Moreno Valley Trade Center
WAREHOUSE
NOISE IMPACT ANALYSIS
CITY OF MORENO VALLEY

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JANUARY 10, 2021

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
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
MARB/IPA	March Air Reserve Base / Inland Port Airport
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Moreno Valley Trade Center
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Moreno Valley Trade Center development ("Project"). As shown on Exhibit 1-A, the Project site is bounded to the north by Eucalyptus Avenue, the west by Quincy Avenue (the Quincy channel), the south by Encilia Avenue and the east by Redlands Boulevard. The Project is proposed to consist of 1,332,380 square feet of warehouse uses. The Project is anticipated to be constructed in a single phase by the year 2024. At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown, and therefore, this noise study includes a conservative analysis of the proposed Project uses. This study has been prepared to satisfy applicable City of Moreno Valley standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 36 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Moreno Valley Trade Center Traffic Impact Analysis.* (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Opening Year (2024), and General Plan Build-Out (2040) traffic conditions. The analysis shows that the Project-related traffic noise level increases under all "with Project" traffic scenarios would result in *less than significant* impacts at receiving land uses adjacent to the study area roadway segments.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Moreno Valley Trade Center site, the operational analysis estimates the Project-related stationary-source noise hourly average L_{eq} levels at nearby sensitive receiver locations. The typical activities associated with the proposed Moreno Valley Trade Center are anticipated to include cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, and trash enclosure activity. The operational noise analysis shows that the Project will satisfy the City of Moreno Valley stationary-source exterior hourly average L_{eq} noise levels of 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime noise level standards at all nearby receiver locations and at 200 feet from the property line of the source. Therefore, the Project-related operational noise level impacts are considered *less than significant*.

OPERATIONAL VIBRATION ANALYSIS

The operation of the Project site will include heavy trucks moving on site to and from the loading dock areas. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. According to the FTA *Transit Noise and Vibration Impact Assessment*

Manual, (3 p. 113) trucks rarely create vibration that exceeds 70 VdB (unless there are bumps due to frequent potholes in the road). Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes will satisfy the FTA maximum-acceptable 78 VdB for daytime and 72 VdB for nighttime vibration criteria for residential uses, and therefore, will be *less than significant*

CONSTRUCTION NOISE ANALYSIS

Using sample reference noise levels to represent the typical planned construction activities of the Moreno Valley Trade Center site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. The Project-related short-term construction noise levels are expected to range from 58.6 to 64.7 dBA L_{eq} and will satisfy the City of Moreno Valley daytime 65 dBA L_{eq} significance threshold during Project construction activities. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations and at 200 feet from the property line of the source.

CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. At distances ranging from 118 feet to 1,651 feet from typical Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 32.4 to 66.8 VdB and will remain below the FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria of 78 VdB for daytime residential uses at all receiver locations and at 200 feet from the property line of the source. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

SHEET PILE SYSTEM CONSTRUCTION NOISE ANALYSIS

An additional analysis was completed to assess potential impacts due to sheet pile drilling activities planned near the western project site boundary. According to the applicant, the sheet pile system will be installed using and ABI drill rig, forklift and rigging crane. It is expected that the contractor will be using the ABI drill rig to drive piles 8 hours per day for approximately 25 days. Sheet pile system methods can include different equipment types, such as impact or drilling, and as such, noise levels will vary depending on the method used. Non-impact pile driving equipment (e.g., drilling or other non-impact alternatives) such as the planned ABI drill rig shall be required to reduce the pile driving equipment noise levels at adjacent receiver locations. The sheet pile system construction noise levels are estimated and expected to range from 57.4 to 64.1 dBA L_{eq} at the receiver locations near the planned sheet pile area. The sheet pile system construction noise analysis shows that the nearby receiver locations will satisfy the City of Moreno Valley daytime 65 dBA L_{eq} significance threshold. Therefore, the noise impacts due to the Project sheet pile construction noise is considered *less than significant* at all receiver locations and at 200 feet from the property line of the source.

SHEET PILE SYSTEM CONSTRUCTION VIBRATION ANALYSIS

At distances ranging from 124 feet to 250 feet from the sheet pile construction activities (at the Project site boundary), construction vibration levels are estimated to range from 63.0 to 72.1 VdB and will remain below the FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria of 78 VdB for daytime residential uses at all receiver locations and at 200 feet from the property line of the source. Therefore, the Project-related sheet pile system vibration impacts are considered *less than significant* during the construction activities at the Project site.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Moreno Valley Trade Center 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. (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Operational Vibration		*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-
Sheet Pile System Noise		*Less Than Significant*	-
Sheet Pile System 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 Trade Center ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed project is located in the eastern portion of the City of Moreno Valley in the County of Riverside. The project is 80 gross acres and is bounded to the north by Eucalyptus Avenue, the west by Quincy Street (the Quincy channel), the south by Encilia Avenue and the east by Redlands Boulevard. The Project location is shown on Exhibit 1-A. The project is surrounded by varied land uses. To the north the properties are zoned for Industrial uses and the Aldi's logistics building was recently constructed and is in operation. To the east the properties are within the approved World Logistics Center Specific Plan and are planned for logistics use. To the south the properties are zoned for residential use, most of which are already developed with houses. To the west the zone is for residential uses and is vacant.

1.2 PROJECT DESCRIPTION

The project envisions the development of the site for 1,332,380 square feet of warehouse uses. The project opening year is 2024. Truck access to and from the project site will be restricted to three project driveways. These driveways include the two driveways on Eucalyptus Avenue, and the southern driveway on Redlands Boulevard. The western driveway will include inbound/outbound access for autos/trucks and the eastern driveway will be restricted to outbound truck traffic only. The southern driveway on Redlands Boulevard will allow inbound truck traffic, but will restrict outbound truck traffic via onsite features such as a pork-chop designed driveway, signage posted at the driveway exit prohibiting outbound truck traffic, or other measures based on discussion with City staff. The two driveways on Redlands Boulevard will be restricted to right-in/right-out access only for autos and the three driveways on Encilia Avenue will be full-access for autos. The Project includes a planned 14-foot high screen wall surrounding the loading dock areas.

At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown; the building is designed to accommodate one tenant or be divisible to accommodate two tenants. The on-site Project-related noise sources are expected to include: cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, 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.

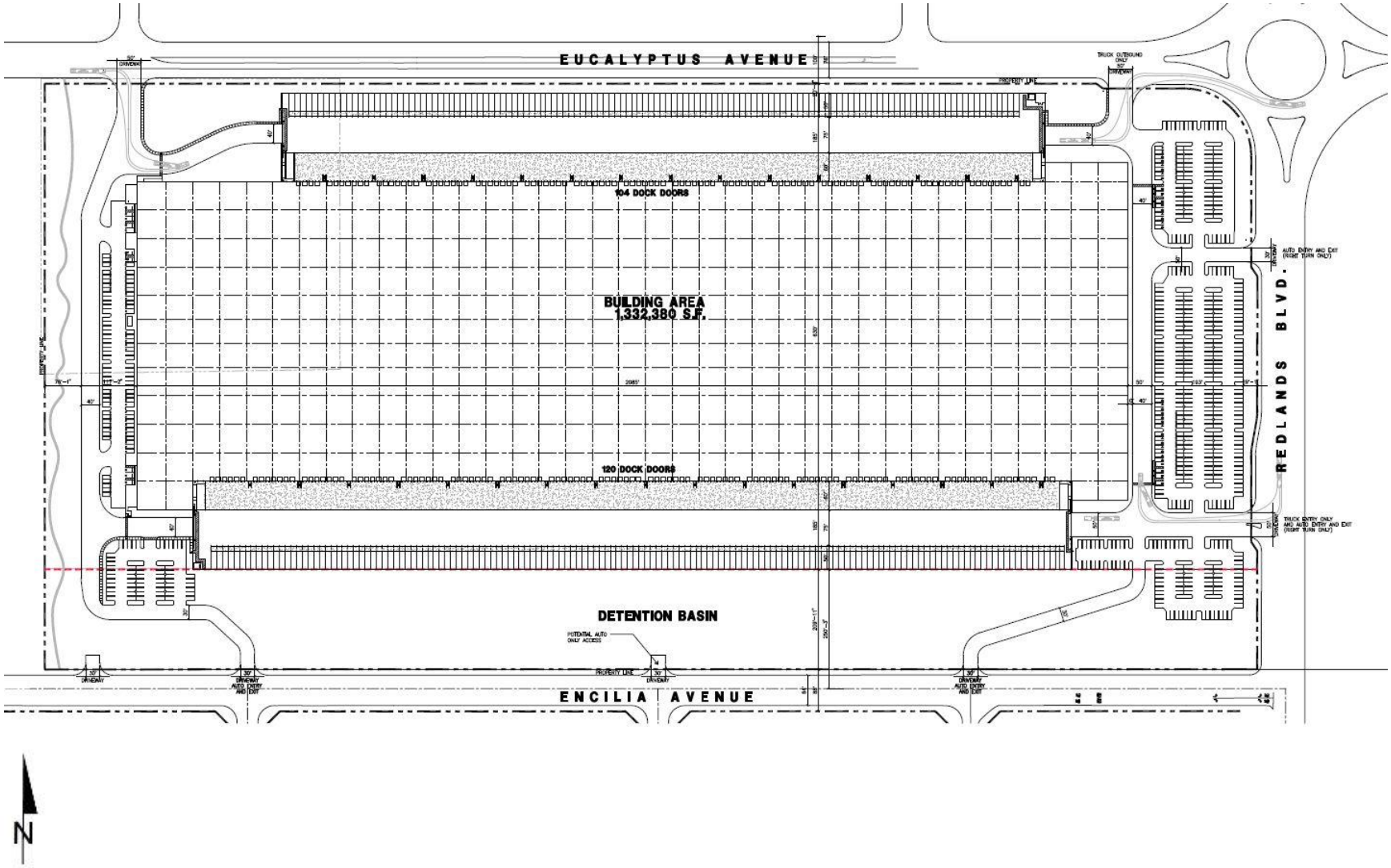
EXHIBIT 1-A: LOCATION MAP

LEGEND:

N

Site Boundary

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. (4) 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. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

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. (4)

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. (6)

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. (4)

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 FHWA does not consider the planting of vegetation to be a noise abatement measure. (6)

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (6) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. Federal Highway Administration (FHWA) measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This

concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

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. (7)

2.7 COMMUNITY RESPONSE TO NOISE

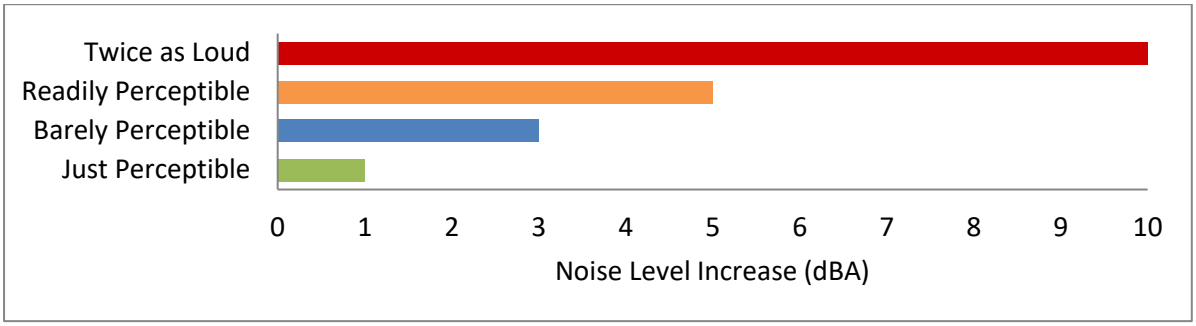
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- 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. (8) 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. (8) 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*. (6)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (9)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area.

2.9 VIBRATION

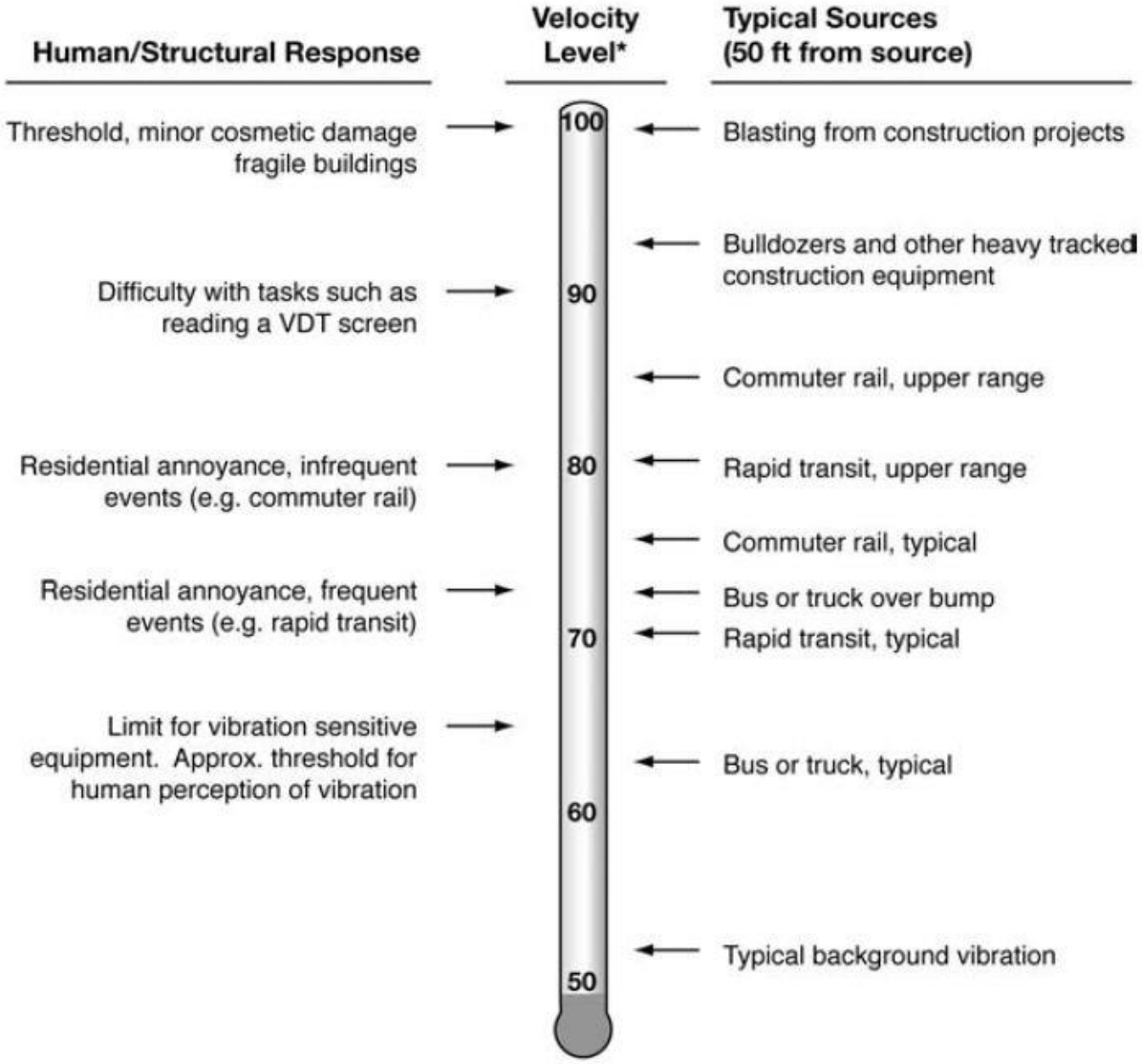
Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (3), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction

equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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

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



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

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3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) 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 GREEN BUILDING STANDARDS CODE

The State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (11) 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 non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

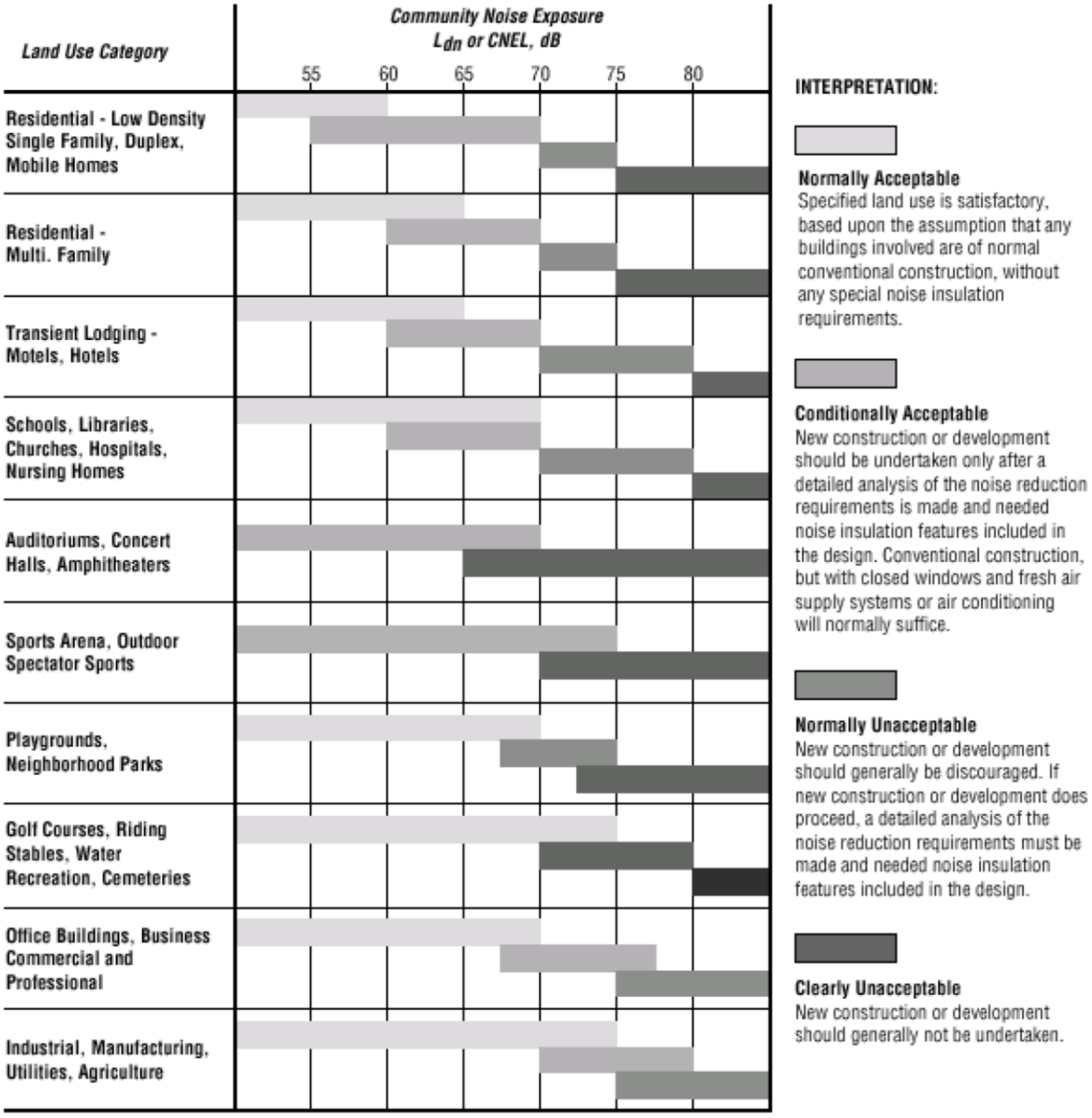
3.3 CITY OF MORENO VALLEY GENERAL PLAN NOISE ELEMENT

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*. (10)

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 industrial land uses such as the Project, as shown on Exhibit 3-A. When the unmitigated exterior noise levels approach 70 dBA CNEL industrial land use is considered *normally acceptable*. With exterior noise levels ranging from 70 to 80 dBA CNEL, industrial land uses are considered *conditionally acceptable*, and with exterior noise levels greater than 80 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.* (10) For the purposes of this analysis, industrial land use such as the Project does not contain outdoor living areas requiring exterior noise mitigation as outlined in the OPR *General Plan Guidelines*, and therefore, only the interior noise levels experienced by employees at the Project site are evaluated against the appropriate noise level standards.

