ALLIANCE CALIFORNIA GATEWAY SOUTH BUILDING 3

NOISE IMPACT ANALYSIS

CITY OF SAN BERNARDINO

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November 7, 2013

JN:08878-04 Noise Report.docx

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LIST OF ABBREVIATED TERMS

(1)	Reference
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
INCE	institute of Noise Control Engineering
Leq	Equivalent continuous sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
mph	Miles per hour
Project	Alliance California Gateway South Building 3
RCNM	Roadway Construction Noise Model
STC	Sound Transmission Class

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Alliance California Gateway South Building 3 ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational noise impacts and short-term construction noise impacts.

1.1 SITE LOCATION

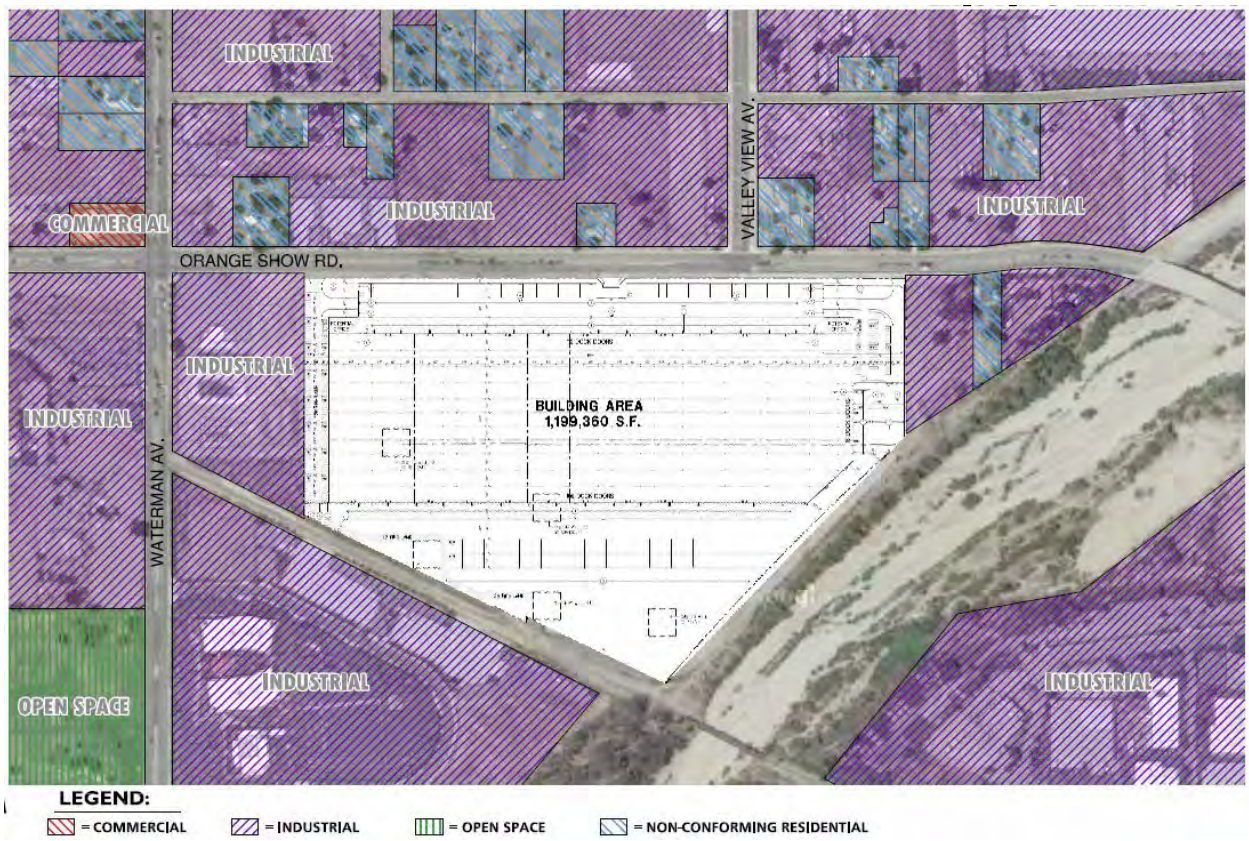
The proposed Alliance California Gateway South Building 3 development is located at the southeast corner of Waterman Avenue and Orange Show Road in the City of San Bernardino as shown on Exhibit 1-A. The Project site is currently vacant with the exception of a few building structures located in the middle of the site.

