Moreno Valley Commercial

NOISE IMPACT ANALYSIS

CITY OF MORENO VALLEY

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TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Moreno Valley Commercial
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures, if any, for the proposed Moreno Valley Commercial development ("Project") located at the northwest corner of Alessandro Boulevard and Lasselle Street in the City of Moreno Valley. The Project is proposed on an approximately 5.63-acre (245,912 square feet) site. This study has been prepared to satisfy applicable City of Moreno Valley standards and thresholds of significance based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Moreno Valley Commercial Noise Impact 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. (2). 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 described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

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

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Moreno Valley Commercial ("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 noise and vibration 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 and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Moreno Valley Commercial Project is located at the northwest corner of Alessandro Boulevard and Lasselle Street in the City of Moreno Valley, as shown on Exhibit 1-A. The Project site is currently vacant. The zoning designation of the Project site is Neighborhood Commercial (NC). (3) The Project site is surrounded entirely by residential uses. The March Air Reserve Base is located roughly 3 miles southwest of the Project site.

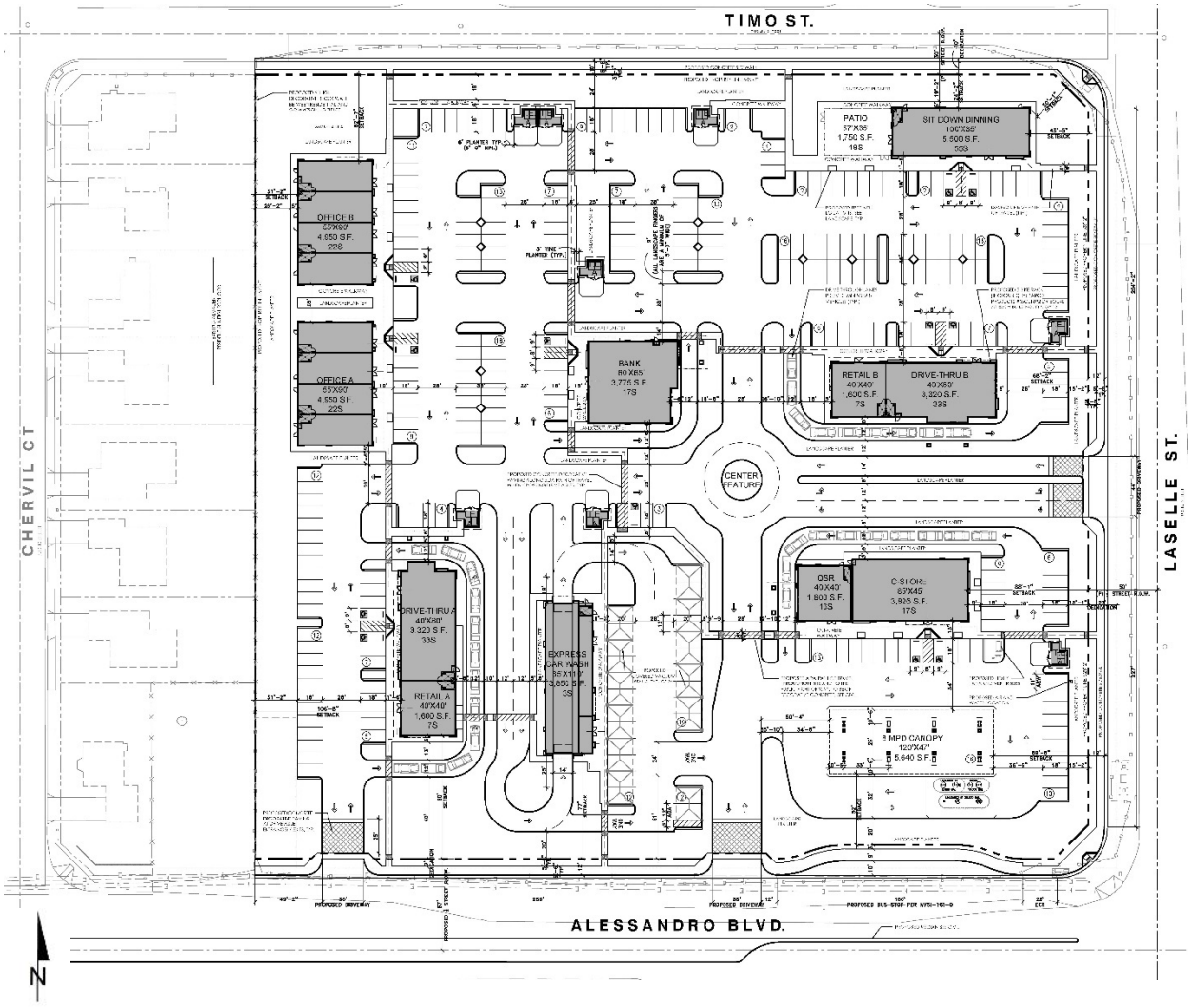
1.2 PROJECT DESCRIPTION

The Project is proposed to consist of a new gas station with a convenience store (3,825 sf) and 16 fueling positions, a quick service restaurant (1,600 sf), two drive-thru restaurants (3,320 sf each), a sit-down dining restaurant (5,500 sf with a patio of 1,750 sf), retail uses (3,200 sf), office uses (9,900 sf), an express carwash with one tunnel (3,850 sf), and a bank (3,775 sf). The Project is proposed on an approximately 5.63-acre (245,912 sf) site. Exhibit 1-B illustrates the site plan for the Project. The Project is anticipated to be constructed and occupied by 2022.

The on-site Project-related noise sources are expected to include: roof-top air conditioning units, outdoor activity, car wash tunnel, car wash vacuum, drive-thru speakerphone activity, and trash enclosure activity. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site. To present a conservative approach, this report assumes the Project will operate 24-hours daily for seven days per week. Per the *New Commercial and Office Plaza At NWC of Alessandro Blvd and Lasselle St, Moreno Valley Focused Traffic Impact Study Update* (FTIS) prepared by K2 Traffic Engineering, Inc. the Project is expected to generate a total of approximately 4,220 two-way vehicular trips per day (2,110 inbound and 2,110 outbound). (4) At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: 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	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
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. (5) 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. (6) 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 and is commonly used to describe the "average" noise levels within the environment.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{50}, L_{25}, L_8 and L_2, are commonly used. The percentile noise descriptors are the noise levels equaled or exceeded during 50 percent, 25 percent, 8 percent and 2 percent of a stated time. Sound levels associated with the L_2 and L_8 typically describe transient or short-term events, while levels associated with the L_{50} describe the steady state (or median) noise conditions. The relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{50} describes the noise levels occurring 50 percent of the time, the L_{eq} accounts for the total energy (average) observed for the entire hour.

Peak hour or average 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 Moreno Valley 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. 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. (5)

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. (7)

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. (5)

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.

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 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. (7)

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. (8)

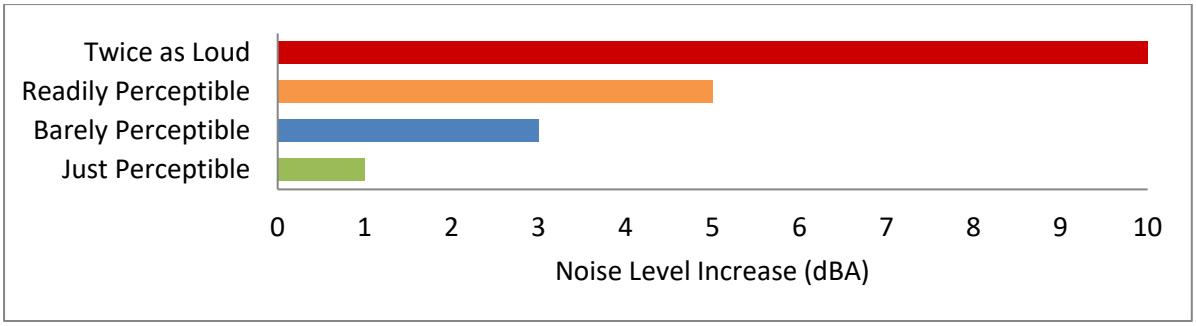
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, 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. (9) 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. (9) 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 are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (7)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



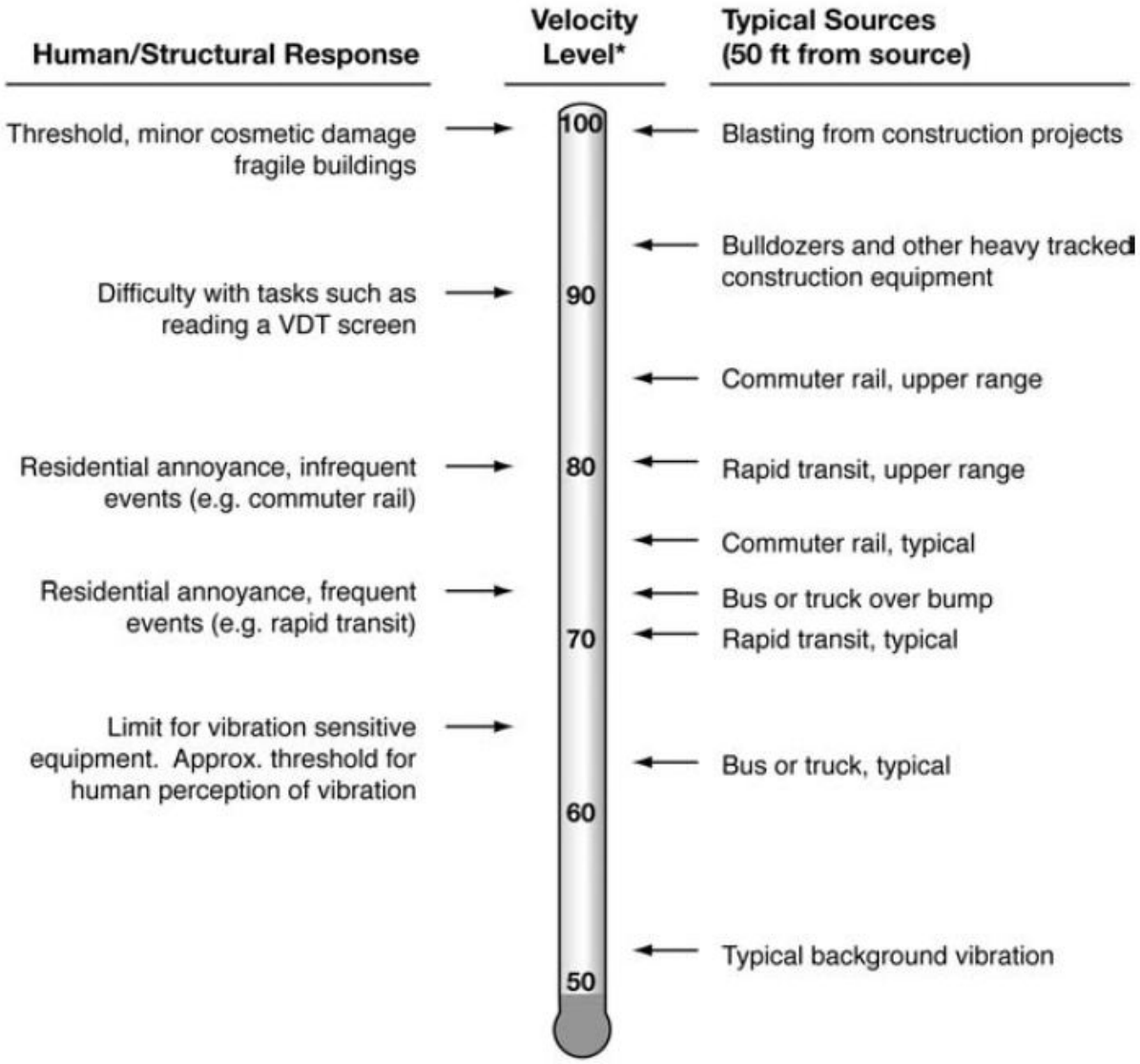
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (10), 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



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

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

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 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.3 CITY OF MORENO VALLEY GENERAL PLAN NOISE ELEMENT

The City of Moreno Valley Noise Element typically provides the standards for land use compatibility for community noise exposure. However, the City of Moreno Valley General Plan does not include a noise element or specific transportation-related noise standards. Rather, noise is considered in the Environmental Safety section of the General Plan Safety Element. (12) While the General Plan provides background and noise fundamentals, it does not identify criteria to assess the impacts associated with off-site transportation-related noise impacts. Therefore,

for this analysis, the transportation noise criteria are derived from standards contained in the California Office of Planning and Research (OPR) *General Plan Guidelines*. (11)

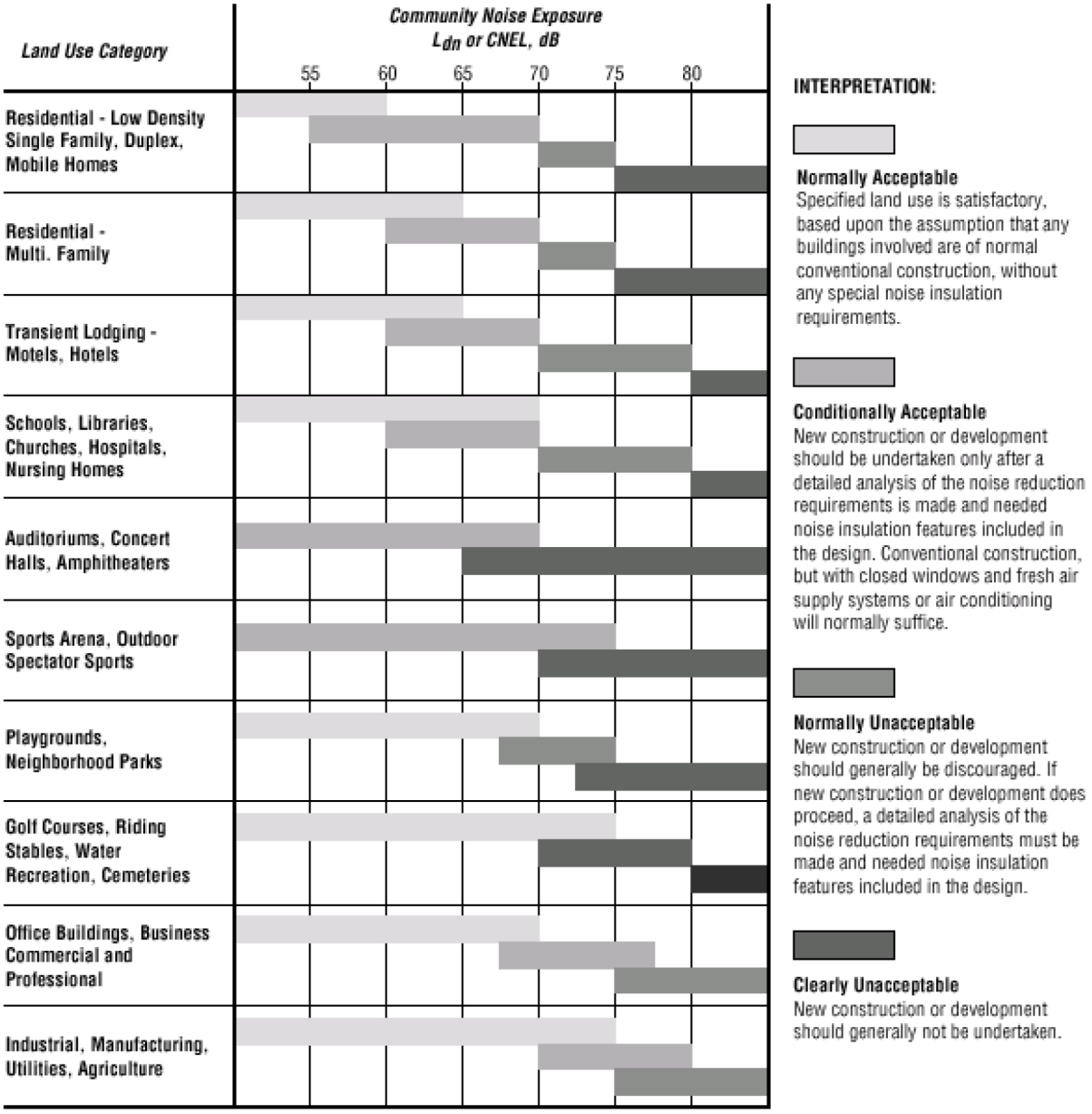
The OPR land use/noise compatibility standards are used by many California cities and counties and specify the maximum noise levels allowable for new developments impacted by transportation noise sources. The OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix D: Noise Element Guidelines,* identify the criteria for commercial land uses such as the Project, as shown on Exhibit 3-A. When the unmitigated exterior noise levels approach 67.5 dBA CNEL commercial land use is considered *normally acceptable*. With exterior noise levels ranging from 67.5 to 77.5 dBA CNEL, commercial land uses are considered *conditionally acceptable*, and with exterior noise levels greater than 77.5 dBA CNEL, they are considered *normally unacceptable*. For *normally unacceptable* land use, *new construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.* (11)

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Moreno Valley Commercial Project, stationary-source (operational) noise such as the expected roof-top air conditioning units, outdoor activity, car wash tunnel, car wash vacuum, drive-thru speakerphone activity, and trash enclosure activity are typically evaluated against standards established under a City's Municipal Code. The City of Moreno Valley Municipal Code, Chapter 11.80 *Noise Regulation*, provides performance standards and noise control guidelines for determining and mitigating non-transportation or stationary-source noise impacts from operations at private properties.

The City of Moreno Valley Municipal Code defines *Maximum Sound Levels (in dB(A)) for Source Land Uses* in Table 11.80.030-2 for *Residential* and *Commercial* land uses. As defined by the Municipal Code, Section 11.80.020 *Definitions*, *Commercial means all uses of land not otherwise classified as residential,* and *Residential means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.* (13) For the purpose of this analysis, the Moreno Valley Commercial Project is considered *Commercial* land use. Based on this standard, the operational noise level limits for commercial land use, from Table 11.80.030-2, of 65 dBA L_{eq} during the daytime (8:00 a.m. to 10:00 p.m.) hours and 60 dBA L_{eq} during the nighttime (10:01 p.m. to 7:59 a.m.) hours shall apply to the operational noise source activities from the Project.

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY CRITERIA



Source: OPR General Plan Guidelines, Appendix D: Noise Element Guidelines, Figure 2.