The purpose of the transportation noise criteria is to protect, create, and maintain an environment free from noise and vibration that may jeopardize the health or welfare of sensitive receptors, or degrade quality of life. City General Policies (City of Moreno Valley General Plan, pp.9-31, 9-32) act to ensure that when exterior noise levels exceed 65 dBA CNEL at sensitive receivers, mitigation is provided to ensure that interior noise levels of 45 dBA CNEL are maintained. General Plan Policies in this regard are consistent with, and support, the California Building Code interior noise standards.

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY CRITERIA



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

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Moreno Valley Trade Center Project, stationary-source (operational) noise such as the expected cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, 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* land use *means all uses of land not otherwise classified as residential,* and *Residential* land use *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 Trade Center Project is considered *Commercial* land use since it is not classified as residential. 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.

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 Trade Center 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. In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 6:00 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 6:00 p.m. Monday to Friday; 8:00 a.m. to 4:00 p.m. on weekends and holidays.	65	60[3]

[1] Source: City of Moreno Valley Municipal Code, Section 11.80.030 (D)(7) and Section 8.21.050 (O) (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.

3.5 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. (3)

To analyze vibration impacts originating from the operation and construction of the Moreno Valley Trade Center, 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 relies on the Federal Transit Administration (FTA) methodology. The FTA *Transit Noise and Vibration Impact Assessment Manual* methodology provides guidelines for the maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 90 VdB for industrial (workshop) use, 84 VdB for office use and 78 VdB for daytime residential uses and 72 VdB for nighttime uses in buildings where people normally sleep. (3)

4 SIGNIFICANCE CRITERIA

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

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 Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is the March Air Reserve Base/Inland Port Airport (MARB/IPA) located over 5 miles west of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to 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.* (14)

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) (15) 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. (14) 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 (6 p. 9) and Caltrans (16 p. 2_48).

4.3 NON-NOISE-SENSITIVE RECEIVERS

Since the City of Moreno Valley General Plan Safety Element does not identify criteria to assess the impacts associated with off-site transportation-related noise impacts, the OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix D: Noise Element Guidelines* is used to determine potential impacts at adjacent land uses. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land use, such as industrial use, is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *conditionally acceptable* according to the *Land Use Compatibility Criteria*. (10)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise

level increase thresholds for noise-sensitive land uses but instead rely on the OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix D: Noise Element Guidelines normally acceptable* 70 dBA CNEL exterior noise level criteria.

4.4 SIGNIFICANCE CRITERIA SUMMARY

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

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA CNEL and the Project creates a readily perceptible 5 dBA CNEL or greater Project-related noise level increase; or
    - range from 60 to 65 dBA CNEL and the Project creates a barely perceptible 3 dBA CNEL or greater Project-related noise level increase; or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level increase of greater than 1.5 dBA CNEL (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g., office, commercial, industrial):
    - are greater than the OPR General Plan Guidelines, Figure 2, normally acceptable 70 dBA CNEL and the Project creates a barely perceptible 3 dBA CNEL or greater Project-related noise level increase.

OPERATIONAL NOISE & VIBRATION

- If Project-related operational (stationary source) noise levels:
    - exceed the 65 dBA L_{eq} daytime or 60 dBA L_{eq} nighttime noise level standards at 200 feet from the property line of the noise source (City of Moreno Valley Municipal Code, Table 11.80.030-2); or
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA L_{eq} and the Project creates a *readily perceptible* 5 dBA L_{eq} or greater Project-related noise level increase; or
    - range from 60 to 65 dBA L_{eq} and the Project creates a *barely perceptible* 3 dBA L_{eq} or greater Project-related noise level increase; or
    - already exceed 65 dBA L_{eq}, and the Project creates a community noise level increase of greater than 1.5 dBA L_{eq} (FICON, 1992).
- If Project generated operational vibration levels exceed the FTA's acceptable vibration thresholds of 78 VdB for daytime residential use and 72 VdB for nighttime uses in buildings where people normally sleep. (FTA Transit Noise and Vibration Impact Assessment Manual).

CONSTRUCTION NOISE & VIBRATION

- If Project-related construction activities create noise levels at 200 feet from the property line of the noise source in the City of Moreno Valley which exceed the construction noise level threshold of 65 dBA Leq during the daytime hours, or 60 dBA Leq during the nighttime hours, (City of Moreno Valley Municipal Code, Table 11.80.030-2).

- If Project generated operational vibration levels exceed the FTA's acceptable vibration thresholds of 78 VdB for daytime residential use and buildings where people normally sleep. (FTA Transit Noise and Vibration Impact Assessment Manual).

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[1]	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	
		Vibration Level Threshold[4]	78 VdB	72 VdB
Construction	Noise-Sensitive	At 200' from the property line of the source[3]	65 dBA L_{eq}	60 dBA L_{eq}
		Vibration Level Threshold[4]	78 VdB	n/a

[1] FICON, 1992.
[2] OPR General Plan Guidelines, Figure 2 Land Use Compatibility Criteria.
[3] City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation (Appendix 3.1).
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
"Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at three 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 Thursday, December 12th, 2019. 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. (17)

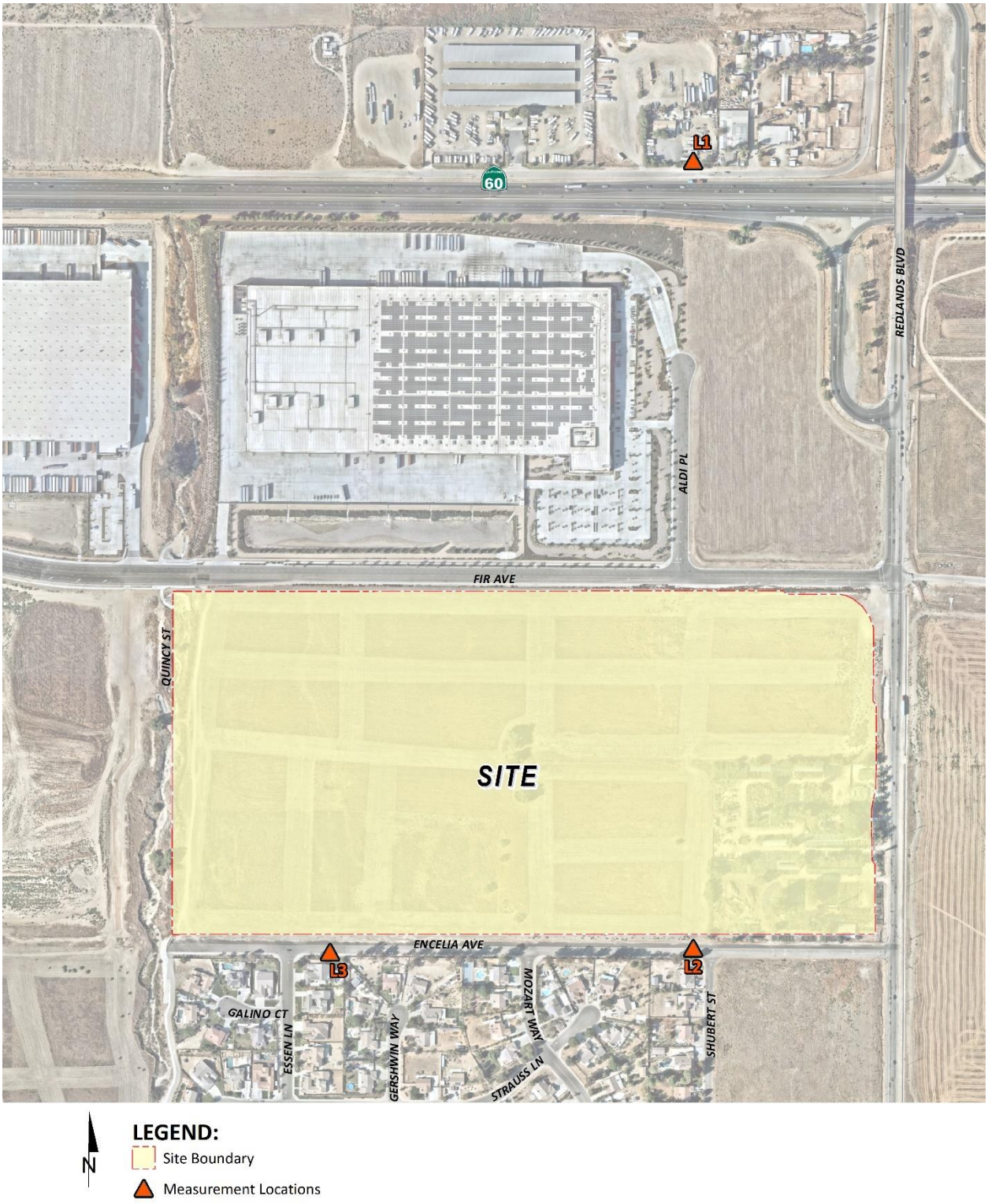
5.2 NOISE MEASUREMENT LOCATIONS

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*. (4) 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*. (3)

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. (3) 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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 (8:00 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:59 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels north of the project site near existing residential home and the Moreno Valley Freeway. The noise levels at this location consist primarily of traffic noise from the Moreno Valley Freeway. The noise level measurements collected show an overall 24-hour exterior noise level of 80.5 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 75.3 dBA L_{eq} with an average nighttime noise level of 73.8 dBA L_{eq}.
- Location L2 represents the noise levels south of the Project site near existing single-family residential homes by Encelia Avenue and Shubert Street. The noise level measurements collected show an overall 24-hour exterior noise level of 61.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 54.2 dBA L_{eq} with an average nighttime noise level of 54.6 dBA L_{eq}. The noise levels at this location consist primarily of traffic noise from Encelia Avenue and Shubert Street.
- Location L3 represents the noise levels south of the Project site on Encelia Avenue next to existing single-family residential homes. The 24-hour CNEL indicates that the overall exterior noise level is 56.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 51.0 dBA L_{eq} with an average nighttime noise level of 50.4 dBA L_{eq}. Traffic on Encelia Avenue represents the primary source of noise at this location.

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.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with California State Route 60, and surrounding surface streets in addition to background industrial land use activities. 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 near existing residential home and the Moreno Valley Freeway.	75.3	73.8	80.5
L2	Located south of the Project site near existing single-family residential homes by Encelia Avenue and Shubert Street.	54.2	54.6	61.0
L3	Located south of the Project site on Encelia Avenue next to existing single-family residential homes.	51.0	50.4	56.8

[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" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment. Consistent with the *Land Use Compatibility Criteria*, 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. (18) 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. (19) 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. (20)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the 15 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. The ADT volumes used in this study area presented on Table 6-2 are based on the *Moreno Valley Trade Center Traffic Impact Analysis* for warehousing use, prepared by Translutions, Inc. for the following traffic scenarios under both Without and With Project alternatives: Existing, Opening Year (2024), and General Plan Build-Out (2040). (21)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts, without and with project ADT traffic volumes from the Project traffic study.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Existing Land Use[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	55'	50
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	55'	50
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	55'	50
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	55'	50
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	55'	50
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	67'	50
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	67'	50
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	50'	40
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	50'	40
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	50'	40
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	50'	40
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	50'	40
13	Encilia Av.	e/o Essen Lane	Sensitive	44'	45
14	Encilia Av.	e/o Mozart Wy.	Sensitive	44'	45
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	44'	45

[1] 1 Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] Distance to receiving land use is based upon the right-of-way distances.
[3] Source: Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing		Opening Year (2024)		General Plan Buildout (2040)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	14,403	15,119	18,155	18,871	25,690	26,406
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	12,290	13,209	16,324	17,243	26,068	26,987
3	Redlands Blvd.	s/o Eucalyptus Av.	12,535	13,181	15,044	15,690	25,275	25,921
4	Redlands Blvd.	s/o Dwy. 6	12,535	13,339	15,044	15,848	25,275	26,079
5	Redlands Blvd.	n/o Encelia Av.	12,535	13,526	15,044	16,035	25,275	26,266
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	12,724	12,767	18,159	18,202	24,982	25,025
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	23,934	24,704	32,941	33,711	44,511	45,281
8	Eucalyptus Av.	e/o Moreno Beach Dr.	3,673	4,558	6,371	7,256	12,586	13,471
9	Eucalyptus Av.	e/o Auto Mall Dr.	1,617	2,229	2,943	3,555	8,251	8,863
10	Eucalyptus Av.	w/o Aldi Place	1,507	2,151	2,822	3,466	7,912	8,556
11	Eucalyptus Av.	w/o Dwy. 5	2,424	3,070	3,834	4,480	9,978	10,624
12	Eucalyptus Av.	w/o Redlands Blvd.	2,424	3,285	3,834	4,695	9,978	10,839
13	Encilia Av.	e/o Essen Lane	217	375	240	398	3,996	4,154
14	Encilia Av.	e/o Mozart Wy.	217	576	240	599	3,996	4,355
15	Encilia Av.	w/o Redlands Blvd.	475	1,121	524	1,170	4,312	4,958

[1] Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Impact Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-7 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	71.98%	14.56%	13.46%	100.00%
Medium Trucks	76.23%	9.38%	14.39%	100.00%
Heavy Trucks	81.79%	7.65%	10.55%	100.00%

[1] Source: Based on a 24-hour count taken at Iris Avenue between Lasselle Street and Nason Street (Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.). Values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	94.24%	4.44%	1.32%	100.00%

Based on a 24-hour count taken at Iris Avenue between Lasselle Street and Nason Street (Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	91.59%	4.73%	3.69%	100.00%
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	90.62%	4.81%	4.56%	100.00%
3	Redlands Blvd.	s/o Eucalyptus Av.	94.53%	4.22%	1.25%	100.00%
4	Redlands Blvd.	s/o Dwy. 6	94.59%	4.17%	1.24%	100.00%
5	Redlands Blvd.	n/o Encelia Av.	94.67%	4.11%	1.22%	100.00%
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	94.26%	4.43%	1.31%	100.00%
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	92.99%	4.54%	2.47%	100.00%
8	Eucalyptus Av.	e/o Moreno Beach Dr.	87.60%	4.89%	7.51%	100.00%
9	Eucalyptus Av.	e/o Auto Mall Dr.	79.95%	5.91%	14.14%	100.00%
10	Eucalyptus Av.	w/o Aldi Place	75.37%	6.60%	18.03%	100.00%
11	Eucalyptus Av.	w/o Dwy. 5	78.16%	6.44%	15.40%	100.00%
12	Eucalyptus Av.	w/o Redlands Blvd.	79.59%	6.02%	14.39%	100.00%
13	Encilia Av.	e/o Essen Lane	96.67%	2.57%	0.76%	100.00%
14	Encilia Av.	e/o Mozart Wy.	97.83%	1.67%	0.50%	100.00%
15	Encilia Av.	w/o Redlands Blvd.	97.56%	1.88%	0.56%	100.00%

[1] Source: Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: OPENING YEAR (2024) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	92.11%	4.67%	3.22%	100.00%
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	91.47%	4.73%	3.80%	100.00%
3	Redlands Blvd.	s/o Eucalyptus Av.	94.48%	4.26%	1.26%	100.00%
4	Redlands Blvd.	s/o Dwy. 6	94.54%	4.21%	1.25%	100.00%
5	Redlands Blvd.	n/o Encelia Av.	94.60%	4.17%	1.23%	100.00%
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	94.26%	4.43%	1.31%	100.00%
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	93.33%	4.52%	2.16%	100.00%
8	Eucalyptus Av.	e/o Moreno Beach Dr.	90.07%	4.73%	5.21%	100.00%
9	Eucalyptus Av.	e/o Auto Mall Dr.	85.28%	5.36%	9.36%	100.00%
10	Eucalyptus Av.	w/o Aldi Place	82.53%	5.78%	11.69%	100.00%
11	Eucalyptus Av.	w/o Dwy. 5	83.22%	5.81%	10.97%	100.00%
12	Eucalyptus Av.	w/o Redlands Blvd.	83.99%	5.54%	10.47%	100.00%
13	Encilia Av.	e/o Essen Lane	96.53%	2.68%	0.79%	100.00%
14	Encilia Av.	e/o Mozart Wy.	97.69%	1.78%	0.53%	100.00%
15	Encilia Av.	w/o Redlands Blvd.	97.42%	1.99%	0.59%	100.00%

[1] Source: Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: GENERAL PLAN BUILD-OUT (2040) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	92.75%	4.60%	2.65%	100.00%
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	92.51%	4.62%	2.88%	100.00%
3	Redlands Blvd.	s/o Eucalyptus Av.	94.38%	4.33%	1.28%	100.00%
4	Redlands Blvd.	s/o Dwy. 6	94.42%	4.31%	1.28%	100.00%
5	Redlands Blvd.	n/o Encelia Av.	94.46%	4.28%	1.27%	100.00%
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	94.25%	4.43%	1.31%	100.00%
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	93.57%	4.50%	1.93%	100.00%
8	Eucalyptus Av.	e/o Moreno Beach Dr.	92.05%	4.59%	3.36%	100.00%
9	Eucalyptus Av.	e/o Auto Mall Dr.	90.74%	4.80%	4.46%	100.00%
10	Eucalyptus Av.	w/o Aldi Place	89.63%	4.97%	5.40%	100.00%
11	Eucalyptus Av.	w/o Dwy. 5	89.72%	5.00%	5.28%	100.00%
12	Eucalyptus Av.	w/o Redlands Blvd.	89.91%	4.91%	5.18%	100.00%
13	Encilia Av.	e/o Essen Lane	94.46%	4.28%	1.27%	100.00%
14	Encilia Av.	e/o Mozart Wy.	94.70%	4.09%	1.21%	100.00%
15	Encilia Av.	w/o Redlands Blvd.	94.97%	3.88%	1.15%	100.00%

[1] Source: Moreno Valley Trade Center Traffic Impact Analysis, translutions, inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

6.3 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-8. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $L_{VdB}(D) = L_{VdB}(25\ ft) - 30\log(D/25)$

TABLE 6-8: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87
Pile Driver	93

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

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7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the *Moreno Valley Trade Center Traffic Impact Analysis*. (21) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation. Roadway segments are analyzed from the without Project to the with Project conditions in each of the following timeframes: Existing, Opening Year (2024), and General Plan Build-Out (2040). Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	71.5	69	148	319
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	70.8	62	133	287
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	70.9	63	135	291
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	70.9	63	135	291
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	70.9	63	135	291
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	70.1	68	147	316
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	72.9	104	224	482
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	63.6	RW	RW	87
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	60.1	RW	RW	50
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	59.7	RW	RW	RW
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	61.8	RW	RW	66
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	61.8	RW	RW	66
13	Encilia Av.	e/o Essen Lane	Sensitive	53.1	RW	RW	RW
14	Encilia Av.	e/o Mozart Wy.	Sensitive	53.1	RW	RW	RW
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	56.5	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	73.0	87	188	405
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	72.8	85	183	394
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	71.0	64	138	297
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	71.0	64	138	298
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	71.0	65	139	299
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	70.1	68	147	317
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	73.7	118	254	547
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	67.9	RW	78	167
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	66.8	RW	66	141
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	67.5	RW	73	157
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	68.5	RW	85	184
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	68.5	RW	86	185
13	Encilia Av.	e/o Essen Lane	Sensitive	54.5	RW	RW	RW
14	Encilia Av.	e/o Mozart Wy.	Sensitive	55.8	RW	RW	RW
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	58.8	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: OPENING YEAR (2024) PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	72.5	80	173	373
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	72.0	75	161	347
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	71.6	71	153	329
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	71.6	71	153	329
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	71.6	71	153	329
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	71.7	86	186	401
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	74.2	128	277	596
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	66.0	RW	58	126
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	62.7	RW	RW	75
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	62.5	RW	RW	73
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	63.8	RW	RW	90
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	63.8	RW	RW	90
13	Encilia Av.	e/o Essen Lane	Sensitive	53.6	RW	RW	RW
14	Encilia Av.	e/o Mozart Wy.	Sensitive	53.6	RW	RW	RW
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	56.9	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: OPENING YEAR (2024) WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	73.7	98	210	453
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	73.6	96	207	446
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	71.7	72	155	334
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	71.8	72	156	335
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	71.8	73	156	337
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	71.7	86	186	401
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	74.9	141	304	656
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	68.9	RW	91	197
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	67.5	RW	73	157
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	68.1	RW	80	173
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	69.0	RW	92	199
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	69.0	RW	93	200
13	Encilia Av.	e/o Essen Lane	Sensitive	54.8	RW	RW	RW
14	Encilia Av.	e/o Mozart Wy.	Sensitive	56.1	RW	RW	RW
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	59.1	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: GENERAL PLAN BUILD-OUT (2040) WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	74.0	101	218	470
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	74.0	102	220	474
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	73.9	100	216	465
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	73.9	100	216	465
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	73.9	100	216	465
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	73.0	107	230	496
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	75.5	157	338	729
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	69.0	RW	92	198
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	67.1	RW	69	149
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	67.0	RW	67	145
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	68.0	RW	79	170
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	68.0	RW	79	170
13	Encilia Av.	e/o Essen Lane	Sensitive	65.8	RW	50	107
14	Encilia Av.	e/o Mozart Wy.	Sensitive	65.8	RW	50	107
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	66.1	RW	52	112

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.
[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 the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: GENERAL PLAN BUILD-OUT (2040) WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	74.9	117	252	542
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	75.1	121	260	561
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	74.0	101	218	469
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	74.0	101	218	470
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	74.0	102	219	471
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	73.0	107	230	496
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	76.0	169	363	783
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	70.7	56	120	258
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	69.5	RW	100	215
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	69.8	RW	105	226
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	70.7	56	120	259
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	70.7	56	121	260
13	Encilia Av.	e/o Essen Lane	Sensitive	65.9	RW	50	108
14	Encilia Av.	e/o Mozart Wy.	Sensitive	66.0	RW	51	110
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	66.4	RW	55	118

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.
[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 the receiving adjacent 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 to fully analyze all the existing traffic scenarios identified in the *Moreno Valley Trade Center Traffic Impact Analysis*. This condition is provided solely for informational purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 53.1 to 72.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 54.5 to 73.7 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level impacts will range from 0.0 to 7.7 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

In order for an off-site traffic noise level impact to be considered significant, receivers need to perceive an increase of traffic noise levels over time. Therefore, off-site traffic impacts are generally limited to noise sensitive residential receivers that are likely to perceive this increase. While the analysis shows that the non-sensitive industrial uses will experience an off-site traffic noise level increase of 7.7 dBA CNEL, this is not considered a significant noise level impact since there are no adjacent receivers that will experience this increase over time. In addition, the Project-related off-site traffic noise level increase are largely due to the low traffic volumes that currently exist. This finding is consistent with the off-site traffic increase significance criteria outlined in Section 4.