EXHIBIT 1-A: LOCATION MAP

1.2 STUDY AREA

The project site is located within area developed mostly with commercial and industrial land uses. However, the study area includes several non-conforming residential homes. As shown on Exhibit 1-B, the existing land use to the north of the project site consists mostly of industrial land uses and approximately three single-family detached residential homes fronting Orange Show Road. The Santa Ana River and industrial land uses are located east of the project site in addition to a single non-conforming residential lot. All of the remaining land uses surrounding the project site to the west and south are generally considered industrial.

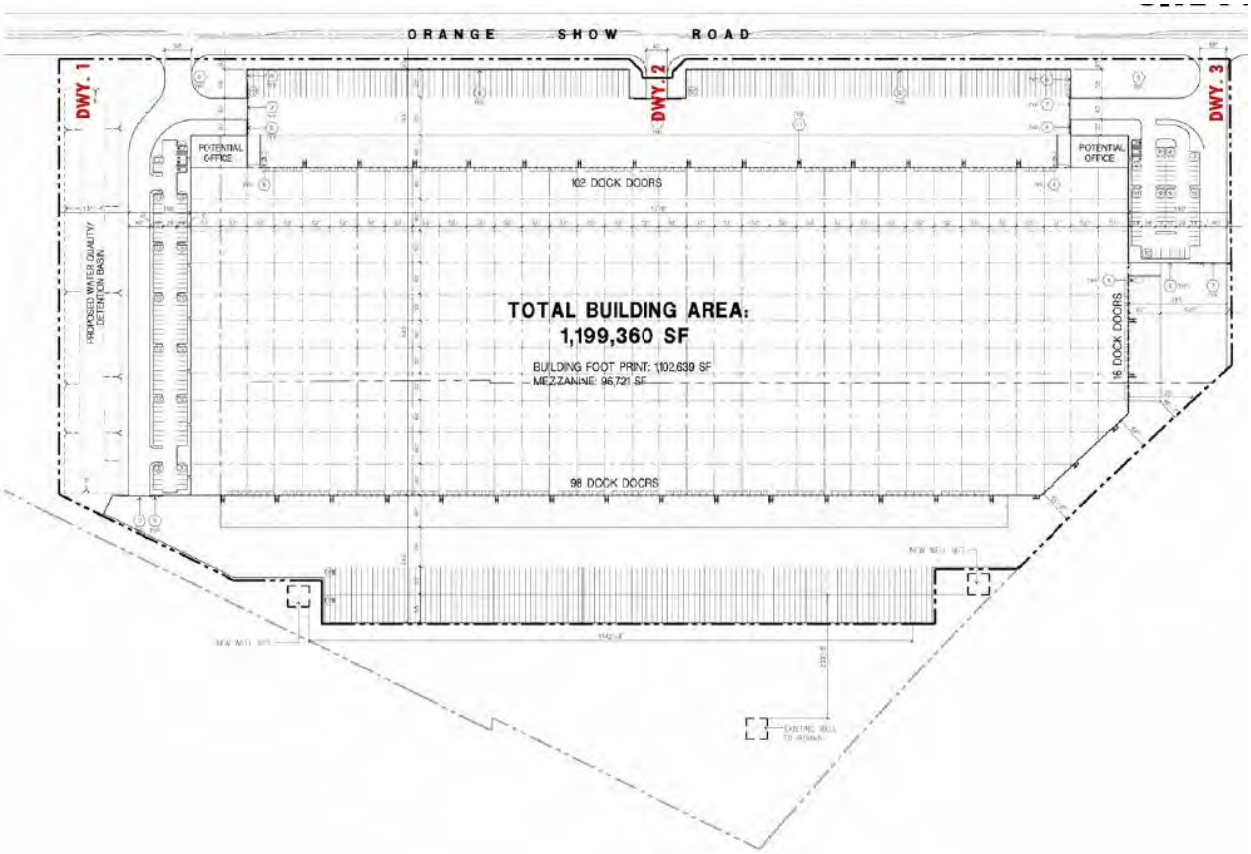
EXHIBIT 1-B: EXISTING LAND USES



1.3 PROJECT DESCRIPTION

The Project is proposed to consist of approximately 1,199,360 square feet of high-cube distribution warehouse use within a single building. It is assumed that the Project will be constructed and occupied by 2015. Exhibit 1-C illustrates a preliminary conceptual site plan.

EXHIBIT 1-C: SITE PLAN



2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud.(1) 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.(2) 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 commonly used figure is the equivalent level (Leq). 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 (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

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 twenty-four 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 Leq sound levels in the evening from 7 p.m. to 10 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10 p.m. and 7 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 particular time, but rather represents the total sound exposure. The City of San Bernardino 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 manner in which 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.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor 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 receptor, 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 receptor 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.