Further, Section 11.80.030 (C) *Prohibited Acts*, *Nonimpulsive Sound Decibel Limits*, states: *No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimpulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on a privately owned property.* (13) Therefore, at a distance of 200 feet from the property line, the Project's operational noise levels shall not exceed the 65 dBA

L_{eq} daytime and 60 dBA L_{eq} nighttime noise level standards for commercial land uses, as shown on Table 3-1.

The City of Moreno Valley Municipal Code also identifies continuous sound level limits in Table 11.80.030-1 based on the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health (NIOSH) noise exposure guidelines. A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The City of Moreno Valley noise level threshold starts at 90 dBA for more than eight hours per day, and for every increase, the exposure time is reduced. The City of Moreno Valley identifies noise level thresholds of 92 dBA for more than 6 hours per day, 95 dBA for more than 4 hour per day, 97 dBA for more than 3 hours per day, and up to 100 dBA for more than 2 hours per day. However, this noise study uses the more restrictive City of Moreno Valley commercial noise level limits identified on Table 11.80.030-2 for source land uses in the Municipal Code, shown on Table 3-1 of this report, to evaluate the potential operational noise levels due to the operation of the Project.

TABLE 3-1: OPERATIONAL NOISE STANDARDS AT 200 FEET FROM THE SOURCE

City	Source Land use	Noise Level Standards (dBA Leq)[1]	
		Daytime	Nighttime
Moreno Valley	Commercial	65	60

[1] City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation, Table 11.80.030-2 Maximum Sound Levels (in dB(A)) for Source Land Uses when measured at a distance of 200 feet from the property line of the source land use (Appendix 3.1). Leq represents a steady state sound level containing the same total energy as a time varying signal over a given period. "Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Moreno Valley Commercial site, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby receiver locations. The construction-related noise standards are shown on Table 3-2.

The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby sensitive receiver locations. As a subset of its stationary-source noise regulations, the City Municipal Code establishes permitted hours of construction activity. More specifically, Municipal Code Section 11.80.030 (D)(7), *Construction and Demolition*, provides the following:

> *No person shall operate, or cause operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.*

Therefore, based on the Section 11.80.030 (D)(7) construction regulations, a construction-related *noise disturbance* occurs if Project construction activity occurs outside of the permitted hours. However, for this analysis, the stationary-source noise level limits of 65 dBA L_{eq} during the daytime hours and 60 dBA L_{eq} during the nighttime hours are used as appropriate thresholds for the nearby sensitive land uses (e.g., residential homes) in the Project study area based on the City of Moreno Valley stationary noise standards shown on Table 3-1. In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 4:00 p.m. on weekends and holidays or as approved by the City Engineer. The City of Moreno Valley construction noise standards are shown on Table 3-2 and included in Appendix 3.1. As previously discussed in Section 3.4, the construction noise level threshold used in this noise study represents a conservative approach, since it is more restrictive than the continuous sound level limits of Table 11.80.030-1 of the City of Moreno Valley Municipal Code.

TABLE 3-2: CONSTRUCTION NOISE STANDARDS FROM THE SOURCE LAND USE

City	Permitted Hours of Construction Activity	Construction Noise Level Standard (dBA L_{eq})[2]	
		Daytime	Nighttime
Moreno Valley[1]	General Activity: 7:00 a.m. to 8:00 p.m. on any day. Grading is limited to 7:00 a.m. to 7:00 p.m. Monday to Friday; 8:00 a.m. to 4:00 p.m. on weekends and holidays.	65	60[3]

[1] City of Moreno Valley Municipal Code, Section 11.80.030 (D)(7) as shown in Appendix 3.1.
[2] Acceptable threshold for determining the relative significance of short-term Project construction noise levels, based on the City of Moreno Valley stationary noise standards shown on Table 3-1.
[3] Any nighttime construction activity requires an exemption from the City of Moreno Valley Municipal Code as indicated in Section 11.80.030 (E)(8) for a special event permit (Section 11.80.040). The special event permit application shall be submitted to the City of Moreno Valley Planning Department for approval and meet the requirements of Municipal Code Section 11.80.040.
"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

3.6 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. 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. (10)

To analyze vibration impacts originating from the operation and construction of the Moreno Valley Commercial, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Moreno Valley does not identify specific vibration level limits and instead this analysis relies on the Caltrans *Transportation and Construction Vibration Guidance Manual*, (14 p. 38) Table 19 and 20, vibration damage and annoyance criteria are used in this noise study to assess potential temporary construction-related impacts at adjacent receiver locations.

3.6.1 BUILDING DAMAGE:

While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration. The construction vibration damage potential criteria include consideration of the building conditions. (6 p. 182) Table 3-3 describes the maximum acceptable transient and continuous vibration building damage potential levels by structure type and condition.

TABLE 3-3: BUILDING DAMAGE VIBRATION CRITERIA

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

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.

Most of the buildings near the Project site can be described as new residential structures with a maximum acceptable transient building damage vibration threshold of 1.0 PPV (in/sec).

3.6.2 HUMAN ANNOYANCE

For sensitive residential receiver locations, potential annoyance due to construction-related vibration levels is evaluated based on the Caltrans annoyance potential criteria. Table 3-2 describes the maximum acceptable criteria used to describe the transient and continuous sources of vibration. To describe the human annoyance due to construction vibration levels, this analysis relies on the *distinctly perceptible* maximum transient vibration threshold of 0.25 PPV (in/sec).

TABLE 3-4: HUMAN ANNOYANCE VIBRATION CRITERIA

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

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 20, p. 38.

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. (11) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

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?

While the City of Moreno Valley General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located approximately 3 miles southwest of the Project site. The *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan* (MARB/IPA LUCP) includes the policies for determining the land use compatibility of the Project. (15). Therefore, the MARB/IPA impacts are considered *less than significant,* and no further noise analysis is provided under Guideline C.

4.2 NOISE-SENSITIVE RECEIVERS

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.* (16)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (17) developed guidance to be used for the assessment

of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (16) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (7 p. 9) and Caltrans (18 p. 2_48).

4.3 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	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site	Noise-Sensitive[1]	if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	if ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive	At 200' from the property line of the source[3]	65 dBA L_{eq}	60 dBA L_{eq}
		if ambient is < 60 dBA L_{eq}[1]	≥ 5 dBA L_{eq} Project increase	
		if ambient is 60 - 65 dBA L_{eq}[1]	≥ 3 dBA L_{eq} Project increase	
		if ambient is > 65 dBA L_{eq}[1]	≥ 1.5 dBA L_{eq} Project increase	
	Non-Noise-Sensitive[2]	If ambient is < 70 dBA L_{eq}	≥ 5 dBA L_{eq} Project increase	
		If ambient is > 70 dBA L_{eq}	≥ 3 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	At 200' from the property line of the source[3]	65 dBA L_{eq}	60 dBA L_{eq}
		Building Damage Vibration Threshold[4]	1.0 PPV (in/sec)	
		Human Annoyance Vibration Threshold[4]	0.25 PPV (in/sec)	

[1] FICON, 1992.
[2] Based on the OPR land use/noise compatibility standards.
[3] City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation (Appendix 3.1).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19 & 20, p. 38.
"Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four 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, September 16th, 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. (19)

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*. (5) 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*. (10)

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. (10) 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 average or equivalent 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. Appendix 5.2 provides a summary of the existing hourly ambient noise levels.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. The 24-hour existing noise level measurement results are shown on Table 5-1.

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 Timo Street near existing single-family residential homes at 13861 Paprika Court.	52.4	50.1	57.7
L2	Located east of the Project site on Darwin Drive near existing single-family residential home at 26282 Sequoia Street.	57.1	52.2	60.5
L3	Located southwest of the Project site near the Moreno Hills Seventh-day Adventist Church at 25873 Alessandro Boulevard.	58.0	55.7	63.0
L4	Located west of the Project site on Chervil Court near existing single-family residential home at 13898 Chervil Court.	52.3	48.1	56.2

[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 hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with OPR land use/noise compatibility standards, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

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. (20) 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. (21) 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. (22)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 7 off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Moreno Valley General Plan Circulation Element, and the posted vehicle speeds. Consistent with the FTIS prepared by K2 Traffic Engineering, Inc. (4) the off-site traffic noise analysis includes the following traffic scenarios.

- Existing (2018)
- Existing Plus Project (E+P)
- Pre-Project Conditions: Year 2025 plus Cumulative Projects. (Year 2025)
- Pre-Project Conditions: Year 2025 plus Cumulative Projects plus Project. (Year 2025+P)

The average daily traffic (ADT) volumes used for this study are presented on Table 6-2. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Classification[2]	Centerline Distance to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	Arterial	50'	40
2	Lasselle St.	s/o Bay Av.	Sensitive	Arterial	50'	40
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	Divided Arterial	55'	40
4	Nason St.	n/o Alessandro Blvd.	Sensitive	Arterial	50'	40
5	Lasselle St.	n/o Cactus Av.	Sensitive	Arterial	50'	40
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	Divided Major Arterial	67'	45
7	Alessandro Blvd.	w/o Nason St.	Sensitive	Divided Major Arterial	67'	50

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] Moreno Valley General Plan Circulation Plan Figure 9-1.
[3] Based upon the right-of-way distances for each roadway classification provided in the General Plan Circulation Element.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]			
			Existing		Year 2025 plus Cumulative Projects	
			Without Project	With Project	Without Project	With Project
1	Lasselle St.	s/o Cottonwood Av.	5,500	5,820	6,320	6,640
2	Lasselle St.	s/o Bay Av.	6,550	7,360	7,530	8,340
3	Perris Blvd.	n/o Alessandro Blvd.	20,330	20,570	23,350	23,590
4	Nason St.	n/o Alessandro Blvd.	14,060	14,300	16,150	16,390
5	Lasselle St.	n/o Cactus Av.	14,060	14,260	16,160	16,360
6	Alessandro Blvd.	e/o Perris Blvd.	18,650	18,970	21,430	21,750
7	Alessandro Blvd.	w/o Nason St.	7,560	7,880	8,690	9,010

[1] New Commercial and Office Plaza Focused Traffic Impact Study Update, K2 Traffic Engineering, Inc.

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] Typical Southern California vehicle mix.
"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.

7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the FTIS prepared by K2 Traffic Engineering. (4) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions, without and with the development of the full Project. The existing with Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2025 conditions.
- Year 2025 Conditions Without / With Project: This scenario refers to the Pre-Project Conditions: Year 2025 plus Cumulative Projects (Year 2025) noise conditions traffic conditions without and with the development of the full Project.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 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 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. Tables 7-1 to 7-4 present a summary of the exterior traffic noise levels for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets for each traffic condition.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	63.4	RW	RW	85
2	Lasselle St.	s/o Bay Av.	Sensitive	64.2	RW	RW	95
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	69.5	RW	110	237
4	Nason St.	n/o Alessandro Blvd.	Sensitive	67.5	RW	73	158
5	Lasselle St.	n/o Cactus Av.	Sensitive	67.5	RW	73	158
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	68.8	RW	120	258
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.0	RW	78	168

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	63.7	RW	RW	88
2	Lasselle St.	s/o Bay Av.	Sensitive	64.7	RW	RW	103
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	69.6	RW	111	239
4	Nason St.	n/o Alessandro Blvd.	Sensitive	67.6	RW	74	160
5	Lasselle St.	n/o Cactus Av.	Sensitive	67.6	RW	74	160
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	68.8	RW	121	261
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.2	RW	80	173

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: YEAR 2025 WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	64.0	RW	RW	93
2	Lasselle St.	s/o Bay Av.	Sensitive	64.8	RW	RW	104
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	70.1	56	121	260
4	Nason St.	n/o Alessandro Blvd.	Sensitive	68.1	RW	80	173
5	Lasselle St.	n/o Cactus Av.	Sensitive	68.1	RW	81	173
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	69.4	RW	131	283
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.6	RW	86	185

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: YEAR 2025 WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	64.2	RW	RW	96
2	Lasselle St.	s/o Bay Av.	Sensitive	65.2	RW	52	112
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	70.2	56	121	262
4	Nason St.	n/o Alessandro Blvd.	Sensitive	68.2	RW	81	175
5	Lasselle St.	n/o Cactus Av.	Sensitive	68.2	RW	81	175
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	69.4	RW	133	286
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.8	RW	88	189

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT 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 for informational purposes and to fully analyze all the existing traffic scenarios identified in the FTIS prepared by K2 Traffic Engineering, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2025 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 63.4 to 69.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 63.7 to 69.6 dBA CNEL. Table 7-5 shows that the Project off-site traffic noise level increases range from 0.0 to 0.5 dBA CNEL on the study area roadway segments.

7.3 YEAR 2025 TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Pre-Project Conditions: Year 2025 plus Cumulative Projects without Project conditions CNEL noise levels. The Year 2025 without Project exterior noise levels range from 64.0 to 70.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows Year 2025 with Project conditions range from 64.2 to 70.2 dBA CNEL. Table 7-6 shows that the Project off-site traffic noise level increases range from 0.0 to 0.4 dBA CNEL.

TABLE 7-5: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	63.4	63.7	0.3	3.0	No
2	Lasselle St.	s/o Bay Av.	Sensitive	64.2	64.7	0.5	3.0	No
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	69.5	69.6	0.1	1.5	No
4	Nason St.	n/o Alessandro Blvd.	Sensitive	67.5	67.6	0.1	1.5	No
5	Lasselle St.	n/o Cactus Av.	Sensitive	67.5	67.6	0.1	1.5	No
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	68.8	68.8	0.0	1.5	No
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.0	66.2	0.2	1.5	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-6: YEAR 2025 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Lasselle St.	s/o Cottonwood Av.	Sensitive	64.0	64.2	0.2	3.0	No
2	Lasselle St.	s/o Bay Av.	Sensitive	64.8	65.2	0.4	3.0	No
3	Perris Blvd.	n/o Alessandro Blvd.	Sensitive	70.1	70.2	0.1	1.5	No
4	Nason St.	n/o Alessandro Blvd.	Sensitive	68.1	68.2	0.1	1.5	No
5	Lasselle St.	n/o Cactus Av.	Sensitive	68.1	68.2	0.1	1.5	No
6	Alessandro Blvd.	e/o Perris Blvd.	Sensitive	69.4	69.4	0.0	1.5	No
7	Alessandro Blvd.	w/o Nason St.	Sensitive	66.6	66.8	0.2	1.5	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

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8 RECEIVER LOCATIONS

To assess the potential for long-term 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.

To describe the potential off-site Project noise levels, four receiver locations in the vicinity of the Project site were identified. 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. 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.

R1: Location R1 represents the existing noise sensitive residence at 13862 Cumin Street, approximately 72 feet north of the Project site. R1 is placed at the private outdoor living area (backyard) 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 26282 Sequoia Street, approximately 1,428 feet east of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R2 is placed at the residential building façade. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the Moreno Hills Seventh-day Adventist Church at 25873 Alessandro Boulevard, approximately 207 feet southwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the residential 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 13940 Chervil Court, approximately 28 feet west of the Project site. R1 is placed at the private outdoor living area (backyard) facing the Project site. A 24-hour noise measurement near this location, L4, is used to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS

9 OPERATIONAL NOISE ANALYSIS

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations, identified in Section 8, resulting from the operation of the proposed Moreno Valley Commercial Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical daytime and nighttime commercial activities at the Project site. The on-site Project-related noise sources are expected to include: roof-top air conditioning units, outdoor activity, car wash tunnel, car wash vacuum, drive-thru speakerphone activity, and trash enclosure activity.

9.2 REFERENCE NOISE LEVELS

To estimate the Project 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 detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, outdoor activity, car wash tunnel, car wash vacuum, drive-thru speakerphone activity, and trash enclosure activity all operating at the same time. 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 precisions 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. (19)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

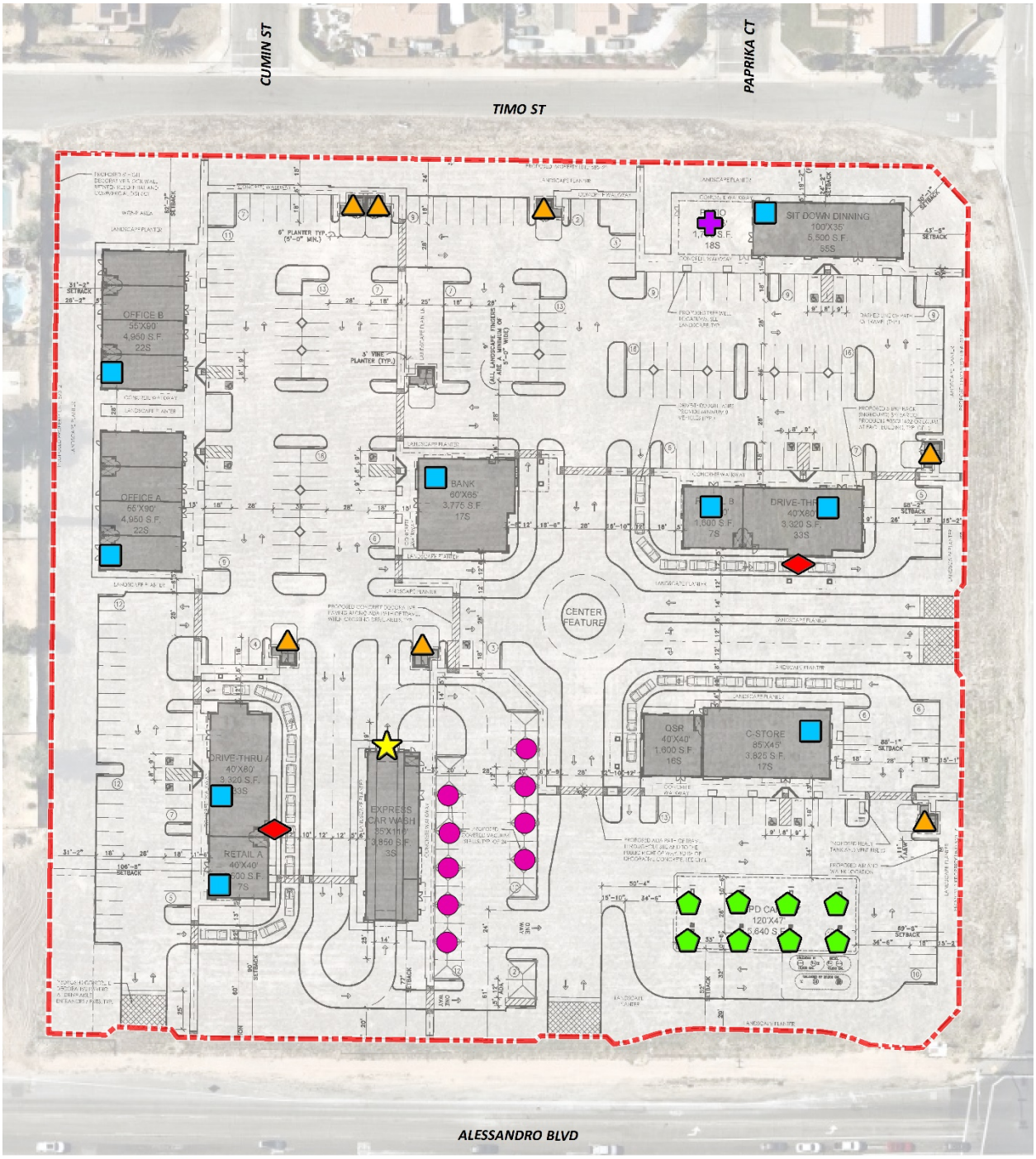


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level @50 feet (dBA L_{eq})	Sound Power Level (dBA)[3]
		Day	Night		
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Outdoor Activity	5'	60	0	59.8	91.5
Car Wash Tunnel	8'	60	0	74.3	106.0
Car Wash Vacuum	3'	60	0	54.6	86.3
Gas Station Activity	5'	60	60	48.2	79.9
Drive-Thru Activity	3'	30	30	51.5	83.2
Trash Enclosure Activity	5'	5	5	52.7	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. "Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 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.