7.3 Opening Year (2024) Project Traffic Noise Level Increases

Table 7-3 presents the Opening Year (2024) without Project conditions CNEL noise levels. The Opening Year (2024) without Project exterior noise levels are expected to range from 53.6 to 74.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Opening Year (2024) with Project conditions will range from 54.8 to 74.9 dBA CNEL. Table 7-8 shows that the Project off-site traffic noise level increases will range from 0.0 to 5.6 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

In order for an off-site traffic noise level impact to be considered significant, receivers need to perceive an increase of traffic noise levels over time. Therefore, off-site traffic impacts are generally limited to noise sensitive residential receivers that are likely to perceive this increase. While the analysis shows that the non-sensitive industrial uses will experience an off-site traffic noise level increase of 5.6 dBA CNEL, this is not considered a significant noise level impact since there are no adjacent receivers that will experience this increase over time. In addition, the Project-related off-site traffic noise level increase are largely due to the low traffic volumes that currently exist. This finding is consistent with the off-site traffic increase significance criteria outlined in Section 4.

7.4 General Plan Build-Out (2040) Project Traffic Noise Level Increases

Table 7-5 presents the General Plan Build-Out (2040) without Project conditions CNEL noise levels. The General Plan Build-Out (2040) without Project exterior noise levels are expected to range from 65.8 to 75.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the General Plan Build-Out (2040) with Project conditions will range from 65.9 to 76.0 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases will range from 0.0 to 2.9 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

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

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Noise Sensitive Land Use?	Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	71.5	73.0	1.6	No	3.0	No
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	70.8	72.8	2.1	No	3.0	No
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	70.9	71.0	0.1	No	3.0	No
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	70.9	71.0	0.1	No	3.0	No
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	70.9	71.0	0.2	No	3.0	No
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	70.1	70.1	0.0	No	3.0	No
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	72.9	73.7	0.8	No	3.0	No
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	63.6	67.9	4.3	No	n/a	No
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	60.1	66.8	6.7	No	n/a	No
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	59.7	67.5	7.7	No	n/a	No
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	61.8	68.5	6.7	No	n/a	No
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	61.8	68.5	6.7	No	n/a	No
13	Encilia Av.	e/o Essen Lane	Sensitive	53.1	54.5	1.4	Yes	5.0	No
14	Encilia Av.	e/o Mozart Wy.	Sensitive	53.1	55.8	2.7	Yes	5.0	No
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	56.5	58.8	2.3	Yes	5.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.
[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 7-8: OPENING YEAR (2024) WITH PROJECT TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Noise Sensitive Land Use?	Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	72.5	73.7	1.3	No	3.0	No
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	72.0	73.6	1.6	No	3.0	No
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	71.6	71.7	0.1	No	3.0	No
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	71.6	71.8	0.1	No	3.0	No
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	71.6	71.8	0.2	No	3.0	No
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	71.7	71.7	0.0	No	3.0	No
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	74.2	74.9	0.6	No	3.0	No
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	66.0	68.9	2.9	No	n/a	No
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	62.7	67.5	4.8	No	n/a	No
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	62.5	68.1	5.6	No	n/a	No
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	63.8	69.0	5.2	No	n/a	No
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	63.8	69.0	5.2	No	n/a	No
13	Encilia Av.	e/o Essen Lane	Sensitive	53.6	54.8	1.3	Yes	5.0	No
14	Encilia Av.	e/o Mozart Wy.	Sensitive	53.6	56.1	2.5	Yes	5.0	No
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	56.9	59.1	2.2	Yes	5.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial.
[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 7-9: GENERAL PLAN BUILD-OUT (2040) WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Existing Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Noise Sensitive Land Use?	Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Redlands Blvd.	s/o SR-60 Westbound Ramps	Non-Sensitive	74.0	74.9	0.9	No	3.0	No
2	Redlands Blvd.	s/o SR-60 Eastbound Ramps	Non-Sensitive	74.0	75.1	1.1	No	3.0	No
3	Redlands Blvd.	s/o Eucalyptus Av.	Non-Sensitive	73.9	74.0	0.1	No	3.0	No
4	Redlands Blvd.	s/o Dwy. 6	Non-Sensitive	73.9	74.0	0.1	No	3.0	No
5	Redlands Blvd.	n/o Encelia Av.	Non-Sensitive	73.9	74.0	0.1	No	3.0	No
6	Moreno Beach Dr.	s/o SR-60 Westbound Ramps	Non-Sensitive	73.0	73.0	0.0	No	3.0	No
7	Moreno Beach Dr.	s/o SR-60 Eastbound Ramps	Non-Sensitive	75.5	76.0	0.5	No	3.0	No
8	Eucalyptus Av.	e/o Moreno Beach Dr.	Non-Sensitive	69.0	70.7	1.7	No	n/a	No
9	Eucalyptus Av.	e/o Auto Mall Dr.	Non-Sensitive	67.1	69.5	2.4	No	n/a	No
10	Eucalyptus Av.	w/o Aldi Place	Non-Sensitive	67.0	69.8	2.9	No	n/a	No
11	Eucalyptus Av.	w/o Dwy. 5	Non-Sensitive	68.0	70.7	2.8	No	n/a	No
12	Eucalyptus Av.	w/o Redlands Blvd.	Non-Sensitive	68.0	70.7	2.8	No	n/a	No
13	Encilia Av.	e/o Essen Lane	Sensitive	65.8	65.9	0.1	Yes	1.5	No
14	Encilia Av.	e/o Mozart Wy.	Sensitive	65.8	66.0	0.2	Yes	1.5	No
15	Encilia Av.	w/o Redlands Blvd.	Sensitive	66.1	66.4	0.3	Yes	1.5	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses, non-sensitive uses include office, commercial and industrial..

[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 SENSITIVE 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.

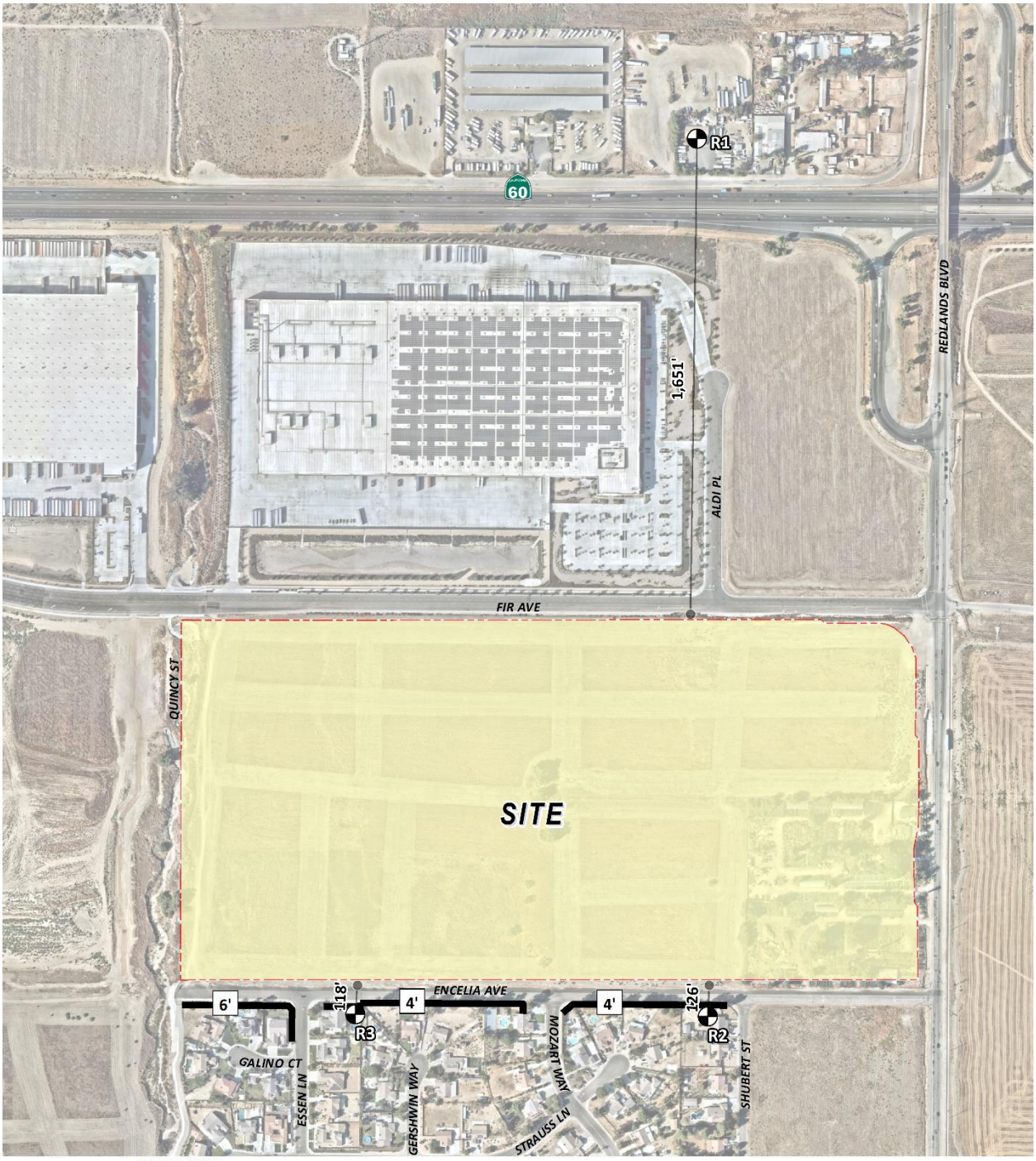
To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the 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 21969 Spruce Avenue, approximately 1,621 feet north of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the residential building façade. 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 13031 Shubert Street, approximately 126 feet south of the Project site. Receiver R2 is placed behind the existing 4-foot high noise barrier in the private outdoor living area (backyard). A 24-hour noise measurement near this location, L2, is used to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise sensitive residence at 13020 Essen Lane, approximately 118 feet south of the Project site. Receiver R3 is placed behind the existing 4-foot high noise barrier in the private outdoor living area (backyard). A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS



9 OPERATIONAL NOISE IMPACTS

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 Trade Center Project. Exhibit 9-A identifies the representative noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

At the time this noise analysis was prepared the future tenants of the proposed Project were unknown. Therefore, this operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, 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 cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, and trash enclosure activity all operating continuously. These sources of noise activity will likely vary throughout the day.

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

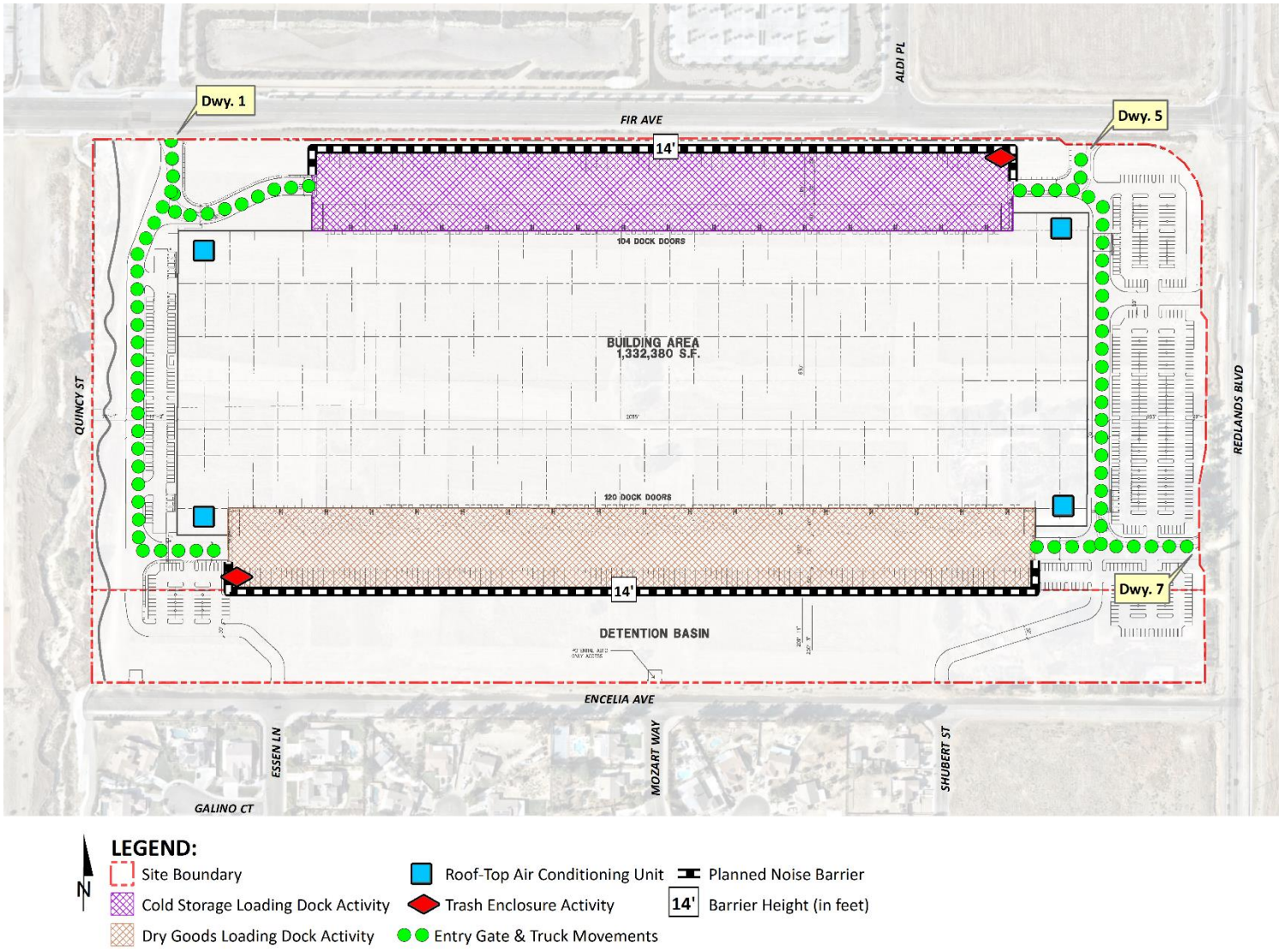


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 feet	Sound Power Level (dBA)[3]
		Day	Night		
Cold Storage Loading Dock Activity	8'	60	60	65.7	111.5
Dry Goods Loading Dock Activity	8'	60	60	62.8	103.4
Entry Gate & Truck Movements	8'	-[4]	-[4]	58.0	89.7
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	5	5	57.3	89.0

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "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.
[4] Entry Gate & Truck Movements are calculate based on the number of events by time of day (See Table 9-2).

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. (17)

9.2.2 COLD STORAGE LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise activities associated with the Project. This includes truck idling, reefer activity (refrigerator truck/cold storage), deliveries, backup alarms, trailer docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background operation activities.

The reference noise level measurement was taken in the center of the loading dock activity area and represents multiple concurrent noise sources resulting in a combined noise level of 65.7 dBA L_{eq} at a uniform distance of 50 feet. Specifically, the reference noise level measurement represents one truck located approximately 30 feet from the noise level meter with another truck passing by to park roughly 20 feet away, both with their engines idling. Throughout the reference noise level measurement, a separate docked and running reefer truck was located approximately 50 feet east of the measurement location. Additional background noise sources included truck pass-by noise, truck drivers talking to each other next to docked trucks, and air brake release noise when trucks parked.

9.2.3 DRY GOODS LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}.

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

The noise level measurements represent the typical weekday dry goods logistics warehouse operation in a single building with a loading dock area on the eastern side of the building façade. In addition, since this reference noise level describes the peak noise source activity, it is also used in the noise prediction model as area source to conservatively describe the entire loading dock area even though during normal operations, the loading dock noise source activity will occur at different locations throughout the loading dock area.

9.2.4 ENTRY GATE & TRUCK MOVEMENTS

An entry gate and truck movements reference noise level measurement were taken at the southern entry gate of the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino over a 15-minute period and represents multiple noise sources producing a reference noise level of 58.0 dBA Leq at 50 feet. The noise sources included at this measurement location account for the rattling and squeaking during normal opening and closing operations, the gate closure equipment, truck engines idling outside the entry gate, truck movements through the entry gate, and background truck court activities and forklift backup alarm noise.

Consistent with the *Moreno Valley Trade Center Traffic Impact Analysis*, the Project is expected to generate a total of approximately 2,321 trip-ends per day (actual vehicles) and includes 885 truck trip-ends per day. (21) This noise study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network. Using the estimated number of truck trips in combination with time of day vehicle splits, the number of entry gate and truck movements by driveway location were calculated. As shown on Table 9-2, this information is then used to calculate the entry gate and truck movements operational noise source activity based on the number of events by time of day.

TABLE 9-2: ENTRY GATE & TRUCK MOVEMENTS BY LOCATION

Entry Gate & Truck Movement Location[1]	Total Project Truck Trips[2]	Trip Dist.[3]		Truck Trips by Location[4]	Time of Day Vehicle Splits[5]			Truck Movements[6]		
		In	Out		Day	Evening	Night	Day	Evening	Night
Driveway 1	885	70%	90%	708	81.79%	7.65%	10.55%	579	54	75
Driveway 5		0%	10%	44	81.79%	7.65%	10.55%	36	3	5
Driveway 7		30%	0%	133	81.79%	7.65%	10.55%	109	10	14

[1] Driveway locations as shown on Exhibit 9-A.
[2] Total Project truck trips according to Table A of the Moreno Valley Trade Center TIA.
[3] Project truck trip distribution according to Figure 6 of the Moreno Valley Trade Center TIA.
[4] Calculated trip trucks per location represents the product of the total (inbound and outbound) project truck trips by and the trip distribution.
[5] Heavy truck time of day vehicle splits as shown on Table 6-3.
[6] Calculated time of day entry gate and truck movements by location.

