797

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,264 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	438 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.28	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-20.89	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.37	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.3	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	55.0	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	63.8	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	65.5	64.7	58.8	56.9	65.4	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	329
CNEL:	34	74	159	342

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,094 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,007 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.63	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.25	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.73	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	65.8	64.1	58.0	66.6	67.3
Medium Trucks:	62.2	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	70.1	69.4	60.4	61.6	70.0	70.1
Vehicle Noise:	72.2	71.5	66.0	63.7	72.1	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	178	384	828
CNEL:	86	186	401	864

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,858 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	238 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.93	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-23.55	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-20.02	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.0	58.9	57.1	51.1	59.7	60.3
Medium Trucks:	55.7	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	64.5	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	66.2	65.4	59.5	57.6	66.1	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	40	87	188

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,532 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	877 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.27	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.88	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-14.36	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.4	61.3	59.6	53.5	62.1	62.7
Medium Trucks:	58.0	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	66.8	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	68.6	67.8	61.9	60.0	68.5	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	100	216	465
CNEL:	48	104	224	483

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project | *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. | *Job Number:* 12398
Road Segment: e/o Veile Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,476 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	623 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.75	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-19.37	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.85	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	61.7	60.0	53.9	62.5	63.1
Medium Trucks:	58.5	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	67.3	66.6	57.6	58.8	67.2	67.3
Vehicle Noise:	69.0	68.2	62.3	60.4	68.9	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	172	370
CNEL:	38	83	178	384

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO | *Project Name:* Jack Rabbit Trail Develop
Road Name: Potrero Bl. | *Job Number:* 12398
Road Segment: s/o Oak Valley Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,770 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	731 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.09%
Medium Trucks:	84.8%	4.9%	10.3%	1.51%
Heavy Trucks:	86.5%	2.7%	10.8%	3.40%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.91	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-20.89	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.37	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.7	60.6	58.8	52.8	61.4	62.0
Medium Trucks:	55.0	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	63.8	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	66.2	65.4	60.3	57.6	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	170	365
CNEL:	38	82	178	383

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 Without Project | *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. | *Job Number:* 12398
Road Segment: w/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,108 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	759 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.90	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-18.51	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-14.99	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.9	62.2	56.1	64.7	65.4
Medium Trucks:	60.7	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	69.5	68.9	59.8	61.1	69.4	69.6
Vehicle Noise:	71.2	70.5	64.5	62.7	71.1	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	181	391
CNEL:	41	87	189	406

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO | *Project Name:* Jack Rabbit Trail Develop
Road Name: California Av. | *Job Number:* 12398
Road Segment: n/o 6th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,559 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	296 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.42%
Medium Trucks:	84.8%	4.9%	10.3%	2.02%
Heavy Trucks:	86.5%	2.7%	10.8%	4.55%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.90	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-23.55	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-20.02	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.0	59.9	58.2	52.1	60.7	61.3
Medium Trucks:	55.7	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	64.5	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	66.5	65.7	60.1	57.9	66.3	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	188
CNEL:	20	42	91	196

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: Oak Valley Pkwy. — *Job Number:* 12398
Road Segment: e/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,600 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,300 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.65%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	4.40%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.44	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.25	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.73	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	67.0	65.3	59.2	67.8	68.4
Medium Trucks:	62.2	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	70.1	69.4	60.4	61.6	70.0	70.1
Vehicle Noise:	72.6	71.8	66.8	64.0	72.5	72.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	189	407	877
CNEL:	92	198	427	919

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: e/o Veile Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,647 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,137 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.40%
Medium Trucks:	84.8%	4.9%	10.3%	3.26%
Heavy Trucks:	86.5%	2.7%	10.8%	5.33%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.16	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-15.63	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-13.50	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	64.3	62.6	56.5	65.1	65.7
Medium Trucks:	62.2	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	69.6	69.0	59.9	61.2	69.5	69.7
Vehicle Noise:	71.5	70.8	64.9	63.0	71.4	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	118	254	547
CNEL:	57	123	264	569

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: e/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,262 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,438 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.52%
Medium Trucks:	84.8%	4.9%	10.3%	4.51%
Heavy Trucks:	86.5%	2.7%	10.8%	6.98%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.28	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.21	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.31	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.4	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	62.7	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	69.9	69.3	60.2	61.5	69.8	69.9
Vehicle Noise:	71.6	70.8	64.5	63.0	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	159	342	737
CNEL:	76	165	355	764

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYC 2027 With Project BO — *Project Name:* Jack Rabbit Trail Develop
Road Name: 4th St. — *Job Number:* 12398
Road Segment: w/o Potrero Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,374 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	2,114 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.23%
Medium Trucks:	84.8%	4.9%	10.3%	4.95%
Heavy Trucks:	86.5%	2.7%	10.8%	6.82%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.38	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-11.13	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-9.74	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	68.2	66.5	60.4	69.0	69.6
Medium Trucks:	68.1	67.4	61.0	59.5	67.9	68.1
Heavy Trucks:	74.7	74.1	65.1	66.3	74.7	74.8
Vehicle Noise:	76.5	75.8	69.5	68.0	76.4	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	880
CNEL:	91	197	423	912

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,682 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,973 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.25	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-14.36	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-10.84	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	61.5	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	70.3	69.7	60.6	61.9	70.2	70.3
Vehicle Noise:	72.0	71.3	65.3	63.5	71.9	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	193	416	897
CNEL:	93	201	433	932

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,233 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,602 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.62	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.23	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.71	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.9	66.1	60.0	68.7	69.3
Medium Trucks:	64.2	63.5	57.1	55.6	64.0	64.3
Heavy Trucks:	72.1	71.4	62.4	63.7	72.0	72.1
Vehicle Noise:	74.3	73.5	68.0	65.7	74.1	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	243	524	1,128
CNEL:	118	254	546	1,177

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,737 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	145 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-10.09	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.71	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.19	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	56.8	55.0	48.9	57.6	58.2
Medium Trucks:	53.5	52.8	46.4	44.9	53.3	53.6
Heavy Trucks:	62.3	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	64.0	63.3	57.3	55.5	63.9	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	28	60	129
CNEL:	13	29	62	135

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,969 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	914 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.09	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.70	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-14.18	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.6	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	58.2	57.5	51.1	49.6	58.1	58.3
Heavy Trucks:	67.0	66.4	57.3	58.6	66.9	67.1
Vehicle Noise:	68.8	68.0	62.1	60.2	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	478
CNEL:	50	107	231	497

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,094 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	508 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.64	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-20.26	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-16.74	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.8	59.1	53.0	61.6	62.2
Medium Trucks:	57.6	56.9	50.5	48.9	57.4	57.6
Heavy Trucks:	66.4	65.7	56.7	58.0	66.3	66.4
Vehicle Noise:	68.1	67.4	61.4	59.6	68.0	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	323
CNEL:	34	72	156	335

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: Potrero Bl.
Road Segment: s/o Oak Valley Pkwy.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,188 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	2,265 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.87%
Medium Trucks:	84.8%	4.9%	10.3%	2.19%
Heavy Trucks:	86.5%	2.7%	10.8%	4.94%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.708
Medium Trucks:	54.546
Heavy Trucks:	54.562

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.90	-0.69	-1.20	-4.71	0.000	0.000
Medium Trucks:	77.72	-14.36	-0.67	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-10.84	-0.67	-1.20	-5.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	65.4	63.7	57.6	66.2	66.8
Medium Trucks:	61.5	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	70.3	69.7	60.6	61.9	70.2	70.3
Vehicle Noise:	72.2	71.4	65.7	63.6	72.1	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	198	427	919
CNEL:	96	206	444	957

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 Without Project
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,624 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	968 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.84	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-17.45	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-13.93	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	65.0	63.2	57.2	65.8	66.4
Medium Trucks:	61.8	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	70.5	69.9	60.9	62.1	70.5	70.6
Vehicle Noise:	72.3	71.5	65.6	63.7	72.2	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	213	460
CNEL:	48	103	222	478

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: California Av.
Road Segment: n/o 6th St.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,439 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	203 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	0.0 feet
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.17%
Medium Trucks:	84.8%	4.9%	10.3%	1.80%
Heavy Trucks:	86.5%	2.7%	10.8%	4.04%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-8.51	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-25.71	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.19	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	58.3	56.6	50.5	59.1	59.7
Medium Trucks:	53.5	52.8	46.4	44.9	53.3	53.6
Heavy Trucks:	62.3	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	64.5	63.7	58.3	55.9	64.3	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	64	138
CNEL:	14	31	67	144

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: Oak Valley Pkwy.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,739 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,894 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.07%
Medium Trucks:	84.8%	4.9%	10.3%	2.13%
Heavy Trucks:	86.5%	2.7%	10.8%	4.80%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	45.000
Medium Trucks:	44.803
Heavy Trucks:	44.822

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.17	0.58	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.23	0.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.71	0.61	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	68.6	66.9	60.8	69.5	70.1
Medium Trucks:	64.2	63.5	57.1	55.6	64.0	64.3
Heavy Trucks:	72.1	71.4	62.4	63.7	72.0	72.1
Vehicle Noise:	74.5	73.7	68.5	65.9	74.4	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	117	252	543	1,170
CNEL:	122	264	568	1,225