9.2.2 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units, reference noise level measurements were collected from 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 an average of 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. For this noise analysis, the air conditioning units are expected to be located on the roof of the proposed building. This reference noise level describes the expected roof-top air conditioning units located 5 feet above the roof for the planned air conditioning units at the Project site.

9.2.3 OUTDOOR ACTIVITY

To describe the outdoor common area courtyards activity areas, a reference noise level measurement was taken at the Louie's by the Bay in Newport Beach. At 50 feet, the reference noise level is 59.8 dBA L_{eq} at a noise source height of 5 feet. The reference noise level measurement includes outdoor eating, drinking, with laughing and talking. Outdoor common area and roof deck activities area are limited to the daytime hours only.

9.2.4 CAR WASH TUNNEL

A reference noise level measurement was taken by Urban Crossroads at the Audi Mission Viejo dealership to describe the air blowers used in a car wash tunnel. A reference noise level of 74.3 dBA L_{eq} was measured at the uniform distance of 50 feet. The reference noise level measurement includes an exposed five-unit air blower system with background pressure washer noise and is used to represent the proposed Project facilities. It is anticipated that the air dryers within the proposed car wash will operate continuously during the peak operating conditions. Further, this

noise analysis does not include any additional attenuation or directional influence provided by locating the car wash air blower and dryer equipment inside the tunnel itself, but rather, models the tunnel exit activities as occurring at the building façade. As such, the analysis may conservatively overstate actual noise levels produced by the car wash tunnel air blower and dryer equipment.

9.2.5 CAR WASH VACUUM

To represent the self-serve vacuums within the Project site, a reference noise level measurement was collected at an express car wash located at 1195 Baker Street in the City of Costa Mesa. The reference noise level measurement represents up to four vacuums operating simultaneously at the Costa Mesa express car wash. At a uniform reference distance of 50 feet, the vacuum reference noise level is 54.6 dBA L_{eq}. This reference car wash vacuum activity noise level is anticipated to conservatively overstate those of the Project, since this reference noise level includes more vacuums operating simultaneously (4 vacuums) than what will be possible at the Project site (2 vacuums).

9.2.6 GAS STATION ACTIVITY

To describe the potential noise level impacts created by the gas station of the Project, a reference noise level measurement was collected at an ARCO gas station located at 6501 Quail Hill Parkway in the City of Irvine. The reference noise level measurement includes six cars fueling at once, car doors closing, engines starting, fuel pump TV sounds and background car pass-by events within a 3-minute period. At 50 feet from the gas station, a reference noise level of 48.2 dBA L_{eq} was measured.

9.2.7 DRIVE-THRU SPEAKERPHONE ACTIVITY

To describe the potential noise level impacts associated with potential drive-thru speakerphones and vehicle activities, a reference noise level measurement was collected at a Panera Bread restaurant located at 423 South Associated Road in the City of Brea. The reference noise levels collected at the Panera Bread restaurant are expected to reflect potential drive-thru speakerphone noise level activities at the Project site, since the reference measurement includes both drive-thru speakerphone and vehicle activity noise. The noise sources included in the reference noise level measurement consist of voices of the Panera Bread employees over the speakerphone, customers' voices ordering food, car engines idling, car radios playing music, and cars queuing in the drive-thru lane. At 50 feet from the speakerphone, a reference noise level of 51.5 dBA L_{eq} was measured. This reference noise level measurement overstates the actual average noise levels since it represents the average of 28 speakerphone menu board ordering events observed over a two-hour period. In other words, the Panera Bread speakerphone menu board reference noise level describes continuous drive-thru operations and does not include any periods of inactivity.

9.2.8 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 56.8 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 5 minutes per hour.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior 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 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 protocol, the CadnaA noise prediction model relies on the reference sound power level (PWL) 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 (PWL) 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 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. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include roof-top air conditioning units, outdoor activity, car wash tunnel, car wash vacuum, drive-thru speakerphone activity, and trash enclosure activity, Urban Crossroads, Inc. calculated the operational source 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. Tables 9-2 shows the Project operational noise levels during the daytime hours of 8:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 28.4 to 55.4 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	at 200'
Roof-Top Air Conditioning Units	43.8	25.8	40.0	48.3	40.0
Outdoor Activity	43.5	3.1	19.5	19.0	19.5
Car Wash Tunnel	44.1	21.3	33.7	54.4	33.7
Car Wash Vacuum	27.5	19.3	35.1	33.8	35.1
Gas Station Activity	18.7	17.4	31.1	25.5	31.1
Drive-Thru Activity	20.9	6.7	18.7	21.0	18.7
Trash Enclosure Activity	39.1	13.5	23.0	33.4	23.0
Total (All Noise Sources)	**49.1**	**28.4**	**42.4**	**55.4**	**42.4**

[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 10:01 p.m. to 7:59 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 24.6 to 46.1 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 including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	at 200'
Roof-Top Air Conditioning Units	41.4	23.4	37.5	45.9	38.1
Outdoor Activity	0.0	0.0	0.0	0.0	0.0
Car Wash Tunnel	0.0	0.0	0.0	0.0	0.0
Car Wash Vacuum	0.0	0.0	0.0	0.0	0.0
Gas Station Activity	17.7	16.4	30.1	24.5	34.6
Drive-Thru Activity	19.9	5.7	17.8	20.1	24.0
Trash Enclosure Activity	38.2	12.5	22.0	32.4	30.0
Total (All Noise Sources)	**43.1**	**24.6**	**38.4**	**46.1**	**40.3**

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Moreno Valley exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-4 shows the operational noise levels associated with Moreno Valley Commercial Project will satisfy the City of Moreno Valley 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime exterior noise level standards at all nearby receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	49.1	43.1	65	60	No	No
R2	28.4	24.6	65	60	No	No
R3	42.4	38.4	65	60	No	No
R4	55.4	46.1	65	60	No	No
at 200'	42.4	40.3	65	60	No	No

[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 source (commercial) land use, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby 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. (5) 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-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 and 9-6, the Project will not generate a measurable daytime and nighttime operational noise level increases at the nearby receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-5: DAYTIME PROJECT 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]	Noise Sensitive Land Use?	Increase Criteria[7]	Increase Criteria Exceeded?
R1	49.1	L1	52.4	54.1	1.7	Yes	5.0	No
R2	28.4	L2	57.1	57.1	0.0	Yes	5.0	No
R3	42.4	L3	58.0	58.1	0.1	Yes	5.0	No
R4	55.4	L4	52.3	57.1	4.8	Yes	5.0	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 4-1.

TABLE 9-6: NIGHTTIME PROJECT 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]	Noise Sensitive Land Use?	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.1	L1	50.1	50.9	0.8	Yes	5.0	No
R2	24.6	L2	52.2	52.2	0.0	Yes	5.0	No
R3	38.4	L3	55.7	55.8	0.1	Yes	5.0	No
R4	46.1	L4	48.1	50.2	2.1	Yes	5.0	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 4-1.

10 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. To prevent high levels of construction noise from impacting noise-sensitive land uses, City of Moreno Valley Municipal Code Section 11.80.030 (D)(7) limits general construction activities within 200 feet of residential uses to weekdays, between 7:00 a.m. and 8:00 p.m. In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 4:00 p.m. on weekends and holidays or as approved by the City Engineer.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels.

10.2 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. To assess the worst-case construction 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 construction activity area to each receiver location. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

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})
Site Preparation	Scraper, Water Truck, & Dozer Activity	75.3	75.3
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Grading	Rough Grading Activities	73.5	73.5
	Water Truck Pass-By & Backup Alarm	71.9	
	Construction Vehicle Maintenance Activities	67.5	
Building Construction	Foundation Trenching	68.2	71.6
	Framing	62.3	
	Concrete Mixer Backup Alarms & Air Brakes	71.6	
Paving	Concrete Mixer Truck Movements	71.2	71.2
	Concrete Paver Activities	65.6	
	Concrete Mixer Pour & Paving Activities	65.9	
Architectural Coating	Air Compressors	65.2	65.2
	Generator	64.9	
	Crane	62.3	

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

10.3 TYPICAL 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 nearby sensitive receiver locations were completed. 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 construction activity area to each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 44.7 to 75.5 dBA L_{eq}, and the highest construction levels are expected to range from 54.8 to 75.5 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: UNMITIGATED TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	62.9	61.1	59.2	58.8	52.8	62.9
R2	48.2	46.4	44.5	44.1	38.1	48.2
R3	63.0	61.2	59.3	58.9	52.9	63.0
R4	70.3	68.5	66.6	66.2	60.2	70.3
at 200'	64.2	62.4	60.5	60.1	54.1	64.2

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Construction noise level calculations based on distance from the project construction activity area to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearby receiver locations, the City of Moreno Valley has identified a construction-related noise level threshold of 65 dBA L_{eq}. As shown on Table 10-3, the estimated construction noise levels at the adjacent residences uses to the north and east represented by R1 and R2 including the church represented by R3 and at 200 feet from the property line will satisfy the 65 dBA L_{eq} construction noise level standard. However, the construction noise level at the noise sensitive residences represented by R4will exceed the City of Moreno Valley construction noise level standard 65 dBA L_{eq}. Therefore, the unmitigated noise impact due to Project construction activities is considered *potentially significant*.

TABLE 10-3: UNMITIGATED TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Use	Construction Noise Levels (dBA L_{eq})		
		Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	Residential	62.9	65	No
R2	Residential	48.2	65	No
R3	Church	63.0	65	No
R4	Residential	70.3	65	Yes
at 200'	-	64.2	65	No

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Highest construction noise level calculations based on distance from the construction activity area to nearby receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds as shown on Table 3-2.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

Therefore, a minimum 8-foot-high temporary construction noise barrier at the west Project site boundary is required to reduce the typical construction noise levels as shown on Exhibit 10-A. As

shown on Table 10-4, the mitigated construction noise levels are expected to be 64.7 dBA L_{eq}. Appendix 10.2 includes the mitigated typical construction CadnaA noise model calculations.

TABLE 10-4: MITIGATED TYPICAL CONSTRUCTION NOISE LEVELS

Receiver Location[1]	Mitigated Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R4	64.7	62.9	61.0	60.6	54.6	64.7

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Construction noise level calculations based on distance from the project construction activity area to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.2.

Table 10-5 shows that the mitigated construction noise levels will satisfy the City of Moreno Valley construction noise level standard 65 dBA L_{eq} at R4. With the required 8-foot-high temporary noise barrier, the mitigated construction noise impacts are considered *less than significant* at all sensitive receiver locations and at 200 feet from the Project site boundary.

TABLE 10-5: MITIGATED TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Use	Construction Noise Levels (dBA L_{eq})		
		Highest Construction[2]	Construction Standard[3]	Threshold Exceeded?[4]
R4	Residential	64.7	65	No

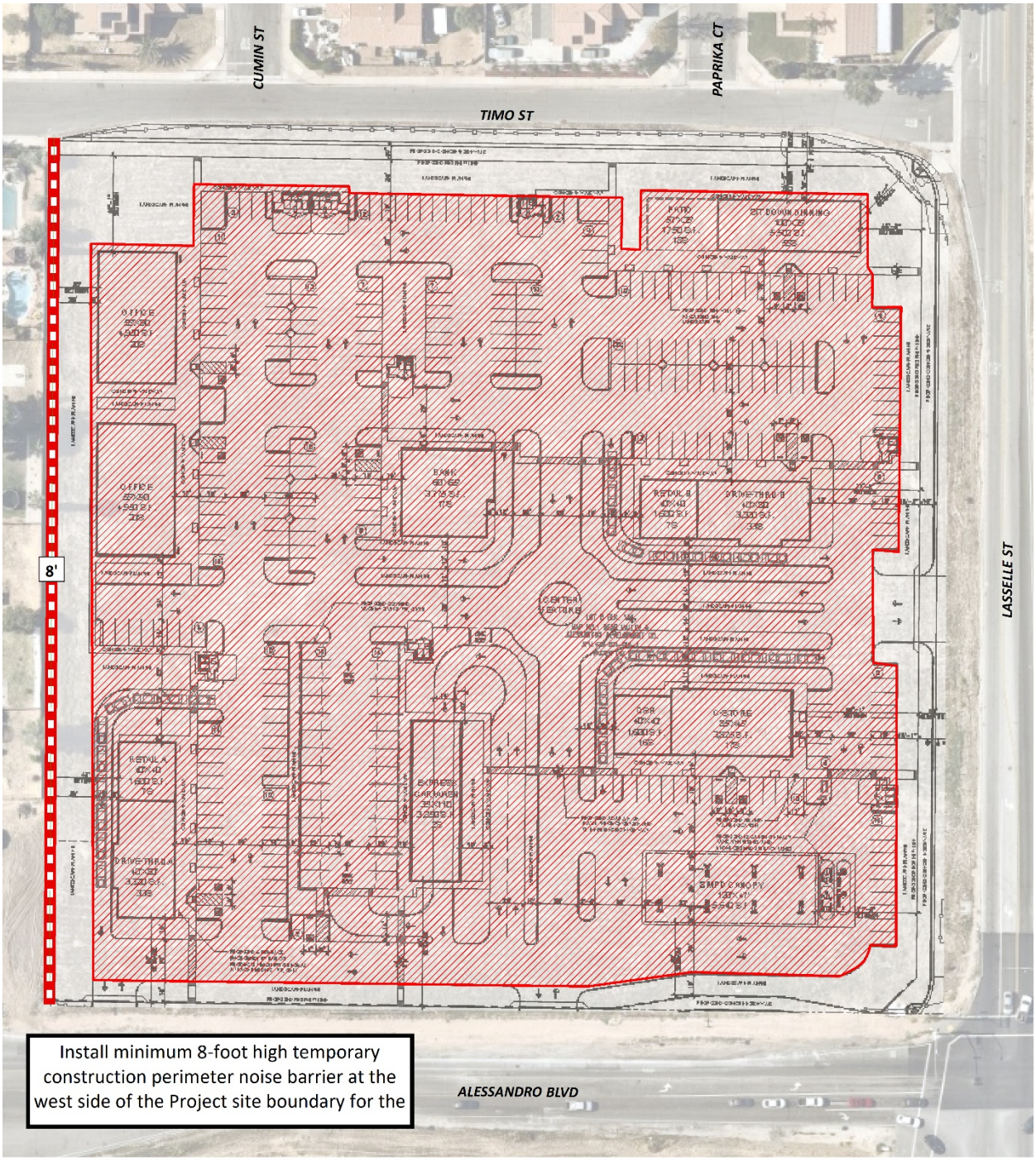
[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Highest construction noise level calculations based on distance from the construction activity area to nearby receiver locations as shown on Table 10-4.
[3] Construction noise level standards as shown on Table 3-2.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 PROJECT CONSTRUCTION NOISE MITIGATION MEASURES

Though construction noise is temporary and intermittent, and will not present any long-term impacts, the following project construction noise mitigation measures shall be provided.

- To reduce construction noise at the residences to the west of the Project site presented by R4, , the contractor shall install a minimum 8-foot high temporary construction perimeter noise barrier at the west of the Project site boundary for the duration of construction activities. The limits of the noise barrier are shown on Exhibit 10-B. The noise control barrier shall include the following:
    - The noise control barriers must present a solid face from top to bottom.
    - The noise barrier shall be constructed using one of the following materials with no decorative cutouts or line-of-sight openings between shielded areas and the noise source:
        - An acoustical blanket (e.g. vinyl acoustic curtains, quilted blankets, or equivalent) attached to the construction site perimeter fence or equivalent temporary fence posts.
        - Any combination of these construction materials satisfying a weight of at least 4 pounds per square foot of face area.
    - The noise barriers shall be maintained, and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.

EXHIBIT 10-A: CONSTRUCTION NOISE MITIGATION MEASURES



LEGEND:

N

Construction Activity Area

6' Temporary Noise Barrier Height (in feet)

Temporary Noise Barrier

10.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-6. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-6: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

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

Table 10-7 presents the expected Project related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 28 to 1,428 feet from Project construction activity, the transient construction vibration velocity levels are estimated to range from 0.000 to 0.075 PPV in/sec, as shown on Table 10-5. Based on maximum acceptable transient vibration threshold of 1.0 PPV (in/sec) for new residential structures, the typical Project construction vibration levels will satisfy the building damage thresholds at all the nearest receiver locations.

In addition, the construction vibration analysis on Table 10-7 shows that the impacts will satisfy the *distinctly perceptible* maximum transient vibration human annoyance threshold of 0.25 PPV (in/sec) at all the nearest receiver locations. Therefore, the vibration impacts due to the typical Project construction activities are considered *less than significant*. In addition, the typical construction vibration levels at the nearest 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 boundaries.