9.2.5 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units within the planned commercial retail land uses within the Project site, reference noise levels measurements were taken at the Santee Walmart. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of the existing Walmart store. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At 5 feet from the roof-top air conditioning unit, the exterior noise levels were measured at 77.2 dBA L_{eq}. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings. The noise attenuation provided by the existing parapet wall is not reflected in this reference noise level measurement.

9.2.6 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure, Urban Crossroads collected a reference noise level measurement at an existing commercial and office park trash enclosure within a parking lot on the northeast corner of Baker Street and Red Hill Avenue. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The trash enclosure activity noise levels include two metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, trash dropping into the metal dumpster, and background parking lot vehicle movements. Noise associated with trash enclosure activities is conservatively expected 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 as a result 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 including the planned 14-foot high screen wall 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 cold storage loading dock activity, dry goods loading dock activity, entry gate & truck movements, roof-top air conditioning units, 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 and at 200 feet from the property line of the source. Tables 9-3 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 40.0 to 44.3 dBA L_{eq}.

TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)			
	R1	R2	R3	at 200'
Cold Storage Loading Dock Activity	44.1	25.9	25.7	25.6
Dry Goods Loading Dock Activity	14.1	39.3	39.3	38.9
Entry Gate & Truck Movements	31.1	29.4	34.9	31.9
Roof-Top Air Conditioning Units	22.1	26.9	27.5	25.7
Trash Enclosure Activity	0.3	7.1	12.7	10.4
Total (All Noise Sources)	**44.3**	**40.1**	**41.0**	**40.0**

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

Table 9-4 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 39.3 to 44.1 dBA L_{eq}. The differences between the daytime and nighttime noise levels is largely related to the duration of noise activity (Table 9-1).

TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)			
	R1	R2	R3	at 200'
Cold Storage Loading Dock Activity	44.1	25.9	25.7	25.6
Dry Goods Loading Dock Activity	14.1	39.3	39.3	38.9
Entry Gate & Truck Movements	22.2	20.6	25.9	23.0
Roof-Top Air Conditioning Units	19.7	24.5	25.1	23.3
Trash Enclosure Activity	0.0	6.1	11.8	9.4
Total (All Noise Sources)	**44.1**	**39.7**	**39.8**	**39.3**

[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 9-5 shows the operational noise levels associated with Moreno Valley Trade Center 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 and at 200 feet from the property line of the source. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-5: 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	44.3	44.1	65	60	No	No
R2	40.1	39.7	65	60	No	No
R3	41.0	39.8	65	60	No	No
at 200'	40.0	39.3	65	60	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-3 and 9-4.
[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. (4) 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 describe the Project noise level increases to the existing ambient noise environment. As indicated on Tables 9-6 and 9-7, the Project is not expected to generate a measurable daytime and nighttime operational noise level increase dBA L_{eq} at the nearby receiver locations and at 200 feet from the property line of the source. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

9.7 OPERATIONAL VIBRATION IMPACTS

To assess the potential vibration impacts from truck haul trips associated with operational activities the FTA *Transit Noise and Vibration Impact Assessment Manual* maximum-acceptable vibration criteria of 78 VdB for daytime residential uses and 72 VdB for nighttime uses in buildings where people normally sleep is used. However, trucks rarely create vibration that exceeds 70 VdB (unless there are bumps due to frequent potholes in the road). (3 p. 113) Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes will satisfy the maximum-acceptable vibration criteria of 78 VdB for daytime and 72 VdB for nighttime for residential uses, and therefore, will be *less than significant*.

TABLE 9-6: 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]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	44.3	L1	75.3	75.3	0.0	1.5	No
R2	40.1	L2	54.2	54.4	0.2	5.0	No
R3	41.0	L3	51.0	51.4	0.4	5.0	No
at 200'	40.0	L3	51.0	51.3	0.3	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-3.
[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 9-7: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	44.1	L1	73.8	73.8	0.0	1.5	No
R2	39.7	L2	54.6	54.7	0.1	5.0	No
R3	39.8	L3	50.4	50.8	0.4	5.0	No
at 200'	39.3	L3	50.4	50.7	0.3	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-4.
[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 IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearby sensitive receiver locations previously described in Section 8.

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 6:00 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 is expected to occur in the following stages:

- Demolition
- 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 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances of 30 feet and 50 feet, all construction noise level measurements presented on Table 10-1 have been adjusted for consistency to describe a uniform reference distance of 50 feet.

EXHIBIT 10-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

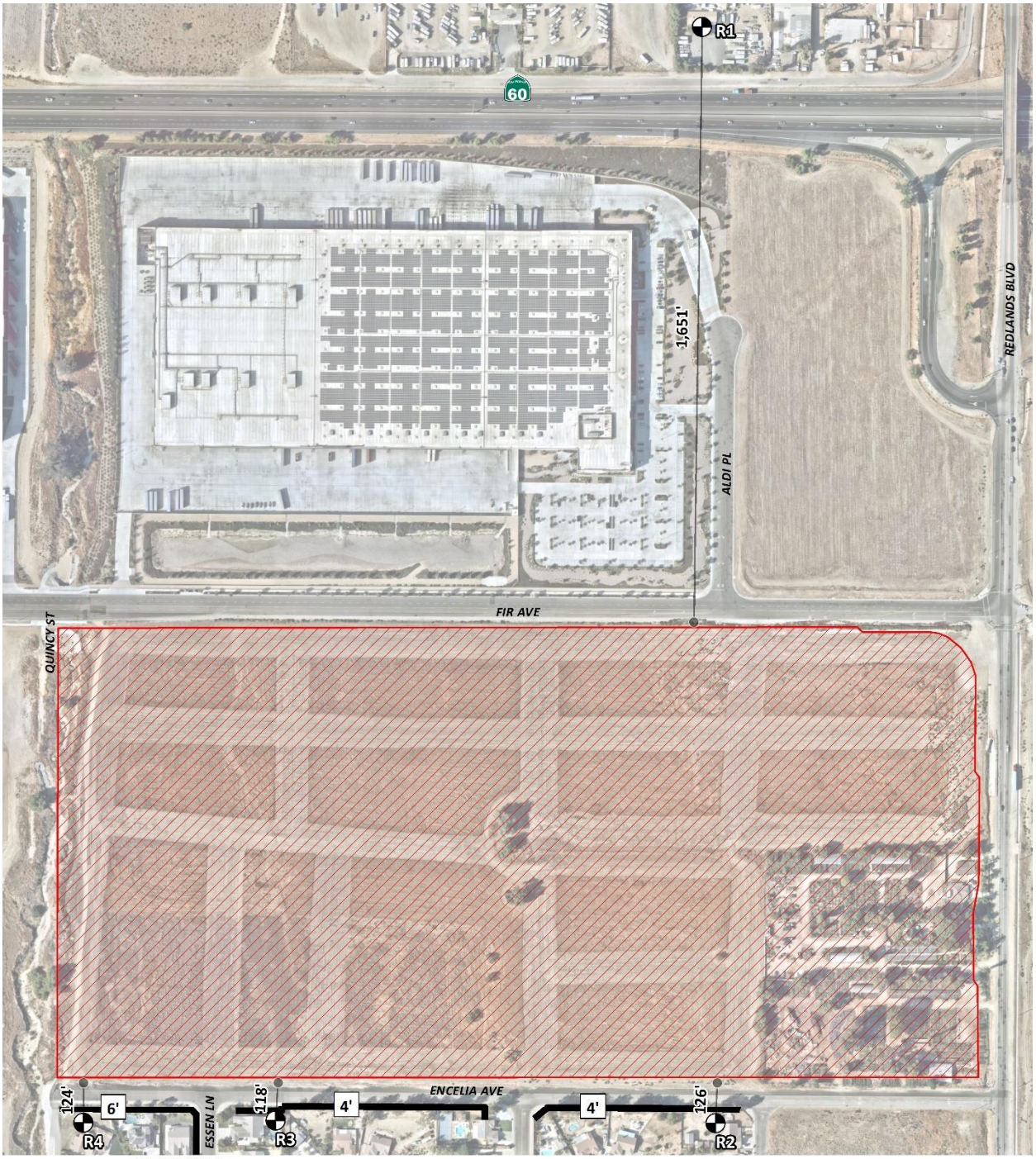


TABLE 10-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Highest Reference Noise Level (dBA L_{eq})
Demolition	Demolition Activity	67.9	71.9
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Site Preparation	Scraper Turnaround & Pass-by 4 with Blades	72.6	72.6
	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. 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 primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 58.6 to 64.7 dBA L_{eq} at the nearby receiver locations and at 200 feet from the property line of the source. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	57.0	57.7	58.6	56.7	56.3	50.3	58.6
R2	63.1	63.8	64.7	62.8	62.4	56.4	64.7
R3	62.9	63.6	64.5	62.6	62.2	56.2	64.5
at 200'	61.7	62.4	63.3	61.4	61.0	55.0	63.3

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

10.4 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the nearby receiver locations will satisfy the City of Moreno Valley daytime 65 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations and at 200 feet from the property line of the source.

TABLE 10-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

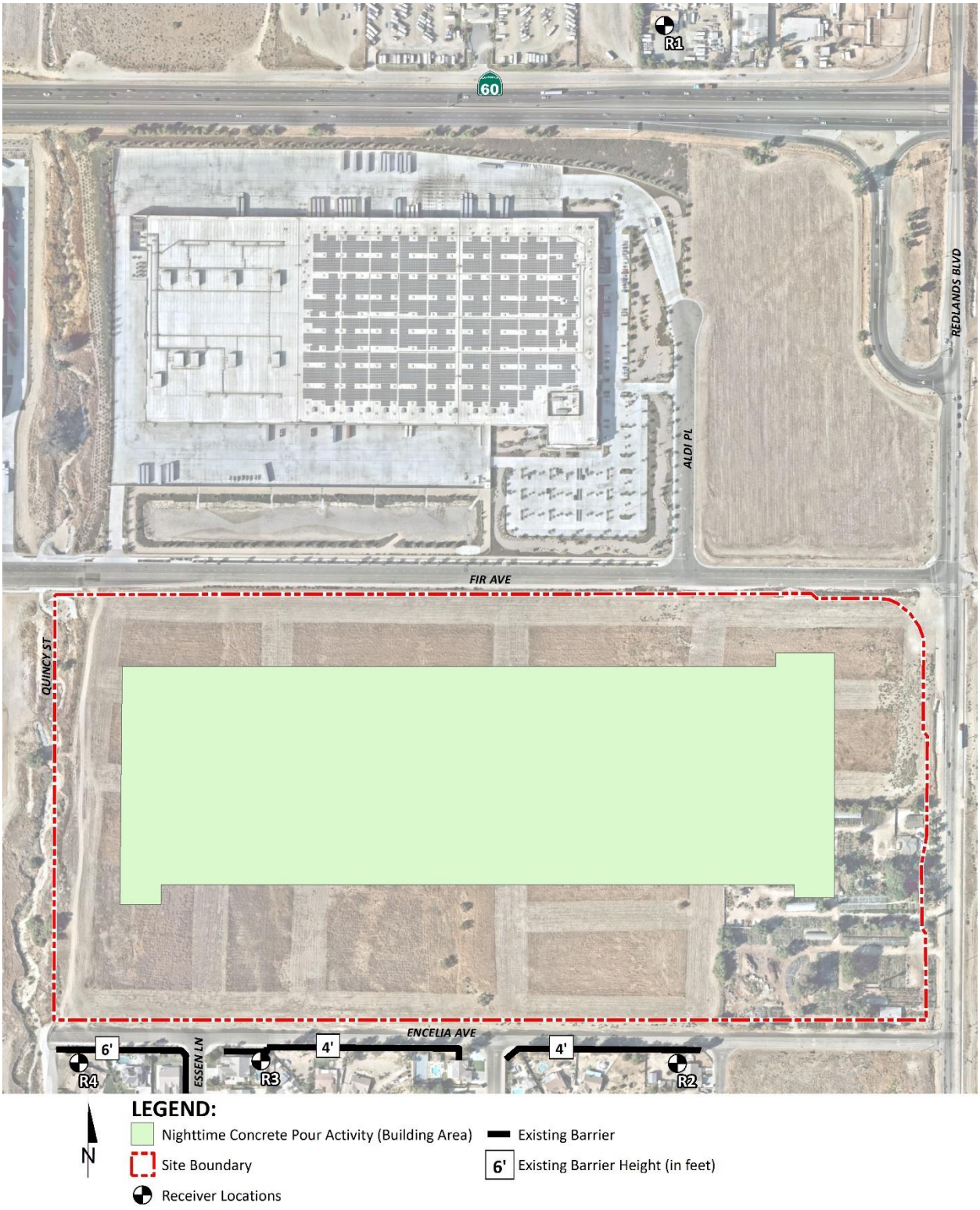
Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	58.6	65	No
R2	64.7	65	No
R3	64.5	65	No
at 200'	63.3	65	No

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

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

Nighttime concrete pouring activities may occur as a part of Project construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual buildings area as shown on Exhibit 10-B. Since the nighttime concrete pours may take place outside the permitted hours of construction as outlined in Section 3.5, the Project Applicant will be required to obtain prior authorization for nighttime work from the City of Moreno Valley.

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



The paving stage construction noise levels, previously presented on Table 10-1, are based on nighttime concrete pouring activity reference noise level measurements. Table 10-4 shows the concrete pour activities (paving) noise will range from 52.9 to 55.8 dBA $L_{eq.}$ at the nearest sensitive receiver locations and at 200 feet from the property line of the source. The concrete pouring construction noise analysis shows that the noise sensitive residential receiver locations will satisfy the 60 dBA L_{eq} nighttime significance threshold during concrete pouring activities. Therefore, the noise impacts due to nighttime concrete pouring activity is considered *less than significant*. Appendix 10.2 includes the detailed CadnaA nighttime concrete construction noise model inputs.

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Paving Construction[2]	Nighttime Construction Standard[3]	Threshold Exceeded?[4]
R1	52.9	60	No
R2	55.8	60	No
R3	55.8	60	No
at 200'	55.4	60	No

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

10.6 TYPICAL CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-5 presents the expected

typical construction equipment vibration levels at the nearby receiver locations. At distances ranging from 118 feet to 1,651 feet from typical Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 32.4 to 66.8 VdB and will remain below the FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria of 78 VdB for daytime residential uses at all receiver locations and at 200 feet from the property line of the source. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

TABLE 10-5: TYPICAL CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold VdB[3]	Threshold Exceeded?[4]
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Levels		
R1	1,651'	3.4	24.4	31.4	32.4	32.4	78	No
R2	126'	36.9	57.9	64.9	65.9	65.9	78	No
R3	118'	37.8	58.8	65.8	66.8	66.8	78	No
at 200'	200'	30.9	51.9	58.9	59.9	59.9	78	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[3] FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria as shown on Table 4-1.
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

10.7 SHEET PILE SYSTEM CONSTRUCTION REFERENCE NOISE LEVELS

An additional analysis was completed to assess potential impacts due to sheet pile drilling activities planned near the western project site boundary. Exhibit 10-C shows the location of the sheet pile drilling area in relation to three nearby receiver locations. According to the applicant, the sheet pile system will be installed using and ABI drill rig, forklift and rigging crane. It is expected that the contractor will be using the ABI drill rig to drive piles 8 hours per day for approximately 25 days.

This sheet pile construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (22) A default ground attenuation factor of 0.0 was used in the CadnaA noise prediction model to account for hard site conditions. Table 10-6 provides a summary of the reference average L_{eq} noise levels used to describe each stage of construction.

EXHIBIT 10-C: SHEET PILE DRIVING NOISE SOURCE LOCATIONS

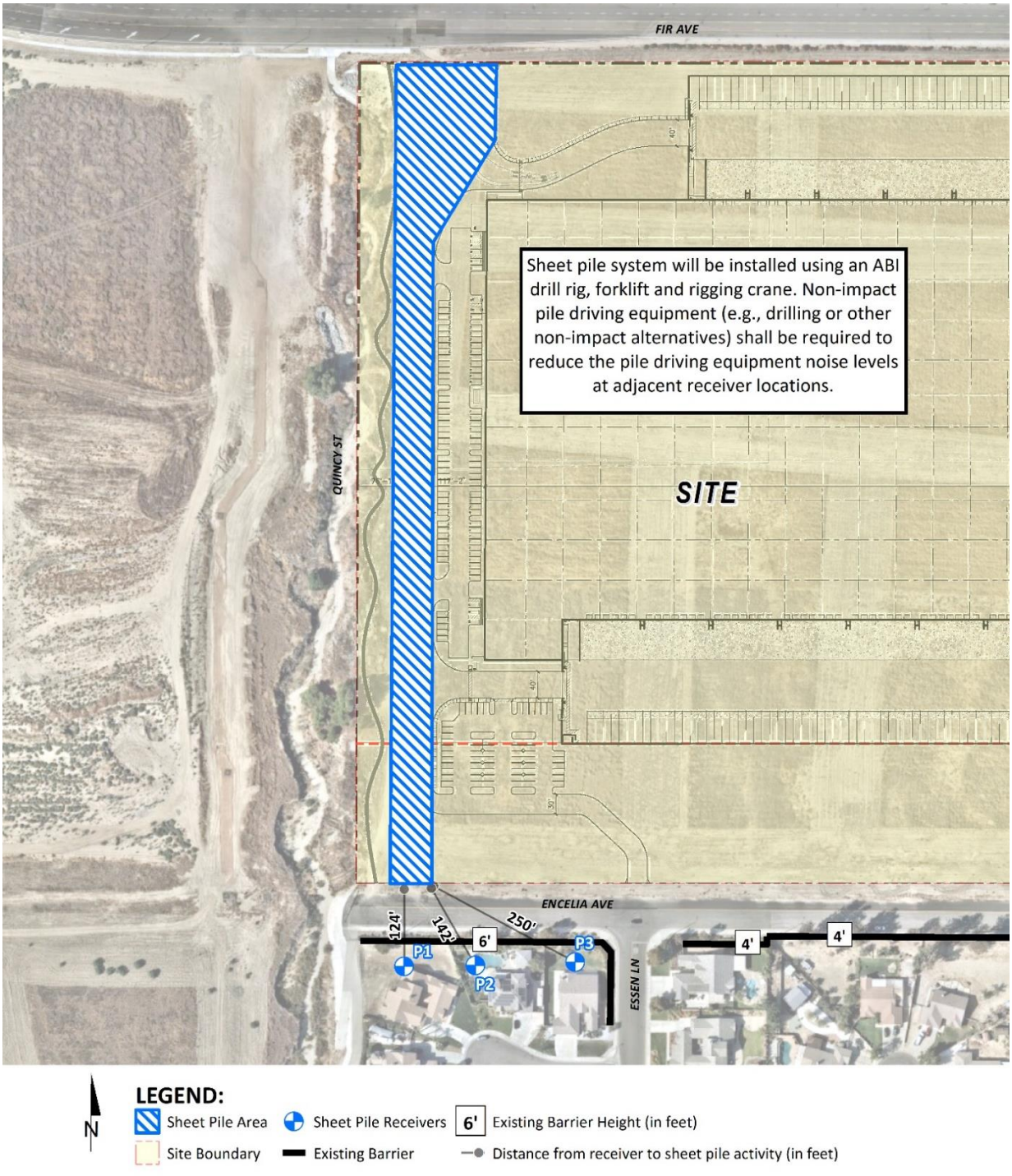


TABLE 10-6: SHEET PILE SYSTEM CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Typical Equipment	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Highest Reference Noise Level (dBA L_{eq})
Sheet Pile System	Drill Rig	77	77
	Forklifts	68	
	Cranes	73	

[1] FHWA's Roadway Construction Noise Model, January 2006.

Sheet pile system methods can include different equipment types, such as impact or drilling, and as such, noise levels will vary depending on the method used. Non-impact pile driving equipment (e.g., drilling or other non-impact alternatives) such as the planned ABI drill rig shall be required to reduce the pile driving equipment noise levels at adjacent receiver locations.