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: 4th St.
Road Segment: e/o Veile Av.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,265 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,022 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.36%
Medium Trucks:	84.8%	4.9%	10.3%	3.35%
Heavy Trucks:	86.5%	2.7%	10.8%	5.30%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.63	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-15.99	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-13.99	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	61.8	61.1	54.8	53.2	61.7	61.9
Heavy Trucks:	69.1	68.5	59.4	60.7	69.0	69.2
Vehicle Noise:	71.1	70.3	64.5	62.5	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	236	509
CNEL:	53	114	246	529

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: 4th St.
Road Segment: e/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,700 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	1,474 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.60%
Medium Trucks:	84.8%	4.9%	10.3%	4.46%
Heavy Trucks:	86.5%	2.7%	10.8%	6.94%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.17	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.15	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.22	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	62.8	62.1	55.7	54.1	62.6	62.8
Heavy Trucks:	70.0	69.3	60.3	61.6	69.9	70.0
Vehicle Noise:	71.7	70.9	64.6	63.1	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	347	747
CNEL:	77	167	360	775

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2045 With Project BO
Road Name: 4th St.
Road Segment: w/o Potrero Bl.
Project Name: Jack Rabbit Trail Develop
Job Number: 12398

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,890 vehicles
Peak Hour Percentage:	8.33%
Peak Hour Volume:	2,323 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	88.56%
Medium Trucks:	84.8%	4.9%	10.3%	4.73%
Heavy Trucks:	86.5%	2.7%	10.8%	6.72%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	32.833
Medium Trucks:	32.562
Heavy Trucks:	32.589

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.81	2.64	-1.20	-4.52	0.000	0.000
Medium Trucks:	77.72	-10.92	2.69	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-9.39	2.69	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	68.7	66.9	60.8	69.5	70.1
Medium Trucks:	68.3	67.6	61.2	59.7	68.1	68.4
Heavy Trucks:	75.1	74.5	65.4	66.7	75.0	75.2
Vehicle Noise:	76.9	76.1	69.9	68.3	76.7	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	200	431	928
CNEL:	96	207	446	962

APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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12398 - Beaumont Pointe