TABLE 10-7: TYPICAL CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Structure Type[2]	Distance to Const. Activity (Feet)[3]	Typical Construction Vibration Levels PPV (in/sec)[4]					Thresholds PPV (in/sec)[5]		Thresholds Exceeded?[6]	
			Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level	Building Damage	Human Annoyance	Building Damage	Human Annoyance
R1	Residential	72'	0.001	0.007	0.016	0.018	0.018	1.00	0.25	No	No
R2	Residential	1,428'	0.000	0.000	0.000	0.000	0.000	1.00	0.25	No	No
R3	Residential	207'	0.000	0.001	0.003	0.004	0.004	1.00	0.25	No	No
R4	Residential	28'	0.003	0.030	0.064	0.075	0.075	1.00	0.25	No	No
at 200'	Residential	200'	0.000	0.002	0.003	0.004	0.004	1.00	0.25	No	No

[1] Receiver locations are shown on Exhibit 8-A.
[2] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.
[3] Distance from receiver location to Project construction boundary.
[4] Based on the Vibration Source Levels of Construction Equipment (Table 10-4).
[5] Thresholds for transient sources associated with typical construction activities, Caltrans Transportation and Construction Vibration Manual, April 2020 p.38. (see Tables 3-1 & 3-2).
[6] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. —. *California Environmental Quality Act, Environmental Checklist Form Appendix G.* 2019.
3. **City of Moreno Valley.** *City of Moreno Valley Zoning Map.* 2020.
4. **K2 Traffic Engineering, Inc.** *New Commercial and Office Plaza At NWC of Alessandro Blvd and Lasselle St, Moreno Valley Focused Traffic Impact Study Update.* September 2020.
5. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
6. **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.
7. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
8. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
9. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
10. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
11. **Office of Planning and Research.** *State of California General Plan Guidlines.* October 2017.
12. **City of Moreno Valley.** *General Plan Safety Element.* October 2006.
13. —. *Municipal Code, Chapter 11.80 Noise Regulation.*
14. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
15. **Riverside County Airport Land Use Commission.** *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan.* November 2014.
16. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
17. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
18. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
19. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
20. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
21. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.

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

12 CERTIFICATIONS

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Moreno Valley Commercial 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) 336-5979.

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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 Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF MORENO VALLEY MUNICIPAL CODE

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8.21.050 Grading permit requirements.

A. Application for Permit.

1. The application for a grading permit shall be made on a form as provided by the city engineer. All required discretionary approvals under the zoning ordinance and municipal code must be obtained prior to issuance of a grading permit.

2. No grading permit for a development project subject to approval by the planning commission, city council or administrative approval process shall be issued until such commission, council or administrative process has approved the grading concept as part of the discretionary approval process. Any application for a grading permit which effects environmentally sensitive areas shall contain information showing that the proposed grading will be accomplished without significant harm to the environment or appropriate environmental mitigation measures that have been identified within an environmental impact report for the proposed site have been complied with.

B. Responsibility of Land Owners.

1. It is unlawful for any persons owning, leasing, occupying or having charge of any real property in the city to stockpile, deposit, or allow the placement, construction or deposition of earth material on any real property in excess of fifty (50) cubic yards without first obtaining a grading permit as hereinafter described (unless exempt as noted in Section 8.21.020(A)(1) through (11), exceptions). Processing of said earth material must result in a relative compaction of at least ninety (90) percent of the maximum density compaction of the surrounding material, unless otherwise provided for as part of an approved grading plan.

2. Clearing, brushing and grubbing of vegetation done in preparation of land development shall not be undertaken until all discretionary approvals for the land development project have been issued and a grading permit for the project has been obtained. For the purposes of this section, land development shall be defined as any use of real property for which discretionary approval is required as further defined in the this code.

3. A grading permit issued by the city engineer is required prior to any grading or clearing and grubbing operations on:

a. Previously undisturbed land; or

b. Land covered by native vegetation; or

c. Land which has not been used for agricultural purposes for three years immediately prior to the initiation of a grading operation for the purpose of conducting agricultural activities.

A grading permit may be issued by the city engineer, prior to discretionary approval, if the city engineer, in cooperation with the planning official, determines that the grading and/or agricultural operation will not cause significant damage to any environmentally sensitive areas nor cause the elimination of any significant wildlife habitat for riparian area.

4. This section shall not regulate routine landscape maintenance, the removal of dead or diseased trees or shrubs or the removal of vegetation upon the order of the fire marshal for the elimination of a potential fire hazard.

C. Types of Grading Permits.

1. Either a mass grading permit, borrow site permit, rough grading permit, preliminary grading permit, precise grading permit or a stockpile permit all as defined in Section 8.21.040 of this chapter may be issued for grading work upon completion of a proper application and approval by the city engineer.

2. Building permits may be issued for a site graded under an approved grading plan and valid grading permit upon completion and approval of rough grade and geotechnical inspection as specified in Section 8.21.170 of this chapter. Building permits for construction of model homes may be issued for the model home sites only, prior to completion of rough grading for the site, provided that rough grading has been completed and approved as noted for the model home sites.

3. Building permits shall not be issued for a site graded under a preliminary grading permit until a new precise grading plan has been approved and a permit has been issued and the provisions as noted above have been satisfied.

D. Stockpile Permits.

1. A temporary stockpile permit is subject to conditions which may include, but are not limited to, the following items: a stockpile plan prepared by a registered civil engineer, an erosion control plan prepared by a registered civil engineer, fencing, hydroseeding or other maintenance requirements. Other conditions may be established, even after the permit has been issued, in the interest of public health, safety or welfare, and shall be as determined by the city engineer.

2. An indeterminate stockpile permit may be issued for soil that is to be used for the future development of the stockpile site where there is no current project, or for storage of soil for current or future sale, or for some other purpose as stated by the property owner. Requests for indeterminate stockpile permits will be reviewed on a case-by-case basis. Such requests may be considered to be the establishment of a business and may require review by other city department or divisions and shall be subject to all of the conditions of approval for such projects. An indeterminate stockpile permit is subject to all of the same requirements as a temporary stockpile permit.

E. Grading Permit Application. A grading permit application shall consist of the following items and forms completed and signed by the applicant or his/her representative, unless otherwise specified by the city engineer:

1. Application form;

2. Four sets of grading plans;

3. Two copies of a preliminary soils report (see subsection (M)(1) of this section);

4. Two copies of a preliminary geology report if applicable (see subsection (M)(2) of this section);

5. Two sets of erosion control plans;

6. Payment of the grading plan check and inspection fees.

The city engineer will inspect the project site as necessary and determine whether additional reports or other data are required prior to issuance of a grading permit. The city engineer will notify the applicant of his or her determination.

F. Grading Plan Clearances. The city engineer shall notify the applicant when clearance is required for the project from other departments or divisions within the city as well as clearance required from other agencies. All required clearances from other departments, divisions or outside agencies shall be the responsibility of and obtained by the applicant prior to issuance of the grading permit. The city engineer will not notify the applicant for South Coast Air Quality District (SCAQMD) required clearances and permits.

G. Data to Accompany Application.

1. A grading plan, approved and signed by a California registered civil engineer, soils engineer and engineering geologist shall accompany each application for a grading permit, unless waived by the city engineer. The grading plans shall be prepared on twenty-four (24) inch by thirty-six (36) inch Mylar film with a standard city title block, and shall be drawn in ink. The plans shall show the original and designed finish contours, spot elevations, building pads, public improvements, slope ratios, proposed drainage facilities, protective fencing, retaining walls and any structures or buildings on adjacent properties within fifteen (15) feet of the common property lines.

2. Unless waived by the city engineer, each application for a grading permit shall be accompanied by supporting data consisting of a soils engineering report, engineering geology report, and the grading plans and specifications. All such plans shall be drawn to engineering scales as approved by the city engineer. The title sheet of the plan set shall contain the names, addresses and phone numbers of the site owner, the civil engineer responsible for the plans preparation, the project soil engineer and engineering geologist, including registration numbers. The title sheet shall also contain a locality sketch of the project site.

3. A statement of quantities shall be furnished, giving the estimated cubic yards of excavation, embankment, fill, and shrinkage or swell factor. Also, types of ditches and down drains, lineal feet and sizes of various types of pipe, the amount of rock to be used for rip-rap or slope protection, the lineal feet of fencing and any other pertinent information useful in determining the extent of the proposed work.

4. The grading plans shall show scaled sections of all stabilization fills, buttress fills, keyways and benching for fill placement.

H. Grading Plan Check. All grading plans submitted to the city will be checked for conformance with the provisions of this chapter, conditions of approval, the city of Moreno Valley Municipal Code, applicable specific plans, other city ordinances, rules and regulations, all applicable federal and state requirements, 2010 California Code of Regulations Title 24, Chapter 11 accessibility requirements, city technical requirements and plan requirements, and any other applicable requirements for the development.

I. Mass Grading Plans, Rough Grading Plans, Stockpile Plans, Borrow Site Plans and Preliminary Grading Plans. The plans shall include, but not be limited to, the following information.

1. Vicinity map of the site;

2. Property limits clearly labeled or otherwise identified, accurate contours of existing ground and details of terrain, and area of drainage a minimum of fifteen (15) feet beyond the property limits (spot elevations may be used on flatland sites);

3. Prominent existing or natural terrain features;

4. Limiting dimensions, elevations of finish contours to be achieved by the grading, proposed drainage devices, and related construction;

5. Details (plan and section) of all surface and subsurface drainage devices, walls, cribbing, dams, and other protective devices to be constructed with, or as part of the proposed work, together with a map showing the drainage area and estimated runoff from the area served by the drains;

6. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings of structures on land of adjacent owners which may be affected by the proposed grading operations;

7. If the grading project includes the movement of earth material to or from the site in an amount considered substantial by the city engineer, the permittee shall submit a haul route for review and approval by the public works department, land development division. The city engineer may prescribe as a condition of the grading permit and submitted haul route, alternate routes or special requirement in consideration on the possible impact on the adjacent community environment or effect on the public right-of-way itself;

8. Additional plans, drawings, calculations, environmental impact information, or other reports and information required by the city engineer.

J. Precise Grading Plans. The plans shall include of the information required in subsection I of this section plus the footprint or allowable building area of all proposed structures (including appurtenances), setback distances between structures and top or toe of slopes, setback distances between structures and property lines, detailed finish grade and finish floor elevations, flow lines for lot drainage including spot elevations for the drainage swales, details for building footings and side yard swale relationship (including extra height of or deepened footings), and all proposed PCC flatwork and PCC/AC driveways.

K. Grading Plan Correction Sheet. A grading plan standards and correction sheet which is used as the basis for plan checking, is available from the Public Works Department, Land Development Division which identifies the items typically required on grading plans depending on site conditions.

L. Geotechnical Reports. A soil engineering and engineering geology report shall be required for all grading projects unless otherwise waived by the city engineer. The reports shall include information useful to the site and any additional information required by the city engineer. Recommendations included in the reports and approved by the city engineer, shall be incorporated into the grading plans and specifications. The building official may require a soil report of additional information related to the building structure in accordance with the California Code of Regulations Title 24 (IBC).

M. Geotechnical Report Standards. Two copies of each geotechnical report required in subsection L of this section, shall be submitted as part of the application for a grading permit. Each report shall contain information applicable to the project as shall be prepared in accordance with generally accepted geotechnical engineering practice. Recommendations contained in the approved reports shall be incorporated into the grading plans and specifications and shall become conditions of the grading permit.

1. Preliminary Soil Report. Soil engineering reports shall be required for all residential subdivisions, commercial or industrial development projects, multi-residential projects, and similar developments for which a grading permit is required. Soil reports shall also be required for grading or building permits on single lot projects when specified by the city engineer or building official. The preliminary (initial) soil engineering report shall include information and data regarding the nature, distribution, and physical and chemical properties of existing soils, conclusions as to the adequacy

of the site for the proposed grading, recommendations for general and corrective grading procedures, foundation and pavement design criteria, and shall provide other recommendations, as necessary, for the project grading and development.

2. Preliminary Engineering Geology Report. Engineering geologic reports shall be required for all developments on hillside sites where geologic conditions are considered to have a substantial effect on existing and/or future site stability. This requirement may be extended to other sites as required by the city engineer. The preliminary (initial) engineering geology report shall include a comprehensive description of the site topography and geology including, where necessary, a geologic map; and opinion as to the adequacy of the proposed development from an engineering geologic standpoint; and opinion as to the extent that known or as reasonably should be known instability on adjacent properties may adversely effect the project; a description of the field investigation and findings; conclusions regarding the effect of geologic conditions on the proposed project; and specific recommendations for plan modification, corrective grading and/or special techniques and systems to facilitate a safe and stable development; and shall provide other recommendations as necessary for the project grading and development. The preliminary engineering geology report may be combined with the soil engineering report.

3. Seismicity Report. A seismicity report as determined by the city engineer, may be required as a condition for issuance of a grading permit and/or building permit for all residential subdivisions, and for commercial or industrial developments, and shall be required as a condition of development for all essential facilities (as defined in the California Building Code) or as determined by the city engineer, building official or planning official. Additionally, sites containing earthquake-sensitive earth materials and/or sites that are located on or near potentially active or active faults are required to submit a seismicity report as a condition for issuance of a grading permit. The report shall be prepared by an engineering geologist, geophysicist, or a civil engineer with expertise in earthquake technology and its application to buildings or other civil engineering works. The scope of the report shall be commensurate with the proposed development and shall reflect the latest available and accepted technological recommendations related to seismicity. The seismicity report may be combined with the soil and engineering geology reports.

N. Import and Export of Earth Material. Where an excess of five thousand (5,000) cubic yards of earth material for a project site is moved on public roadways to or from the project site as part of the grading operations, all of the following requirements shall apply:

1. Either water of dust preventative spray material (or both) shall be consistently applied for prevention of dust resulting from the loading or transportation of earth to or from the project site on public roadways. The permittee shall be responsible for maintaining public rights-of-way, used for transporting materials, in a condition free of dust, earth, or debris attributed to the grading operations.

2. Loading and transporting of earth materials to or from the site must be accomplished within the limitations established in subsection O of this section.

3. Access roads to the site shall be only at points designated on the approved grading plans.

4. At a minimum, the first fifty (50) feet of access road adjacent to the intersection with the public roadway shall have a grade not to exceed five percent. There must be a three hundred (300) foot clear, unobstructed sight distance to the intersection from both the public roadway and the access road. If the five percent grade or three hundred (300) foot sight distance requirements can not be obtained due to site constraints, then flagman shall be posted at the access road and shall remain for the entire duration of material transportation operations.

5. A stop sign conforming to the requirements of the California Vehicle Code shall be posted at the exit of the access road to the public roadway.

6. Advanced warning signs along with traffic control and safety devices shall be reviewed and approved by the city engineer and shall be posted on the public roadway in the vicinity of the access intersection as required by the current State of California Department of Transportation “Manual of Traffic Control—Warning Signs, Lights and Devices for Use in Performance of Work Upon Highways.” The size, shape, color, number, spacing, and other details of all such signs and devices shall conform to the standards contained therein and in the current state of California Department of Transportation “Traffic Manual.” The advanced warning signs and other devices shall be covered or removed when the access intersection is not in use.

O. Time of Grading Operations. Grading and equipment operations shall only be completed between the hours of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday. The city engineer may, however, permit grading or equipment operations before or after the allowable hours of operation if he

or she determines that such operations are not detrimental to the health, safety, or welfare of residents or the general public. Permitted hours of operations may be shortened by the city engineer's finding of a previously unforeseen effect on the health, safety, or welfare of the surrounding community.

P. Responsibility of Permittee. It shall be the responsibility of the permittee to be knowledgeable of the conditions and/or restrictions of the grading permit as outlined in applicable sections of this chapter, and as contained on the approved grading plans and in the approved geotechnical report(s). It shall also be the responsibility of the permittee to be knowledgeable with the obvious and accessible location on the site, and with a copy of the grading plans bearing the stamp or signature of approval by the city engineer. The applicant will be responsible for obtaining all clearances and permits, if any, directly from the South Coast Air Quality Management District (SCAQMD) prior to beginning grading.

Q. Haul Routes. Where excavation of embankment material is imported or exported

from one grading site to another, over public streets, whether or not either site is otherwise subject to grading permit requirements, the city engineer may specify the route to be used in transportation of the materials on public streets.

1. Deviation from the designated haul route shall constitute a violation of the condition of the permit issued under this chapter. When the city engineer does specify a route, he or she shall do so in writing on the permit document, and shall immediately notify the traffic division of the public works department as well as the traffic division of the city police department, that said haul route has been specified and approved.

2. The city engineer may further specify load limits where, in his or her opinion, the standard load capacity of vehicles used in such hauling would cause excessive damage to streets on the designated route. Any grading or hauling contractor or project site owner/permittee, moving earth materials in violation of the chapter, shall be financially responsible for any damage to the public streets caused by the hauling vehicles, and shall pay to the city of Moreno Valley the cost, as determined by the city engineer, of repairing such damage, or shall repair the damage in question to the satisfaction of the city engineer.

3. At least twenty-four (24) hours before hauling is to commence, the applicant shall be required to notify the city of Moreno Valley public works department, traffic division, and land development division as well as the city police department, traffic division. The permit may specify other necessary conditions or restrictions, where the use of public streets would disrupt the normal traffic activities or cause a public inconvenience.

R. Debris on Public Streets. Vehicle Code Section 23112(b) forbids the placing, dumping or depositing of dirt and rocks on public streets or any portion of the public right-of-way. All vehicles engaged in hauling materials under the provisions of this chapter, shall refrain from depositing dirt or debris on public streets by any means, including but not limited to, spillage from the bed of a truck or other vehicle and debris collected on the wheels of the haul vehicle. The city engineer may require a cash deposit to insure the clean-up of public streets.

S. Clean-Up. The permittee conducting any earth-moving operation under this chapter which requires vehicles to haul earth materials, including but not limited to, earth, mud, rock or other materials, on any public streets shall be responsible for the complete removal of such materials if spilled, dumped or deposited on a public street within twenty-four (24) hours of noted spill, dumping or deposition. If the permittee fails to remove such spillage, dumping or deposited material within the noted time frame, and it is necessary for the city to complete the removal, the permittee and/or property owner from where the material was removed from or deposited to, shall be liable to pay the city the full cost of such removal work. A cash deposit may be required to insure cleanup of public streets.

T. Dust Control. The contractor or permittee conducting any earth-moving or grading operation under this chapter shall be responsible for controlling dust at all times. The owner, contractor and permittee shall be responsible for implementing any and all Best Management Practices (BMPs) for all grading and earth-moving operations in accordance with the National Pollutant Discharge Elimination System (NPDES) and as required by South Coast Air Quality Management District (SCAQMD).