10.8 SHEET PILE SYSTEM CONSTRUCTION NOISE ANALYSIS AND COMPLIANCE

Using the reference RCNM construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at three 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 primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-7, the sheet pile system construction noise levels are estimated at expected to range from 57.4 to 64.1 dBA L_{eq} at the receiver locations near the planned sheet pile area.

The sheet pile system construction noise analysis shows that the nearby receiver locations will satisfy the City of Moreno Valley daytime 65 dBA L_{eq} significance threshold. Therefore, the noise impacts due to the Project sheet pile construction noise is considered *less than significant* at all receiver locations and at 200 feet from the property line of the source. Appendix 10.3 includes the detailed CadnaA sheet pile system construction noise model inputs.

TABLE 10-7: SHEET PILE SYSTEM CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Sheet Pile System Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	64.1	65	No
R2	62.2	65	No
R3	57.4	65	No
at 200'	60.0	65	No

[1] Noise receiver locations near the planned sheet pile area are shown on Exhibit 10-B.
[2] Highest construction noise level calculations based on distance from the sheet pile noise source activity to nearby receiver locations as shown on Table 10-6.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.9 SHEET PILE SYSTEM CONSTRUCTION VIBRATION IMPACTS

Using the typical pile driver vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the sheet pile system vibration impacts. Table 10-8 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 124 feet to 250 feet from the sheet pile construction activities (at the Project site boundary), construction vibration levels are estimated to range from 63.0 to 72.1 VdB and will remain below the FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria of 78 VdB for daytime residential uses at all receiver locations and at 200 feet from the property line of the source. Therefore, the Project-related sheet pile construction vibration impacts are considered *less than significant* during the construction activities at the Project site.

TABLE 10-8: SHEET PILE SYSTEM CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]	Threshold VdB[3]	Threshold Exceeded?[4]
P1	124'	72.1	78	No
P2	142'	70.4	78	No
P3	250'	63.0	78	No
at 200'	200'	65.9	78	No

[1] Noise receiver locations are shown on Exhibit 10-B.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[3] FTA Transit Noise and Vibration Impact Assessment Manual maximum acceptable vibration criteria as shown on Table 4-1.
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **Urban Crossroads.** *Goodman Logistics Center Traffic Impact Analysis.* May 2020.
3. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
4. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
5. **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.
6. **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.
7. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
8. **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.
9. **Occupational Safety and Health Administration.** *Standard 29 CRF, Part 1910.*
10. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
11. **State of California.** *2016 California Green Building Standards Code.* January 2017.
12. **City of Moreno Valley.** *General Plan Safety Element.* October 2006.
13. —. *Municipal Code, Chapter 11.80 Noise Regulation.*
14. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
15. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
16. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
17. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
18. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
19. **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.
20. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
21. **translutions, inc.** *Moreno Valley Trade Center Traffic Impact Analysis.* March 2020.
22. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

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12 CERTIFICATION

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

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of 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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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)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 12975 Study Area Photos

L1_E
33, 56' 22.790000", 117, 9' 33.070000"

L1_N
33, 55' 13.090000", 117, 10' 43.080000"

L1_S
33, 56' 23.020000", 117, 9' 32.960000"

L1_W
33, 56' 22.690000", 117, 9' 33.160000"

L2_E
33, 55' 54.910000", 117, 9' 32.880000"

L2_N
33, 55' 54.960000", 117, 9' 33.020000"

JN: 12975 Study Area Photos

L2_S
33, 55' 54.650000", 117, 9' 32.880000"

L2_W
33, 55' 55.000000", 117, 9' 32.880000"

L3_E
33, 55' 54.360000", 117, 9' 48.320000"

L3_N
33, 55' 22.490000", 117, 9' 25.740000"

L3_S
33, 55' 54.320000", 117, 9' 48.240000"

L3_W
33, 55' 54.320000", 117, 9' 48.260000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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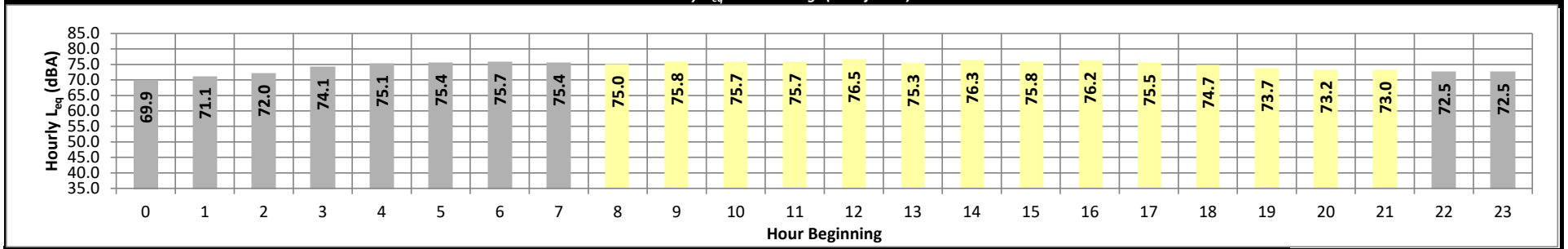
24-Hour Noise Level Measurement Summary

Date: Thursday, December 12, 2019 *Location:* L1 - Located north of the project site near existing residential home and the Moreno Valley Freeway. *Meter:* Piccolo I *JN:* 12975

Project: Moreno Valley Trade Center *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	69.9	86.1	49.6	81.0	79.0	77.0	75.0	68.0	62.0	55.0	54.0	51.0	69.9	10.0	79.9
	1	71.1	92.8	49.6	81.0	80.0	78.0	76.0	69.0	63.0	55.0	53.0	51.0	71.1	10.0	81.1
	2	72.0	86.0	50.0	81.0	80.0	78.0	77.0	71.0	65.0	57.0	56.0	53.0	72.0	10.0	82.0
	3	74.1	87.2	55.0	82.0	81.0	80.0	79.0	74.0	70.0	61.0	59.0	56.0	74.1	10.0	84.1
	4	75.1	93.2	57.4	82.0	81.0	80.0	79.0	76.0	72.0	63.0	61.0	59.0	75.1	10.0	85.1
	5	75.4	93.0	57.8	82.0	81.0	80.0	79.0	76.0	73.0	65.0	63.0	60.0	75.4	10.0	85.4
	6	75.7	87.7	58.8	83.0	81.0	80.0	79.0	76.0	74.0	68.0	66.0	62.0	75.7	10.0	85.7
	7	75.4	90.3	54.5	83.0	81.0	80.0	79.0	76.0	73.0	66.0	64.0	59.0	75.4	0.0	75.4
Day	8	75.0	89.9	57.4	82.0	81.0	79.0	78.0	75.0	73.0	66.0	64.0	60.0	75.0	0.0	75.0
	9	75.8	88.1	55.7	83.0	82.0	80.0	79.0	76.0	73.0	66.0	63.0	60.0	75.8	0.0	75.8
	10	75.7	90.8	57.2	82.0	81.0	80.0	79.0	76.0	73.0	66.0	63.0	60.0	75.7	0.0	75.7
	11	75.7	98.0	57.5	82.0	81.0	80.0	79.0	76.0	73.0	66.0	64.0	61.0	75.7	0.0	75.7
	12	76.5	97.0	55.9	85.0	83.0	81.0	79.0	76.0	74.0	67.0	65.0	62.0	76.5	0.0	76.5
	13	75.3	89.0	58.6	82.0	81.0	80.0	79.0	76.0	73.0	66.0	64.0	60.0	75.3	0.0	75.3
	14	76.3	89.2	57.0	85.0	83.0	80.0	79.0	76.0	74.0	68.0	65.0	61.0	76.3	0.0	76.3
	15	75.8	96.2	59.9	83.0	82.0	80.0	79.0	76.0	73.0	67.0	64.0	61.0	75.8	0.0	75.8
	16	76.2	99.3	59.3	83.0	81.0	79.0	78.0	76.0	73.0	68.0	65.0	61.0	76.2	0.0	76.2
	17	75.5	98.2	59.4	83.0	81.0	79.0	78.0	75.0	73.0	67.0	65.0	62.0	75.5	0.0	75.5
	18	74.7	88.2	57.7	82.0	81.0	79.0	78.0	75.0	72.0	65.0	63.0	61.0	74.7	0.0	74.7
	19	73.7	90.8	58.0	81.0	80.0	79.0	78.0	74.0	70.0	63.0	61.0	59.0	73.7	5.0	78.7
	20	73.2	88.4	57.0	81.0	80.0	78.0	78.0	73.0	70.0	62.0	61.0	59.0	73.2	5.0	78.2
	21	73.0	89.9	55.7	81.0	80.0	79.0	77.0	73.0	69.0	61.0	60.0	58.0	73.0	5.0	78.0
Night	22	72.5	91.9	51.6	81.0	80.0	78.0	77.0	72.0	67.0	59.0	57.0	54.0	72.5	10.0	82.5
	23	72.5	95.4	52.4	81.0	80.0	78.0	77.0	71.0	67.0	60.0	59.0	54.0	72.5	10.0	82.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	73.0	88.1	55.7	81.0	80.0	78.0	77.0	73.0	69.0	61.0	60.0	58.0
	Max	76.5	99.3	59.9	85.0	83.0	81.0	79.0	76.0	74.0	68.0	65.0	62.0
Energy Average		75.3	Average:		82.5	81.2	79.5	78.4	75.2	72.4	65.6	63.4	60.4
Night	Min	69.9	86.0	49.6	81.0	79.0	77.0	75.0	68.0	62.0	55.0	53.0	51.0
	Max	75.7	95.4	58.8	83.0	81.0	80.0	79.0	76.0	74.0	68.0	66.0	62.0
Energy Average		73.8	Average:		81.7	80.4	78.9	77.7	72.9	68.6	60.9	59.2	55.9

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
74.7	**75.3**	**73.8**

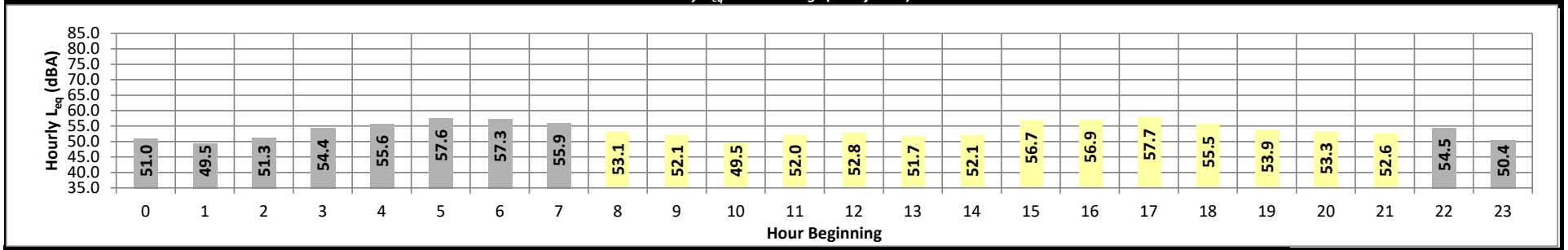
24-Hour CNEL (dBA)
80.5

24-Hour Noise Level Measurement Summary

Date: Thursday, December 12, 2019 *Location:* L2 - Located south of the Project site near existing single-family residential homes by Encelia Avenue and Shubert Street. *Meter:* Piccolo I *JN:* 12975

Project: Moreno Valley Trade Center *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	51.0	72.9	43.9	59.0	58.0	53.0	52.0	50.0	48.0	46.0	45.0	44.0	51.0	10.0	61.0
	1	49.5	65.4	43.2	55.0	54.0	53.0	52.0	49.0	48.0	45.0	44.0	44.0	49.5	10.0	59.5
	2	51.3	71.5	42.6	60.0	56.0	53.0	52.0	50.0	49.0	45.0	45.0	44.0	51.3	10.0	61.3
	3	54.4	79.5	46.6	61.0	58.0	56.0	55.0	53.0	51.0	49.0	48.0	47.0	54.4	10.0	64.4
	4	55.6	76.2	46.8	63.0	60.0	57.0	57.0	55.0	53.0	49.0	49.0	48.0	55.6	10.0	65.6
	5	57.6	75.5	50.0	69.0	66.0	60.0	58.0	55.0	54.0	52.0	52.0	51.0	57.6	10.0	67.6
	6	57.3	74.4	49.9	67.0	64.0	60.0	58.0	56.0	55.0	53.0	52.0	51.0	57.3	10.0	67.3
	7	55.9	79.5	46.1	67.0	63.0	56.0	54.0	52.0	50.0	48.0	47.0	46.0	55.9	0.0	55.9
Day	8	53.1	74.0	44.3	64.0	61.0	57.0	55.0	50.0	48.0	46.0	45.0	45.0	53.1	0.0	53.1
	9	52.1	76.4	41.8	63.0	60.0	55.0	52.0	47.0	45.0	43.0	42.0	42.0	52.1	0.0	52.1
	10	49.5	71.0	40.9	62.0	57.0	50.0	49.0	45.0	43.0	42.0	41.0	41.0	49.5	0.0	49.5
	11	52.0	75.8	39.6	65.0	60.0	52.0	49.0	43.0	42.0	40.0	40.0	40.0	52.0	0.0	52.0
	12	52.8	80.0	39.6	65.0	63.0	57.0	51.0	45.0	42.0	41.0	40.0	39.0	52.8	0.0	52.8
	13	51.7	74.0	39.6	64.0	60.0	55.0	52.0	47.0	44.0	41.0	41.0	40.0	51.7	0.0	51.7
	14	52.1	70.4	39.6	65.0	63.0	56.0	53.0	47.0	44.0	41.0	41.0	40.0	52.1	0.0	52.1
	15	56.7	80.3	45.4	66.0	63.0	59.0	57.0	54.0	52.0	49.0	48.0	46.0	56.7	0.0	56.7
	16	56.9	77.1	49.9	67.0	65.0	61.0	59.0	55.0	53.0	51.0	51.0	50.0	56.9	0.0	56.9
	17	57.7	81.7	46.9	68.0	66.0	61.0	59.0	54.0	52.0	50.0	50.0	48.0	57.7	0.0	57.7
	18	55.5	77.7	47.0	67.0	64.0	57.0	55.0	52.0	51.0	49.0	49.0	48.0	55.5	0.0	55.5
	19	53.9	71.4	47.0	64.0	62.0	57.0	55.0	52.0	51.0	49.0	48.0	47.0	53.9	5.0	58.9
	20	53.3	73.9	46.2	64.0	61.0	56.0	54.0	51.0	50.0	48.0	47.0	47.0	53.3	5.0	58.3
	21	52.6	77.6	43.8	61.0	59.0	56.0	53.0	50.0	49.0	46.0	46.0	45.0	52.6	5.0	57.6
Night	22	54.5	83.6	43.6	59.0	55.0	52.0	51.0	50.0	48.0	46.0	46.0	45.0	54.5	10.0	64.5
	23	50.4	64.3	43.5	56.0	55.0	53.0	52.0	50.0	49.0	47.0	46.0	45.0	50.4	10.0	60.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.5	70.4	39.6	61.0	57.0	50.0	49.0	43.0	42.0	40.0	40.0	39.0
	Max	57.7	81.7	49.9	68.0	66.0	61.0	59.0	55.0	53.0	51.0	51.0	50.0
Energy Average		54.2	Average:		64.6	61.7	56.4	53.8	49.4	47.6	45.4	44.9	44.1
Night	Min	49.5	64.3	42.6	55.0	54.0	52.0	51.0	49.0	48.0	45.0	44.0	44.0
	Max	57.6	83.6	50.0	69.0	66.0	60.0	58.0	56.0	55.0	53.0	52.0	51.0
Energy Average		54.6	Average:		61.6	58.9	55.3	54.1	52.0	50.5	48.0	47.4	46.5

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
54.4	54.2	54.6

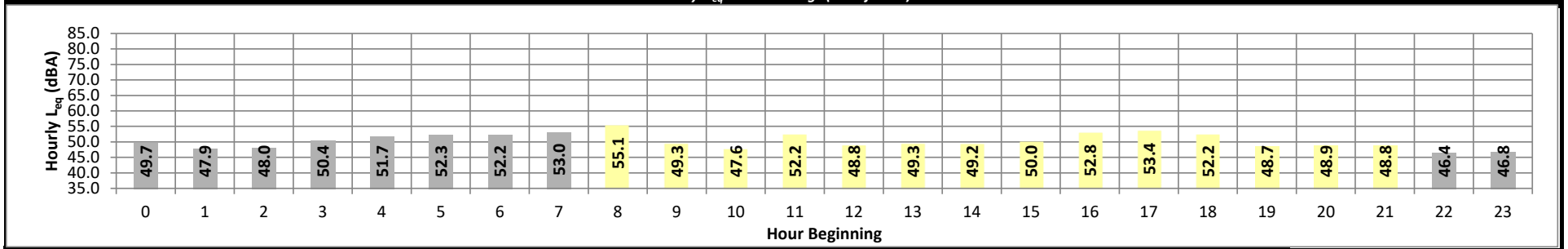
24-Hour CNEL (dBA)
61.0

24-Hour Noise Level Measurement Summary

Date: Thursday, December 12, 2019 *Location:* L3 - Located south of the Project site on Encelia Avenue next to existing single-family residential homes. *Meter:* Piccolo I *JN:* 12975

Project: Moreno Valley Trade Center *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	49.7	66.1	40.4	57.0	55.0	54.0	53.0	50.0	47.0	44.0	43.0	42.0	49.7	10.0	59.7
	1	47.9	67.9	41.3	52.0	51.0	50.0	49.0	48.0	47.0	44.0	44.0	43.0	47.9	10.0	57.9
	2	48.0	64.9	41.2	51.0	51.0	50.0	50.0	49.0	47.0	43.0	43.0	42.0	48.0	10.0	58.0
	3	50.4	67.8	44.1	55.0	53.0	53.0	52.0	50.0	49.0	46.0	46.0	45.0	50.4	10.0	60.4
	4	51.7	63.2	42.3	57.0	56.0	55.0	55.0	53.0	50.0	46.0	45.0	44.0	51.7	10.0	61.7
	5	52.3	77.3	46.0	60.0	56.0	53.0	52.0	51.0	50.0	48.0	48.0	47.0	52.3	10.0	62.3
	6	52.2	71.1	46.8	61.0	58.0	54.0	53.0	51.0	50.0	48.0	48.0	47.0	52.2	10.0	62.2
	7	53.0	77.2	44.7	62.0	57.0	54.0	53.0	51.0	49.0	47.0	47.0	46.0	53.0	0.0	53.0
Day	8	55.1	81.7	44.4	65.0	61.0	58.0	56.0	51.0	48.0	47.0	46.0	46.0	55.1	0.0	55.1
	9	49.3	71.9	41.8	59.0	55.0	51.0	49.0	48.0	47.0	45.0	44.0	44.0	49.3	0.0	49.3
	10	47.6	70.1	40.6	55.0	51.0	49.0	48.0	46.0	45.0	43.0	43.0	42.0	47.6	0.0	47.6
	11	52.2	81.3	40.0	62.0	57.0	50.0	48.0	45.0	44.0	43.0	42.0	41.0	52.2	0.0	52.2
	12	48.8	75.0	39.4	61.0	56.0	49.0	46.0	44.0	43.0	42.0	41.0	41.0	48.8	0.0	48.8
	13	49.3	72.1	40.1	61.0	58.0	52.0	50.0	46.0	44.0	42.0	42.0	41.0	49.3	0.0	49.3
	14	49.2	78.9	39.6	58.0	54.0	48.0	46.0	45.0	44.0	43.0	42.0	41.0	49.2	0.0	49.2
	15	50.0	67.9	41.4	59.0	56.0	53.0	52.0	49.0	47.0	45.0	44.0	43.0	50.0	0.0	50.0
	16	52.8	70.6	45.6	61.0	59.0	55.0	54.0	52.0	51.0	49.0	48.0	47.0	52.8	0.0	52.8
	17	53.4	73.9	46.1	60.0	58.0	56.0	55.0	53.0	51.0	49.0	49.0	47.0	53.4	0.0	53.4
	18	52.2	77.2	42.8	62.0	59.0	53.0	52.0	49.0	48.0	46.0	45.0	44.0	52.2	0.0	52.2
	19	48.7	69.3	41.6	58.0	54.0	50.0	49.0	47.0	46.0	44.0	44.0	43.0	48.7	5.0	53.7
	20	48.9	68.5	42.2	57.0	53.0	51.0	50.0	48.0	47.0	45.0	44.0	43.0	48.9	5.0	53.9
	21	48.8	67.8	41.0	58.0	54.0	52.0	52.0	47.0	46.0	44.0	43.0	42.0	48.8	5.0	53.8
Night	22	46.4	61.0	40.2	51.0	50.0	48.0	48.0	46.0	45.0	43.0	43.0	42.0	46.4	10.0	56.4
	23	46.8	60.6	40.8	50.0	49.0	49.0	48.0	47.0	46.0	44.0	44.0	43.0	46.8	10.0	56.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.6	67.8	39.4	55.0	51.0	48.0	46.0	44.0	43.0	42.0	41.0	41.0
	Max	55.1	81.7	46.1	65.0	61.0	58.0	56.0	53.0	51.0	49.0	49.0	47.0
Energy Average		51.0	Average:		59.7	56.1	51.9	50.5	47.9	46.5	44.8	44.1	43.2
Night	Min	46.4	60.6	40.2	50.0	49.0	48.0	48.0	46.0	45.0	43.0	43.0	42.0
	Max	53.0	77.3	46.8	62.0	58.0	55.0	55.0	53.0	50.0	48.0	48.0	47.0
Energy Average		50.4	Average:		55.6	53.6	52.0	51.3	49.6	48.0	45.3	45.1	44.1