2.3.3 ATMOSPHERIC EFFECTS

Receptors 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 ft) 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.

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. 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 resident. 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.

2.4 TRAFFIC NOISE PREDICTION

According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance,* provided by the Federal Highway Administration, the level of traffic noise depends on three primary factors: the volume of the traffic, the speed of the traffic, and the vehicle mix within the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks.(3) A doubling of the traffic volume, assuming that the speed and vehicle mix do not change, results in a noise level increase of 3 dBA. The vehicle mix on a given roadway may also have an effect on community noise levels. As the number of medium and heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise level impacts will increase. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires on the roadway.

2.5 NOISE CONTROL

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

2.6 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of the noise source. (3)

2.7 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 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. (4)

2.8 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual'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 of the receptor;
- Noise receptor's perception that they are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Receptor's 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. Another 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. (5) 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. (5)

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered "barely perceptible," and changes of 5 dBA are considered "readily perceptible." (3)

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 fairly 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 according to guidelines adopted by the Governor's Office of Planning and Research. (6) The purpose of the Noise Element is to "limit the exposure of the community to excessive noise levels". In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL. There is no interior noise standard for industrial warehousing uses such as the building proposed by the Alliance California Gateway South Building 3 project.

3.3 CITY OF SAN BERNARDINO GENERAL PLAN NOISE ELEMENT

The City of San Bernardino General Plan Noise Element (7) identifies several policies to minimize the impacts of excessive noise levels throughout the community. The General Plan Noise Element identifies goals and policies focused on land use planning and design, transportation related noise sources, and non-transportation related noise sources.

3.3.1 LAND USE PLANNING AND DESIGN

To ensure that residents are protected from excessive noise through careful land planning (Goal 14.1), the City of San Bernardino General Plan Noise Element provides guidelines to evaluate the Land Use Compatibility for Community Noise Exposure (Figure N-1). These guidelines are based on the Governor's Office of Planning and Research (6) and are used to assess the community noise exposure on land uses. According to the Land Use Compatibility for Community Noise Exposure guidelines, noise sensitive land uses such as single family residences are *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. For office and commercial land uses, exterior noise levels below 70 dBA CNEL are considered *normally acceptable* and noise levels of less than 80 are considered *conditionally acceptable.* Industrial, and manufacturing land uses are considered *normally acceptable* with noise levels below 75 dBA CNEL and *conditionally acceptable* with noise levels of less than 80 dBA CNEL. The City of San Bernardino General Plan Noise Element is included in Appendix 3.1.

3.3.2 TRANSPORTATION RELATED NOISE SOURCES

To encourage the reduction of noise from transportation related noise sources such as motor vehicles, aircraft operations and railroad movements (Goal 14.2), Table N-3 of the City of San Bernardino General Plan Noise Element identifies a maximum allowable exterior noise level of 65 dBA CNEL and an interior noise level limit of 45 dBA CNEL for new residential developments. While the city specifically identifies an exterior noise level limit for noise sensitive residential land uses such as hotels, hospitals, schools and parks, the City of San Bernardino doe not maintain exterior noise standards for non-noise sensitive land uses such as office, retail, manufacturing, utilities, agriculture, and industrial.

3.3.3 NON-TRANSPORTATION RELATED NOISE SOURCES

While the City maintains several policies to control the negative effects of nuisance noise, it does not identify specific maximum exterior noise level limits. The policies contained in the Noise Control Ordinance are designed to protect residents from the negative effects of "spillover" or nuisance noise (Goal 14.3).

To analyze noise impacts originating from a designated fixed location or private property such as the Project site, stationary source noise such as idling trucks, delivery truck activities, parking, backup alarms and the refrigerated containers or reefers are typically evaluated against the policies adopted in the City's Noise Control Ordinance (Chapter 8.54). (8) However, when *such noises are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose…*these activities shall be exempt (Section 8.54.060.B). In effect, the operational stationary source noise level impacts associated with the Alliance California Gateway South Building 3 are considered exempt provided that these activities are consistent with typical industrial land use activities. The City of San Bernardino Noise Control Ordinance is included in Appendix 3.2.

The City of San Bernardino has set restrictions to control noise impacts associated with the construction of the proposed project. Section 8.54.070 of the City's Noise Control Ordinance states that *no person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m.*

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, noise impacts would be potentially significant if the Project is determined to result in or cause:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

While the CEQA Guidelines and the City of San Bernardino noise standards provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under the first threshold, they do not define the levels at which increases are considered substantial for use under the second and third threshold. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receptors in order to determine if a noise increase represents a significant adverse environmental impact.