CadnaA Noise Prediction Model: 12398_15b.cna
Date: 23.06.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	32.1	32.0	38.7	55.0	45.0	0.0				5.00	a	6318806.11	2292331.15	5.00
RECEIVERS		R2	34.3	34.2	40.9	55.0	45.0	0.0				5.00	a	6321134.99	2290808.09	5.00
RECEIVERS		R3	35.9	35.8	42.5	55.0	45.0	0.0				5.00	a	6323538.75	2288028.01	5.00
RECEIVERS		R4	40.3	40.1	46.8	55.0	45.0	0.0				5.00	a	6324208.60	2285233.27	5.00
RECEIVERS		R5	43.0	42.7	49.4	55.0	45.0	0.0				5.00	a	6322668.83	2282431.69	5.00
RECEIVERS		xBIO-1	42.2	42.1	48.8	0.0	0.0	0.0		x	Total	5.00	a	6315486.52	2289104.40	5.00
RECEIVERS		xBIO-2	46.2	46.2	52.8	0.0	0.0	0.0		x	Total	5.00	a	6317292.24	2288261.01	5.00
RECEIVERS		xBIO-3	50.2	50.2	56.9	0.0	0.0	0.0		x	Total	5.00	a	6317222.84	2286292.08	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323343.27	2283042.07	25.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323411.45	2283447.91	25.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323361.13	2283290.44	25.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323258.86	2283100.51	25.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323146.84	2282977.13	25.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323245.87	2282819.67	25.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323400.09	2282837.52	25.00
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323653.33	2282793.69	25.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323708.53	2283012.85	25.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323708.53	2283202.78	25.00
POINTSOURCE		AC11	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323711.77	2283366.74	25.00
POINTSOURCE		AC12	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323715.02	2283538.81	25.00
POINTSOURCE		AC13	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323555.93	2283707.64	25.00
POINTSOURCE		AC14	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6323473.14	2283860.24	25.00
POINTSOURCE		AC15	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6322630.61	2283701.15	50.00
POINTSOURCE		AC16	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6321193.94	2285366.72	50.00
POINTSOURCE		AC17	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6320840.05	2284798.54	50.00
POINTSOURCE		AC18	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6320487.78	2284962.50	50.00
POINTSOURCE		AC19	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6320767.00	2285595.61	50.00
POINTSOURCE		AC20	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6319538.11	2286149.18	50.00
POINTSOURCE		AC21	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6319255.65	2285514.45	50.00
POINTSOURCE		AC22	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6318706.95	2285589.12	50.00
POINTSOURCE		AC23	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6318163.12	2285921.91	50.00
POINTSOURCE		AC24	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6319229.56	2286445.79	50.00
POINTSOURCE		AC25	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6318695.80	2286775.65	50.00
POINTSOURCE		AC26	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6318025.68	2286382.15	50.00
POINTSOURCE		AC27	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6318306.20	2286876.95	50.00
POINTSOURCE		AC28	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6317173.74	2286856.17	50.00
POINTSOURCE		AC29	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6317443.87	2287349.68	50.00
POINTSOURCE		AC30	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6317065.06	2287590.09	50.00
POINTSOURCE		AC31	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6315523.31	2288350.44	50.00
POINTSOURCE		AC32	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6315187.86	2287742.68	50.00
POINTSOURCE		PARKING00	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323692.29	2283754.72	5.00
POINTSOURCE		PARKING01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6315002.38	2287851.87	5.00
POINTSOURCE		PARKING01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323590.02	2283818.03	5.00
POINTSOURCE		PARKING02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6315087.89	2288024.20	5.00
POINTSOURCE		PARKING02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323193.92	2283772.58	5.00
POINTSOURCE		PARKING03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6315210.23	2288197.84	5.00
POINTSOURCE		PARKING03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323093.27	2283720.63	5.00
POINTSOURCE		PARKING04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6315287.84	2288359.64	5.00
POINTSOURCE		PARKING04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323318.92	2283589.14	5.00
POINTSOURCE		PARKING05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6316880.24	2286952.28	5.00
POINTSOURCE		PARKING05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323216.65	2283563.17	5.00
POINTSOURCE		PARKING06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6316915.30	2287019.81	5.00
POINTSOURCE		PARKING06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323125.74	2283472.26	5.00
POINTSOURCE		PARKING07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6316958.16	2287102.92	5.00
POINTSOURCE		PARKING07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323036.46	2283384.60	5.00
POINTSOURCE		PARKING08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317002.31	2287195.13	5.00
POINTSOURCE		PARKING08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322945.55	2283298.56	5.00
POINTSOURCE		PARKING09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317042.57	2287278.25	5.00
POINTSOURCE		PARKING09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322853.02	2283201.16	5.00
POINTSOURCE		PARKING10	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317088.03	2287367.86	5.00
POINTSOURCE		PARKING10	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322768.60	2283119.99	5.00
POINTSOURCE		PARKING11	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317128.29	2287449.67	5.00
POINTSOURCE		PARKING11	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322581.91	2283222.26	5.00
POINTSOURCE		PARKING12	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317168.55	2287535.39	5.00
POINTSOURCE		PARKING12	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322679.32	2283308.30	5.00
POINTSOURCE		PARKING13	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317238.67	2287488.64	5.00
POINTSOURCE		PARKING13	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322763.73	2283395.96	5.00
POINTSOURCE		PARKING14	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317197.12	2287410.71	5.00
POINTSOURCE		PARKING14	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322851.39	2283483.62	5.00
POINTSOURCE		PARKING15	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317155.56	2287328.90	5.00
POINTSOURCE		PARKING15	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322943.92	2283581.02	5.00
POINTSOURCE		PARKING16	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317115.30	2287244.48	5.00
POINTSOURCE		PARKING16	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323018.60	2283658.94	5.00
POINTSOURCE		PARKING17	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317072.44	2287158.77	5.00
POINTSOURCE		PARKING17	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323276.71	2283402.45	5.00
POINTSOURCE		PARKING18	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317026.99	2287066.56	5.00
POINTSOURCE		PARKING18	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323215.03	2283280.70	5.00
POINTSOURCE		PARKING19	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6316986.73	2286979.55	5.00
POINTSOURCE		PARKING19	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323159.83	2283176.81	5.00
POINTSOURCE		PARKING20	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6316941.27	2286889.94	5.00
POINTSOURCE		PARKING20	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323062.43	2283077.78	5.00
POINTSOURCE		PARKING21	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317343.87	2287396.43	5.00
POINTSOURCE		PARKING21	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322961.78	2283020.96	5.00
POINTSOURCE		PARKING22	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317303.61	2287325.00	5.00
POINTSOURCE		PARKING22	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322851.17	2282989.96	5.00
POINTSOURCE		PARKING23	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317258.15	2287245.78	5.00
POINTSOURCE		PARKING23	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322697.17	2283053.43	5.00
POINTSOURCE		PARKING24	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317210.10	2287157.47	5.00
POINTSOURCE		PARKING24	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323174.44	2284123.22	5.00
POINTSOURCE		PARKING25	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317163.35	2287073.05	5.00
POINTSOURCE		PARKING25	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323127.36	2284048.55	5.00
POINTSOURCE		PARKING26	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317117.90	2286989.94	5.00
POINTSOURCE		PARKING26	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323077.04	2283969.01	5.00
POINTSOURCE		PARKING27	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317075.04	2286910.72	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARKING27	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323232.88	2284087.51	5.00
POINTSOURCE		PARKING28	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317091.92	2286775.65	5.00
POINTSOURCE		PARKING28	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323286.45	2284035.56	5.00
POINTSOURCE		PARKING29	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317147.77	2286744.49	5.00
POINTSOURCE		PARKING29	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323382.23	2284079.39	5.00
POINTSOURCE		PARKING30	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317952.95	2286301.63	5.00
POINTSOURCE		PARKING30	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323310.80	2284141.08	5.00
POINTSOURCE		PARKING31	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318006.20	2286271.76	5.00
POINTSOURCE		PARKING31	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323219.90	2284201.15	5.00
POINTSOURCE		PARKING32	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318050.36	2286115.92	5.00
POINTSOURCE		PARKING32	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323150.09	2283954.40	5.00
POINTSOURCE		PARKING33	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318091.91	2286183.45	5.00
POINTSOURCE		PARKING33	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323031.59	2283887.84	5.00
POINTSOURCE		PARKING34	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318142.56	2286263.97	5.00
POINTSOURCE		PARKING35	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318193.21	2286352.28	5.00
POINTSOURCE		PARKING36	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318247.76	2286435.40	5.00
POINTSOURCE		PARKING37	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318298.40	2286515.92	5.00
POINTSOURCE		PARKING38	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318343.86	2286591.24	5.00
POINTSOURCE		PARKING39	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318402.30	2286686.05	5.00
POINTSOURCE		PARKING40	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318451.65	2286765.27	5.00
POINTSOURCE		PARKING41	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318493.21	2286832.80	5.00
POINTSOURCE		PARKING42	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318382.82	2286904.23	5.00
POINTSOURCE		PARKING43	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318317.89	2286936.69	5.00
POINTSOURCE		PARKING44	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317502.31	2287386.04	5.00
POINTSOURCE		PARKING45	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317442.57	2287422.40	5.00
POINTSOURCE		PARKING46	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6317386.72	2287530.19	5.00
POINTSOURCE		PARKING47	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318917.99	2285535.55	5.00
POINTSOURCE		PARKING48	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318961.82	2285606.98	5.00
POINTSOURCE		PARKING49	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319005.65	2285686.52	5.00
POINTSOURCE		PARKING50	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319059.22	2285764.44	5.00
POINTSOURCE		PARKING51	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319109.54	2285848.86	5.00
POINTSOURCE		PARKING52	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319421.23	2286111.84	5.00
POINTSOURCE		PARKING53	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319382.27	2286022.56	5.00
POINTSOURCE		PARKING54	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319343.31	2285936.52	5.00
POINTSOURCE		PARKING55	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319301.10	2285847.23	5.00
POINTSOURCE		PARKING56	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319263.76	2285759.57	5.00
POINTSOURCE		PARKING57	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319219.93	2285667.04	5.00
POINTSOURCE		PARKING58	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319179.35	2285576.13	5.00
POINTSOURCE		PARKING59	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319583.57	2286296.91	5.00
POINTSOURCE		PARKING60	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318833.57	2286782.29	5.00
POINTSOURCE		PARKING61	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318908.25	2286738.46	5.00
POINTSOURCE		PARKING62	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6318987.79	2286686.51	5.00
POINTSOURCE		PARKING63	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319067.34	2286634.57	5.00
POINTSOURCE		PARKING64	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319150.13	2286584.24	5.00
POINTSOURCE		PARKING65	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6319236.17	2286527.42	5.00
POINTSOURCE		PARKING66	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320586.80	2284947.89	5.00
POINTSOURCE		PARKING67	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320632.26	2285046.92	5.00
POINTSOURCE		PARKING68	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320669.59	2285131.33	5.00
POINTSOURCE		PARKING69	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320708.55	2285217.37	5.00
POINTSOURCE		PARKING70	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320749.14	2285306.66	5.00
POINTSOURCE		PARKING71	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320786.48	2285394.32	5.00
POINTSOURCE		PARKING72	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320825.44	2285490.10	5.00
POINTSOURCE		PARKING73	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320861.15	2285561.52	5.00
POINTSOURCE		PARKING74	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6321012.12	2285475.48	5.00
POINTSOURCE		PARKING75	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320976.41	2285395.94	5.00
POINTSOURCE		PARKING76	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320930.96	2285311.53	5.00
POINTSOURCE		PARKING77	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320882.25	2285222.24	5.00
POINTSOURCE		PARKING78	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320836.80	2285141.07	5.00
POINTSOURCE		PARKING79	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320791.35	2285048.54	5.00
POINTSOURCE		PARKING80	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320745.89	2284970.62	5.00
POINTSOURCE		PARKING81	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320700.44	2284881.33	5.00
POINTSOURCE		PARKING82	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320659.85	2284798.54	5.00
POINTSOURCE		PARKING83	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6321109.53	2285412.17	5.00
POINTSOURCE		PARKING84	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6321065.69	2285339.12	5.00
POINTSOURCE		PARKING85	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6321020.24	2285256.33	5.00