U. Protection of Adjoining Property. Each adjacent owner is entitled to the lateral and subjacent support which his/her land receives from the adjoining land, subject to the right of the owner of the adjoining land to make proper and usual excavations on the same for purposes of construction or improvement, under the following conditions:

1. Any owner of land or lessee intending to permit or to make an excavation greater than ten (10) feet in depth within fifty (50) feet of his or her property line(s) shall give reasonable notice to the owner or owners of land abutting the property line(s) affected by such excavation, stating the depth for which such excavation is intended to be made and when the excavation will begin.

2. In making any excavation, ordinary care and skill shall be used, and reasonable precautions taken so that the soil of adjoining properties will not cave in or settle without regard to any building or other structure which may be thereon, and there shall be no liability for damage done to any such building or other structure by reason of the excavation, except as otherwise provided or allowed by law.

3. If at any time it appears that the excavation is to of greater depth than are the walls or foundation of an adjoining building or other structure, and the distance from the edge of the excavation to an adjoining building or other structure is less than the depth of the excavation, then the permittee or person completing the excavation must take any and all necessary steps to protect the adjacent building or other structure from possible damage resulting from the excavation or the permittee or person completing the excavation must notify the owner of the adjoining building or other structure and allow at least ten (10) days, if so desired, in which to take measures to protect the same from any damage, or to brace or extend the foundations of the noted building or other structure from possible damage from the excavation.

V. Issuance, Expiration and Renewal.

1. Every grading permit issued shall be valid for a period of one hundred eighty (180) days from the date of issuance.

2. Every permit shall expire by limitation and become null and void if the work authorized by such permit is not commenced within one hundred eighty (180) days from the date of such permit or if the work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of one hundred eighty (180) days.

3. The time limitations for all grading permits issued by the city are also subject to the following provisions:

a. A permit issued in accordance with these requirements shall expire upon a change of ownership, if the grading work thereon, for which said permit was issued has not been completed, and a new permit shall be required for the completion of the work. If the time limitations as noted above are not applicable, and if no changes have been made to the plans and specifications last submitted to the city engineer, no charge shall be made for the issuance of a new permit under such circumstances. If, however, changes have been made to the plans and specifications last submitted to the city engineer, fees based on the valuation of the additional or new work, additional yardage and necessary plan checking shall be charged to the permit applicant.

b. The city engineer may extend the one hundred eighty (180) day expiration time limit on permits not to exceed three successive periods for one hundred eighty (180) days each, upon written request by the applicant showing that circumstances beyond the control of the applicant have prevented action from being taken.

4. The city engineer may require that grading operations and project designs be modified if delays occur which incur weather-related problems not considered at the time the permit was issued.

5. If the permittee presents satisfactory reasons for failure to begin or complete the work within the periods specified above, the city engineer, upon written request, may grant an extension of time reasonably necessary or as specified in subsection (V)(3)(b) of this section for an additional three hundred sixty-five (365) days without additional fees, provided that:

a. No changes have been made in the original plans and specifications for such work.

b. Suspension of abandonment has not exceeded one hundred eighty (180) days.

c. A re-endorsement of the compliance of the plans with the current and applicable regulations has been obtained by the permittee from the Land Development Division.

d. Such requests for extensions must be submitted no later than the 30th day following the date on which said permit would otherwise expire.

6. If the permittee is unable to complete the work by the end of a two-calendar-year period (initial one hundred eighty (180) days plus one and one-half year extension) or fails to request an extension within the time provided in subsection (V)(5) of this section, the city engineer, upon written request and justification, may renew the grading permit for a fee of one-half the amount required for the original permit for such work, provided no changes have been made to the original plans and specifications for such work.

W. Denial of Permit. The city engineer shall not issue a permit in any case where he finds that the work as proposed by the applicant is liable to constitute a hazard to property or result in debris being deposited on any public street or public way or interfere with any existing drainage course. If it can be shown to the satisfaction of the city engineer that the hazard can be essentially eliminated by the construction of retaining structures, buttress fills, drainage devices, or by other means, the city engineer may issue a permit with the condition that such work be performed. If, in the opinion of the city engineer, the land area for which grading is proposed is subject to geological or flood hazard to the extent that no

reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, the grading permit and any proposed building permits for habitable structures shall be denied.

X. The city engineer may require plans and specifications to be modified in order to mitigate anticipated adverse environmental effects of proposed grading projects. The city engineer may, under circumstances where the significant adverse environmental effects of a proposed grading project cannot be mitigated in accordance with the requirements of the California Environmental Quality Act (CEQA), deny the issuance of a grading permit.

Y. The city engineer shall require plans and specifications to be modified in order to make them consistent with the city of Moreno Valley general plan, specific plans, municipal code requirements, or other rules, regulations, or conditions of approval applicable to the project. The city engineer may deny the grading permit if the proposed project cannot be designed in accordance with this chapter, applicable rules, regulations, or conditions. (Ord. 912 § 8, 2016; Ord. 827 § 2.2, 2011)

Chapter 11.80 NOISE REGULATION

11.80.010 Legislative findings.

It is found and declared that:

A. Excessive sound within the limits of the city is a condition which has existed for some time, and the amount and intensity of such sound is increasing.

B. Such excessive sound is a detriment to the public health, safety, and welfare and quality of life of the residents of the city.

C. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted is declared as a matter of legislative determination and public policy, and 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, safety, welfare and quality of life of the city and its inhabitants. (Ord. 740 § 1.2, 2007)

11.80.020 Definitions.

For purposes of this chapter, certain words and phrases used herein are defined as follows:

"A-weighted sound level" means the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit of measurement is the dB(A).

"Commercial" means all uses of land not otherwise classified as residential, as defined in this section.

"Construction" means any site preparation, and/or any assembly, erection, repair, or alteration, excluding demolition, of any structure, or improvements to real property.

"Continuous airborne sound" means sound that is measured by the slow-response setting of a meter manufactured to the specifications of ANSI Section 1.4-1983 (R2006) "Specification for Sound Level Meters," or its successor.

"Daytime" means eight a.m. to ten p.m. the same day.

"Decibel" (dB) means a unit for measuring the amplitude of sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound measured to the reference pressure, which is twenty (20) microPascals (twenty (20) microNewtons per square meter.)

"Demolition" means any dismantling, intentional destruction or removal of structures or other improvements to real property.

"Disturb" means to interrupt, interfere with, or hinder the enjoyment of peace or quiet or the normal listening activities or the sleep, rest or mental concentration of the hearer.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or significant property damage which necessitates immediate action. Economic loss alone shall not constitute an emergency. It shall be the burden of an alleged violator to prove an "emergency."

"Emergency work" means any work made necessary to restore property to a safe condition following an emergency, or to protect persons or property threatened by an imminent emergency, to the extent such work is, in fact, necessary to protect persons or property from exposure to imminent danger or damage.

"Frequency" means the number of complete oscillation cycles per unit of time.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and discharge of firearms.

"Nighttime" means 10:01 p.m. to 7:59 a.m. the following day.

"Noise disturbance" means any sound which:

1. Disturbs a reasonable person of normal sensitivities;

2. Exceeds the sound level limits set forth in this chapter; or

3. Is plainly audible as defined in this section. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of two hundred (200) feet from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property.

"Person" means any person, person's firm, association, copartnership, joint venture, corporation, or any entity public or private in nature.

"Plainly audible" means that the sound or noise produced or reproduced by any particular source, can be clearly distinguished from ambient noise by a person using his/her normal hearing faculties.

"Public right-of-way" means any street, avenue, boulevard, sidewalk, bike path or alley, or similar place normally accessible to the public which is owned or controlled by a governmental entity.

"Public space" means any park, recreational or community facility, or lot which contains at least one building that is open to the general public during its hours of operation.

"Residential" means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium capable of producing an auditory impression. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

"Sound level" means the weighted sound pressure level as measured in dB(A) by a sound level meter and as specified in American National Standards Institute (ANSI) specifications for sound-level meters (ANSI Section 1.4-1971 (R1976)). If the frequency weighting employed is not indicated, the A-weighting shall apply.

"Sound level meter" means an instrument, demonstrably capable of accurately measuring sound levels as defined above.

All technical definitions not defined above shall be in accordance with applicable publications and standards of the American National Standards Institute (ANSI). (Ord. 740 § 1.2, 2007)

11.80.030 Prohibited acts.

A. General Prohibition. It is unlawful and a violation of this chapter to maintain, make, cause, or allow the making of any sound that causes a noise disturbance, as defined in Section 11.80.020.

B. Sound causing permanent hearing loss.

1. Sound level limits. Based on statistics from the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health, Table 1 and Table 1-A specify sound level limits which, if exceeded, will have a high probability of producing permanent hearing loss in anyone in the area where the sound levels are being exceeded. No sound shall be permitted within the city which exceeds the parameters set forth in Tables 11.80.030-1 and 11.80.030-1-A of this chapter:

Table 11.80.030-1

MAXIMUM CONTINUOUS SOUND LEVELS*

Duration per Day Continuous Hours	**Sound level [db(A)]**
8	90
6	92
4	95
3	97

2	100
1.5	102
1	105
0.5	110
0.25	115

* When the daily sound exposure is composed of two or more periods of sound exposure at different levels, the combined effect of all such periods shall constitute a violation of this section if the sum of the percent of allowed period of sound exposure at each level exceeds 100 percent

Table 11.80.030-1A

MAXIMUM IMPULSIVE SOUND LEVELS

Number of Repetitions per 24-Hour Period	Sound level [dB(A)]
1	145
10	135
100	125

2. Exemptions. No violation shall exist if the only persons exposed to sound levels in excess of those listed in Tables 11.80.030-1 and 11.80.030-1A are exposed as a result of:

a. Trespass;

b. Invitation upon private property by the person causing or permitting the sound; or

c. Employment by the person or a contractor of the person causing or permitting the sound.

C. Nonimpulsive Sound Decibel Limits. No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimplusive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

Table 11.80.030-2

MAXIMUM SOUND LEVELS (IN dB(A)) FOR SOURCE LAND USES

Residential		Commercial	
Daytime	**Nighttime**	**Daytime**	**Nighttime**
60	55	65	60

D. Specific Prohibitions. In addition to the general prohibitions set out in subsection A of this section, and unless otherwise exempted by this chapter, the following specific acts, or the causing or permitting thereof, are regulated as follows:

1. Motor Vehicles. No person shall operate or cause to be operated a public or private motor vehicle, or combination of vehicles towed by a motor vehicle, that creates a sound exceeding the sound level limits in Table 11.80.030-2 when the vehicle(s) are not otherwise subject to noise regulations provided for by the California Vehicle Code.

2. Radios, Televisions, Electronic Audio Equipment, Musical Instruments or Similar Devices from a Stationary Source. No person shall operate, play or permit the operation or playing of any radio, tape player, television, electronic audio equipment, musical instrument, sound amplifier or other mechanical or electronic sound making device that produces, reproduces or amplifies sound in such a manner as to create a noise disturbance. However, this subsection shall not apply to any use or activity exempted in subsection E of this section and any use or activity for which a special permit has been issued pursuant to Section 11.80.040.

3. Radios, Electronic Audio Equipment, or Similar Devices from a Mobile Source Such as a Motor Vehicle. Sound amplification or reproduction equipment on or in a motor vehicle is subject to regulation in accordance with the California Vehicle Code when upon the public right-of-way. When upon public space or publicly owned property other than the public right-of-way or upon private property open to the public, sound amplification or reproduction equipment shall not be operated in such a manner that it is plainly audible at a distance of fifty (50) feet in any direction from the vehicle.

4. Portable, Hand-Held Music or Sound Amplification or Reproduction Equipment. Such equipment shall not be operated on a public right-of-way, public space or other publicly owned property in such a manner as to be plainly audible at a distance of fifty (50) feet in any direction from the operator.

5. Loudspeakers and Public Address Systems.

a. Except as permitted by Section 11.80.040, no person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any commercial purpose:

1. Which produces, reproduces or amplifies sound in such a manner as to create a noise disturbance; or

2. During nighttime hours on a public right-of-way, public space or other publicly owned property.

b. No person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any noncommercial purpose, during nighttime hours in such a manner as to create a noise disturbance.

6. Animals. No person shall own, possess or harbor an animal or bird that howls, barks, meows, squawks, or makes other sounds that:

a. Create a noise disturbance;

b. Are of frequent or continued duration for ten (10) or more consecutive minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound; or

c. Are intermittent for a period of thirty (30) or more minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound.

7. Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

8. Emergency Signaling Devices. No person shall intentionally sound or permit the sounding outdoors of any fire, burglar or civil defense alarm, siren or whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing as follows:

a. Testing of a stationary emergency signaling device shall not occur between seven p.m. and seven a.m. the following day;

b. Testing of a stationary emergency signaling device shall use only the minimum cycle test time, in no case to exceed sixty (60) seconds;

c. Testing of a complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall only occur only on weekdays between seven a.m. and seven p.m. and shall be exempt from the time limit specified in subsection (D)(8)(2) of this section.

9. Power Tools. No person shall operate or permit the operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours so as to cause a noise disturbance across a residential real property boundary.

10. Pumps, Air Conditioners, Air-Handling Equipment and Other Continuously Operating Equipment. Notwithstanding the general prohibitions of subsection a of this section, no person shall operate or permit the operation of any pump, air

conditioning, air-handling or other continuously operating motorized equipment in a state of disrepair or in a manner which otherwise creates a noise disturbance distinguishable from normal operating sounds.

E. Exemptions. The following uses and activities shall be exempt from the sound level regulations except the maximum sound levels provided in Tables 11.80.030-1 and 11.80.030-1A:

1. Sounds resulting from any authorized emergency vehicle when responding to an emergency call or acting in time of an emergency.

2. Sounds resulting from emergency work as defined in Section 11.80.020

3. Any aircraft operated in conformity with, or pursuant to, federal law, federal air regulations and air traffic control instruction used pursuant to and within the duly adopted federal air regulations; and any aircraft operating under technical difficulties in any kind of distress, under emergency orders of air traffic control, or being operated pursuant to and subsequent to the declaration of an emergency under federal air regulations.

4. All sounds coming from the normal operations of interstate motor and rail carriers, to the extent that local regulation of sound levels of such vehicles has been preempted by the Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.) or other applicable federal laws or regulations

5. Sounds from the operation of motor vehicles, to the extent they are regulated by the California Vehicle Code.

6. Any constitutionally protected noncommercial speech or expression conducted within or upon a any public right-of-way, public space or other publicly owned property constituting an open or a designated public forum in compliance with any applicable reasonable time, place and manner restrictions on such speech or expression or otherwise pursuant to legal authority.

7. Sounds produced at otherwise lawful and permitted city-sponsored events, organized sporting events, school assemblies, school playground activities, by permitted fireworks, and by permitted parades on public right-of-way, public space or other publicly owned property.

8. An event for which a temporary use permit or special event permit has been issued under other provisions of this code, where the provisions of Section 11.80.040 are met, the permit granted expressly grants an exemption from specific standards contained in this chapter, and the permittee and all persons under the permittee's reasonable control actually comply with all conditions of such permit. Violation of any condition of such a permit related to sound or sound equipment shall be a violation of this chapter and punishable as such.

F. Nothing in this chapter shall be construed to limit, modify or repeal any other regulation elsewhere in this code relating to the regulation of noise sources, nor shall any such other regulation be read to permit the emission of noise in violation of any provision of this chapter. (Ord. 740 § 1.2, 2007)

11.80.040 Special provisions for temporary use and special event permits.

The exemption by permit set forth in Section 11.80.030(E)(8) shall be subject to the following requirements and conditions:

A. The permit application shall include the name, address and telephone number of the permit applicant; the date, hours and location for which the permit is requested; and the nature of the event or activity. It shall also specify the types of sounds and/or sound equipment to be permitted, the proposed duration of such sound, the specific standards from which the sound is to be exempted, and the reasons for each requested exemption.

B. The permit shall be issued provided the proposed activity meets the requirements of this section and the issuing official determines that the sound to be emitted at the event as proposed would not be detrimental to the public health, safety or welfare, that the event cannot reasonably achieve its legitimate aims and purposes without the exemption and that the sound levels proposed will not unreasonably damage the peace and quiet enjoyment of the lawful users of surrounding properties, nor constitute a public nuisance.

C. The official issuing the permit may prescribe any reasonable conditions or requirements he/she deems necessary to minimize noise disturbances upon the community or the surrounding neighborhood, and/or to protect the health, safety or welfare of the public, including participants in the permitted event, including use of mufflers, screens or other sound-attenuating devices.

D. Any permit granted must be in writing and shall contain all conditions upon which the permit shall be effective.

E. No more than six events requiring a sound limit exemption may be held at any particular location upon privately owned or controlled property per calendar year, provided further that the number of events shall not exceed the number permitted under the regulations for the type of permit issued. For purposes of this subsection, “location” means a legal parcel of real property or a complete shopping or commercial center or mall sharing common parking and access even if comprised of multiple legal parcels.

F. The exemption from sound limits under such permit shall not exceed maximum period of four hours in one twenty-four (24) hour day.

G. The permit will only be granted for hours between nine a.m. and ten p.m. on all days other than Friday and Saturday; and, on Friday and Saturday, between the hours of nine a.m. and one a.m. of the following day, except in the following circumstances:

1. A permit may be granted for hours between nine a.m. on New Year’s Eve and one a.m. the following day (New Year’s Day).

2. A permit may be granted for hours between nine a.m. and two a.m. the following day if there are no residences, hospitals, or nursing homes within a 0.5 mile radius of the property where the function is taking place.

H. Functions for which the permits are issued shall be limited to a continuous airborne sound level not to exceed seventy (70) dB(A), as measured two hundred (200) feet from the real property boundary of the source property if on private property, or from the source if on public right-of-way, public space or other publicly owned property. (Ord. 740 § 1.2, 2007)

11.80.050 Measurement or assessment of sound.

A. Measurement With Sound Meter.

1. The measurement of sound shall be made with a sound level meter meeting the standards prescribed by ANSI Section 1.4-1983 (R2006). The instruments shall be maintained in calibration and good working order. A calibration check shall be made of the system at the time of any sound level measurement. Measurements recorded shall be taken so as to provide a proper representation of the source of the sound. The microphone during measurement shall be positioned so as not to create any unnatural enhancement or diminution of the measured sound. A windscreen for the microphone shall be used at all times. However, a violation of this chapter may occur without the occasion of the measurements being made as otherwise provided.