4.1 DIRECT PROJECT IMPACTS

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development:

- If project related operational noise levels exceed applicable City of San Bernardino standards.
- If project-related construction activities take place outside the hours of 7:00 a.m. and 8:00 p.m.

4.2 CUMULATIVE PROJECT IMPACTS

The level of significance attributed to the cumulative project impacts are based on the noise levels with and without the project. The significance of cumulative noise impacts varies depending on the condition of the environment and the project related noise level increases. For example, if the ambient noise environment is quiet and the new noise source greatly increase the noise levels, an impact may occur even though the noise criteria might not be exceeded. Therefore, for the purpose of this analysis, a “readily perceptible” a 5 dBA or greater project related noise level increase is considered a significant impact.

In areas where the without project noise levels range from 60 to 65 dBA and noise levels impacts become noticeable at some value of greater than 1 dBA, and 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 since it likely contributes to an existing noise deficiency. Table 4.1 below provides a summary of the cumulative noise impact significance criteria.

TABLE 4-1: SIGNIFICANCE OF CUMULATIVE NOISE IMPACTS

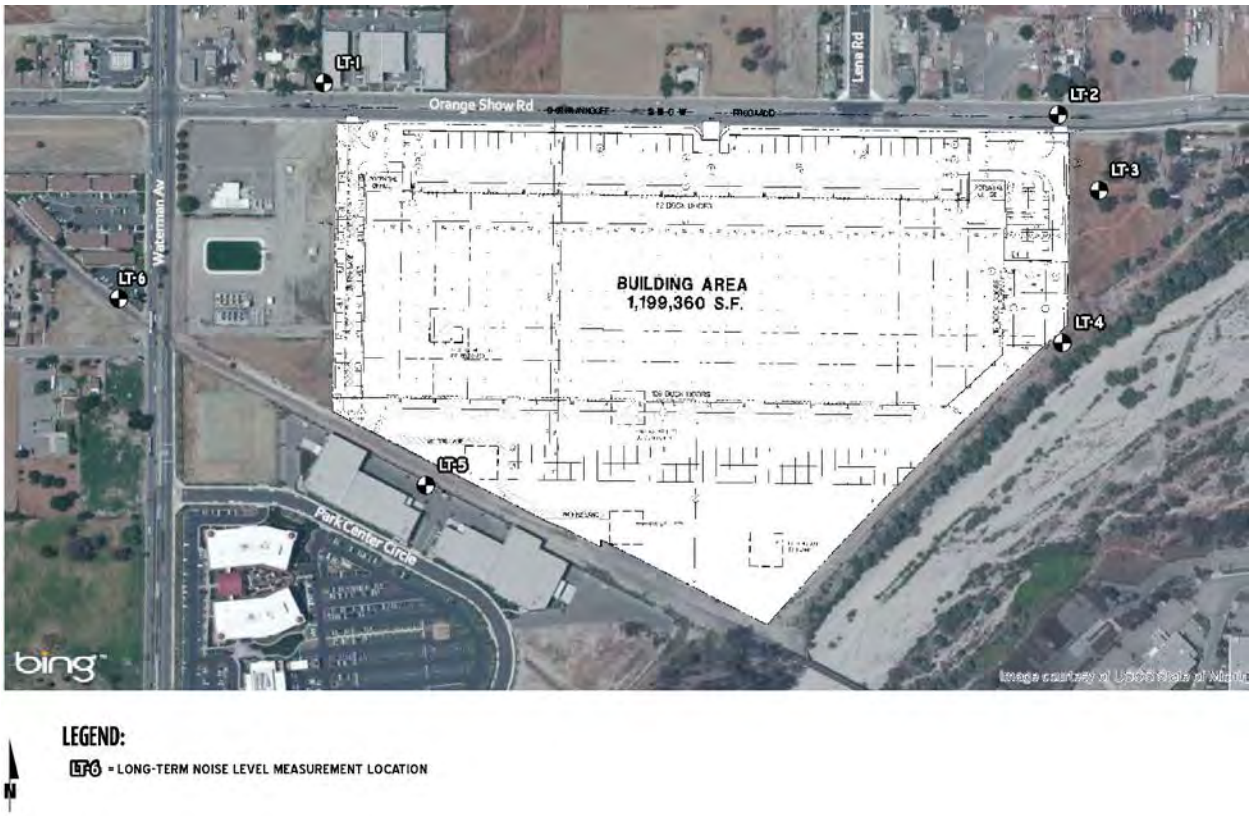
Without Project Noise Level (CNEL)	Project Related Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Based on the Community Response to Noise Surveys contained in the U.S. Environmental Protection Agency Office of Noise Abatement and Control, Noise Effects Handbook-A Desk Reference to Health and Welfare Effect of Noise, October 1979 (revised July 1981).