POINTSOURCE		PARKING86	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320965.05	2285175.16	5.00
POINTSOURCE		PARKING87	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320919.59	2285098.87	5.00
POINTSOURCE		PARKING88	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320870.89	2285027.44	5.00
POINTSOURCE		PARKING89	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6320814.07	2284939.78	5.00
POINTSOURCE		PARKING90	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323029.96	2284139.46	5.00
POINTSOURCE		PARKING91	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322974.77	2284053.42	5.00
POINTSOURCE		PARKING92	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322927.69	2283973.88	5.00
POINTSOURCE		PARKING93	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322877.37	2283892.71	5.00
POINTSOURCE		PARKING94	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322822.17	2283811.54	5.00
POINTSOURCE		PARKING95	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6322773.47	2283727.12	5.00
POINTSOURCE		PARKING96	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323338.40	2283856.99	5.00
POINTSOURCE		PARKING97	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323378.98	2283780.70	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARKING98	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323559.18	2283972.25	5.00
POINTSOURCE		PARKING99	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6323617.62	2283894.33	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6315664.07	2288449.10	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6317042.69	2287741.37	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6315223.38	2287549.31	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6318067.35	2286066.39	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6318530.00	2286813.13	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6319341.68	2286313.14	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6318877.40	2285564.77	5.00
POINTSOURCE		TRASH08	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6319664.73	2286267.69	5.00
POINTSOURCE		TRASH09	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6320778.36	2285762.82	5.00
POINTSOURCE		TRASH10	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6320364.40	2284845.62	5.00
POINTSOURCE		TRASH11	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6319252.40	2285342.37	5.00
POINTSOURCE		TRASH12	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6320815.70	2284628.09	5.00
POINTSOURCE		TRASH13	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6322491.01	2283590.76	5.00
POINTSOURCE		TRASH14	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6322984.51	2284439.78	5.00
POINTSOURCE		TRASH15	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6321336.80	2285465.74	5.00
POINTSOURCE		TRASH16	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6317591.07	2287442.58	5.00
POINTSOURCE		TRASH17	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6318303.53	2287044.78	5.00
POINTSOURCE		TRASH18	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6317880.47	2286287.06	5.00
POINTSOURCE		TRASH19	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	6317173.27	2286677.50	5.00
POINTSOURCE		DT01	84.0	84.0	84.0	Lw	84					0.0	3.00	a	6323204.45	2283025.26	3.00
POINTSOURCE		DT02	84.0	84.0	84.0	Lw	84					0.0	3.00	a	6323300.00	2283161.97	3.00
POINTSOURCE		DT03	84.0	84.0	84.0	Lw	84					0.0	3.00	a	6323391.14	2283361.89	3.00
POINTSOURCE		DT04	84.0	84.0	84.0	Lw	84					0.0	3.00	a	6323436.71	2283517.72	3.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY01	93.2	93.2	93.2	67.8	67.8	67.8	Lw	93.2									8
LINESOURCE		DWY02	93.2	93.2	93.2	75.8	75.8	75.8	Lw	93.2									8
LINESOURCE		DWY03	93.2	93.2	93.2	70.6	70.6	70.6	Lw	93.2									8
LINESOURCE		DWY04	93.2	93.2	93.2	69.0	69.0	69.0	Lw	93.2									8
LINESOURCE		DWY05	93.2	93.2	93.2	78.6	78.6	78.6	Lw	93.2									8
LINESOURCE		DWY06	93.2	93.2	93.2	74.2	74.2	74.2	Lw	93.2									8
LINESOURCE		DWY07	93.2	93.2	93.2	71.5	71.5	71.5	Lw	93.2									8
LINESOURCE		DWY08	93.2	93.2	93.2	68.6	68.6	68.6	Lw	93.2									8
LINESOURCE		DWY09	93.2	93.2	93.2	75.4	75.4	75.4	Lw	93.2									8
LINESOURCE		DWY10	93.2	93.2	93.2	71.2	71.2	71.2	Lw	93.2									8
LINESOURCE		DWY11	93.2	93.2	93.2	68.1	68.1	68.1	Lw	93.2									8
LINESOURCE		DWY12	93.2	93.2	93.2	74.2	74.2	74.2	Lw	93.2									8
LINESOURCE		DWY13	93.2	93.2	93.2	72.4	72.4	72.4	Lw	93.2									8
LINESOURCE		DWY14	93.2	93.2	93.2	70.5	70.5	70.5	Lw	93.2									8
LINESOURCE		DWY15	93.2	93.2	93.2	68.5	68.5	68.5	Lw	93.2									8
LINESOURCE		DWY16	93.2	93.2	93.2	75.1	75.1	75.1	Lw	93.2									8
LINESOURCE		DWY17	93.2	93.2	93.2	74.8	74.8	74.8	Lw	93.2									8
LINESOURCE		DWY18	93.2	93.2	93.2	68.7	68.7	68.7	Lw	93.2									8
LINESOURCE		DWY19	93.2	93.2	93.2	75.0	75.0	75.0	Lw	93.2									8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6315625.28	2288405.42	8.00	0.00
					6315494.37	2288466.20	8.00	0.00
					6315441.75	2288453.04	8.00	0.00
					6315039.21	2287619.03	8.00	0.00
LINESOURCE	8.00	a			6315238.54	2287616.13	8.00	0.00
					6315074.23	2287691.58	8.00	0.00
LINESOURCE	8.00	a			6317038.73	2287698.59	8.00	0.00
					6317301.84	2287563.78	8.00	0.00
					6317409.71	2287463.80	8.00	0.00
					6317549.15	2287384.87	8.00	0.00
LINESOURCE	8.00	a			6317301.84	2287563.78	8.00	0.00
					6316911.15	2286790.27	8.00	0.00
LINESOURCE	8.00	a			6316814.00	2286904.23	8.00	0.00
					6316841.28	2286875.65	8.00	0.00
					6316829.59	2286822.41	8.00	0.00
LINESOURCE	8.00	a			6316982.83	2286756.17	8.00	0.00
					6317021.79	2286812.02	8.00	0.00
					6317055.56	2286818.51	8.00	0.00
					6317197.12	2286743.19	8.00	0.00
LINESOURCE	8.00	a			6318280.22	2286978.25	8.00	0.00
					6318462.04	2286884.74	8.00	0.00
					6318534.77	2286901.63	8.00	0.00
					6318642.56	2286858.77	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6318595.80	2286783.45	8.00	0.00
LINESOURCE	8.00	a			6318504.33	2286894.56	8.00	0.00
					6317999.71	2286087.35	8.00	0.00
LINESOURCE	8.00	a			6317926.85	2286340.48	8.00	0.00
					6318096.25	2286241.78	8.00	0.00
LINESOURCE	8.00	a			6319284.08	2286357.05	8.00	0.00
					6319348.18	2286452.75	8.00	0.00
					6319450.45	2286381.32	8.00	0.00
					6319458.57	2286308.27	8.00	0.00
					6319497.53	2286262.82	8.00	0.00
					6319627.95	2286205.66	8.00	0.00
LINESOURCE	8.00	a			6319458.57	2286308.27	8.00	0.00
					6318960.19	2285369.97	8.00	0.00
LINESOURCE	8.00	a			6319273.29	2285413.89	8.00	0.00
					6319155.00	2285460.87	8.00	0.00
					6319027.06	2285495.86	8.00	0.00
LINESOURCE	8.00	a			6318808.90	2285595.06	8.00	0.00
					6318739.42	2285473.86	8.00	0.00
					6318815.72	2285443.02	8.00	0.00
					6318939.09	2285418.67	8.00	0.00
					6318983.23	2285413.33	8.00	0.00
LINESOURCE	8.00	a			6320757.15	2285696.92	8.00	0.00
					6321005.63	2285585.87	8.00	0.00
					6321296.21	2285408.93	8.00	0.00
LINESOURCE	8.00	a			6321005.63	2285585.87	8.00	0.00
					6320542.97	2284730.36	8.00	0.00
LINESOURCE	8.00	a			6320405.74	2284906.45	8.00	0.00
					6320512.13	2284842.37	8.00	0.00
					6320478.04	2284759.58	8.00	0.00
LINESOURCE	8.00	a			6320844.92	2284688.15	8.00	0.00
					6320732.91	2284749.84	8.00	0.00
					6320676.09	2284670.30	8.00	0.00
LINESOURCE	8.00	a			6323061.45	2284274.81	8.00	0.00
					6323159.83	2284215.76	8.00	0.00
					6322728.02	2283542.06	8.00	0.00
LINESOURCE	8.00	a			6322538.51	2283640.83	8.00	0.00
					6322719.90	2283524.20	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	103.4	103.4	103.4	59.1	59.1	59.1	Lw	103.4					8
AREASOURCE		DOCK02	103.4	103.4	103.4	58.8	58.8	58.8	Lw	103.4					8
AREASOURCE		DOCK03	103.4	103.4	103.4	61.8	61.8	61.8	Lw	103.4					8
AREASOURCE		DOCK04	103.4	103.4	103.4	61.8	61.8	61.8	Lw	103.4					8
AREASOURCE		DOCK05	103.4	103.4	103.4	61.5	61.5	61.5	Lw	103.4					8
AREASOURCE		DOCK06	103.4	103.4	103.4	61.6	61.6	61.6	Lw	103.4					8
AREASOURCE		DOCK07	103.4	103.4	103.4	60.1	60.1	60.1	Lw	103.4					8
AREASOURCE		DOCK08	103.4	103.4	103.4	60.1	60.1	60.1	Lw	103.4					8
AREASOURCE		DOCK09	103.4	103.4	103.4	57.9	57.9	57.9	Lw	103.4					8
AREASOURCE		DOCK10	103.4	103.4	103.4	58.0	58.0	58.0	Lw	103.4					8
AREASOURCE		DOCK11	103.4	103.4	103.4	74.0	74.0	74.0	Lw	103.4					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6315602.03	2288356.70	8.00	0.00
					6315656.18	2288470.14	8.00	0.00
					6316504.66	2288055.77	8.00	0.00
					6317059.80	2287742.68	8.00	0.00
					6316993.00	2287602.88	8.00	0.00
					6315573.82	2288301.57	8.00	0.00
AREASOURCE	8.00	a			6315286.65	2287713.13	8.00	0.00
					6316831.47	2286942.64	8.00	0.00
					6316787.49	2286853.42	8.00	0.00
					6316529.66	2286896.83	8.00	0.00
					6316479.67	2286915.24	8.00	0.00
					6315203.65	2287542.73	8.00	0.00
					6315258.45	2287658.00	8.00	0.00
AREASOURCE	8.00	a			6317525.13	2287343.09	8.00	0.00
					6317585.42	2287456.17	8.00	0.00
					6318316.59	2287047.08	8.00	0.00
					6318258.96	2286936.56	8.00	0.00
					6318231.61	2286885.63	8.00	0.00
					6317495.89	2287290.27	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6317245.93	2286840.35	8.00	0.00
					6317976.94	2286433.82	8.00	0.00
					6317949.58	2286382.89	8.00	0.00
					6317889.32	2286270.46	8.00	0.00
					6317156.86	2286676.95	8.00	0.00
					6317216.69	2286786.59	8.00	0.00
AREASOURCE	8.00	a			6318684.05	2286731.85	8.00	0.00
					6318207.96	2285966.07	8.00	0.00
					6318052.74	2286068.01	8.00	0.00
					6318528.38	2286826.12	8.00	0.00
					6318638.71	2286760.82	8.00	0.00
AREASOURCE	8.00	a			6319196.67	2286411.94	8.00	0.00
					6319351.42	2286314.76	8.00	0.00
					6318877.40	2285555.03	8.00	0.00
					6318719.32	2285647.42	8.00	0.00
AREASOURCE	8.00	a			6319583.75	2286109.46	8.00	0.00
					6319605.25	2286158.19	8.00	0.00
					6319661.49	2286275.80	8.00	0.00
					6319820.58	2286204.37	8.00	0.00
					6320786.48	2285769.31	8.00	0.00
					6320737.34	2285648.03	8.00	0.00
					6320714.42	2285599.30	8.00	0.00
AREASOURCE	8.00	a			6320446.44	2284998.86	8.00	0.00
					6320372.52	2284831.01	8.00	0.00
					6319241.04	2285339.12	8.00	0.00
					6319314.34	2285509.02	8.00	0.00
AREASOURCE	8.00	a			6321232.87	2285322.36	8.00	0.00
					6321267.12	2285374.64	8.00	0.00
					6321331.93	2285480.36	8.00	0.00
					6322989.38	2284454.39	8.00	0.00
					6323010.48	2284404.07	8.00	0.00
					6323023.47	2284368.35	8.00	0.00
					6323047.82	2284342.38	8.00	0.00
					6323088.40	2284318.03	8.00	0.00
					6323024.54	2284215.63	8.00	0.00
AREASOURCE	8.00	a			6320895.80	2284783.42	8.00	0.00
					6322591.95	2283732.57	8.00	0.00
					6322564.91	2283683.90	8.00	0.00
					6322495.88	2283571.28	8.00	0.00
					6320802.71	2284624.84	8.00	0.00
					6320870.57	2284732.95	8.00	0.00
AREASOURCE	8.00	a			6323758.85	2282964.14	8.00	0.00
					6323750.73	2282790.45	8.00	0.00
					6323700.41	2282790.45	8.00	0.00
					6323703.66	2282969.01	8.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BLDG01	x	0		45.00	a	6315467.42	2288422.08	45.00	0.00
								6315602.03	2288356.70	45.00	0.00
								6315573.82	2288301.57	45.00	0.00
								6316993.00	2287602.88	45.00	0.00
								6317019.93	2287656.72	45.00	0.00
								6317150.69	2287591.34	45.00	0.00
								6316831.47	2286942.64	45.00	0.00
								6315286.65	2287713.13	45.00	0.00
								6315258.45	2287658.00	45.00	0.00
								6315123.84	2287724.67	45.00	0.00
BUILDING		BLDG02	x	0		45.00	a	6317399.68	2287412.89	45.00	0.00
								6317525.13	2287343.09	45.00	0.00
								6317495.89	2287290.27	45.00	0.00
								6318231.61	2286885.63	45.00	0.00
								6318258.96	2286936.56	45.00	0.00
								6318383.47	2286868.65	45.00	0.00
								6318076.92	2286312.14	45.00	0.00
								6317949.58	2286382.89	45.00	0.00
								6317976.94	2286433.82	45.00	0.00
								6317245.93	2286840.35	45.00	0.00
								6317216.69	2286786.59	45.00	0.00
								6317091.24	2286858.27	45.00	0.00
BUILDING		BLDG03	x	0		45.00	a	6318682.79	2286832.61	45.00	0.00
								6319289.87	2286462.32	45.00	0.00
								6319243.27	2286382.97	45.00	0.00
								6319196.67	2286411.94	45.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6318719.32	2285647.42	45.00	0.00
								6318765.92	2285618.45	45.00	0.00
								6318707.98	2285525.24	45.00	0.00
								6318102.16	2285899.32	45.00	0.00
								6318162.62	2285993.78	45.00	0.00
								6318207.96	2285966.07	45.00	0.00
								6318684.05	2286731.85	45.00	0.00
								6318638.71	2286760.82	45.00	0.00
BUILDING		BLDG04	x	0		45.00	a	6319503.50	2286204.04	45.00	0.00
								6319605.25	2286158.19	45.00	0.00
								6319583.75	2286109.46	45.00	0.00
								6320714.42	2285599.30	45.00	0.00
								6320737.34	2285648.03	45.00	0.00
								6320839.09	2285605.03	45.00	0.00
								6320526.69	2284901.41	45.00	0.00
								6320423.51	2284950.14	45.00	0.00
								6320446.44	2284998.86	45.00	0.00
								6319314.34	2285509.02	45.00	0.00
								6319288.54	2285457.43	45.00	0.00
								6319189.67	2285503.29	45.00	0.00
BUILDING		BLDG05	x	0		45.00	a	6321167.98	2285430.51	45.00	0.00
								6321267.12	2285374.64	45.00	0.00
								6321232.87	2285322.36	45.00	0.00
								6323024.54	2284215.63	45.00	0.00
								6322658.64	2283622.61	45.00	0.00
								6322564.91	2283683.90	45.00	0.00
								6322591.95	2283732.57	45.00	0.00
								6320895.80	2284783.42	45.00	0.00
								6320870.57	2284732.95	45.00	0.00
								6320775.04	2284796.04	45.00	0.00
BUILDING		BLDG06	x	0		20.00	a	6323489.37	2283899.20	20.00	0.00
								6323601.39	2283697.90	20.00	0.00
								6323544.57	2283671.93	20.00	0.00
								6323435.80	2283874.85	20.00	0.00
BUILDING		BLDG07	x	0		20.00	a	6323557.55	2283585.89	20.00	0.00
								6323752.36	2283582.65	20.00	0.00
								6323758.85	2282964.14	20.00	0.00
								6323703.66	2282969.01	20.00	0.00
								6323693.92	2282759.60	20.00	0.00
								6323450.41	2282759.60	20.00	0.00
								6323453.66	2282795.32	20.00	0.00
								6323354.63	2282793.69	20.00	0.00
								6323353.01	2282892.72	20.00	0.00
								6323518.59	2283017.72	20.00	0.00
								6323546.19	2283017.72	20.00	0.00
								6323554.31	2283046.94	20.00	0.00
								6323563.51	2283077.71	20.00	0.00
								6323570.41	2283109.07	20.00	0.00
								6323574.96	2283140.87	20.00	0.00
								6323577.14	2283172.91	20.00	0.00
								6323576.95	2283205.03	20.00	0.00
								6323574.37	2283237.04	20.00	0.00
								6323569.42	2283268.77	20.00	0.00
								6323562.14	2283300.05	20.00	0.00
								6323552.55	2283330.71	20.00	0.00
								6323540.72	2283360.57	20.00	0.00
								6323526.71	2283389.47	20.00	0.00
								6323538.07	2283457.65	20.00	0.00
								6323562.42	2283459.27	20.00	0.00
BUILDING		BLDG08	x	0		20.00	a	6323401.71	2283506.35	20.00	0.00
								6323452.04	2283488.49	20.00	0.00
								6323430.93	2283381.35	20.00	0.00
								6323374.11	2283391.09	20.00	0.00
BUILDING		BLDG09	x	0		20.00	a	6323361.13	2283352.13	20.00	0.00
								6323406.58	2283334.27	20.00	0.00
								6323372.49	2283228.75	20.00	0.00
								6323317.30	2283249.86	20.00	0.00
BUILDING		BLDG10	x	0		20.00	a	6323270.22	2283158.95	20.00	0.00
								6323310.80	2283128.10	20.00	0.00
								6323255.61	2283038.82	20.00	0.00
								6323208.53	2283069.66	20.00	0.00
BUILDING		BLDG11	x	0		20.00	a	6323177.69	2283033.95	20.00	0.00
								6323211.78	2282991.74	20.00	0.00
								6323120.87	2282926.81	20.00	0.00
								6323091.65	2282965.77	20.00	0.00
BUILDING		BLDG12	x	0		20.00	a	6323356.26	2283105.38	20.00	0.00
								6323393.59	2283081.03	20.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6323333.53	2282982.00	20.00	0.00
								6323296.19	2283007.98	20.00	0.00
BUILDING		BLDG13	x	0		20.00	a	6323265.35	2282933.30	20.00	0.00
								6323314.05	2282879.73	20.00	0.00
								6323296.19	2282866.74	20.00	0.00
								6323305.93	2282858.63	20.00	0.00
								6323307.56	2282757.98	20.00	0.00
								6323106.26	2282757.98	20.00	0.00
								6323112.75	2282811.55	20.00	0.00
								6323215.03	2282884.60	20.00	0.00
								6323210.15	2282895.96	20.00	0.00