2. The slow meter response of the sound level meter shall be used in order to best determine the average amplitude.

3. The measurement shall be made at any point on the property into which the sound is being transmitted and shall be made at least three feet away from any ground, wall, floor, ceiling, roof and other plane surface.

4. In case of multiple occupancy of a property, the measurement may be made at any point inside the premises to which any complainant has right of legal private occupancy; provided that the measurement shall not be made within three feet of any ground, wall, floor, ceiling, roof or other plane surface.

5. All measurements of sound provided for in this chapter will be made by qualified officials of the city who are designated by the city manager or designee to operate the apparatus used to make the measurements.

B. Assessment Without Sound Level Meter. Any police officer, code enforcement officer, or other official designated by the city manager or designee who hears a noise or sound that is plainly audible, as defined in Section 11.80.020, in violation of this chapter, may enforce this chapter and shall assess the noise or sound according to the following standards:

1. The primary means of detection shall be by means of the official’s normal hearing faculties, not artificially enhanced.

2. The official shall first attempt to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates so that the official can readily identify the offending source of the sound or noise and the distance involved. If the official is unable to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates, then the official shall confirm the source of the sound or noise by approaching the suspected vehicle or real property until the official is able to obtain a direct line of sight and hearing, and confirm the source of the sound or noise that was heard at the place of the original assessment of the sound or noise.

3. The official need not be required to identify song titles, artists, or lyrics in order to establish a violation. (Ord. 740 § 1.2, 2007)

11.80.060 Violation.

A. Violation of Sound Level Limits. Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine not to exceed one thousand dollars ($1,000.00) and/or six months in the county jail, or both. Notwithstanding the foregoing, any violation of the provisions of this chapter may, in the discretion of the citing officer or the city attorney, be cited and/or prosecuted as an infraction or be subject to civil citation pursuant to Chapter 1.10.

B. Joint and Several Responsibility. In addition to the person causing the offending sound, the owner, tenant or lessee of property, or a manager, overseer or agent, or any other person lawfully entitled to possess the property from which the offending sound is emitted at the time the offending sound is emitted, shall be responsible for compliance with this chapter if the additionally responsible party knows or should have known of the offending noise disturbance. It shall not be a lawful defense to assert that some other person caused the sound. The lawful possessor or operator of the premises shall be responsible for operating or maintaining the premises in compliance with this chapter and may be cited regardless of whether or not the person actually causing the sound is also cited.

C. Violation May be Declared a Public Nuisance. The operation or maintenance of any device, equipment, instrument, vehicle or machinery in violation of any provisions of this chapter which endangers the public health, safety and quality of life of residents in the area is declared to be a public nuisance, and may be subject to abatement summarily or by a restraining order or injunction issued

by a court of competent jurisdiction. (Ord. 824 § 1.2, 2011; Ord. 740 § 1.2, 2007)

APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 13160 Study Area Photos

L1_E
33, 55' 9.360000", 117, 12' 39.480000"

L1_N
33, 55' 9.360000", 117, 12' 39.480000"

L1_S
33, 55' 9.360000", 117, 12' 39.480000"

L1_W
33, 55' 9.360000", 117, 12' 39.480000"

L2_E
33, 55' 5.580000", 117, 12' 16.410000"

L2_N
33, 55' 5.650000", 117, 12' 16.440000"

JN: 13160 Study Area Photos

L2_S
33, 55' 5.530000", 117, 12' 16.250000"

L2_W
33, 55' 5.510000", 117, 12' 16.250000"

L3_E
33, 55' 1.630000", 117, 12' 41.630000"

L3_N
33, 55' 1.820000", 117, 12' 41.710000"

L3_S
33, 55' 1.580000", 117, 12' 41.540000"

L3_W
33, 55' 1.560000", 117, 12' 41.520000"

JN: 13160 Study Area Photos

L4_E
33, 55' 8.200000", 117, 12' 41.630000"

L4_N
33, 55' 8.220000", 117, 12' 41.600000"

L4_S
33, 55' 8.180000", 117, 12' 41.630000"

L4_W
33, 55' 8.180000", 117, 12' 41.630000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

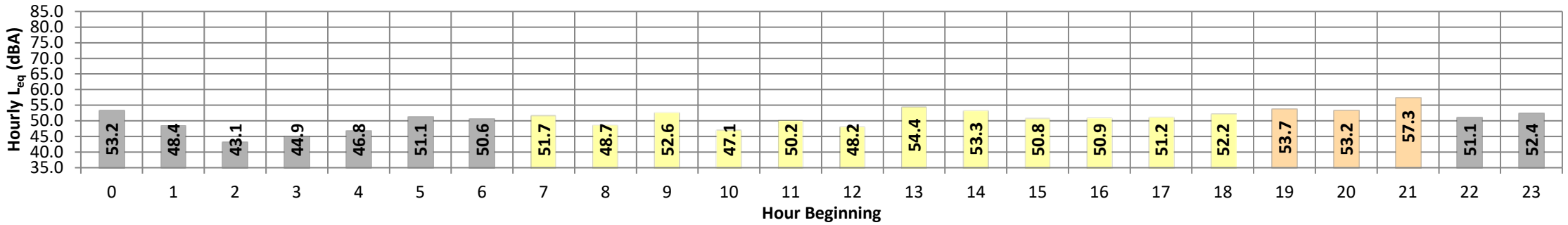
Date: Wednesday, September 16, 2020
Project: Moreno Valley Commercial

Location: L1 - Located north of the Project site on Timo Street near existing single-family residential homes at 13861 Paprika Court.

Meter: Piccolo II

JN: 13160
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	53.2	63.8	40.5	62.3	61.3	59.4	58.2	53.9	48.8	41.5	41.0	40.6	53.2	10.0	63.2
	1	48.4	60.1	39.2	59.6	58.9	55.5	52.5	46.2	43.3	40.3	39.9	39.4	48.4	10.0	58.4
	2	43.1	75.8	39.4	74.1	71.9	65.9	59.7	43.9	41.8	40.0	39.8	39.5	43.1	10.0	53.1
	3	44.9	55.3	40.3	54.7	53.9	49.9	47.6	44.0	42.5	40.9	40.6	40.4	44.9	10.0	54.9
	4	46.8	55.0	43.1	54.7	54.1	51.6	49.8	46.3	45.1	43.8	43.5	43.2	46.8	10.0	56.8
	5	51.1	61.8	45.7	61.3	60.5	57.5	54.7	49.5	47.9	46.4	46.1	45.8	51.1	10.0	61.1
	6	50.6	58.4	47.0	57.7	57.2	54.9	53.5	50.6	49.3	47.8	47.4	47.1	50.6	10.0	60.6
Day	7	51.7	60.2	47.6	59.8	59.0	56.6	55.0	51.4	49.7	48.2	48.0	47.7	51.7	0.0	51.7
	8	48.7	58.2	44.8	57.8	57.0	54.0	51.7	47.8	46.6	45.4	45.2	45.0	48.7	0.0	48.7
	9	52.6	66.0	42.8	65.3	64.3	60.1	56.0	47.5	45.8	43.6	43.3	43.0	52.6	0.0	52.6
	10	47.1	58.6	40.8	58.3	57.6	54.1	50.7	44.4	42.8	41.4	41.2	41.0	47.1	0.0	47.1
	11	50.2	62.5	39.6	61.8	61.0	58.2	55.4	45.0	42.3	40.4	40.0	39.7	50.2	0.0	50.2
	12	48.2	58.9	42.0	58.5	57.8	55.0	52.4	46.4	44.3	42.6	42.3	42.1	48.2	0.0	48.2
	13	54.4	67.1	44.4	66.7	65.8	62.1	58.3	49.6	47.4	45.1	44.7	44.5	54.4	0.0	54.4
	14	53.3	65.4	44.1	64.9	64.0	60.8	57.8	50.4	46.4	44.6	44.4	44.2	53.3	0.0	53.3
	15	50.8	61.8	41.5	61.3	60.4	57.3	55.0	50.1	46.4	42.6	42.1	41.7	50.8	0.0	50.8
	16	50.9	60.7	40.6	60.3	59.7	57.3	55.5	50.5	47.8	42.7	42.0	41.0	50.9	0.0	50.9
	17	51.2	61.3	42.2	60.5	59.8	57.5	55.6	51.9	45.0	42.9	42.6	42.3	51.2	0.0	51.2
	18	52.2	74.3	43.9	73.8	72.8	68.6	64.5	54.7	48.7	44.7	44.4	44.1	52.2	0.0	52.2
Evening	19	53.7	77.1	46.9	75.8	73.9	68.8	64.9	57.6	53.6	47.6	47.3	47.0	53.7	5.0	58.7
	20	53.2	62.9	47.2	62.2	61.6	59.4	57.4	52.6	49.9	47.9	47.7	47.4	53.2	5.0	58.2
	21	57.3	68.8	43.2	68.4	67.9	65.3	62.2	55.5	48.5	44.0	43.7	43.3	57.3	5.0	62.3
Night	22	51.1	61.4	41.0	60.5	59.6	57.5	56.0	51.0	46.8	42.3	41.7	41.2	51.1	10.0	61.1
	23	52.4	63.7	40.6	63.2	62.7	60.3	57.9	50.3	45.3	41.5	41.1	40.7	52.4	10.0	62.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.1	58.2	39.6	57.8	57.0	54.0	50.7	44.4	42.3	40.4	40.0	39.7
	Max	54.4	74.3	47.6	73.8	72.8	68.6	64.5	54.7	49.7	48.2	48.0	47.7
Energy Average		51.4	Average:		62.4	61.6	58.5	55.7	49.1	46.1	43.7	43.4	43.0
Evening	Min	53.2	62.9	43.2	62.2	61.6	59.4	57.4	52.6	48.5	44.0	43.7	43.3
	Max	57.3	77.1	47.2	75.8	73.9	68.8	64.9	57.6	53.6	47.9	47.7	47.4
Energy Average		55.1	Average:		68.8	67.8	64.5	61.5	55.2	50.7	46.5	46.2	45.9
Night	Min	43.1	55.0	39.2	54.7	53.9	49.9	47.6	43.9	41.8	40.0	39.8	39.4
	Max	53.2	75.8	47.0	74.1	71.9	65.9	59.7	53.9	49.3	47.8	47.4	47.1
Energy Average		50.1	Average:		60.9	60.0	57.0	54.4	48.4	45.6	42.7	42.4	42.0

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
51.7	52.4	50.1

24-Hour CNEL (dBA)
57.7

24-Hour Noise Level Measurement Summary

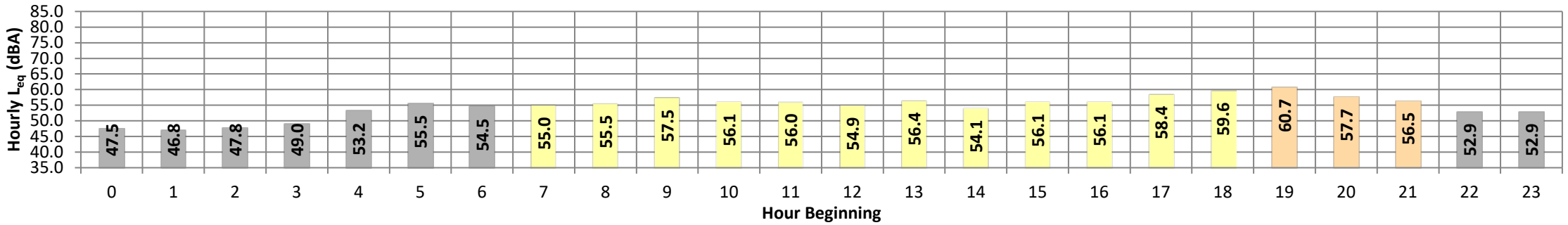
Date: Wednesday, September 16, 2020
Project: Moreno Valley Commercial

Location: L2 - Located east of the Project site on Darwin Drive near existing single-family residential home at 26282 Sequoia Street.

Meter: Piccolo II

JN: 13160
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	47.5	58.9	39.5	58.7	58.0	54.8	51.9	44.4	42.3	40.3	40.0	39.6	47.5	10.0	57.5
	1	46.8	59.0	38.9	58.7	57.8	54.1	50.5	43.4	41.4	39.6	39.3	39.0	46.8	10.0	56.8
	2	47.8	60.3	38.6	59.8	58.9	55.2	51.5	43.8	41.4	39.3	39.1	38.7	47.8	10.0	57.8
	3	49.0	61.2	39.8	60.8	60.0	56.7	53.5	44.9	42.4	40.4	40.1	39.9	49.0	10.0	59.0
	4	53.2	66.2	42.2	65.8	64.9	60.5	57.6	47.8	44.5	42.8	42.6	42.3	53.2	10.0	63.2
	5	55.5	68.8	44.6	68.3	67.2	62.9	59.1	50.3	47.3	45.3	45.0	44.7	55.5	10.0	65.5
	6	54.5	66.2	46.4	65.6	64.7	61.7	59.0	52.1	49.0	47.0	46.7	46.5	54.5	10.0	64.5
Day	7	55.0	65.1	48.8	64.8	64.2	61.7	59.6	53.5	51.0	49.3	49.1	48.9	55.0	0.0	55.0
	8	55.5	67.3	45.2	67.0	66.4	63.1	59.9	52.7	48.7	46.0	45.7	45.4	55.5	0.0	55.5
	9	57.5	70.6	42.9	70.0	68.9	65.1	62.2	52.8	48.0	43.9	43.5	43.1	57.5	0.0	57.5
	10	56.1	69.2	40.9	68.7	67.7	63.7	60.3	51.5	46.1	41.9	41.5	41.1	56.1	0.0	56.1
	11	56.0	68.9	40.8	68.5	67.6	63.8	60.8	51.0	45.9	41.9	41.4	41.0	56.0	0.0	56.0
	12	54.9	67.4	42.4	67.1	66.3	63.0	59.8	49.5	46.0	43.3	42.9	42.5	54.9	0.0	54.9
	13	56.4	68.9	42.2	68.3	67.4	64.0	61.2	53.3	47.6	43.2	42.8	42.3	56.4	0.0	56.4
	14	54.1	66.8	39.4	66.4	65.4	61.8	58.9	50.2	44.9	40.4	40.0	39.5	54.1	0.0	54.1
	15	56.1	69.0	39.5	68.6	67.8	64.3	61.1	49.8	44.4	40.5	40.1	39.6	56.1	0.0	56.1
	16	56.1	68.4	40.4	68.1	67.3	64.1	61.6	51.3	45.3	41.5	41.0	40.5	56.1	0.0	56.1
	17	58.4	71.1	42.2	70.5	69.3	66.1	64.0	54.6	47.8	43.4	42.9	42.3	58.4	0.0	58.4
	18	59.6	73.6	44.1	72.6	71.2	66.9	63.5	54.6	49.3	45.1	44.6	44.2	59.6	0.0	59.6
Evening	19	60.7	73.8	44.1	73.2	72.3	68.9	66.2	53.4	48.9	45.2	44.8	44.3	60.7	5.0	65.7
	20	57.7	70.9	42.7	70.5	69.4	65.3	61.9	52.0	48.0	43.8	43.3	42.9	57.7	5.0	62.7
	21	56.5	69.9	42.1	69.5	68.3	64.1	61.1	50.0	46.2	43.2	42.7	42.3	56.5	5.0	61.5
Night	22	52.9	65.1	40.7	64.8	64.1	60.9	58.1	48.0	44.1	41.5	41.1	40.8	52.9	10.0	62.9
	23	52.9	65.7	40.1	65.2	64.4	60.5	57.1	49.2	44.0	40.9	40.5	40.2	52.9	10.0	62.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	54.1	65.1	39.4	64.8	64.2	61.7	58.9	49.5	44.4	40.4	40.0	39.5
	Max	59.6	73.6	48.8	72.6	71.2	66.9	64.0	54.6	51.0	49.3	49.1	48.9
Energy Average		56.6	Average:		68.4	67.5	64.0	61.1	52.1	47.1	43.4	43.0	42.5
Evening	Min	56.5	69.9	42.1	69.5	68.3	64.1	61.1	50.0	46.2	43.2	42.7	42.3
	Max	60.7	73.8	44.1	73.2	72.3	68.9	66.2	53.4	48.9	45.2	44.8	44.3
Energy Average		58.6	Average:		71.0	70.0	66.1	63.1	51.8	47.7	44.1	43.6	43.1
Night	Min	46.8	58.9	38.6	58.7	57.8	54.1	50.5	43.4	41.4	39.3	39.1	38.7
	Max	55.5	68.8	46.4	68.3	67.2	62.9	59.1	52.1	49.0	47.0	46.7	46.5
Energy Average		52.2	Average:		63.1	62.2	58.6	55.4	47.1	44.0	41.9	41.6	41.3

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
55.8	57.1	52.2

24-Hour CNEL (dBA)
60.5

24-Hour Noise Level Measurement Summary

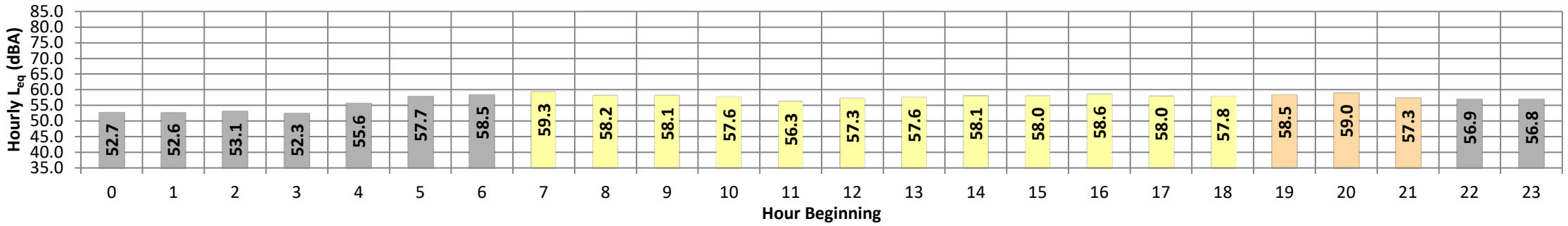
Date: Wednesday, September 16, 2020
Project: Moreno Valley Commercial

Location: L3 - Located southwest of the Project site near the Moreno Hills Seventh-day Adventist Church at 25873 Alessandro Boulevard.