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, six long-term noise level measurements were taken at receptor locations in the Project study area. The noise level measurement receptor locations were selected to describe and document the existing noise environment within the project area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. The noise level measurements were recorded by Urban Crossroads, Inc. on Monday, October 21, 2013. Appendix 5.1 includes study area photos.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



5.1 MEASUREMENT PROCEDURE AND CRITERIA

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 meets American National Standards Institute (ANSI) specifications for sound level meters (Standard S1.4-1983) (9).

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned at the nearest noise sensitive receptor locations to assess the existing ambient hourly noise levels surrounding the Project site. It is important to recognize that the neighboring noise sensitive receptor locations represent typical non-conforming residential land uses.

It is not necessary to collect measurements at each individual building or residence, because each receptor measurement represents a group of buildings that share acoustical equivalence. In other words, the area represented by the receptor shares similar shielding, terrain, and geometric relationship to the reference noise source. For example while noise level measurement location LT-2 was taken north of the project, the noise level measurement is intended to represent the expected exterior noise levels for the residential homes fronting Orange Show Road. While receptors represent a location of noise sensitive areas, receivers represent noise modeling locations used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receptor locations allows for a comparison of the before and after project noise levels.

5.3 NOISE MEASUREMENT RESULTS

The results of the noise level measurements are presented in Table 5-1. Table 5-1 identifies the hourly daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 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:

- Located north of Orange Show Road in the nearby business center, location LT-1 represents the off-site noise levels at the northwest corner of the project site. Based on the noise level measurements, the existing daytime hourly ambient noise levels ranged from 63.1 to 69.5 dBA Leq resulting in an energy (logarithmic) average daytime noise level of 67.2 dBA Leq. During the nighttime hours, the measured ambient noise levels ranged from 57.9 to 69.2 dBA Leq producing an energy (logarithmic) average nighttime noise level of 64.8 dBA Leq. A review of the 24-hour Community Noise Equivalent Level (CNEL) indicates that the overall exterior noise level is 71.8 dBA CNEL which is considered “conditionally acceptable” for office building, businesses and commercial land use by the City of San Bernardino Land Use Compatibility for Community Noise Exposure (General Plan Noise Element Figure N-1).
- Location LT-2 represents the adjacent residential homes located north of the Project site across Orange Show Road. Due to the chain-link fencing and the abundance of Rottweiler dogs roaming the yards, we were not able to place a noise level meter on or near the homes. Instead, the noise level meter was placed in the center median island. The noise level measurements show an overall 24-hour exterior noise level of 77.2 dBA CNEL which is considered “clearly unacceptable” for residential use by the Land Use Compatibility for Community Noise Exposure (General Plan Noise Element Figure N-1). The hourly noise levels measured at Location LT-2 ranged from 68.5 to 75.9 dBA Leq during the daytime hours and from 62.8 to 74.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 73.8 dBA Leq with an average nighttime noise level of 69.7 dBA Leq.

- Location LT-3 represents the area east of the Project site near the adjacent non-conforming residential land use. Due to a noise meter error, the noise level measurement lasted for a period of only eight hours. However, based on the data collected by the meter and observed noise levels made by Urban Crossroads in the field, the daytime hourly noise levels ranged from 55.8 to 60.3 dBA Leq with an observed hourly nighttime noise level of 57.4 dBA Leq. It is the opinion of Urban Crossroads that these noise levels accurately represent the existing noise levels; thus, it was not necessary to collect a 24-hour measurement in this location.
- To represent the existing ambient noise levels near the Santa Ana River, noise level measurement location LT-4 was placed at the eastern corner of the Project site. At this location, the 24-hour noise level was measured at 61.4 dBA CNEL. The existing daytime hourly noise levels were measured at 45.2 to 56.8 dBA Leq with the nighttime hours ranging from 49.1 to 60.7 dBA Leq. The energy (logarithmic) average daytime noise level was calculated at 51.3 dBA Leq with an average nighttime noise level of 55.3 dBA Leq.
- Located southwest of the project site in the Park Center Circle business center, location LT-5 represents the off-site noise levels at the southwest corner of the project site. Based on the noise level measurements, the existing daytime hourly ambient noise levels ranged from 44.2 to 57.6 dBA Leq resulting in an energy (logarithmic) average daytime noise level of 50.6 dBA Leq. During the nighttime hours, the measured ambient noise levels ranged from 46.4 to 55.7 dBA Leq producing an energy (logarithmic) average nighttime noise level of 52.3 dBA Leq. A review of the 24-hour Community Noise Equivalent Level (CNEL) indicates that the overall exterior noise level is 58.7 dBA CNEL which is considered “normally acceptable” for office building, businesses and commercial land use by the City of San Bernardino Land Use Compatibility for Community Noise Exposure (General Plan Noise Element Figure N-1).
- Location LT-6 represents the Valley Business Park located west of the Project site across Waterman Avenue. The noise level measurements show an overall 24-hour exterior noise level of 67.9 dBA CNEL which is considered “normally unacceptable” for office building, businesses and commercial land use by the Land Use Compatibility for Community Noise Exposure (General Plan Noise Element Figure N-1). The hourly noise levels measured at Location LT-6 ranged from 60.3 to 65.6 dBA Leq during the daytime hours and from 56.2 to 65.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 62.6 dBA Leq with an average nighttime noise level of 61.0 dBA Leq.