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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12398 - Beaumont Pointe

CadnaA Noise Prediction Model: 12398_15_Construction.cna
Date: 23.06.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	61.2	61.2	67.8	55.0	45.0	0.0				5.00	a	6318806.11	2292331.15	5.00
RECEIVERS		R2	62.3	62.3	68.9	55.0	45.0	0.0				5.00	a	6321134.99	2290808.09	5.00
RECEIVERS		R3	64.7	64.7	71.3	55.0	45.0	0.0				5.00	a	6323538.75	2288028.01	5.00
RECEIVERS		R4	68.7	68.7	75.4	55.0	45.0	0.0				5.00	a	6324208.60	2285233.27	5.00
RECEIVERS		R5	75.5	75.5	82.2	55.0	45.0	0.0				5.00	a	6322668.83	2282431.69	5.00
RECEIVERS		xBIO-1	74.4	74.4	81.1	0.0	0.0	0.0		x	Total	5.00	a	6315486.52	2289104.40	5.00
RECEIVERS		xBIO-2	75.2	75.2	81.8	0.0	0.0	0.0		x	Total	5.00	a	6317292.24	2288261.01	5.00
RECEIVERS		xBIO-3	77.7	77.7	84.4	0.0	0.0	0.0		x	Total	5.00	a	6317222.84	2286292.08	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		SITEBOUNDARY00001	142.4	142.4	142.4	79.0	79.0	79.0	Lw''	79					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6313356.36	2288514.52	8.00	0.00
					6315362.74	2288922.66	8.00	0.00
					6315532.04	2288939.05	8.00	0.00
					6315701.95	2288933.85	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6315869.86	2288907.05	8.00	0.00
					6316032.96	2288859.15	8.00	0.00
					6316188.66	2288790.84	8.00	0.00
					6316334.47	2288703.34	8.00	0.00
					6317974.42	2287587.41	8.00	0.00
					6318662.24	2287201.80	8.00	0.00
					6319222.36	2286971.29	8.00	0.00
					6320152.38	2286395.44	8.00	0.00
					6320146.12	2286501.03	8.00	0.00
					6321258.55	2285817.95	8.00	0.00
					6322134.25	2285280.24	8.00	0.00
					6323490.59	2284442.31	8.00	0.00
					6323668.60	2284254.31	8.00	0.00
					6323628.60	2284169.31	8.00	0.00
					6323653.60	2284152.31	8.00	0.00
					6323709.79	2284091.56	8.00	0.00
					6323748.20	2284076.50	8.00	0.00
					6323809.27	2284038.31	8.00	0.00
					6323808.23	2283814.49	8.00	0.00
					6323802.42	2282522.19	8.00	0.00
					6322527.01	2282524.31	8.00	0.00
					6322514.74	2282700.79	8.00	0.00
					6321870.89	2282690.98	8.00	0.00
					6321866.55	2282759.62	8.00	0.00
					6321231.53	2282760.23	8.00	0.00
					6321240.52	2283771.35	8.00	0.00
					6318670.64	2283728.18	8.00	0.00
					6318667.29	2285128.28	8.00	0.00
					6317313.41	2285137.40	8.00	0.00
					6317300.30	2286479.74	8.00	0.00
					6314685.22	2286514.56	8.00	0.00
					6314664.32	2287810.45	8.00	0.00
					6313381.18	2287837.03	8.00	0.00

APPENDIX 10.2:

NIGHTTIME CONCRETE POUR CALCULATIONS

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12398 - Beaumont Pointe

CadnaA Noise Prediction Model: 12398_18_Concrete.cna
Date: 16.11.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	26.8	26.8	33.5	55.0	45.0	0.0				5.00	a	6318806.11	2292331.15	5.00
RECEIVERS		R2	28.5	28.5	35.2	55.0	45.0	0.0				5.00	a	6321134.99	2290808.09	5.00
RECEIVERS		R3	33.9	33.9	40.5	55.0	45.0	0.0				5.00	a	6323538.75	2288028.01	5.00
RECEIVERS		R4	40.9	40.9	47.6	55.0	45.0	0.0				5.00	a	6324208.60	2285233.27	5.00
RECEIVERS		R5	45.4	45.4	52.0	55.0	45.0	0.0				5.00	a	6322668.83	2282431.69	5.00
RECEIVERS		xBIO-1	36.3	36.3	43.0	0.0	0.0	0.0		x	Total	5.00	a	6315486.52	2289104.40	5.00
RECEIVERS		xBIO-2	39.8	39.8	46.5	0.0	0.0	0.0		x	Total	5.00	a	6317292.24	2288261.01	5.00
RECEIVERS		xBIO-3	42.9	42.9	49.5	0.0	0.0	0.0		x	Total	5.00	a	6317222.84	2286292.08	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
CONCRETE		CONS01	100.3	100.3	100.3	48.9	48.9	48.9	Lw	100.3					8
CONCRETE		CONS02	100.3	100.3	100.3	52.1	52.1	52.1	Lw	100.3					8
CONCRETE		CONS03	100.3	100.3	100.3	51.7	51.7	51.7	Lw	100.3					8
CONCRETE		CONS04	100.3	100.3	100.3	50.1	50.1	50.1	Lw	100.3					8
CONCRETE		CONS05	100.3	100.3	100.3	48.4	48.4	48.4	Lw	100.3					8
CONCRETE		CONS06	100.3	100.3	100.3	69.2	69.2	69.2	Lw	100.3					8
CONCRETE		CONS07	100.3	100.3	100.3	72.6	72.6	72.6	Lw	100.3					8
CONCRETE		CONS08	100.3	100.3	100.3	72.8	72.8	72.8	Lw	100.3					8
CONCRETE		CONS09	100.3	100.3	100.3	73.0	73.0	73.0	Lw	100.3					8

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
CONCRETE		CONS10	100.3	100.3	100.3	73.1	73.1	73.1	Lw	100.3					8
CONCRETE		CONS11	100.3	100.3	100.3	67.0	67.0	67.0	Lw	100.3					8
CONCRETE		CONS12	100.3	100.3	100.3	57.6	57.6	57.6	Lw	100.3					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CONCRETE	8.00	a			6315467.42	2288422.08	8.00	0.00
					6317150.69	2287591.34	8.00	0.00
					6316831.47	2286942.64	8.00	0.00
					6316803.17	2286870.87	8.00	0.00
					6315258.45	2287658.00	8.00	0.00
					6315123.84	2287724.67	8.00	0.00
CONCRETE	8.00	a			6317399.68	2287412.89	8.00	0.00
					6318383.47	2286868.65	8.00	0.00
					6318076.92	2286312.14	8.00	0.00
					6317091.24	2286858.27	8.00	0.00
CONCRETE	8.00	a			6318682.79	2286832.61	8.00	0.00
					6319289.87	2286462.32	8.00	0.00
					6318707.98	2285525.24	8.00	0.00
					6318102.16	2285899.32	8.00	0.00
CONCRETE	8.00	a			6319503.50	2286204.04	8.00	0.00
					6320839.09	2285605.03	8.00	0.00
					6320526.69	2284901.41	8.00	0.00
					6319189.67	2285503.29	8.00	0.00
CONCRETE	8.00	a			6321167.98	2285430.51	8.00	0.00
					6323063.72	2284270.89	8.00	0.00
					6322658.64	2283622.61	8.00	0.00
					6320775.04	2284796.04	8.00	0.00
CONCRETE	8.00	a			6323489.37	2283899.20	8.00	0.00
					6323601.39	2283697.90	8.00	0.00
					6323544.57	2283671.93	8.00	0.00
					6323435.80	2283874.85	8.00	0.00
CONCRETE	8.00	a			6323401.71	2283506.35	8.00	0.00
					6323452.04	2283488.49	8.00	0.00
					6323430.93	2283381.35	8.00	0.00
					6323374.11	2283391.09	8.00	0.00
CONCRETE	8.00	a			6323361.13	2283352.13	8.00	0.00
					6323406.58	2283334.27	8.00	0.00
					6323372.49	2283228.75	8.00	0.00
					6323317.30	2283249.86	8.00	0.00
CONCRETE	8.00	a			6323270.22	2283158.95	8.00	0.00
					6323310.80	2283128.10	8.00	0.00
					6323255.61	2283038.82	8.00	0.00
					6323208.53	2283069.66	8.00	0.00
CONCRETE	8.00	a			6323177.69	2283033.95	8.00	0.00
					6323211.78	2282991.74	8.00	0.00
					6323120.87	2282926.81	8.00	0.00
					6323091.65	2282965.77	8.00	0.00
CONCRETE	8.00	a			6323112.75	2282811.55	8.00	0.00
					6323215.03	2282884.60	8.00	0.00
					6323210.15	2282895.96	8.00	0.00
					6323265.35	2282933.30	8.00	0.00
					6323314.05	2282879.73	8.00	0.00
					6323296.19	2282866.74	8.00	0.00
					6323307.56	2282757.98	8.00	0.00
					6323106.26	2282757.98	8.00	0.00
CONCRETE	8.00	a			6323354.63	2282793.69	8.00	0.00
					6323353.01	2282892.72	8.00	0.00
					6323518.59	2283017.72	8.00	0.00
					6323546.19	2283017.72	8.00	0.00
					6323554.31	2283046.94	8.00	0.00
					6323563.51	2283077.71	8.00	0.00
					6323570.41	2283109.07	8.00	0.00
					6323574.96	2283140.87	8.00	0.00
					6323577.14	2283172.91	8.00	0.00
					6323576.95	2283205.03	8.00	0.00
					6323574.37	2283237.04	8.00	0.00
					6323569.42	2283268.77	8.00	0.00
					6323562.14	2283300.05	8.00	0.00
					6323552.55	2283330.71	8.00	0.00
					6323540.72	2283360.57	8.00	0.00
					6323526.71	2283389.47	8.00	0.00
					6323538.07	2283457.65	8.00	0.00
					6323562.42	2283459.27	8.00	0.00
					6323557.55	2283585.89	8.00	0.00
					6323752.36	2283582.65	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6323756.43	2282757.87	8.00	0.00
					6323450.41	2282759.60	8.00	0.00
					6323453.66	2282795.32	8.00	0.00

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APPENDIX 10.3:

BLASTING CALCULATIONS

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BLASTING INPUTS & CALCULATIONS

Scaled Distance

Source: ISEE's Blaster's Handbook, 2018 Edition.

Square Root Scaled Distance

$$SD_2 = R / W^{1/2}$$

R =	9384	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_2 = 1876.80 ft/lbs$^{1/2}$

Peak Particle Velocity

$$PPV = A * (SD_2)^{-B}$$

A =	160	**"Best Fit" 160 per blasting contractor guidance based on site conditions.**
SD_2 =	1876.80	*All blasts will be designed on-site by the blasting contractor to remain below 0.5 in/sec PPV*
B =	1.6	Slope of the line (note that the slope is **negative** in the equation)

PPV = 0.00 in/sec

Vibration Amplitude Equations For Various Blasting Industries

Industry	Metric Equations mm/sec.	U.S. Equations in./sec.	Confidence level	Source
General	$PPV = 1{,}140(SD_2)^{-1.6}$	$PPV = 160(SD_2)^{-1.6}$	Best Fit	DuPont
Construction	$PPV = 173(SD_2)^{-1.6}$	$PPV = 24.2(SD_2)^{-1.6}$	Lower Bound	Oriard
Construction	$PPV = 1{,}730(SD_2)^{-1.6}$	$PPV = 242(SD_2)^{-1.6}$	Upper Bound	Oriard (2005)
Construction	$PPV = 4{,}320(SD_2)^{-1.6}$	$PPV = 605(SD_2)^{-1.6}$	Upper Bound - High Confinement	Oriard (2005)
Construction	$PPV = 53(SD_2)^{-1.09}$	$PPV = 5(SD_2)^{-1.09}$	Best Fit	USBM RI 8507
Quarries	$PPV = 1{,}090(SD_2)^{-1.82}$	$PPV = 182(SD_2)^{-1.82}$	Best Fit	USBM Bulletin 656
Coal Mines	$PPV = 905(SD_2)^{-1.52}$	$PPV = 119(SD_2)^{-1.52}$	Best Fit	USBM RI 8507
Coal Mines	$PPV = 3{,}330(SD_2)^{-1.52}$	$PPV = 438(SD_2)^{-1.52}$	Upper bound	USBM RI 8507
Coal - Low Frequency sites	$PPV = 1{,}252(SD_2)^{-1.31}$	$PPV = 138(SD_2)^{-1.31}$	Best Fit	USBM RI 9226

Air Overpressure/Airblast

Cubed Root Scaled Distance

$$SD_3 = R / W^{1/3}$$

R =	9384	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_3 = 3209.28 ft/lbs$^{1/3}$

Air Overpressure Prediction

R1

$P = A * SD_3^{-B}$

A =	0.5	Partially confined.
SD_3 =	3209.28	
B =	1.1	Slope of the line (note that the slope is negative)