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
50.8	51.0	50.4

24-Hour CNEL (dBA)
56.8

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,403	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,440	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.97	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.24	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.52	0.32	-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:	68.3	66.1	65.2	60.1	68.0	68.6
Medium Trucks:	65.9	63.9	60.8	57.9	65.7	66.1
Heavy Trucks:	65.0	63.3	59.0	55.7	64.1	64.4
Vehicle Noise:	71.4	69.4	67.3	63.0	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	640
CNEL:	69	148	319	688

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Redlands Blvd.
Road Segment: s/o Eucalyptus Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,535	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,254	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.57	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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:	67.7	65.5	64.6	59.5	67.4	68.0
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	70.8	68.8	66.7	62.4	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	583
CNEL:	63	135	291	627

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,290	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,229	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.66	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.93	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.21	0.32	-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:	67.6	65.4	64.5	59.4	67.3	67.9
Medium Trucks:	65.2	63.2	60.2	57.2	65.0	65.4
Heavy Trucks:	64.3	62.6	58.4	55.0	63.4	63.7
Vehicle Noise:	70.7	68.7	66.6	62.3	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	267	576
CNEL:	62	133	287	619

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Redlands Blvd.
Road Segment: s/o Dwy. 6
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,535	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,254	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.57	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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:	67.7	65.5	64.6	59.5	67.4	68.0
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	70.8	68.8	66.7	62.4	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	583
CNEL:	63	135	291	627

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Redlands Blvd.
Road Segment: n/o Encelia Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,535	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,254	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.57	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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:	67.7	65.5	64.6	59.5	67.4	68.0
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	70.8	68.8	66.7	62.4	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	583
CNEL:	63	135	291	627

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,934	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	2,393	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	1.24	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-12.03	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.31	-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:	69.7	67.5	66.6	61.5	69.4	70.0
Medium Trucks:	67.3	65.3	62.2	59.3	67.1	67.5
Heavy Trucks:	66.4	64.7	60.4	57.1	65.5	65.8
Vehicle Noise:	72.8	70.8	68.7	64.4	72.4	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	97	208	448	965
CNEL:	104	224	482	1,038

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,724	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,272	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.51	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-14.78	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.06	-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:	67.0	64.8	63.8	58.7	66.6	67.2
Medium Trucks:	64.5	62.6	59.5	56.6	64.3	64.7
Heavy Trucks:	63.6	62.0	57.7	54.3	62.7	63.1
Vehicle Noise:	70.1	68.0	65.9	61.7	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	294	634
CNEL:	68	147	316	681

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eucalyptus Av.
Road Segment: e/o Moreno Beach Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,673	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	367	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.93	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-19.20	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.48	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:	60.1	57.9	56.9	51.8	59.7	60.3
Medium Trucks:	58.1	56.1	53.0	50.1	57.9	58.2
Heavy Trucks:	58.0	56.4	52.1	48.7	57.1	57.5
Vehicle Noise:	63.6	61.6	59.3	55.2	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	38	81	175
CNEL:	19	40	87	188

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eucalyptus Av.
Road Segment: e/o Auto Mall Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,617 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	162 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-9.50	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-22.77	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-28.05	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:	56.5	54.3	53.4	48.3	56.2	56.7
Medium Trucks:	54.5	52.5	49.4	46.5	54.3	54.7
Heavy Trucks:	54.5	52.8	48.5	45.2	53.6	53.9
Vehicle Noise:	60.0	58.1	55.8	51.6	59.6	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	22	47	101
CNEL:	11	23	50	109

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eucalyptus Av.
Road Segment: w/o Dwy. 5
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,424 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	242 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-7.74	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-21.01	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-26.29	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:	58.3	56.1	55.1	50.0	57.9	58.5
Medium Trucks:	56.2	54.3	51.2	48.3	56.1	56.4
Heavy Trucks:	56.2	54.6	50.3	46.9	55.3	55.7
Vehicle Noise:	61.8	59.8	57.5	53.4	61.4	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	133
CNEL:	14	31	66	142

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eucalyptus Av.
Road Segment: w/o Aldi Place
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,507 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	151 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-9.80	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-23.07	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-28.35	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:	56.2	54.0	53.1	48.0	55.9	56.4
Medium Trucks:	54.2	52.2	49.1	46.2	54.0	54.4
Heavy Trucks:	54.2	52.5	48.2	44.9	53.3	53.6
Vehicle Noise:	59.7	57.8	55.5	51.3	59.3	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	45	97
CNEL:	10	22	48	104

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eucalyptus Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,424 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	242 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-7.74	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-21.01	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-26.29	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:	58.3	56.1	55.1	50.0	57.9	58.5
Medium Trucks:	56.2	54.3	51.2	48.3	56.1	56.4
Heavy Trucks:	56.2	54.6	50.3	46.9	55.3	55.7
Vehicle Noise:	61.8	59.8	57.5	53.4	61.4	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	133
CNEL:	14	31	66	142

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Encilia Av.
Road Segment: e/o Essen Lane
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	217 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	22 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-18.73	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-32.00	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-37.28	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.6	46.7	41.6	49.5	50.0
Medium Trucks:	47.6	45.6	42.5	39.6	47.4	47.7
Heavy Trucks:	47.1	45.4	41.1	37.8	46.2	46.5
Vehicle Noise:	53.1	51.1	48.9	44.7	52.7	53.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	31
CNEL:	3	7	15	33

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Encilia Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	475 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	48 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-15.33	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-28.60	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-33.88	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.2	51.0	50.1	45.0	52.9	53.4
Medium Trucks:	51.0	49.0	45.9	43.0	50.8	51.1
Heavy Trucks:	50.5	48.8	44.5	41.2	49.6	49.9
Vehicle Noise:	56.5	54.5	52.3	48.1	56.1	56.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	24	52
CNEL:	6	12	26	56

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	217 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	22 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-18.73	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-32.00	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-37.28	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.6	46.7	41.6	49.5	50.0
Medium Trucks:	47.6	45.6	42.5	39.6	47.4	47.7
Heavy Trucks:	47.1	45.4	41.1	37.8	46.2	46.5
Vehicle Noise:	53.1	51.1	48.9	44.7	52.7	53.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	31
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,119 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,512 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	91.59%
Medium Trucks:	76.2%	9.4%	14.4%	4.73%
Heavy Trucks:	81.8%	7.7%	10.6%	3.69%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.88	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.76	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.83	0.32	-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:	68.4	66.2	65.3	60.2	68.1	68.6
Medium Trucks:	66.4	64.4	61.3	58.4	66.2	66.5
Heavy Trucks:	69.7	68.0	63.7	60.4	68.8	69.1
Vehicle Noise:	73.1	71.2	68.5	64.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	176	379	816
CNEL:	87	188	405	873

Wednesday, November 4, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,209 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,321 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	90.62%
Medium Trucks:	76.2%	9.4%	14.4%	4.81%
Heavy Trucks:	81.8%	7.7%	10.6%	4.56%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.51	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.26	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.49	0.32	-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:	67.8	65.6	64.7	59.5	67.4	68.0
Medium Trucks:	65.9	63.9	60.8	57.9	65.7	66.0
Heavy Trucks:	70.0	68.3	64.1	60.7	69.1	69.5
Vehicle Noise:	73.0	71.1	68.2	64.3	72.4	72.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	369	795
CNEL:	85	183	394	849

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Blvd.
Road Segment: s/o Dwy. 6
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,339 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,334 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.59%
Medium Trucks:	76.2%	9.4%	14.4%	4.17%
Heavy Trucks:	81.8%	7.7%	10.6%	1.24%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.29	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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:	68.0	65.8	64.9	59.8	67.7	68.2
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	71.0	68.9	66.8	62.6	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	277	597
CNEL:	64	138	298	642

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Blvd.
Road Segment: s/o Eucalyptus Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,181 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,318 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.53%
Medium Trucks:	76.2%	9.4%	14.4%	4.22%
Heavy Trucks:	81.8%	7.7%	10.6%	1.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.34	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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:	68.0	65.7	64.8	59.7	67.6	68.2
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	70.9	68.9	66.8	62.5	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	276	594
CNEL:	64	138	297	639

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Blvd.
Road Segment: n/o Encelia Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,526 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,353 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.67%
Medium Trucks:	76.2%	9.4%	14.4%	4.11%
Heavy Trucks:	81.8%	7.7%	10.6%	1.22%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.22	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.32	-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	65.9	64.9	59.8	67.7	68.3
Medium Trucks:	65.3	63.3	60.2	57.3	65.1	65.5
Heavy Trucks:	64.4	62.7	58.4	55.1	63.5	63.8
Vehicle Noise:	71.0	69.0	66.9	62.6	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	278	600
CNEL:	65	139	299	645

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,767 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,277 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:	72.0%	14.6%	13.5%	94.26%
Medium Trucks:	76.2%	9.4%	14.4%	4.43%
Heavy Trucks:	81.8%	7.7%	10.6%	1.31%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.49	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-14.78	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.06	-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:	67.0	64.8	63.9	58.8	66.6	67.2
Medium Trucks:	64.5	62.6	59.5	56.6	64.3	64.7
Heavy Trucks:	63.6	62.0	57.7	54.3	62.7	63.1
Vehicle Noise:	70.1	68.1	65.9	61.7	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	137	294	634
CNEL:	68	147	317	682

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Eucalyptus Av.
Road Segment: e/o Moreno Beach Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,558 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	456 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:	72.0%	14.6%	13.5%	87.60%
Medium Trucks:	76.2%	9.4%	14.4%	4.89%
Heavy Trucks:	81.8%	7.7%	10.6%	7.51%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.31	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.84	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.98	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:	60.7	58.5	57.6	52.5	60.4	60.9
Medium Trucks:	59.4	57.4	54.4	51.4	59.2	59.6
Heavy Trucks:	66.5	64.9	60.6	57.2	65.6	66.0
Vehicle Noise:	68.2	66.4	63.0	59.3	67.5	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	157	339
CNEL:	36	78	167	361

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,704 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,470 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:	72.0%	14.6%	13.5%	92.99%
Medium Trucks:	76.2%	9.4%	14.4%	4.54%
Heavy Trucks:	81.8%	7.7%	10.6%	2.47%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	1.32	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-11.79	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.45	-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:	69.8	67.6	66.7	61.6	69.5	70.0
Medium Trucks:	67.5	65.5	62.5	59.6	67.3	67.7
Heavy Trucks:	69.2	67.6	63.3	59.9	68.3	68.7
Vehicle Noise:	73.7	71.8	69.3	65.2	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	511	1,100
CNEL:	118	254	547	1,179

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Eucalyptus Av.
Road Segment: e/o Auto Mall Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,229 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	223 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:	72.0%	14.6%	13.5%	79.95%
Medium Trucks:	76.2%	9.4%	14.4%	5.91%
Heavy Trucks:	81.8%	7.7%	10.6%	14.14%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-8.82	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.13	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-16.34	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:	57.2	55.0	54.1	49.0	56.8	57.4
Medium Trucks:	57.1	55.2	52.1	49.2	56.9	57.3
Heavy Trucks:	66.2	64.5	60.3	56.9	65.3	65.6
Vehicle Noise:	67.2	65.4	61.7	58.1	66.4	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	133	287
CNEL:	30	66	141	305

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Eucalyptus Av.
Road Segment: w/o Aldi Place
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,151 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	215 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:	72.0%	14.6%	13.5%	75.37%
Medium Trucks:	76.2%	9.4%	14.4%	6.60%
Heavy Trucks:	81.8%	7.7%	10.6%	18.03%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-9.23	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-19.81	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.44	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:	56.8	54.6	53.7	48.5	56.4	57.0
Medium Trucks:	57.4	55.5	52.4	49.5	57.3	57.6
Heavy Trucks:	67.1	65.4	61.2	57.8	66.2	66.5
Vehicle Noise:	67.9	66.2	62.3	58.8	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	149	320
CNEL:	34	73	157	339

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Eucalyptus Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,285 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	329 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:	72.0%	14.6%	13.5%	79.59%
Medium Trucks:	76.2%	9.4%	14.4%	6.02%
Heavy Trucks:	81.8%	7.7%	10.6%	14.39%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-7.15	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-18.37	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.58	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:	58.9	56.6	55.7	50.6	58.5	59.1
Medium Trucks:	58.9	56.9	53.8	50.9	58.7	59.1
Heavy Trucks:	68.0	66.3	62.0	58.6	67.0	67.4
Vehicle Noise:	68.9	67.2	63.4	59.9	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	81	174	376
CNEL:	40	86	185	398

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Eucalyptus Av.
Road Segment: w/o Dwy. 5
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,070 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	307 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:	72.0%	14.6%	13.5%	78.16%
Medium Trucks:	76.2%	9.4%	14.4%	6.44%
Heavy Trucks:	81.8%	7.7%	10.6%	15.40%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-7.53	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-18.37	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.58	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:	58.5	56.3	55.4	50.2	58.1	58.7
Medium Trucks:	58.9	56.9	53.8	50.9	58.7	59.1
Heavy Trucks:	68.0	66.3	62.0	58.6	67.0	67.4
Vehicle Noise:	68.9	67.1	63.4	59.8	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	173	374
CNEL:	40	85	184	396

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Encilia Av.
Road Segment: e/o Essen Lane
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	375 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	37 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	96.67%
Medium Trucks:	76.2%	9.4%	14.4%	2.57%
Heavy Trucks:	81.8%	7.7%	10.6%	0.76%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-16.24	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-32.00	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-37.28	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.3	50.1	49.2	44.0	51.9	52.5
Medium Trucks:	47.6	45.6	42.5	39.6	47.4	47.7
Heavy Trucks:	47.1	45.4	41.1	37.8	46.2	46.5
Vehicle Noise:	54.4	52.4	50.5	46.1	54.0	54.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	18	38
CNEL:	4	9	19	41

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	576 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	58 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	97.83%
Medium Trucks:	76.2%	9.4%	14.4%	1.67%
Heavy Trucks:	81.8%	7.7%	10.6%	0.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-14.33	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-32.00	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-37.28	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.2	52.0	51.1	46.0	53.9	54.4
Medium Trucks:	47.6	45.6	42.5	39.6	47.4	47.7
Heavy Trucks:	47.1	45.4	41.1	37.8	46.2	46.5
Vehicle Noise:	55.7	53.6	52.0	47.4	55.3	55.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	21	46
CNEL:	5	11	23	50

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,155 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,816 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.04	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.23	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-18.51	0.32	-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:	69.3	67.1	66.2	61.1	69.0	69.6
Medium Trucks:	66.9	64.9	61.8	58.9	66.7	67.1
Heavy Trucks:	66.0	64.3	60.1	56.7	65.1	65.4
Vehicle Noise:	72.4	70.4	68.3	64.0	72.0	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	347	747
CNEL:	80	173	373	803

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Encilia Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,121 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	112 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	97.56%
Medium Trucks:	76.2%	9.4%	14.4%	1.88%
Heavy Trucks:	81.8%	7.7%	10.6%	0.56%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-11.45	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-28.60	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-33.88	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.1	54.9	53.9	48.8	56.7	57.3
Medium Trucks:	51.0	49.0	45.9	43.0	50.8	51.1
Heavy Trucks:	50.5	48.8	44.5	41.2	49.6	49.9
Vehicle Noise:	58.7	56.6	55.0	50.4	58.3	58.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	16	34	73
CNEL:	8	17	37	79

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,324 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,632 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.42	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.69	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-18.97	0.32	-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:	68.9	66.7	65.7	60.6	68.5	69.1
Medium Trucks:	66.4	64.5	61.4	58.5	66.2	66.6
Heavy Trucks:	65.5	63.9	59.6	56.2	64.6	65.0
Vehicle Noise:	72.0	69.9	67.8	63.6	71.5	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	150	323	696
CNEL:	75	161	347	748

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Redlands Blvd.
Road Segment: s/o Eucalyptus Av.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,044	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,504	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.78	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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:	68.5	66.3	65.4	60.3	68.2	68.7
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.6	69.6	67.5	63.2	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	659
CNEL:	71	153	329	708

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Redlands Blvd.
Road Segment: n/o Encelia Av.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,044	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,504	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.78	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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:	68.5	66.3	65.4	60.3	68.2	68.7
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.6	69.6	67.5	63.2	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	659
CNEL:	71	153	329	708

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Redlands Blvd.
Road Segment: s/o Dwy. 6

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,044	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,504	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.78	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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:	68.5	66.3	65.4	60.3	68.2	68.7
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.6	69.6	67.5	63.2	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	659
CNEL:	71	153	329	708

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Westbound Ramps

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,159	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,816	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	0.04	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-13.23	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.51	-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:	68.5	66.3	65.4	60.3	68.2	68.8
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.6	69.6	67.5	63.2	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	373	803
CNEL:	86	186	401	863

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Moreno Beach Dr. | Job Number: 12975
Road Segment: s/o SR-60 Eastbound Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,941 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,294 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	2.62	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-10.64	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.93	-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:	71.1	68.9	68.0	62.9	70.8	71.3
Medium Trucks:	68.7	66.7	63.6	60.7	68.5	68.8
Heavy Trucks:	67.8	66.1	61.8	58.5	66.9	67.2
Vehicle Noise:	74.2	72.2	70.0	65.8	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	257	554	1,195
CNEL:	128	277	596	1,284

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: e/o Auto Mall Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,943 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	294 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-6.90	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.16	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-25.45	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:	59.1	56.9	56.0	50.9	58.8	59.3
Medium Trucks:	57.1	55.1	52.0	49.1	56.9	57.3
Heavy Trucks:	57.1	55.4	51.1	47.8	56.2	56.5
Vehicle Noise:	62.6	60.7	58.4	54.2	62.2	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	70	151
CNEL:	16	35	75	162

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: e/o Moreno Beach Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,371 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	637 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-3.54	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.81	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.09	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:	62.5	60.3	59.3	54.2	62.1	62.7
Medium Trucks:	60.4	58.5	55.4	52.5	60.2	60.6
Heavy Trucks:	60.4	58.8	54.5	51.1	59.5	59.9
Vehicle Noise:	66.0	64.0	61.7	57.6	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	117	252
CNEL:	27	58	126	271

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: w/o Aldi Place

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,822 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	282 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-7.08	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-20.35	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-25.63	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:	58.9	56.7	55.8	50.7	58.6	59.2
Medium Trucks:	56.9	54.9	51.9	48.9	56.7	57.1
Heavy Trucks:	56.9	55.2	51.0	47.6	56.0	56.4
Vehicle Noise:	62.5	60.5	58.2	54.0	62.0	62.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	68	147
CNEL:	16	34	73	157

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Eucalyptus Av.
Road Segment: w/o Dwy. 5