TABLE 5-1: LONG-TERM AMBIENT NOISE LEVEL MEASUREMENTS

Observer Location[1]	Date	Description	Hourly Noise Level (Leq dBA)[2]	
			Daytime (7am to 10pm)	Nighttime (10pm to 7am)
LT-1	10/21/2013	Located north of Orange Show Road in the nearby business center.	67.2	64.8
LT-2	10/21/2013	Located in the center median island north of Orange Show road opposite the nearby homes.	73.8	69.7
LT-3[3]	10/20/2013	East of the project site near the adjacent residential homes.	56.9	57.4
LT-4	10/21/2013	Located east of the loading dock area near the Sana Ana River.	51.3	55.3
LT-5	10/21/2013	Located southwest of the project site in the Park Center Circle business center.	50.6	52.3
LT-6	10/21/2013	East of the project site near the railroad track adjacent to the Valley Business Park.	62.6	61.0

[1] See Exhibit 5-A for the location of the monitoring sites.
[2] Energy (logarithmic) average hourly levels. The long-term measurements printouts are included in Appendix 5.1.
[3] Due to a noise meter error, the noise level measurement at observation location LT-3 lasted only 8 hours.

6 METHODS AND PROCEDURES

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

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated along the proposed project's predicted local traffic route where 50 or more peak hour trips would be contributed using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108.(10) 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.(11) 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.

6.2 TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the project's off-site transportation noise impacts. Table 6-1 identifies the 13 study area roadway segments, the functional roadway classifications according to the General Plan Circulation Element, the number of lanes and the vehicle speeds. For the purpose of this analysis, soft site conditions were used to analyze the traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation.

The Existing, Year 2015, and Year 2035 average daily traffic volumes used for this study a presented in Table 6-2 were provided by the *Alliance California Gateway South Building 3 Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (12) Table 6-2 presents the hourly traffic flow distributions (vehicle mix) used for this analysis. To quantify the off-site truck traffic noise levels, the truck trips were added to the heavy truck category in the FHWA noise prediction model. The FHWA noise prediction model inputs were modified to account for the increase in average daily traffic, as well as the increase in the percentage of daytime heavy truck activities. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Jurisdiction	Roadway Classification[1]	Lanes	Vehicle Speed (MPH)
1	E St.	n/o Orange Show Rd.	San Bernardino	Major	4	50
2	Waterman Av.	n/o Orange Show Rd.	San Bernardino	Major	4	50
3	Waterman Av.	s/o Orange Show Rd.	San Bernardino	Major	4	50
4	Waterman Av.	n/o Hospitality Ln.	San Bernardino	Major	4	50
5	Waterman Av.	s/o Hospitality Ln.	San Bernardino	Major	4	50
6	Carnegie Dr.	s/o Hospitality Ln.	San Bernardino	Major	4	50
7	Orange Show Rd.	w/o E St.	San Bernardino	Major	4	50
8	Orange Show Rd.	e/o E St.	San Bernardino	Major	4	50
9	Orange Show Rd.	e/o Arrowhead Av.	San Bernardino	Major	4	50
10	Orange Show Rd.	w/o Waterman Av.	San Bernardino	Major	4	50
11	Orange Show Rd.	e/o Waterman Av.	San Bernardino	Major	4	50
12	Hospitality Ln.	e/o Waterman Av.	San Bernardino	Major	4	50
13	Hospitality Ln.	w/o Carnegie Dr.	San Bernardino	Major	4	50

[1] Road Classifications based upon the General Plan Circulation Element.