P = 0.0001 psi

Air Overpressure Prediction Equations				
Blasting	Metric Equations mb	U.S. Equations psi	Statistical Type	Source
Open air (no confinement)	$P = 3589 \times SD_3^{-1.38}$	$P = 187 \times SD_3^{-1.38}$	Best Fit	Perkins
Coal mines (parting)	$P = 2596 \times SD_3^{-1.62}$	$P = 169 \times SD_3^{-1.62}$	Best Fit	USBM RI 8485
Coal mines (highwall)	$P = 5.37 \times SD_3^{-0.79}$	$P = 0.162 \times SD_3^{-0.79}$	Best Fit	USBM RI 8485
Quarry face	$P = 37.1 \times SD_3^{-0.97}$	$P = 1.32 \times SD_3^{-0.97}$	Best Fit	USBM RI 8485
Metal Mine	$P = 14.3 \times SD_3^{-0.71}$	$P = 0.401 \times SD_3^{-0.71}$	Best Fit	USBM RI 8485
Construction (average)	$P = 24.8 \times SD_3^{-1.1}$	$P = 1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Construction (highly confined)	$P = 2.48 \times SD_3^{-1.1}$	$P = 0.1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Buried (total confinement)	$P = 1.73 \times SD_3^{-0.96}$	$P = 0.061 \times SD_3^{-0.96}$	Best Fit	USBM RI 8485

Decibels (Linear)

$P_s = 20 * \log(P / P_0)$

P =	0.0001 psi	
P_0 =	2.9E-09 pascals	Reference value: $2.9 * 10^{-9}$ lbs/inch^2

P_s = 87.59 dB

URBAN CROSSROADS

BLASTING INPUTS & CALCULATIONS

Scaled Distance

Source: ISEE's Blaster's Handbook, 2018 Edition.

Square Root Scaled Distance

$SD_2 = R / W^{1/2}$

R =	7310	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_2 = 1462.00 $ft/lbs^{1/2}$

Peak Particle Velocity

$PPV = A * (SD_2)^{-B}$

A =	160	**"Best Fit" 160 per blasting contractor guidance based on site conditions.**
SD_2 =	1462.00	*All blasts will be designed on-site by the blasting contractor to remain below 0.5 in/sec PPV*
B =	1.6	Slope of the line (note that the slope is **negative** in the equation)

PPV = 0.00 in/sec

Vibration Amplitude Equations For Various Blasting Industries

Industry	Metric Equations mm/sec.	U.S. Equations in./sec.	Confidence level	Source
General	$PPV = 1,140(SD_2)^{-1.6}$	$PPV = 160(SD_2)^{-1.6}$	Best Fit	DuPont
Construction	$PPV = 173(SD_2)^{-1.6}$	$PPV = 24.2(SD_2)^{-1.6}$	Lower Bound	Oriard
Construction	$PPV = 1,730(SD_2)^{-1.6}$	$PPV = 242(SD_2)^{-1.6}$	Upper Bound	Oriard (2005)
Construction	$PPV = 4,320(SD_2)^{-1.6}$	$PPV = 605(SD_2)^{-1.6}$	Upper Bound - High Confinement	Oriard (2005)
Construction	$PPV = 53(SD_2)^{-1.09}$	$PPV = 5(SD_2)^{-1.09}$	Best Fit	USBM RI 8507
Quarries	$PPV = 1,090(SD_2)^{-1.82}$	$PPV = 182(SD_2)^{-1.82}$	Best Fit	USBM Bulletin 656
Coal Mines	$PPV = 905(SD_2)^{-1.52}$	$PPV = 119(SD_2)^{-1.52}$	Best Fit	USBM RI 8507
Coal Mines	$PPV = 3,330(SD_2)^{-1.52}$	$PPV = 438(SD_2)^{-1.52}$	Upper bound	USBM RI 8507
Coal - Low Frequency sites	$PPV = 1,252(SD_2)^{-1.31}$	$PPV = 138(SD_2)^{-1.31}$	Best Fit	USBM RI 9226

Air Overpressure/Airblast

Cubed Root Scaled Distance

$SD_3 = R / W^{1/3}$

R =	7310	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_3 = 2499.98 $ft/lbs^{1/3}$

Air Overpressure Prediction

R2

$P = A * SD_3^{-B}$

A =	0.5	Partially confined.
SD_3 =	2499.98	
B =	1.1	Slope of the line (note that the slope is negative)

P = 0.0001 psi

Air Overpressure Prediction Equations				
Blasting	Metric Equations mb	U.S. Equations psi	Statistical Type	Source
Open air (no confinement)	$P = 3589 \times SD_3^{-1.38}$	$P = 187 \times SD_3^{-1.38}$	Best Fit	Perkins
Coal mines (parting)	$P = 2596 \times SD_3^{-1.62}$	$P = 169 \times SD_3^{-1.62}$	Best Fit	USBM RI 8485
Coal mines (highwall)	$P = 5.37 \times SD_3^{-0.79}$	$P = 0.162 \times SD_3^{-0.79}$	Best Fit	USBM RI 8485
Quarry face	$P = 37.1 \times SD_3^{-0.97}$	$P = 1.32 \times SD_3^{-0.97}$	Best Fit	USBM RI 8485
Metal Mine	$P = 14.3 \times SD_3^{-0.71}$	$P = 0.401 \times SD_3^{-0.71}$	Best Fit	USBM RI 8485
Construction (average)	$P = 24.8 \times SD_3^{-1.1}$	$P = 1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Construction (highly confined)	$P = 2.48 \times SD_3^{-1.1}$	$P = 0.1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Buried (total confinement)	$P = 1.73 \times SD_3^{-0.96}$	$P = 0.061 \times SD_3^{-0.96}$	Best Fit	USBM RI 8485

Decibels (Linear)

$P_s = 20 * \log(P / P_0)$

P =	0.0001	psi	
P_0 =	2.9E-09	pascals	Reference value: $2.9 * 10^{-9}$ lbs/inch^2

P_s = 89.98 dB

URBAN CROSSROADS

BLASTING INPUTS & CALCULATIONS

Scaled Distance

Source: ISEE's Blaster's Handbook, 2018 Edition.

Square Root Scaled Distance

$SD_2 = R / W^{1/2}$

R =	4422	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_2 = 884.40 $ft/lbs^{1/2}$

Peak Particle Velocity

$PPV = A * (SD_2)^{-B}$

A =	160	**"Best Fit" 160 per blasting contractor guidance based on site conditions.**
SD_2 =	884.40	*All blasts will be designed on-site by the blasting contractor to remain below 0.5 in/sec PPV*
B =	1.6	Slope of the line (note that the slope is **negative** in the equation)

PPV = 0.00 in/sec

Vibration Amplitude Equations For Various Blasting Industries

Industry	Metric Equations mm/sec.	U.S. Equations in./sec.	Confidence level	Source
General	$PPV = 1,140(SD_2)^{-1.6}$	$PPV = 160(SD_2)^{-1.6}$	Best Fit	DuPont
Construction	$PPV = 173(SD_2)^{-1.6}$	$PPV = 24.2(SD_2)^{-1.6}$	Lower Bound	Oriard
Construction	$PPV = 1,730(SD_2)^{-1.6}$	$PPV = 242(SD_2)^{-1.6}$	Upper Bound	Oriard (2005)
Construction	$PPV = 4,320(SD_2)^{-1.6}$	$PPV = 605(SD_2)^{-1.6}$	Upper Bound - High Confinement	Oriard (2005)
Construction	$PPV = 53(SD_2)^{-1.09}$	$PPV = 5(SD_2)^{-1.09}$	Best Fit	USBM RI 8507
Quarries	$PPV = 1,090(SD_2)^{-1.82}$	$PPV = 182(SD_2)^{-1.82}$	Best Fit	USBM Bulletin 656
Coal Mines	$PPV = 905(SD_2)^{-1.52}$	$PPV = 119(SD_2)^{-1.52}$	Best Fit	USBM RI 8507
Coal Mines	$PPV = 3,330(SD_2)^{-1.52}$	$PPV = 438(SD_2)^{-1.52}$	Upper bound	USBM RI 8507
Coal - Low Frequency sites	$PPV = 1,252(SD_2)^{-1.31}$	$PPV = 138(SD_2)^{-1.31}$	Best Fit	USBM RI 9226

Air Overpressure/Airblast

Cubed Root Scaled Distance

$SD_3 = R / W^{1/3}$

R =	4422	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_3 = 1512.30 $ft/lbs^{1/3}$

Air Overpressure Prediction

R3

$P = A * SD_3^{-B}$

A =	0.5	Partially confined.
SD_3 =	1512.30	
B =	1.1	Slope of the line (note that the slope is negative)

P = 0.0002 psi

Air Overpressure Prediction Equations				
Blasting	**Metric Equations mb**	**U.S. Equations psi**	**Statistical Type**	**Source**
Open air (no confinement)	$P = 3589 \times SD_3^{-1.38}$	$P = 187 \times SD_3^{-1.38}$	Best Fit	Perkins
Coal mines (parting)	$P = 2596 \times SD_3^{-1.62}$	$P = 169 \times SD_3^{-1.62}$	Best Fit	USBM RI 8485
Coal mines (highwall)	$P = 5.37 \times SD_3^{-0.79}$	$P = 0.162 \times SD_3^{-0.79}$	Best Fit	USBM RI 8485
Quarry face	$P = 37.1 \times SD_3^{-0.97}$	$P = 1.32 \times SD_3^{-0.97}$	Best Fit	USBM RI 8485
Metal Mine	$P = 14.3 \times SD_3^{-0.71}$	$P = 0.401 \times SD_3^{-0.71}$	Best Fit	USBM RI 8485
Construction (average)	$P = 24.8 \times SD_3^{-1.1}$	$P = 1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Construction (highly confined)	$P = 2.48 \times SD_3^{-1.1}$	$P = 0.1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Buried (total confinement)	$P = 1.73 \times SD_3^{-0.96}$	$P = 0.061 \times SD_3^{-0.96}$	Best Fit	USBM RI 8485

Decibels (Linear)

$P_s = 20 * \log(P / P_0)$

P =	0.0002	psi	
P_0 =	2.9E-09	pascals	Reference value: $2.9 * 10^{-9}$ lbs/inch^2

P_s = 94.78 dB

BLASTING INPUTS & CALCULATIONS

Scaled Distance

Source: ISEE's Blaster's Handbook, 2018 Edition.