Meter: Piccolo II

JN: 13160
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	52.7	61.4	43.0	61.2	60.9	59.7	58.3	52.7	48.0	44.2	43.6	43.1	52.7	10.0	62.7
	1	52.6	62.1	41.4	61.8	61.4	60.1	58.7	51.7	46.5	42.7	42.1	41.6	52.6	10.0	62.6
	2	53.1	62.6	41.5	62.3	62.0	61.0	59.4	51.3	47.2	42.5	42.0	41.6	53.1	10.0	63.1
	3	52.3	61.6	42.8	61.1	60.6	59.3	57.9	52.0	47.5	43.6	43.3	43.0	52.3	10.0	62.3
	4	55.6	65.7	45.6	65.4	64.9	62.8	61.1	54.5	50.4	46.4	46.0	45.7	55.6	10.0	65.6
	5	57.7	66.1	49.5	65.8	65.4	64.1	62.0	58.3	54.7	50.5	50.0	49.6	57.7	10.0	67.7
	6	58.5	65.4	50.7	65.2	64.9	64.0	63.1	59.4	56.2	51.7	51.2	50.8	58.5	10.0	68.5
Day	7	59.3	65.9	51.4	65.6	65.3	64.4	63.5	60.6	57.5	52.6	52.0	51.5	59.3	0.0	59.3
	8	58.2	65.2	49.0	65.0	64.7	63.7	62.6	59.4	56.1	50.3	49.7	49.1	58.2	0.0	58.2
	9	58.1	66.6	45.8	66.2	65.8	64.5	63.2	59.2	54.9	47.4	46.5	46.0	58.1	0.0	58.1
	10	57.6	66.3	44.3	66.0	65.8	64.3	62.7	58.2	54.4	46.4	45.2	44.5	57.6	0.0	57.6
	11	56.3	63.7	44.2	63.5	63.1	61.9	60.8	57.7	53.9	46.4	45.3	44.4	56.3	0.0	56.3
	12	57.3	64.4	47.2	64.1	63.9	62.9	61.8	58.4	55.3	49.2	48.3	47.4	57.3	0.0	57.3
	13	57.6	65.5	46.6	65.2	64.8	63.5	62.2	58.3	55.2	49.0	47.9	46.8	57.6	0.0	57.6
	14	58.1	66.7	45.6	66.4	66.0	64.5	63.1	58.6	55.4	48.0	46.6	45.7	58.1	0.0	58.1
	15	58.0	66.2	45.9	65.9	65.4	63.8	62.2	58.7	55.7	48.8	47.5	46.2	58.0	0.0	58.0
	16	58.6	67.2	46.4	66.8	66.3	64.9	63.4	59.0	56.0	48.7	47.5	46.6	58.6	0.0	58.6
	17	58.0	64.8	47.5	64.5	64.1	62.9	62.0	59.1	56.4	50.1	48.7	47.8	58.0	0.0	58.0
	18	57.8	64.5	47.9	64.2	63.9	62.8	61.9	59.1	56.1	49.7	48.9	48.1	57.8	0.0	57.8
Evening	19	58.5	66.7	47.6	66.5	66.2	64.7	63.3	59.3	55.7	49.3	48.4	47.7	58.5	5.0	63.5
	20	59.0	68.9	46.6	68.4	67.9	65.5	63.7	59.1	55.1	48.7	47.7	46.8	59.0	5.0	64.0
	21	57.3	66.9	45.8	66.4	65.7	63.9	61.7	57.8	53.7	47.2	46.5	45.9	57.3	5.0	62.3
Night	22	56.9	66.8	45.1	66.0	65.3	63.5	61.8	57.4	52.6	46.4	45.7	45.2	56.9	10.0	66.9
	23	56.8	76.8	44.5	76.3	75.3	71.3	67.2	58.2	52.7	46.4	45.4	44.6	56.8	10.0	66.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	56.3	63.7	44.2	63.5	63.1	61.9	60.8	57.7	53.9	46.4	45.2	44.4
	Max	59.3	67.2	51.4	66.8	66.3	64.9	63.5	60.6	57.5	52.6	52.0	51.5
Energy Average		58.0	Average:		65.3	64.9	63.7	62.4	58.9	55.6	48.9	47.8	47.0
Evening	Min	57.3	66.7	45.8	66.4	65.7	63.9	61.7	57.8	53.7	47.2	46.5	45.9
	Max	59.0	68.9	47.6	68.4	67.9	65.5	63.7	59.3	55.7	49.3	48.4	47.7
Energy Average		58.3	Average:		67.1	66.6	64.7	62.9	58.7	54.8	48.4	47.6	46.8
Night	Min	52.3	61.4	41.4	61.1	60.6	59.3	57.9	51.3	46.5	42.5	42.0	41.6
	Max	58.5	76.8	50.7	76.3	75.3	71.3	67.2	59.4	56.2	51.7	51.2	50.8
Energy Average		55.7	Average:		65.0	64.5	62.9	61.1	55.1	50.6	46.0	45.5	45.0

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
57.3	58.0	55.7

24-Hour CNEL (dBA)
63.0

24-Hour Noise Level Measurement Summary

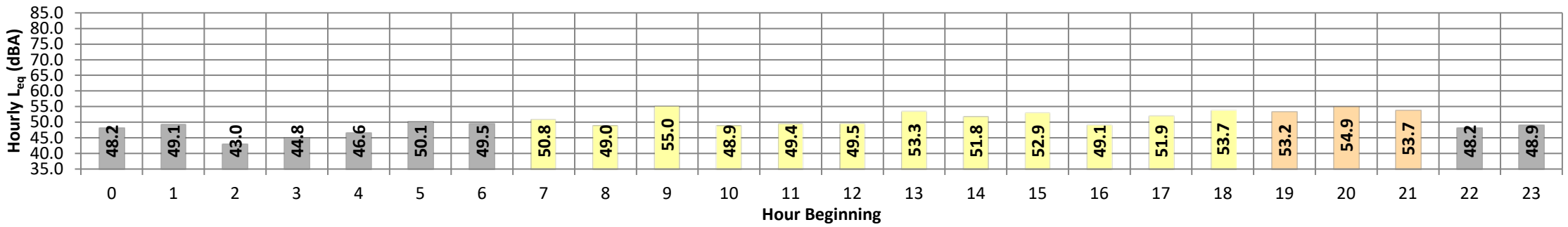
Date: Wednesday, September 16, 2020
Project: Moreno Valley Commercial

Location: L4 - Located west of the Project site on Chervil Court near existing sinlge family residential home at 13898 Chervil Court.

Meter: Piccolo II

JN: 13160
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	48.2	56.2	45.8	55.8	55.3	52.6	50.3	47.5	46.8	46.1	46.0	45.9	48.2	10.0	58.2
	1	49.1	57.1	46.5	55.9	54.9	52.7	51.7	49.1	47.8	46.9	46.8	46.6	49.1	10.0	59.1
	2	43.0	48.7	39.9	48.3	47.7	46.6	45.9	43.4	41.8	40.5	40.2	40.0	43.0	10.0	53.0
	3	44.8	52.9	41.2	52.6	52.2	50.1	48.1	44.2	43.1	41.7	41.5	41.3	44.8	10.0	54.8
	4	46.6	53.2	43.8	52.8	52.4	50.8	49.1	46.5	45.4	44.4	44.2	43.9	46.6	10.0	56.6
	5	50.1	60.0	45.6	59.7	59.3	56.9	54.0	48.2	47.1	46.1	45.9	45.7	50.1	10.0	60.1
	6	49.5	54.9	47.3	54.6	54.3	52.9	51.6	49.6	48.7	47.8	47.6	47.4	49.5	10.0	59.5
Day	7	50.8	57.9	47.9	57.5	57.1	55.2	53.6	50.7	49.5	48.4	48.2	48.1	50.8	0.0	50.8
	8	49.0	56.2	46.0	55.7	55.2	53.2	51.5	49.0	47.8	46.6	46.4	46.1	49.0	0.0	49.0
	9	55.0	67.0	47.8	66.7	65.8	61.8	58.4	52.0	49.9	48.5	48.2	47.9	55.0	0.0	55.0
	10	48.9	59.8	42.1	59.4	58.8	56.2	53.3	46.4	44.3	42.8	42.5	42.3	48.9	0.0	48.9
	11	49.4	59.7	43.0	59.1	58.4	55.5	53.1	48.3	45.9	43.9	43.6	43.2	49.4	0.0	49.4
	12	49.5	58.8	43.9	58.4	57.8	55.3	53.5	48.7	46.6	44.6	44.3	44.0	49.5	0.0	49.5
	13	53.3	64.8	44.4	64.3	63.7	60.6	58.0	50.7	47.6	45.4	45.1	44.6	53.3	0.0	53.3
	14	51.8	80.7	55.2	80.2	79.8	77.4	75.8	71.6	65.9	59.7	57.1	55.5	51.8	0.0	51.8
	15	52.9	73.5	43.8	73.3	73.0	70.9	70.3	63.1	55.6	45.9	45.3	44.1	52.9	0.0	52.9
	16	49.1	59.3	42.8	59.0	58.5	55.6	52.8	47.5	45.6	43.8	43.4	42.9	49.1	0.0	49.1
	17	51.9	61.6	45.6	61.2	60.6	58.1	56.2	51.2	48.7	46.5	46.2	45.8	51.9	0.0	51.9
	18	53.7	62.3	47.1	61.9	61.3	59.6	58.3	53.7	50.6	48.0	47.6	47.2	53.7	0.0	53.7
Evening	19	53.2	64.7	45.7	64.0	63.0	60.1	57.6	51.3	48.8	46.4	46.1	45.8	53.2	5.0	58.2
	20	54.9	68.0	44.8	66.8	65.3	62.1	59.6	51.9	48.3	45.7	45.4	45.0	54.9	5.0	59.9
	21	53.7	64.0	44.4	63.3	62.4	60.4	58.6	53.8	49.8	45.3	44.9	44.5	53.7	5.0	58.7
Night	22	48.2	57.4	42.1	57.0	56.5	54.4	52.3	47.6	45.2	42.9	42.6	42.3	48.2	10.0	58.2
	23	48.9	58.3	42.2	58.0	57.5	56.3	55.0	46.9	44.3	42.8	42.6	42.3	48.9	10.0	58.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.9	56.2	42.1	55.7	55.2	53.2	51.5	46.4	44.3	42.8	42.5	42.3
	Max	55.0	80.7	55.2	80.2	79.8	77.4	75.8	71.6	65.9	59.7	57.1	55.5
Energy Average		51.8	Average:		63.1	62.5	60.0	57.9	52.7	49.8	47.0	46.5	46.0
Evening	Min	53.2	64.0	44.4	63.3	62.4	60.1	57.6	51.3	48.3	45.3	44.9	44.5
	Max	54.9	68.0	45.7	66.8	65.3	62.1	59.6	53.8	49.8	46.4	46.1	45.8
Energy Average		54.0	Average:		64.7	63.5	60.9	58.6	52.3	49.0	45.8	45.4	45.1
Night	Min	43.0	48.7	39.9	48.3	47.7	46.6	45.9	43.4	41.8	40.5	40.2	40.0
	Max	50.1	60.0	47.3	59.7	59.3	56.9	55.0	49.6	48.7	47.8	47.6	47.4
Energy Average		48.1	Average:		55.0	54.5	52.6	50.9	47.0	45.6	44.3	44.2	43.9

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
51.2	52.3	48.1
24-Hour CNEL (dBA)		
56.2		

APPENDIX 7.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: s/o Cottonwood Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	550 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.04	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-21.27	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-25.23	0.73	-1.20	-5.43	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:	62.0	60.1	58.3	52.3	60.9	61.5
Medium Trucks:	56.0	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	57.3	55.9	46.8	48.1	56.4	56.6
Vehicle Noise:	64.0	62.3	59.0	54.4	63.0	63.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	85	182

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Perris Blvd. | Job Number: 13160
Road Segment: n/o Alessandro Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,330 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,033 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	73 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	41.446
Medium Trucks:	41.232
Heavy Trucks:	41.253

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.64	1.12	-1.20	-4.67	0.000	0.000
Medium Trucks:	77.72	-15.60	1.15	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.55	1.15	-1.20	-5.38	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	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	63.4	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	70.1	68.4	65.1	60.5	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	221	477
CNEL:	51	110	237	510

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: s/o Bay Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,550 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	655 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.28	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.52	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.47	0.73	-1.20	-5.43	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:	62.7	60.8	59.1	53.0	61.6	62.3
Medium Trucks:	56.7	55.2	48.9	47.3	55.8	56.0
Heavy Trucks:	58.1	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	64.8	63.0	59.7	55.2	63.7	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	191
CNEL:	20	44	95	205

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Nason St. | Job Number: 13160
Road Segment: n/o Alessandro Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,060 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,406 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.04	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.20	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.15	0.73	-1.20	-5.43	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	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	60.1	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	61.4	60.0	50.9	52.2	60.5	60.6
Vehicle Noise:	68.1	66.3	63.1	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	318
CNEL:	34	73	158	341

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: n/o Cactus Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,060 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,406 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.04	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.20	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.15	0.73	-1.20	-5.43	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	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	60.1	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	61.4	60.0	50.9	52.2	60.5	60.6
Vehicle Noise:	68.1	66.3	63.1	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	318
CNEL:	34	73	158	341

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Alessandro Blvd. | Job Number: 13160
Road Segment: w/o Nason St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,560 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	756 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.62	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-20.86	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.82	-0.49	-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:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	58.9	57.4	48.4	49.7	58.0	58.1
Vehicle Noise:	66.6	64.8	61.8	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	157	338
CNEL:	36	78	168	363

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing 2018 | Project Name: New Commercial and Offi
Road Name: Alessandro Blvd. | Job Number: 13160
Road Segment: e/o Perris Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,650 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,865 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.76	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	79.45	-16.48	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.44	-0.49	-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:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.1	60.7	51.7	52.9	61.3	61.4
Vehicle Noise:	69.3	67.6	64.5	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	240	518
CNEL:	56	120	258	555

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: s/o Cottonwood Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,820 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	582 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.79	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-21.03	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.98	0.73	-1.20	-5.43	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:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	56.2	54.7	48.4	46.8	55.3	55.5
Heavy Trucks:	57.5	56.1	47.1	48.3	56.7	56.8
Vehicle Noise:	64.2	62.5	59.2	54.7	63.2	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	82	177
CNEL:	19	41	88	189

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: s/o Bay Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,360 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	736 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.77	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.01	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.96	0.73	-1.20	-5.43	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	61.3	59.6	53.5	62.2	62.8
Medium Trucks:	57.2	55.7	49.4	47.8	56.3	56.5
Heavy Trucks:	58.6	57.1	48.1	49.4	57.7	57.8
Vehicle Noise:	65.3	63.5	60.3	55.7	64.2	64.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	96	207
CNEL:	22	48	103	221

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: New Commercial and Offi
Road Name: Nason St. | Job Number: 13160
Road Segment: n/o Alessandro Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,300 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,430 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.11	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.12	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.08	0.73	-1.20	-5.43	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	64.2	62.5	56.4	65.0	65.6
Medium Trucks:	60.1	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.4	60.0	51.0	52.2	60.6	60.7
Vehicle Noise:	68.1	66.4	63.1	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	149	322
CNEL:	34	74	160	344

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: New Commercial and Offi
Road Name: Perris Blvd. | Job Number: 13160
Road Segment: n/o Alessandro Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,570 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,057 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	73 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	41.446
Medium Trucks:	41.232
Heavy Trucks:	41.253

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.69	1.12	-1.20	-4.67	0.000	0.000
Medium Trucks:	77.72	-15.55	1.15	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.50	1.15	-1.20	-5.38	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	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	70.1	68.4	65.1	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	223	481
CNEL:	51	111	239	514

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: New Commercial and Offi
Road Name: Lasselle St. | Job Number: 13160
Road Segment: n/o Cactus Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,260 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,426 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.10	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.14	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.09	0.73	-1.20	-5.43	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	64.2	62.5	56.4	65.0	65.6
Medium Trucks:	60.1	58.6	52.2	50.7	59.2	59.4
Heavy Trucks:	61.4	60.0	51.0	52.2	60.6	60.7
Vehicle Noise:	68.1	66.4	63.1	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	149	321
CNEL:	34	74	160	344

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alessandro Blvd.
Road Segment: e/o Perris Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,970 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,897 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.83	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-16.41	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.36	-0.49	-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:	67.6	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	61.4	59.8	53.5	51.9	60.4	60.6
Heavy Trucks:	62.2	60.8	51.7	53.0	61.3	61.5
Vehicle Noise:	69.4	67.7	64.5	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	113	243	523
CNEL:	56	121	261	562

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Lasselle St.
Road Segment: s/o Cottonwood Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,320 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	632 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-3.43	0.71	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-20.67	0.74	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-24.63	0.73	-1.20	*-5.43*	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	60.7	58.9	52.9	61.5	62.1
Medium Trucks:	56.6	55.1	48.7	47.2	55.6	55.9
Heavy Trucks:	57.9	56.5	47.4	48.7	57.0	57.2
Vehicle Noise:	64.6	62.9	59.6	55.0	63.6	64.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	19	40	87	187
CNEL:	20	43	93	200

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alessandro Blvd.
Road Segment: w/o Nason St.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,880 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	788 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.44	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-20.68	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-24.64	-0.49	-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:	65.1	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	58.6	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	59.0	57.6	48.6	49.8	58.2	58.3
Vehicle Noise:	66.7	65.0	62.0	57.2	65.7	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	35	75	161	347
CNEL:	37	80	173	373

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Lasselle St.
Road Segment: s/o Bay Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,530 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	753 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-2.67	0.71	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-19.91	0.74	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.87	0.73	-1.20	*-5.43*	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:	63.3	61.4	59.7	53.6	62.3	62.9
Medium Trucks:	57.3	55.8	49.5	47.9	56.4	56.6
Heavy Trucks:	58.7	57.2	48.2	49.5	57.8	57.9
Vehicle Noise:	65.4	63.6	60.4	55.8	64.3	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	21	45	97	210
CNEL:	22	48	104	225

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Perris Blvd.
Road Segment: n/o Alessandro Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,350 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,335 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	73 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	41.446
Medium Trucks:	41.232
Heavy Trucks:	41.253

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.24	1.12	-1.20	-4.67	0.000	0.000
Medium Trucks:	77.72	-14.99	1.15	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.95	1.15	-1.20	-5.38	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:	68.7	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.7	61.2	54.8	53.3	61.7	62.0
Heavy Trucks:	64.0	62.6	53.5	54.8	63.1	63.3
Vehicle Noise:	70.7	69.0	65.7	61.1	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	243	523
CNEL:	56	121	260	560