TABLE 6-2: VEHICLE MIX

Vehicle Type	Daytime (7 am - 7 pm)	Evening (7 pm - 10 pm)	Nighttime (10 pm - 7 am)	Total % Traffic Flow
Without Project[1]				
Automobiles	77.5%	12.9%	9.6%	94.27%
Medium Trucks	84.8%	4.9%	10.3%	2.48%
Heavy Trucks	86.5%	2.7%	10.8%	3.25%
With Project[2]				
Automobiles	77.5%	12.9%	9.6%	92.70%
Medium Trucks	84.8%	4.9%	10.3%	2.58%
Heavy Trucks	86.5%	2.7%	10.8%	4.72%

[1] Based on existing peak hour counts by vehicle type on Orange Show Road east of Waterman Av.
[2] Includes project heavy truck traffic trips on Orange Show Road east of Waterman Av.

7 TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the *Alliance California Gateway South Building 3 Traffic Impact Analysis*. Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Traffic noise contour boundaries are typically calculated at distances of 100 feet from a roadway centerline. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions, without the Project and with the construction of the proposed Project.
- Year (2015) Without / With Project: This scenario refers to the background noise conditions at future Year 2015 with and without the proposed Project. This scenario corresponds to 2015 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- Year (2035) Without / With Project: This scenario refers to the background noise conditions at future Year 2035 with and without the proposed Project. This scenario corresponds to 2035 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.

7.1 TRAFFIC NOISE CONTOURS

To quantify the Project's traffic noise impacts on the surrounding areas, the changes in traffic noise levels on 13 roadway segments surrounding the Project were calculated based on the changes in the average daily traffic volumes. The noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The traffic noise contour worksheets are included in Appendix 7.1.

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, 60 and 55 dBA noise levels. The distance from the centerline of the roadway to the CNEL contour boundaries for roadways in the proposed Project's vicinity are presented in Tables 7-1 through 7-6. The noise contours do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. In addition, since the noise contours reflect modeling of vehicular noise along area roadways, they appropriately do not reflect noise contribution from the surrounding commercial and industrial uses or railroad activities within the Project study area.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	66.6	59	127	274	591
2	Waterman Av.	n/o Orange Show Rd.	68.4	78	167	361	777
3	Waterman Av.	s/o Orange Show Rd.	68.6	81	173	374	805
4	Waterman Av.	n/o Hospitality Ln.	69.2	88	189	408	879
5	Waterman Av.	s/o Hospitality Ln.	71.6	128	277	596	1,284
6	Carnegie Dr.	s/o Hospitality Ln.	68.7	82	176	379	818
7	Orange Show Rd.	w/o E St.	69.6	94	202	434	936
8	Orange Show Rd.	e/o E St.	68.3	77	166	357	769
9	Orange Show Rd.	e/o Arrowhead Av.	67.1	64	139	298	643
10	Orange Show Rd.	w/o Waterman Av.	66.8	61	132	284	611
11	Orange Show Rd.	e/o Waterman Av.	65.7	52	111	239	515
12	Hospitality Ln.	e/o Waterman Av.	68.6	81	175	376	810
13	Hospitality Ln.	w/o Carnegie Dr.	66.1	55	118	253	546

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

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	67.4	67	145	312	672
2	Waterman Av.	n/o Orange Show Rd.	69.2	88	190	409	882
3	Waterman Av.	s/o Orange Show Rd.	69.6	94	203	437	942
4	Waterman Av.	n/o Hospitality Ln.	70.1	102	220	474	1,021
5	Waterman Av.	s/o Hospitality Ln.	72.5	147	317	682	1,470
6	Carnegie Dr.	s/o Hospitality Ln.	69.5	93	200	432	930
7	Orange Show Rd.	w/o E St.	70.6	109	235	507	1,093
8	Orange Show Rd.	e/o E St.	69.4	91	196	423	911
9	Orange Show Rd.	e/o Arrowhead Av.	68.3	77	165	357	768
10	Orange Show Rd.	w/o Waterman Av.	68.0	73	158	340	734
11	Orange Show Rd.	e/o Waterman Av.	67.3	67	143	309	665
12	Hospitality Ln.	e/o Waterman Av.	69.5	92	199	428	922
13	Hospitality Ln.	w/o Carnegie Dr.	66.9	62	135	290	625

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

TABLE 7-3: YEAR 2015 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	66.9	62	134	288	620
2	Waterman Av.	n/o Orange Show Rd.	68.6	81	173	374	805
3	Waterman Av.	s/o Orange Show Rd.	68.8	83	179	386	833
4	Waterman Av.	n/o Hospitality Ln.	69.6	94	202	434	936
5	Waterman Av.	s/o Hospitality Ln.	72.0	137	295	635	1,368
6	Carnegie Dr.	s/o Hospitality Ln.	68.8	84	180	389	837
7	Orange Show Rd.	w/o E St.	70.1	101	218	470	1,012
8	Orange Show Rd.	e/o E St.	68.8	83	179	385	830
9	Orange Show Rd.	e/o Arrowhead Av.	67.3	66	142	306	660
10	Orange Show Rd.	w/o Waterman Av.	67.0	63	136	293	632
11	Orange Show Rd.	e/o Waterman Av.	66.0	54	116	251	540
12	Hospitality Ln.	e/o Waterman Av.	69.1	86	186	401	864
13	Hospitality Ln.	w/o Carnegie Dr.	66.2	56	121	261	561