Square Root Scaled Distance

$SD_2 = R / W^{1/2}$

R =	2254	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_2 = 450.80 $ft/lbs^{1/2}$

Peak Particle Velocity

$PPV = A * (SD_2)^{-B}$

A =	160	**"Best Fit" 160 per blasting contractor guidance based on site conditions.**
SD_2 =	450.80	*All blasts will be designed on-site by the blasting contractor to remain below 0.5 in/sec PPV*
B =	1.6	Slope of the line (note that the slope is **negative** in the equation)

PPV = 0.01 in/sec

Vibration Amplitude Equations For Various Blasting Industries

Industry	Metric Equations mm/sec.	U.S. Equations in./sec.	Confidence level	Source
General	$PPV = 1{,}140(SD_2)^{-1.6}$	$PPV = 160(SD_2)^{-1.6}$	Best Fit	DuPont
Construction	$PPV = 173(SD_2)^{-1.6}$	$PPV = 24.2(SD_2)^{-1.6}$	Lower Bound	Oriard
Construction	$PPV = 1{,}730(SD_2)^{-1.6}$	$PPV = 242(SD_2)^{-1.6}$	Upper Bound	Oriard (2005)
Construction	$PPV = 4{,}320(SD_2)^{-1.6}$	$PPV = 605(SD_2)^{-1.6}$	Upper Bound - High Confinement	Oriard (2005)
Construction	$PPV = 53(SD_2)^{-1.09}$	$PPV = 5(SD_2)^{-1.09}$	Best Fit	USBM RI 8507
Quarries	$PPV = 1{,}090(SD_2)^{-1.82}$	$PPV = 182(SD_2)^{-1.82}$	Best Fit	USBM Bulletin 656
Coal Mines	$PPV = 905(SD_2)^{-1.52}$	$PPV = 119(SD_2)^{-1.52}$	Best Fit	USBM RI 8507
Coal Mines	$PPV = 3{,}330(SD_2)^{-1.52}$	$PPV = 438(SD_2)^{-1.52}$	Upper bound	USBM RI 8507
Coal - Low Frequency sites	$PPV = 1{,}252(SD_2)^{-1.31}$	$PPV = 138(SD_2)^{-1.31}$	Best Fit	USBM RI 9226

Air Overpressure/Airblast

Cubed Root Scaled Distance

$SD_3 = R / W^{1/3}$

R =	2254	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_3 = 770.86 $ft/lbs^{1/3}$

Air Overpressure Prediction

$P = A * SD_3^{-B}$

A =	0.5	Partially confined.
SD_3 =	770.86	
B =	1.1	Slope of the line (note that the slope is negative)

P = 0.0003 psi

Air Overpressure Prediction Equations				
Blasting	**Metric Equations mb**	**U.S. Equations psi**	**Statistical Type**	**Source**
Open air (no confinement)	$P = 3589 \times SD_3^{-1.38}$	$P = 187 \times SD_3^{-1.38}$	Best Fit	Perkins
Coal mines (parting)	$P = 2596 \times SD_3^{-1.62}$	$P = 169 \times SD_3^{-1.62}$	Best Fit	USBM RI 8485
Coal mines (highwall)	$P = 5.37 \times SD_3^{-0.79}$	$P = 0.162 \times SD_3^{-0.79}$	Best Fit	USBM RI 8485
Quarry face	$P = 37.1 \times SD_3^{-0.97}$	$P = 1.32 \times SD_3^{-0.97}$	Best Fit	USBM RI 8485
Metal Mine	$P = 14.3 \times SD_3^{-0.71}$	$P = 0.401 \times SD_3^{-0.71}$	Best Fit	USBM RI 8485
Construction (average)	$P = 24.8 \times SD_3^{-1.1}$	$P = 1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Construction (highly confined)	$P = 2.48 \times SD_3^{-1.1}$	$P = 0.1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Buried (total confinement)	$P = 1.73 \times SD_3^{-0.96}$	$P = 0.061 \times SD_3^{-0.96}$	Best Fit	USBM RI 8485

Decibels (Linear)

$P_s = 20 * \log(P / P_0)$

P =	0.0003	psi	
P_0 =	2.9E-09	pascals	Reference value: $2.9 * 10^{-9}$ lbs/inch^2

P_s = 101.22 dB

BLASTING INPUTS & CALCULATIONS

Scaled Distance

Source: ISEE's Blaster's Handbook, 2018 Edition.

Square Root Scaled Distance

$SD_2 = R / W^{1/2}$

R =	796	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_2 = 159.20 $ft/lbs^{1/2}$

Peak Particle Velocity

$PPV = A * (SD_2)^{-B}$

A =	160	**"Best Fit" 160 per blasting contractor guidance based on site conditions.**
SD_2 =	159.20	*All blasts will be designed on-site by the blasting contractor to remain below 0.5 in/sec PPV*
B =	1.6	Slope of the line (note that the slope is **negative** in the equation)

PPV = 0.05 in/sec

Vibration Amplitude Equations For Various Blasting Industries

Industry	Metric Equations mm/sec.	U.S. Equations in./sec.	Confidence level	Source
General	$PPV = 1,140(SD_2)^{-1.6}$	$PPV = 160(SD_2)^{-1.6}$	Best Fit	DuPont
Construction	$PPV = 173(SD_2)^{-1.6}$	$PPV = 24.2(SD_2)^{-1.6}$	Lower Bound	Oriard
Construction	$PPV = 1,730(SD_2)^{-1.6}$	$PPV = 242(SD_2)^{-1.6}$	Upper Bound	Oriard (2005)
Construction	$PPV = 4,320(SD_2)^{-1.6}$	$PPV = 605(SD_2)^{-1.6}$	Upper Bound - High Confinement	Oriard (2005)
Construction	$PPV = 53(SD_2)^{-1.09}$	$PPV = 5(SD_2)^{-1.09}$	Best Fit	USBM RI 8507
Quarries	$PPV = 1,090(SD_2)^{-1.82}$	$PPV = 182(SD_2)^{-1.82}$	Best Fit	USBM Bulletin 656
Coal Mines	$PPV = 905(SD_2)^{-1.52}$	$PPV = 119(SD_2)^{-1.52}$	Best Fit	USBM RI 8507
Coal Mines	$PPV = 3,330(SD_2)^{-1.52}$	$PPV = 438(SD_2)^{-1.52}$	Upper bound	USBM RI 8507
Coal - Low Frequency sites	$PPV = 1,252(SD_2)^{-1.31}$	$PPV = 138(SD_2)^{-1.31}$	Best Fit	USBM RI 9226

Air Overpressure/Airblast

Cubed Root Scaled Distance

$SD_3 = R / W^{1/3}$

R =	796	feet	Distance from blast to a point of intereste (meters or feet)
W =	25	lbs	Maximum charge-weigh detonated within any 8-millisecond period (kilograms or pounds)

SD_3 = 272.23 $ft/lbs^{1/3}$

Air Overpressure Prediction

R5

$P = A * SD_3^{-B}$

A =	0.5	Partially confined.
SD_3 =	272.23	
B =	1.1	Slope of the line (note that the slope is negative)

P = 0.0010 psi

Air Overpressure Prediction Equations				
Blasting	Metric Equations mb	U.S. Equations psi	Statistical Type	Source
Open air (no confinement)	$P = 3589 \times SD_3^{-1.38}$	$P = 187 \times SD_3^{-1.38}$	Best Fit	Perkins
Coal mines (parting)	$P = 2596 \times SD_3^{-1.62}$	$P = 169 \times SD_3^{-1.62}$	Best Fit	USBM RI 8485
Coal mines (highwall)	$P = 5.37 \times SD_3^{-0.79}$	$P = 0.162 \times SD_3^{-0.79}$	Best Fit	USBM RI 8485
Quarry face	$P = 37.1 \times SD_3^{-0.97}$	$P = 1.32 \times SD_3^{-0.97}$	Best Fit	USBM RI 8485
Metal Mine	$P = 14.3 \times SD_3^{-0.71}$	$P = 0.401 \times SD_3^{-0.71}$	Best Fit	USBM RI 8485
Construction (average)	$P = 24.8 \times SD_3^{-1.1}$	$P = 1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Construction (highly confined)	$P = 2.48 \times SD_3^{-1.1}$	$P = 0.1 \times SD_3^{-1.1}$	Best Fit	Oriard (2005)
Buried (total confinement)	$P = 1.73 \times SD_3^{-0.96}$	$P = 0.061 \times SD_3^{-0.96}$	Best Fit	USBM RI 8485

Decibels (Linear)

$P_s = 20 * \log(P / P_0)$

P =	0.0010	psi	
P_0 =	2.9E-09	pascals	Reference value: $2.9 * 10^{-9}$ lbs/inch^2

P_s = 111.16 dB