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,834 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	383 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.75	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-19.02	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.30	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:	60.3	58.1	57.1	52.0	59.9	60.5
Medium Trucks:	58.2	56.3	53.2	50.3	58.0	58.4
Heavy Trucks:	58.2	56.6	52.3	48.9	57.3	57.7
Vehicle Noise:	63.8	61.8	59.5	55.4	63.3	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	42	90	193

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Encilia Av.
Road Segment: e/o Essen Lane

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	240 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	24 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-18.29	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-31.56	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-36.84	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	48.0	47.1	42.0	49.9	50.5
Medium Trucks:	48.0	46.0	43.0	40.0	47.8	48.2
Heavy Trucks:	47.5	45.9	41.6	38.2	46.6	47.0
Vehicle Noise:	53.5	51.5	49.3	45.1	53.1	53.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	33
CNEL:	4	8	16	35

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Eucalyptus Av.
Road Segment: w/o Redlands Blvd.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,834 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	383 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.75	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-19.02	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.30	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:	60.3	58.1	57.1	52.0	59.9	60.5
Medium Trucks:	58.2	56.3	53.2	50.3	58.0	58.4
Heavy Trucks:	58.2	56.6	52.3	48.9	57.3	57.7
Vehicle Noise:	63.8	61.8	59.5	55.4	63.3	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	42	90	193

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024)
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	240 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	24 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-18.29	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-31.56	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-36.84	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	48.0	47.1	42.0	49.9	50.5
Medium Trucks:	48.0	46.0	43.0	40.0	47.8	48.2
Heavy Trucks:	47.5	45.9	41.6	38.2	46.6	47.0
Vehicle Noise:	53.5	51.5	49.3	45.1	53.1	53.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	33
CNEL:	4	8	16	35

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Encilia Av. | Job Number: 12975
Road Segment: w/o Redlands Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	524 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	52 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-14.90	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-28.17	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-33.45	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	51.4	50.5	45.4	53.3	53.9
Medium Trucks:	51.4	49.4	46.3	43.4	51.2	51.6
Heavy Trucks:	50.9	49.2	45.0	41.6	50.0	50.4
Vehicle Noise:	56.9	54.9	52.7	48.5	56.5	56.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	55
CNEL:	6	13	28	59

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Redlands Blvd. | Job Number: 12975
Road Segment: s/o SR-60 Eastbound Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,243 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,724 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	91.47%
Medium Trucks:	76.2%	9.4%	14.4%	4.73%
Heavy Trucks:	81.8%	7.7%	10.6%	3.80%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.32	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.18	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.13	0.32	-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:	69.0	66.8	65.8	60.7	68.6	69.2
Medium Trucks:	66.9	65.0	61.9	59.0	66.7	67.1
Heavy Trucks:	70.4	68.7	64.4	61.1	69.5	69.8
Vehicle Noise:	73.8	71.9	69.1	65.1	73.2	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	194	417	899
CNEL:	96	207	446	961

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Redlands Blvd. | Job Number: 12975
Road Segment: s/o SR-60 Westbound Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,871 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,887 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	92.11%
Medium Trucks:	76.2%	9.4%	14.4%	4.67%
Heavy Trucks:	81.8%	7.7%	10.6%	3.22%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.11	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.84	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.46	0.32	-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:	69.4	67.2	66.3	61.2	69.1	69.6
Medium Trucks:	67.3	65.3	62.2	59.3	67.1	67.5
Heavy Trucks:	70.0	68.4	64.1	60.7	69.1	69.5
Vehicle Noise:	73.8	71.9	69.3	65.2	73.3	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	196	423	912
CNEL:	98	210	453	976

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Redlands Blvd. | Job Number: 12975
Road Segment: s/o Eucalyptus Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,690 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,569 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.48%
Medium Trucks:	76.2%	9.4%	14.4%	4.26%
Heavy Trucks:	81.8%	7.7%	10.6%	1.26%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.59	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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	66.5	65.6	60.5	68.4	68.9
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.7	69.7	67.6	63.3	71.3	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	310	669
CNEL:	72	155	334	719

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Redlands Blvd. | Job Number: 12975
Road Segment: s/o Dwy. 6

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,848	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,585	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.54%
Medium Trucks:	76.2%	9.4%	14.4%	4.21%
Heavy Trucks:	81.8%	7.7%	10.6%	1.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.54	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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:	68.8	66.5	65.6	60.5	68.4	69.0
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.7	69.7	67.6	63.3	71.3	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	671
CNEL:	72	156	335	722

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Moreno Beach Dr. | Job Number: 12975
Road Segment: s/o SR-60 Westbound Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,202	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,820	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:	72.0%	14.6%	13.5%	94.26%
Medium Trucks:	76.2%	9.4%	14.4%	4.43%
Heavy Trucks:	81.8%	7.7%	10.6%	1.31%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	0.05	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-13.23	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.51	-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:	68.5	66.3	65.4	60.3	68.2	68.8
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.6	69.6	67.5	63.2	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	373	804
CNEL:	86	186	401	864

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Redlands Blvd. | Job Number: 12975
Road Segment: n/o Encelia Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,035	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,603	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.60%
Medium Trucks:	76.2%	9.4%	14.4%	4.17%
Heavy Trucks:	81.8%	7.7%	10.6%	1.23%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.49	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.05	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-19.33	0.32	-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:	68.8	66.6	65.7	60.6	68.5	69.0
Medium Trucks:	66.1	64.1	61.0	58.1	65.9	66.3
Heavy Trucks:	65.2	63.5	59.2	55.9	64.3	64.6
Vehicle Noise:	71.7	69.7	67.6	63.4	71.3	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	674
CNEL:	73	156	337	725

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024) | Project Name: Alt2 Moreno Valley Trade
Road Name: Moreno Beach Dr. | Job Number: 12975
Road Segment: s/o SR-60 Eastbound Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,711	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	3,371	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:	72.0%	14.6%	13.5%	93.33%
Medium Trucks:	76.2%	9.4%	14.4%	4.52%
Heavy Trucks:	81.8%	7.7%	10.6%	2.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	2.68	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-10.47	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.68	-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:	71.2	69.0	68.0	62.9	70.8	71.4
Medium Trucks:	68.8	66.9	63.8	60.9	68.6	69.0
Heavy Trucks:	70.0	68.3	64.1	60.7	69.1	69.5
Vehicle Noise:	74.9	72.9	70.5	66.4	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	132	284	611	1,317
CNEL:	141	304	656	1,412

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Eucalyptus Av.
Road Segment: e/o Moreno Beach Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,256 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	726 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:	72.0%	14.6%	13.5%	90.07%
Medium Trucks:	76.2%	9.4%	14.4%	4.73%
Heavy Trucks:	81.8%	7.7%	10.6%	5.21%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-3.17	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-15.97	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.55	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:	62.8	60.6	59.7	54.6	62.5	63.1
Medium Trucks:	61.3	59.3	56.2	53.3	61.1	61.5
Heavy Trucks:	67.0	65.3	61.0	57.7	66.1	66.4
Vehicle Noise:	69.2	67.3	64.2	60.4	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	185	398
CNEL:	42	91	197	424

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Eucalyptus Av.
Road Segment: w/o Aldi Place
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,466 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	347 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:	72.0%	14.6%	13.5%	82.53%
Medium Trucks:	76.2%	9.4%	14.4%	5.78%
Heavy Trucks:	81.8%	7.7%	10.6%	11.69%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-6.76	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-18.31	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.25	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:	59.3	57.0	56.1	51.0	58.9	59.5
Medium Trucks:	58.9	57.0	53.9	51.0	58.7	59.1
Heavy Trucks:	67.3	65.6	61.3	58.0	66.4	66.7
Vehicle Noise:	68.4	66.7	63.0	59.4	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	350
CNEL:	37	80	173	372

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Eucalyptus Av.
Road Segment: e/o Auto Mall Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,555 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	356 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:	72.0%	14.6%	13.5%	85.28%
Medium Trucks:	76.2%	9.4%	14.4%	5.36%
Heavy Trucks:	81.8%	7.7%	10.6%	9.36%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-6.51	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-18.52	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-16.11	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:	59.5	57.3	56.4	51.3	59.2	59.7
Medium Trucks:	58.7	56.8	53.7	50.8	58.5	58.9
Heavy Trucks:	66.4	64.8	60.5	57.1	65.5	65.9
Vehicle Noise:	67.8	66.0	62.5	58.9	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	319
CNEL:	34	73	157	339

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Eucalyptus Av.
Road Segment: w/o Dwy. 5
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,480 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	448 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:	72.0%	14.6%	13.5%	83.22%
Medium Trucks:	76.2%	9.4%	14.4%	5.81%
Heavy Trucks:	81.8%	7.7%	10.6%	10.97%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.61	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.17	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.41	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:	60.4	58.2	57.3	52.2	60.1	60.6
Medium Trucks:	60.1	58.1	55.0	52.1	59.9	60.3
Heavy Trucks:	68.1	66.5	62.2	58.8	67.2	67.6
Vehicle Noise:	69.3	67.6	64.0	60.4	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	87	187	404
CNEL:	43	92	199	428

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Eucalyptus Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,695 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	470 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:	72.0%	14.6%	13.5%	83.99%
Medium Trucks:	76.2%	9.4%	14.4%	5.54%
Heavy Trucks:	81.8%	7.7%	10.6%	10.47%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-5.37	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-17.17	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.41	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:	60.7	58.4	57.5	52.4	60.3	60.9
Medium Trucks:	60.1	58.1	55.0	52.1	59.9	60.3
Heavy Trucks:	68.1	66.5	62.2	58.8	67.2	67.6
Vehicle Noise:	69.4	67.6	64.0	60.4	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	87	188	406
CNEL:	43	93	200	431

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	599 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	97.69%
Medium Trucks:	76.2%	9.4%	14.4%	1.78%
Heavy Trucks:	81.8%	7.7%	10.6%	0.53%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-14.16	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-31.56	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-36.84	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.4	52.2	51.2	46.1	54.0	54.6
Medium Trucks:	48.0	46.0	43.0	40.0	47.8	48.2
Heavy Trucks:	47.5	45.9	41.6	38.2	46.6	47.0
Vehicle Noise:	55.9	53.9	52.2	47.6	55.5	56.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	48
CNEL:	5	11	24	52

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Encilia Av.
Road Segment: e/o Essen Lane
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	398 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	96.53%
Medium Trucks:	76.2%	9.4%	14.4%	2.68%
Heavy Trucks:	81.8%	7.7%	10.6%	0.79%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-15.99	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-31.56	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-36.84	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.5	50.3	49.4	44.3	52.2	52.8
Medium Trucks:	48.0	46.0	43.0	40.0	47.8	48.2
Heavy Trucks:	47.5	45.9	41.6	38.2	46.6	47.0
Vehicle Noise:	54.8	52.7	50.8	46.4	54.3	54.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	18	40
CNEL:	4	9	20	43

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OYP (2024)
Road Name: Encilia Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,170 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	117 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	97.42%
Medium Trucks:	76.2%	9.4%	14.4%	1.99%
Heavy Trucks:	81.8%	7.7%	10.6%	0.59%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-11.27	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-28.17	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-33.45	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.3	55.0	54.1	49.0	56.9	57.5
Medium Trucks:	51.4	49.4	46.3	43.4	51.2	51.6
Heavy Trucks:	50.9	49.2	45.0	41.6	50.0	50.4
Vehicle Noise:	59.0	56.9	55.2	50.7	58.6	59.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	16	35	76
CNEL:	8	18	38	83

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,690 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,569 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.55	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.72	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.00	0.32	-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:	70.8	68.6	67.7	62.6	70.5	71.1
Medium Trucks:	68.4	66.4	63.4	60.4	68.2	68.6
Heavy Trucks:	67.5	65.8	61.6	58.2	66.6	66.9
Vehicle Noise:	73.9	71.9	69.8	65.5	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	437	941
CNEL:	101	218	470	1,012

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Redlands Blvd.
Road Segment: s/o Eucalyptus Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,275 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,528 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.47	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	70.8	68.6	67.6	62.5	70.4	71.0
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.8	69.7	65.5	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	931
CNEL:	100	216	465	1,001

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,068 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,607 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.61	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.66	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.94	0.32	-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:	70.9	68.7	67.8	62.7	70.6	71.1
Medium Trucks:	68.5	66.5	63.4	60.5	68.3	68.6
Heavy Trucks:	67.6	65.9	61.6	58.3	66.7	67.0
Vehicle Noise:	74.0	72.0	69.8	65.6	73.6	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	205	441	950
CNEL:	102	220	474	1,022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Redlands Blvd.
Road Segment: s/o Dwy. 6
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,275 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,528 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.47	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	70.8	68.6	67.6	62.5	70.4	71.0
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.8	69.7	65.5	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	931
CNEL:	100	216	465	1,001

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Redlands Blvd.
Road Segment: n/o Encelia Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,275	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	2,528	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.47	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	70.8	68.6	67.6	62.5	70.4	71.0
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.8	69.7	65.5	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	931
CNEL:	100	216	465	1,001

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,511	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	4,451	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	3.93	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-9.34	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.62	-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:	72.4	70.2	69.3	64.2	72.1	72.6
Medium Trucks:	70.0	68.0	64.9	62.0	69.8	70.1
Heavy Trucks:	69.1	67.4	63.1	59.8	68.2	68.5
Vehicle Noise:	75.5	73.5	71.4	67.1	75.1	75.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	146	315	678	1,460
CNEL:	157	338	729	1,570

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,982	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	2,498	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	1.42	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-11.84	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.13	-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:	69.9	67.7	66.8	61.7	69.6	70.1
Medium Trucks:	67.5	65.5	62.4	59.5	67.3	67.6
Heavy Trucks:	66.6	64.9	60.6	57.3	65.7	66.0
Vehicle Noise:	73.0	71.0	68.8	64.6	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	214	461	993
CNEL:	107	230	496	1,068

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Eucalyptus Av.
Road Segment: e/o Moreno Beach Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,586	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,259	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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-0.58	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.85	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.13	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:	65.4	63.2	62.3	57.2	65.1	65.7
Medium Trucks:	63.4	61.4	58.4	55.4	63.2	63.6
Heavy Trucks:	63.4	61.7	57.5	54.1	62.5	62.8
Vehicle Noise:	69.0	67.0	64.7	60.5	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	184	397
CNEL:	43	92	198	427

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: e/o Auto Mall Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,251 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	825 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-2.42	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-15.69	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.97	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:	63.6	61.4	60.5	55.4	63.2	63.8
Medium Trucks:	61.6	59.6	56.5	53.6	61.4	61.7
Heavy Trucks:	61.6	59.9	55.6	52.3	60.7	61.0
Vehicle Noise:	67.1	65.1	62.8	58.7	66.7	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	300
CNEL:	32	69	149	322

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: w/o Dwy. 5

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,978 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	998 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.59	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-14.86	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.14	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:	64.4	62.2	61.3	56.2	64.1	64.6
Medium Trucks:	62.4	60.4	57.3	54.4	62.2	62.6
Heavy Trucks:	62.4	60.7	56.5	53.1	61.5	61.8
Vehicle Noise:	67.9	66.0	63.7	59.5	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	340
CNEL:	37	79	170	365

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: w/o Aldi Place

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,912 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	791 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-2.60	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-15.87	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:	63.4	61.2	60.3	55.2	63.1	63.6
Medium Trucks:	61.4	59.4	56.3	53.4	61.2	61.6
Heavy Trucks:	61.4	59.7	55.4	52.1	60.5	60.8
Vehicle Noise:	66.9	65.0	62.7	58.5	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	135	292
CNEL:	31	67	145	313

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040) | Project Name: Alt2 Moreno Valley Trade
Road Name: Eucalyptus Av. | Job Number: 12975
Road Segment: w/o Redlands Blvd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,978 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	998 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:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.59	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-14.86	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.14	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:	64.4	62.2	61.3	56.2	64.1	64.6
Medium Trucks:	62.4	60.4	57.3	54.4	62.2	62.6
Heavy Trucks:	62.4	60.7	56.5	53.1	61.5	61.8
Vehicle Noise:	67.9	66.0	63.7	59.5	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	340
CNEL:	37	79	170	365

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Encilia Av.
Road Segment: e/o Essen Lane
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,996 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	400 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-6.08	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-19.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-24.63	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.5	60.2	59.3	54.2	62.1	62.7
Medium Trucks:	60.2	58.2	55.2	52.3	60.0	60.4
Heavy Trucks:	59.7	58.1	53.8	50.4	58.8	59.2
Vehicle Noise:	65.7	63.7	61.5	57.3	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	99	214
CNEL:	23	50	107	230

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Encilia Av.
Road Segment: w/o Redlands Blvd.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,312 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	431 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.75	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-19.02	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-24.30	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	60.6	59.6	54.5	62.4	63.0
Medium Trucks:	60.5	58.6	55.5	52.6	60.3	60.7
Heavy Trucks:	60.1	58.4	54.1	50.8	59.2	59.5
Vehicle Noise:	66.1	64.1	61.9	57.7	65.6	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	48	104	225
CNEL:	24	52	112	242

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBO (2040)
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,996 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	400 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.24%
Medium Trucks:	76.2%	9.4%	14.4%	4.44%
Heavy Trucks:	81.8%	7.7%	10.6%	1.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-6.08	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-19.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-24.63	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.5	60.2	59.3	54.2	62.1	62.7
Medium Trucks:	60.2	58.2	55.2	52.3	60.0	60.4
Heavy Trucks:	59.7	58.1	53.8	50.4	58.8	59.2
Vehicle Noise:	65.7	63.7	61.5	57.3	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	99	214
CNEL:	23	50	107	230

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,406 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,641 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	92.72%
Medium Trucks:	76.2%	9.4%	14.4%	4.60%
Heavy Trucks:	81.8%	7.7%	10.6%	2.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.59	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.45	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.81	0.32	-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:	70.9	68.7	67.8	62.6	70.5	71.1
Medium Trucks:	68.7	66.7	63.6	60.7	68.5	68.9
Heavy Trucks:	70.7	69.0	64.8	61.4	69.8	70.1
Vehicle Noise:	75.0	73.0	70.5	66.4	74.5	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	235	506	1,091
CNEL:	117	252	542	1,168

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Redlands Blvd.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,987 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,699 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	92.47%
Medium Trucks:	76.2%	9.4%	14.4%	4.62%
Heavy Trucks:	81.8%	7.7%	10.6%	2.91%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.68	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.33	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.35	0.32	-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:	71.0	68.8	67.8	62.7	70.6	71.2
Medium Trucks:	68.8	66.8	63.7	60.8	68.6	69.0
Heavy Trucks:	71.1	69.5	65.2	61.8	70.2	70.6
Vehicle Noise:	75.2	73.3	70.7	66.6	74.7	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	243	524	1,128
CNEL:	121	260	561	1,208

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Redlands Blvd.
Road Segment: s/o Dwy. 6
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,079 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,608 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.42%
Medium Trucks:	76.2%	9.4%	14.4%	4.30%
Heavy Trucks:	81.8%	7.7%	10.6%	1.28%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.62	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	70.9	68.7	67.8	62.7	70.6	71.1
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.9	69.8	65.5	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	437	942
CNEL:	101	218	470	1,013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Redlands Blvd.
Road Segment: s/o Eucalyptus Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,921 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,592 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.39%
Medium Trucks:	76.2%	9.4%	14.4%	4.33%
Heavy Trucks:	81.8%	7.7%	10.6%	1.28%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.59	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	70.9	68.7	67.8	62.6	70.5	71.1
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.9	69.8	65.5	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	436	940
CNEL:	101	218	469	1,010

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Redlands Blvd.
Road Segment: n/o Encelia Av.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,266 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,627 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 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:	72.0%	14.6%	13.5%	94.46%
Medium Trucks:	76.2%	9.4%	14.4%	4.27%
Heavy Trucks:	81.8%	7.7%	10.6%	1.27%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	47.000
Medium Trucks:	46.811
Heavy Trucks:	46.830

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.65	0.30	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-11.79	0.33	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.32	-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:	71.0	68.7	67.8	62.7	70.6	71.2
Medium Trucks:	68.3	66.4	63.3	60.4	68.1	68.5
Heavy Trucks:	67.4	65.8	61.5	58.1	66.5	66.9
Vehicle Noise:	73.9	71.9	69.8	65.6	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	438	944
CNEL:	102	219	471	1,015