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Lasselle St.
Road Segment: n/o Cactus Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,160 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,616 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.64	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.59	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.55	0.73	-1.20	-5.43	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:	66.7	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	60.7	59.2	52.8	51.2	59.7	59.9
Heavy Trucks:	62.0	60.6	51.5	52.8	61.1	61.3
Vehicle Noise:	68.7	67.0	63.7	59.1	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	81	173	374

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Nason St.
Road Segment: n/o Alessandro Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,150 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,615 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.64	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.60	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.55	0.73	-1.20	-5.43	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:	66.7	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	60.7	59.1	52.8	51.2	59.7	59.9
Heavy Trucks:	62.0	60.6	51.5	52.8	61.1	61.3
Vehicle Noise:	68.7	66.9	63.7	59.1	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	80	173	374

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Alessandro Blvd.
Road Segment: e/o Perris Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,430 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,143 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.36	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	79.45	-15.88	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.83	-0.49	-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:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.9	68.2	65.1	60.4	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	122	264	568
CNEL:	61	131	283	609

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects
Road Name: Alessandro Blvd.
Road Segment: w/o Nason St.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,690 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	869 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.02	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-20.26	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.21	-0.49	-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:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.1	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.7
Vehicle Noise:	67.2	65.4	62.4	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	172	371
CNEL:	40	86	185	398

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Lasselle St.
Road Segment: s/o Bay Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,340 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	834 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.23	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-19.47	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.42	0.73	-1.20	-5.43	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:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.1
Heavy Trucks:	59.1	57.7	48.6	49.9	58.3	58.4
Vehicle Noise:	65.8	64.1	60.8	56.3	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	48	104	225
CNEL:	24	52	112	240

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Lasselle St.
Road Segment: s/o Cottonwood Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,640 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	664 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.22	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.46	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.41	0.73	-1.20	-5.43	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	60.9	59.1	53.1	61.7	62.3
Medium Trucks:	56.8	55.3	48.9	47.4	55.8	56.1
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	64.8	63.1	59.8	55.3	63.8	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	90	193
CNEL:	21	45	96	207

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Perris Blvd.
Road Segment: n/o Alessandro Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,590 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,359 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	73 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	41.446
Medium Trucks:	41.232
Heavy Trucks:	41.253

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.29	1.12	-1.20	-4.67	0.000	0.000
Medium Trucks:	77.72	-14.95	1.15	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.91	1.15	-1.20	-5.38	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:	68.7	66.8	65.1	59.0	67.6	68.2
Medium Trucks:	62.7	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	64.0	62.6	53.6	54.8	63.2	63.3
Vehicle Noise:	70.7	69.0	65.7	61.2	69.7	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	526
CNEL:	56	121	262	564

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Nason St.
Road Segment: n/o Alessandro Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,390 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,639 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.71	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.53	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.49	0.73	-1.20	-5.43	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:	66.7	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	62.0	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	68.7	67.0	63.7	59.2	67.7	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	164	352
CNEL:	38	81	175	377

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Alessandro Blvd.
Road Segment: e/o Perris Blvd.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,750 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,175 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.42	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	79.45	-15.81	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.77	-0.49	-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:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	61.9	60.4	54.1	52.5	61.0	61.2
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	70.0	68.3	65.1	60.4	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	124	266	573
CNEL:	62	133	286	615

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Lasselle St.
Road Segment: n/o Cactus Av.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,360 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,636 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:	50.0 feet
Centerline Dist. to Observer:	50.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	44.147
Medium Trucks:	43.947
Heavy Trucks:	43.966

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.70	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.54	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.50	0.73	-1.20	-5.43	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:	66.7	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	60.7	59.2	52.8	51.3	59.8	60.0
Heavy Trucks:	62.0	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	68.7	67.0	63.7	59.2	67.7	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	352
CNEL:	38	81	175	377

Monday, September 21, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: 2025 Plus Cumulative Projects +
Road Name: Alessandro Blvd.
Road Segment: w/o Nason St.
Project Name: New Commercial and Offi
Job Number: 13160

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,010 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	901 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.86	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-20.10	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.06	-0.49	-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:	65.6	63.7	62.0	55.9	64.5	65.1
Medium Trucks:	59.2	57.7	51.3	49.8	58.3	58.5
Heavy Trucks:	59.6	58.2	49.2	50.4	58.8	58.9
Vehicle Noise:	67.3	65.6	62.5	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	176	380
CNEL:	41	88	189	408

Monday, September 21, 2020

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APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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13160 - Moreno Valley Commercial

CadnaA Noise Prediction Model: 13160_07.cna
Date: 21.07.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
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	49.1	43.1	50.7	65.0	60.0	0.0				5.00	a	6270366.44	2279493.18	5.00
RECEIVERS		R2	28.4	24.6	31.5	65.0	60.0	0.0				5.00	a	6272129.99	2279107.15	5.00
RECEIVERS		R3	42.3	38.4	45.4	65.0	60.0	0.0				5.00	a	6270039.27	2278616.27	5.00
RECEIVERS		R4	55.4	46.1	55.1	65.0	60.0	0.0				5.00	a	6270056.17	2279120.04	5.00
RECEIVERS		@200	44.0	40.2	47.2	65.0	60.0	0.0				5.00	a	6270900.81	2278987.65	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	6270198.89	2278923.24	35.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270200.21	2278981.58	35.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270584.72	2279023.86	35.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270596.04	2279169.58	35.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270519.79	2279170.33	35.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270555.27	2279362.11	35.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270340.09	2279189.21	35.00
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270127.93	2279138.62	35.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6270128.69	2279257.91	35.00
POINTSOURCE		DT01	83.2	83.2	83.2	Lw	83.2		450.00	0.00	270.00	0.0	3.00	a	6270576.78	2279132.78	3.00
POINTSOURCE		DT02	83.2	83.2	83.2	Lw	83.2		450.00	0.00	270.00	0.0	3.00	a	6270234.87	2278959.53	3.00

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		GAS01	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270504.58	2278887.17	5.00
POINTSOURCE		GAS02	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270538.13	2278887.17	5.00
POINTSOURCE		GAS03	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270571.07	2278887.17	5.00
POINTSOURCE		GAS04	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270602.17	2278886.56	5.00
POINTSOURCE		GAS05	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270601.56	2278910.96	5.00
POINTSOURCE		GAS06	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270569.85	2278910.96	5.00
POINTSOURCE		GAS07	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270537.52	2278912.18	5.00
POINTSOURCE		GAS08	79.9	79.9	79.9	Lw	79.9		900.00	0.00	540.00	0.0	5.00	a	6270505.19	2278911.57	5.00
POINTSOURCE		PLAY01	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	5.00	a	6270519.10	2279355.44	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270241.83	2279080.38	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270410.68	2279365.20	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270659.28	2278965.13	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270662.84	2279205.02	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270286.19	2279367.38	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	5.00	a	6270302.59	2279367.11	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89.0		75.00	0.00	45.00	0.0	0.00	a	6270331.53	2279080.31	0.00
POINTSOURCE		TUNNEL01	106.0	106.0	106.0	Lw	106		900.00	0.00	0.00	0.0	5.00	a	6270311.03	2279011.08	5.00
POINTSOURCE		VAC01	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270347.44	2278885.68	3.00
POINTSOURCE		VAC02	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270348.12	2278910.33	3.00
POINTSOURCE		VAC03	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270348.46	2278934.30	3.00
POINTSOURCE		VAC04	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270399.20	2279012.13	3.00
POINTSOURCE		VAC05	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270398.10	2278939.68	3.00
POINTSOURCE		VAC06	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270349.06	2278957.16	3.00
POINTSOURCE		VAC07	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270348.29	2278981.71	3.00
POINTSOURCE		VAC08	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270398.26	2278963.56	3.00
POINTSOURCE		VAC09	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	a	6270398.45	2278987.58	3.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
			left	right		horz.	vert.	Begin		End		x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						6.00	a			6272098.61	2279216.46	6.00	0.00
												6272099.65	2279125.84	6.00	0.00
												6272093.40	2279114.38	6.00	0.00
												6272092.36	2278977.92	6.00	0.00
BARRIEREXISTING		0						6.00	a			6272093.40	2278966.46	6.00	0.00
												6272105.38	2278848.76	6.00	0.00
												6272121.52	2278833.65	6.00	0.00
												6272137.15	2278833.65	6.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		30.00	a	6270119.39	2279336.68	30.00	0.00
								6270173.51	2279336.15	30.00	0.00
								6270172.44	2279245.60	30.00	0.00
								6270118.86	2279246.67	30.00	0.00
BUILDING		BUILDING00002	x	0		30.00	a	6270117.78	2279218.81	30.00	0.00
								6270172.97	2279218.81	30.00	0.00
								6270171.36	2279127.19	30.00	0.00
								6270117.78	2279127.72	30.00	0.00
BUILDING		BUILDING00004	x	0		30.00	a	6270327.28	2279200.59	30.00	0.00
								6270391.58	2279200.05	30.00	0.00
								6270392.65	2279165.23	30.00	0.00
								6270385.15	2279165.23	30.00	0.00
								6270386.22	2279140.04	30.00	0.00
								6270327.82	2279140.58	30.00	0.00
BUILDING		BUILDING00006	x	0		30.00	a	6270473.56	2279032.88	30.00	0.00
								6270512.13	2279031.28	30.00	0.00
								6270512.13	2279035.56	30.00	0.00
								6270596.25	2279036.10	30.00	0.00
								6270596.79	2279035.03	30.00	0.00
								6270595.72	2278990.02	30.00	0.00
								6270473.02	2278993.24	30.00	0.00
BUILDING		BUILDING00007	x	0		30.00	a	6270490.70	2279180.77	30.00	0.00
								6270608.58	2279178.62	30.00	0.00
								6270608.04	2279137.90	30.00	0.00
								6270587.68	2279138.44	30.00	0.00
								6270588.22	2279134.15	30.00	0.00
								6270559.82	2279135.22	30.00	0.00
								6270559.82	2279138.97	30.00	0.00
								6270491.77	2279140.04	30.00	0.00
BUILDING		BUILDING00008	x	0		30.00	a	6270544.82	2279372.58	30.00	0.00
								6270643.94	2279371.51	30.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6270643.40	2279336.15	30.00	0.00
								6270544.28	2279336.68	30.00	0.00
BUILDING		BUILDING00007	x	0		30.00	a	6270192.94	2279035.51	30.00	0.00
								6270198.01	2279035.51	30.00	0.00
								6270198.23	2279042.12	30.00	0.00
								6270217.60	2279042.56	30.00	0.00
								6270217.60	2279035.07	30.00	0.00
								6270232.57	2279035.07	30.00	0.00
								6270231.03	2278914.00	30.00	0.00
								6270191.62	2278914.66	30.00	0.00
BUILDING		BUILDING00008	x	0		30.00	a	6270295.53	2279010.20	30.00	0.00
								6270329.65	2279009.98	30.00	0.00
								6270328.55	2278899.91	30.00	0.00
								6270294.87	2278900.57	30.00	0.00
BUILDING		BUILDING00009	x	0		8.00	a	6270232.81	2279078.43	8.00	0.00
								6270248.60	2279078.97	8.00	0.00
								6270248.60	2279067.20	8.00	0.00
								6270238.70	2279066.93	8.00	0.00
								6270238.70	2279073.35	8.00	0.00
								6270233.08	2279073.08	8.00	0.00
BUILDING		BUILDING00010	x	0		8.00	a	6270324.84	2279077.10	8.00	0.00
								6270341.70	2279077.63	8.00	0.00
								6270341.43	2279072.28	8.00	0.00
								6270336.08	2279071.75	8.00	0.00
								6270335.81	2279065.32	8.00	0.00
								6270324.84	2279065.59	8.00	0.00

Ground Absorption(s)

Name	M.	ID	G	Coordinates	
				x	y
				(ft)	(ft)
GROUND		0	1.0	6270081.00	2279195.86
				6270079.33	2279055.25
				6270052.46	2279055.04
				6270052.67	2279196.28

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APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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13160 - Moreno Valley Commercial

CadnaA Noise Prediction Model: 13160 - Construction - Not Mitigated.cna
Date: 13.10.20
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
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	62.9	62.9	69.6	65.0	60.0	0.0				5.00	a	6270366.44	2279493.18	5.00
RECEIVERS		R2	48.2	48.2	54.9	65.0	60.0	0.0				5.00	a	6272129.99	2279107.15	5.00
RECEIVERS		R3	63.0	63.0	69.7	65.0	60.0	0.0				5.00	a	6270039.27	2278616.27	5.00
RECEIVERS		R4	70.3	70.3	77.0	65.0	60.0	0.0				5.00	a	6270059.67	2279119.52	5.00
RECEIVERS		@200	64.2	64.2	70.9	65.0	60.0	0.0				5.00	a	6270900.81	2278987.65	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	119.7	119.7	119.7	75.3	75.3	75.3	Lw"	75.3					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6270114.20	2279341.67	8.00	0.00
					6270184.55	2279340.22	8.00	0.00
					6270184.84	2279382.49	8.00	0.00
					6270291.39	2279381.04	8.00	0.00
					6270291.68	2279376.41	8.00	0.00
					6270479.00	2279373.23	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6270478.42	2279338.19	8.00	0.00
			6270491.16	2279337.61	8.00	0.00
			6270492.03	2279378.44	8.00	0.00
			6270647.51	2279375.54	8.00	0.00
			6270647.51	2279325.74	8.00	0.00
			6270650.98	2279320.53	8.00	0.00
			6270650.69	2279297.95	8.00	0.00
			6270670.67	2279298.24	8.00	0.00
			6270668.93	2279130.31	8.00	0.00
			6270650.98	2279131.76	8.00	0.00
			6270651.56	2279054.17	8.00	0.00
			6270667.48	2279052.14	8.00	0.00
			6270667.19	2278859.60	8.00	0.00
			6270649.53	2278860.47	8.00	0.00
			6270648.09	2278854.68	8.00	0.00
			6270644.90	2278848.89	8.00	0.00
			6270639.69	2278844.84	8.00	0.00
			6270634.19	2278841.94	8.00	0.00
			6270628.69	2278839.05	8.00	0.00
			6270527.06	2278841.94	8.00	0.00
			6270455.55	2278832.10	8.00	0.00
			6270115.64	2278836.44	8.00	0.00
			6270113.91	2279340.51	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						6.00	a		6272098.61	2279216.46	6.00	0.00
											6272099.65	2279125.84	6.00	0.00
											6272093.40	2279114.38	6.00	0.00
											6272092.36	2278977.92	6.00	0.00
BARRIEREXISTING		0						6.00	a		6272093.40	2278966.46	6.00	0.00
											6272105.38	2278848.76	6.00	0.00
											6272121.52	2278833.65	6.00	0.00
											6272137.15	2278833.65	6.00	0.00
BARRIEREXISTING		0						5.00	a		6270281.42	2279463.92	5.00	0.00
											6270373.95	2279463.58	5.00	0.00
											6270382.63	2279467.40	5.00	0.00
											6270484.37	2279467.40	5.00	0.00

APPENDIX 10.2:

CADNAA MITIGATED CONSTRUCTION NOISE MODEL INPUTS

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13160 - Moreno Valley Commercial

CadnaA Noise Prediction Model: 13160 - Construction - Mitigated.cna
Date: 13.10.20
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
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	62.9	62.9	69.6	65.0	60.0	0.0				5.00	a	6270366.44	2279493.18	5.00
RECEIVERS		R2	48.2	48.2	54.9	65.0	60.0	0.0				5.00	a	6272129.99	2279107.15	5.00
RECEIVERS		R3	62.9	62.9	69.5	65.0	60.0	0.0				5.00	a	6270039.27	2278616.27	5.00
RECEIVERS		R4	64.7	64.7	71.4	65.0	60.0	0.0				5.00	a	6270059.67	2279119.52	5.00
RECEIVERS		@200	64.2	64.2	70.9	65.0	60.0	0.0				5.00	a	6270900.81	2278987.65	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	119.7	119.7	119.7	75.3	75.3	75.3	Lw"	75.3					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6270114.20	2279341.67	8.00	0.00
					6270184.55	2279340.22	8.00	0.00
					6270184.84	2279382.49	8.00	0.00
					6270291.39	2279381.04	8.00	0.00
					6270291.68	2279376.41	8.00	0.00
					6270479.00	2279373.23	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6270478.42	2279338.19	8.00	0.00
			6270491.16	2279337.61	8.00	0.00
			6270492.03	2279378.44	8.00	0.00
			6270647.51	2279375.54	8.00	0.00
			6270647.51	2279325.74	8.00	0.00
			6270650.98	2279320.53	8.00	0.00
			6270650.69	2279297.95	8.00	0.00
			6270670.67	2279298.24	8.00	0.00
			6270668.93	2279130.31	8.00	0.00
			6270650.98	2279131.76	8.00	0.00
			6270651.56	2279054.17	8.00	0.00
			6270667.48	2279052.14	8.00	0.00
			6270667.19	2278859.60	8.00	0.00
			6270649.53	2278860.47	8.00	0.00
			6270648.09	2278854.68	8.00	0.00
			6270644.90	2278848.89	8.00	0.00
			6270639.69	2278844.84	8.00	0.00
			6270634.19	2278841.94	8.00	0.00
			6270628.69	2278839.05	8.00	0.00
			6270527.06	2278841.94	8.00	0.00
			6270455.55	2278832.10	8.00	0.00
			6270115.64	2278836.44	8.00	0.00
			6270113.91	2279340.51	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						6.00	a		6272098.61	2279216.46	6.00	0.00
											6272099.65	2279125.84	6.00	0.00
											6272093.40	2279114.38	6.00	0.00
											6272092.36	2278977.92	6.00	0.00
BARRIEREXISTING		0						6.00	a		6272093.40	2278966.46	6.00	0.00
											6272105.38	2278848.76	6.00	0.00
											6272121.52	2278833.65	6.00	0.00
											6272137.15	2278833.65	6.00	0.00
BARRIERTEMP		0						8.00	a		6270088.74	2279414.11	8.00	0.00
											6270085.53	2278819.56	8.00	0.00
BARRIEREXISTING		0						5.00	a		6270281.42	2279463.92	5.00	0.00
											6270373.95	2279463.58	5.00	0.00
											6270382.63	2279467.40	5.00	0.00
											6270484.37	2279467.40	5.00	0.00