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Westbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,025 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,503 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:	72.0%	14.6%	13.5%	94.25%
Medium Trucks:	76.2%	9.4%	14.4%	4.43%
Heavy Trucks:	81.8%	7.7%	10.6%	1.31%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	1.43	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-11.84	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.13	-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:	69.9	67.7	66.8	61.7	69.6	70.1
Medium Trucks:	67.5	65.5	62.4	59.5	67.3	67.6
Heavy Trucks:	66.6	64.9	60.6	57.3	65.7	66.0
Vehicle Noise:	73.0	71.0	68.8	64.6	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	214	461	994
CNEL:	107	230	496	1,069

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Eucalyptus Av.
Road Segment: e/o Moreno Beach Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,471 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,347 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:	72.0%	14.6%	13.5%	91.99%
Medium Trucks:	76.2%	9.4%	14.4%	4.59%
Heavy Trucks:	81.8%	7.7%	10.6%	3.41%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-0.39	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.41	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.70	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:	65.6	63.4	62.5	57.4	65.3	65.8
Medium Trucks:	63.8	61.9	58.8	55.9	63.6	64.0
Heavy Trucks:	67.8	66.2	61.9	58.5	66.9	67.3
Vehicle Noise:	70.8	69.0	66.1	62.2	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	241	520
CNEL:	56	120	258	555

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Moreno Beach Dr.
Road Segment: s/o SR-60 Eastbound Ramps
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,281 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,528 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:	72.0%	14.6%	13.5%	93.56%
Medium Trucks:	76.2%	9.4%	14.4%	4.50%
Heavy Trucks:	81.8%	7.7%	10.6%	1.94%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	3.98	-0.51	-1.20	-4.71	0.000	0.000
Medium Trucks:	81.00	-9.21	-0.49	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.85	-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:	72.5	70.2	69.3	64.2	72.1	72.7
Medium Trucks:	70.1	68.1	65.1	62.1	69.9	70.3
Heavy Trucks:	70.8	69.2	64.9	61.5	69.9	70.3
Vehicle Noise:	76.0	74.0	71.7	67.6	75.6	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	157	338	729	1,571
CNEL:	169	363	783	1,686

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Eucalyptus Av.
Road Segment: e/o Auto Mall Dr.
Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,863 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	886 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:	72.0%	14.6%	13.5%	90.65%
Medium Trucks:	76.2%	9.4%	14.4%	4.81%
Heavy Trucks:	81.8%	7.7%	10.6%	4.54%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-2.28	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-15.03	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-15.28	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:	63.7	61.5	60.6	55.5	63.4	64.0
Medium Trucks:	62.2	60.3	57.2	54.3	62.0	62.4
Heavy Trucks:	67.3	65.6	61.3	57.9	66.3	66.7
Vehicle Noise:	69.7	67.9	64.8	60.9	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	94	202	434
CNEL:	46	100	215	463

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Eucalyptus Av.
Road Segment: w/o Aldi Place

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,556	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	856	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:	72.0%	14.6%	13.5%	89.50%
Medium Trucks:	76.2%	9.4%	14.4%	4.98%
Heavy Trucks:	81.8%	7.7%	10.6%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-2.49	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-15.03	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-14.59	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:	63.5	61.3	60.4	55.3	63.2	63.8
Medium Trucks:	62.2	60.3	57.2	54.3	62.0	62.4
Heavy Trucks:	67.9	66.3	62.0	58.6	67.0	67.4
Vehicle Noise:	70.1	68.2	65.1	61.3	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	98	212	457
CNEL:	49	105	226	487

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Eucalyptus Av.
Road Segment: w/o Redlands Blvd.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,839	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,084	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:	72.0%	14.6%	13.5%	89.80%
Medium Trucks:	76.2%	9.4%	14.4%	4.92%
Heavy Trucks:	81.8%	7.7%	10.6%	5.28%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.44	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-14.06	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-13.75	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:	64.6	62.4	61.4	56.3	64.2	64.8
Medium Trucks:	63.2	61.2	58.1	55.2	63.0	63.4
Heavy Trucks:	68.8	67.1	62.8	59.5	67.9	68.2
Vehicle Noise:	71.0	69.1	66.0	62.2	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	525
CNEL:	56	121	260	560

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Eucalyptus Av.
Road Segment: w/o Dwy. 5

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,624	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	1,062	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:	72.0%	14.6%	13.5%	89.60%
Medium Trucks:	76.2%	9.4%	14.4%	5.02%
Heavy Trucks:	81.8%	7.7%	10.6%	5.39%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	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	-1.54	0.71	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-14.06	0.74	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-13.75	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:	64.5	62.3	61.3	56.2	64.1	64.7
Medium Trucks:	63.2	61.2	58.1	55.2	63.0	63.4
Heavy Trucks:	68.8	67.1	62.8	59.5	67.9	68.2
Vehicle Noise:	70.9	69.1	66.0	62.1	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	243	523
CNEL:	56	120	259	558

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Encilia Av.
Road Segment: e/o Essen Lane

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,154	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	415	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	72.0%	14.6%	13.5%	94.46%
Medium Trucks:	76.2%	9.4%	14.4%	4.27%
Heavy Trucks:	81.8%	7.7%	10.6%	1.27%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.90	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	79.45	-19.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-24.63	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.6	60.4	59.5	54.4	62.3	62.9
Medium Trucks:	60.2	58.2	55.2	52.3	60.0	60.4
Heavy Trucks:	59.7	58.1	53.8	50.4	58.8	59.2
Vehicle Noise:	65.8	63.8	61.6	57.4	65.4	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	50	108	233

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Encilia Av.
Road Segment: e/o Mozart Wy.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,355	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	436	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	72.0%	14.6%	13.5%	94.72%
Medium Trucks:	76.2%	9.4%	14.4%	4.07%
Heavy Trucks:	81.8%	7.7%	10.6%	1.21%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.68	1.28	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	79.45	-19.35	1.31	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-24.63	1.31	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.9	60.6	59.7	54.6	62.5	63.1
Medium Trucks:	60.2	58.2	55.2	52.3	60.0	60.4
Heavy Trucks:	59.7	58.1	53.8	50.4	58.8	59.2
Vehicle Noise:	65.9	63.9	61.8	57.5	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	47	102	220
CNEL:	24	51	110	237

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GPBOP (2040)
Road Name: Encilia Av.
Road Segment: w/o Redlands Blvd.

Project Name: Alt2 Moreno Valley Trade
Job Number: 12975

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,958	vehicles
Peak Hour Percentage:	10.00%	
Peak Hour Volume:	496	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	72.0%	14.6%	13.5%	94.99%
Medium Trucks:	76.2%	9.4%	14.4%	3.86%
Heavy Trucks:	81.8%	7.7%	10.6%	1.14%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.11	1.28	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	79.45	-19.02	1.31	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-24.30	1.31	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.4	61.2	60.3	55.2	63.1	63.7
Medium Trucks:	60.5	58.6	55.5	52.6	60.3	60.7
Heavy Trucks:	60.1	58.4	54.1	50.8	59.2	59.5
Vehicle Noise:	66.4	64.4	62.3	58.0	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	24	51	110	236
CNEL:	25	55	118	254

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APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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12975

CadnaA Noise Prediction Model: 12975_10.cna
Date: 06.11.20
Analyst: B. Lawson

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	44.4	44.2	50.9	65.0	60.0	0.0				5.00	a	6285795.43	2286852.14	5.00
RECEIVERS		R2	40.1	39.7	46.4	65.0	60.0	0.0				5.00	a	6285832.80	2283837.85	5.00
RECEIVERS		R3	41.0	39.8	46.6	65.0	60.0	0.0				5.00	a	6284622.63	2283845.08	5.00
RECEIVERS		R4 - at 200'	40.1	39.4	46.1	65.0	60.0	0.0				5.00	a	6284889.69	2283757.76	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	6284276.19	2284341.01	53.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6286231.53	2284365.09	53.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6286226.71	2284996.00	53.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6284276.19	2284945.43	53.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		75.00	0.00	45.00	0.0	5.00	a	6286089.45	2285157.34	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		75.00	0.00	45.00	0.0	5.00	a	6284350.84	2284203.75	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY01	99.0	88.7	90.1	77.2	66.9	68.3	PWL-Pt	89.7					561.0	52.0	72.0	6.2	8
LINESOURCE		DWY01	102.3	91.9	93.3	77.2	66.9	68.3	PWL-Pt	89.7					561.0	52.0	72.0	6.2	8
LINESOURCE		DWY05	84.0	73.3	75.6	65.2	54.5	56.7	PWL-Pt	89.7					35.0	3.0	5.0	6.2	8
LINESOURCE		DWY05	89.2	78.6	80.8	65.2	54.5	56.7	PWL-Pt	89.7					35.0	3.0	5.0	6.2	8
LINESOURCE		DWY07	90.5	80.3	81.7	70.0	59.7	61.2	PWL-Pt	89.7					106.0	10.0	14.0	6.2	8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6284201.61	2285199.22	8.00	0.00
					6284210.44	2285027.44	8.00	0.00
					6284268.65	2285025.67	8.00	0.00
					6284363.92	2285052.13	8.00	0.00
					6284438.01	2285085.65	8.00	0.00
					6284522.69	2285092.71	8.00	0.00
LINESOURCE	8.00	a			6284332.16	2284263.58	8.00	0.00
					6284127.52	2284263.58	8.00	0.00
					6284124.00	2284935.70	8.00	0.00
					6284207.17	2285091.05	8.00	0.00
LINESOURCE	8.00	a			6286117.44	2285082.12	8.00	0.00
					6286265.63	2285083.89	8.00	0.00
					6286270.92	2285117.41	8.00	0.00
					6286272.69	2285187.73	8.00	0.00
LINESOURCE	8.00	a			6286265.63	2285083.89	8.00	0.00
					6286322.08	2285045.08	8.00	0.00
					6286316.82	2284273.12	8.00	0.00
LINESOURCE	8.00	a			6286168.77	2284272.36	8.00	0.00
					6286541.71	2284274.29	8.00	0.00

Area Source(s)

ID	Result. PWL			Result. PWL''			Lw / Li		Operating Time			Moving Pt. Src			Height
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night	Number			
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	Day	Evening	Night	(ft)
DOCK01	111.5	111.5	111.5	67.1	67.1	67.1	Lw	111.5							8
DRY01	103.4	103.4	103.4	58.4	58.4	58.4	Lw	103.4							8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6286117.44	2285177.39	8.00	0.00
					6286117.44	2284990.39	8.00	0.00
					6284522.69	2284990.39	8.00	0.00
					6284522.69	2285177.39	8.00	0.00
AREASOURCE	8.00	a			6286170.37	2284357.07	8.00	0.00
					6286166.84	2284170.08	8.00	0.00
					6284332.16	2284170.08	8.00	0.00
					6284332.16	2284357.07	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)
BARRIERS		BARRIERS00001						6.00	a		6284027.67	2283877.60	6.00	0.00
											6284391.46	2283874.88	6.00	0.00
											6284404.65	2283860.32	6.00	0.00
											6284403.29	2283750.28	6.00	0.00
BARRIERS		BARRIERS00002						4.00	a		6284639.26	2283884.29	4.00	0.00
											6285198.14	2283881.20	4.00	0.00
											6285197.37	2283847.19	4.00	0.00
BARRIERS		BARRIERS00003						4.00	a		6285333.13	2283849.84	4.00	0.00
											6285370.04	2283880.24	4.00	0.00
											6285851.26	2283877.34	4.00	0.00
											6285897.57	2283875.89	4.00	0.00
											6285899.74	2283875.17	4.00	0.00
BARRIERS		BARRIERS00004						4.00	a		6284639.26	2283884.29	4.00	0.00
											6284639.24	2283871.62	4.00	0.00
											6284513.10	2283872.78	4.00	0.00
BARRIERS		BARRIERS00005						14.00	a		6286168.19	2284241.64	14.00	0.00
											6286166.84	2284170.08	14.00	0.00
											6284332.16	2284170.08	14.00	0.00
											6284332.16	2284237.11	14.00	0.00
BARRIERS		BARRIERS00006						14.00	a		6284522.69	2285117.41	14.00	0.00
											6284522.69	2285177.39	14.00	0.00
											6286117.44	2285177.39	14.00	0.00
											6286117.44	2285103.29	14.00	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		48.00	a	6284219.26	2284990.39	48.00	0.00
								6286117.44	2284990.39	48.00	0.00
								6286117.44	2285029.20	48.00	0.00
								6286288.56	2285029.20	48.00	0.00
								6286288.56	2284320.03	48.00	0.00
								6286170.37	2284320.03	48.00	0.00
								6286170.37	2284357.07	48.00	0.00
								6284332.16	2284357.07	48.00	0.00
								6284332.16	2284298.86	48.00	0.00
								6284212.20	2284298.86	48.00	0.00

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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12975

CadnaA Noise Prediction Model: 12975_Construction.cna
Date: 11.05.20
Analyst: B. Lawson

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	58.6	58.6	65.2	65.0	60.0	0.0				5.00	a	6285795.43	2286852.14	5.00
RECEIVERS		R2	64.7	64.7	71.4	65.0	60.0	0.0				5.00	a	6285832.80	2283837.85	5.00
RECEIVERS		R3	64.5	64.5	71.2	65.0	60.0	0.0				5.00	a	6284622.63	2283845.08	5.00
RECEIVERS		R4 - at 200'	63.2	63.2	69.9	65.0	60.0	0.0				5.00	a	6284889.69	2283757.76	5.00

Area Source(s)

ID	Result. PWL			Result. PWL''			Lw / Li		Operating Time			Moving Pt. Src			Height
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night	Number			
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	Day	Evening	Night	(ft)
SITEBOUNDARY00001	128.1	128.1	128.1	73.5	73.5	73.5	Lw''	73.5							8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6284023.88	2285199.01	8.00	0.00
					6286220.93	2285201.61	8.00	0.00
					6286236.56	2285187.73	8.00	0.00
					6286424.06	2285187.73	8.00	0.00
					6286446.63	2285184.25	8.00	0.00
					6286470.93	2285173.84	8.00	0.00
					6286507.39	2285144.32	8.00	0.00
					6286535.17	2285104.39	8.00	0.00
					6286547.32	2285067.93	8.00	0.00
					6286545.59	2284804.04	8.00	0.00
					6286557.74	2284788.42	8.00	0.00
					6286556.00	2284496.75	8.00	0.00
					6286540.38	2284415.16	8.00	0.00
					6286542.11	2284231.13	8.00	0.00
					6286552.53	2284215.50	8.00	0.00
					6286554.27	2283963.77	8.00	0.00
					6284021.14	2283963.27	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)
BARRIERS		BARRIERS00001						6.00	a		6284027.67	2283877.60	6.00	0.00
											6284391.46	2283874.88	6.00	0.00
											6284404.65	2283860.32	6.00	0.00
											6284403.29	2283750.28	6.00	0.00
BARRIERS		BARRIERS00002						4.00	a		6284639.26	2283884.29	4.00	0.00
											6285198.14	2283881.20	4.00	0.00
											6285197.37	2283847.19	4.00	0.00
BARRIERS		BARRIERS00003						4.00	a		6285333.13	2283849.84	4.00	0.00
											6285370.04	2283880.24	4.00	0.00
											6285851.26	2283877.34	4.00	0.00
											6285897.57	2283875.89	4.00	0.00
											6285899.74	2283875.17	4.00	0.00
BARRIERS		BARRIERS00004						4.00	a		6284639.26	2283884.29	4.00	0.00
											6284639.24	2283871.62	4.00	0.00
											6284513.10	2283872.78	4.00	0.00

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APPENDIX 10.2:

CADNAA CONCRETE POUR CONSTRUCTION NOISE MODEL INPUTS

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12975

CadnaA Noise Prediction Model: 12975_ConcretePour.cna
Date: 10.01.21
Analyst: B. Lawson

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	52.8	52.8	59.5	65.0	60.0	0.0				5.00	a	6285795.43	2286852.14	5.00
RECEIVERS		R2	55.8	55.8	62.5	65.0	60.0	0.0				5.00	a	6285832.80	2283837.85	5.00
RECEIVERS		R3	55.8	55.8	62.5	65.0	60.0	0.0				5.00	a	6284622.63	2283845.08	5.00
RECEIVERS		R4 - at 200'	55.3	55.3	62.0	65.0	60.0	0.0				5.00	a	6284889.69	2283757.76	5.00

Area Source(s)

ID	Result. PWL			Result. PWL''			Lw / Li		Operating Time			Moving Pt. Src			Height
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night	Number			
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	Day	Evening	Night	(ft)
BUILDING00001	122.1	122.1	122.1	71.2	71.2	71.2	Lw''	71.2							8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BUILDING	8.00	a		6284219.26	2284990.39	8.00	0.00
				6286117.44	2284990.39	8.00	0.00
				6286117.44	2285029.20	8.00	0.00
				6286288.56	2285029.20	8.00	0.00
				6286288.56	2284320.03	8.00	0.00
				6286170.37	2284320.03	8.00	0.00
				6286170.37	2284357.07	8.00	0.00
				6284332.16	2284357.07	8.00	0.00
				6284332.16	2284298.86	8.00	0.00
				6284212.20	2284298.86	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)
BARRIERS		BARRIERS00001						6.00	a		6284027.67	2283877.60	6.00	0.00
											6284391.46	2283874.88	6.00	0.00
											6284404.65	2283860.32	6.00	0.00
											6284403.29	2283750.28	6.00	0.00
BARRIERS		BARRIERS00002						4.00	a		6284639.26	2283884.29	4.00	0.00
											6285198.14	2283881.20	4.00	0.00
											6285197.37	2283847.19	4.00	0.00
BARRIERS		BARRIERS00003						4.00	a		6285333.13	2283849.84	4.00	0.00
											6285370.04	2283880.24	4.00	0.00
											6285851.26	2283877.34	4.00	0.00
											6285897.57	2283875.89	4.00	0.00
											6285899.74	2283875.17	4.00	0.00
BARRIERS		BARRIERS00004						4.00	a		6284639.26	2283884.29	4.00	0.00
											6284639.24	2283871.62	4.00	0.00
											6284513.10	2283872.78	4.00	0.00

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APPENDIX 10.3:

CADNAA SHEET PILE SYSTEM CONSTRUCTION NOISE MODEL INPUTS

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12975

CadnaA Noise Prediction Model: 12975_ConstructionPile.cna
Date: 07.05.20
Analyst: B. Lawson

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)
PILERECEIVERS		P1	64.0	64.0	70.7	65.0	0.0	0.0				5.00	a	6284093.59	2283838.98	5.00
PILERECEIVERS		P2	62.2	62.2	68.8	65.0	0.0	0.0				5.00	a	6284200.83	2283840.29	5.00
PILERECEIVERS		P3	57.3	57.3	64.0	65.0	0.0	0.0				5.00	a	6284351.12	2283845.30	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		PileDriver(Impact)	108.7	108.7	108.7	Lw	108.7					0.0	8.00	a	6284105.32	2283966.70	8.00

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)
BARRIERS		BARRIERS00001						6.00	a		6284027.67	2283877.60	6.00	0.00
											6284391.46	2283874.88	6.00	0.00
											6284404.65	2283860.32	6.00	0.00
											6284403.29	2283750.28	6.00	0.00
BARRIERS		BARRIERS00002						4.00	a		6284639.26	2283884.29	4.00	0.00
											6285198.14	2283881.20	4.00	0.00
											6285197.37	2283847.19	4.00	0.00
BARRIERS		BARRIERS00003						4.00	a		6285333.13	2283849.84	4.00	0.00
											6285370.04	2283880.24	4.00	0.00
											6285851.26	2283877.34	4.00	0.00
											6285897.57	2283875.89	4.00	0.00
											6285899.74	2283875.17	4.00	0.00
BARRIERS		BARRIERS00004						4.00	a		6284639.26	2283884.29	4.00	0.00
											6284639.24	2283871.62	4.00	0.00
											6284513.10	2283872.78	4.00	0.00

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