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

TABLE 7-4: YEAR 2015 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	67.7	70	152	327	705
2	Waterman Av.	n/o Orange Show Rd.	69.4	91	197	424	913
3	Waterman Av.	s/o Orange Show Rd.	69.8	97	209	451	972
4	Waterman Av.	n/o Hospitality Ln.	70.5	108	234	504	1,085
5	Waterman Av.	s/o Hospitality Ln.	72.9	157	337	727	1,565
6	Carnegie Dr.	s/o Hospitality Ln.	69.7	96	206	444	956
7	Orange Show Rd.	w/o E St.	71.1	118	254	546	1,177
8	Orange Show Rd.	e/o E St.	69.8	98	210	453	975
9	Orange Show Rd.	e/o Arrowhead Av.	68.5	79	170	367	790
10	Orange Show Rd.	w/o Waterman Av.	68.2	76	163	351	756
11	Orange Show Rd.	e/o Waterman Av.	67.6	69	149	321	692
12	Hospitality Ln.	e/o Waterman Av.	69.9	98	212	456	983
13	Hospitality Ln.	w/o Carnegie Dr.	67.1	65	139	299	645

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

TABLE 7-5: YEAR 2035 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	68.6	80	173	372	803
2	Waterman Av.	n/o Orange Show Rd.	69.8	96	208	447	964
3	Waterman Av.	s/o Orange Show Rd.	69.9	99	213	458	987
4	Waterman Av.	n/o Hospitality Ln.	70.5	108	232	500	1,078
5	Waterman Av.	s/o Hospitality Ln.	72.7	150	324	697	1,502
6	Carnegie Dr.	s/o Hospitality Ln.	69.5	93	201	432	931
7	Orange Show Rd.	w/o E St.	70.8	113	243	524	1,130
8	Orange Show Rd.	e/o E St.	69.6	94	203	437	941
9	Orange Show Rd.	e/o Arrowhead Av.	68.0	73	157	339	730
10	Orange Show Rd.	w/o Waterman Av.	68.1	75	162	349	751
11	Orange Show Rd.	e/o Waterman Av.	67.6	69	148	319	687
12	Hospitality Ln.	e/o Waterman Av.	69.9	99	213	458	987
13	Hospitality Ln.	w/o Carnegie Dr.	67.2	65	140	301	648

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

TABLE 7-6: YEAR 2035 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	E St.	n/o Orange Show Rd.	69.4	91	196	423	911
2	Waterman Av.	n/o Orange Show Rd.	70.6	109	235	507	1,093
3	Waterman Av.	s/o Orange Show Rd.	70.9	114	246	530	1,142
4	Waterman Av.	n/o Hospitality Ln.	71.4	124	268	577	1,244
5	Waterman Av.	s/o Hospitality Ln.	73.5	171	369	796	1,714
6	Carnegie Dr.	s/o Hospitality Ln.	70.4	106	229	493	1,061
7	Orange Show Rd.	w/o E St.	71.8	131	282	607	1,309
8	Orange Show Rd.	e/o E St.	70.6	110	237	510	1,098
9	Orange Show Rd.	e/o Arrowhead Av.	69.1	87	187	403	867
10	Orange Show Rd.	w/o Waterman Av.	69.2	89	191	412	888
11	Orange Show Rd.	e/o Waterman Av.	68.9	85	183	394	850
12	Hospitality Ln.	e/o Waterman Av.	70.7	112	242	520	1,121
13	Hospitality Ln.	w/o Carnegie Dr.	68.0	74	159	343	740

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

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-7 presents a comparison of the existing without and with Project conditions CNEL noise levels. Table 7-1 shows that the unmitigated exterior noise levels are expected to range from 65.7 to 71.6 dBA CNEL at 100 feet from each roadway's centerline. Table 7-2 presents the existing with Project conditions unmitigated noise contours that are expected to range from 66.9 to 72.5 dBA CNEL at 100 feet from the roadway centerline. As shown on Table 7-7 the Project is expected to generate an unmitigated exterior noise level increase of up to 1.7 dBA CNEL. Based on the cumulative noise impact significance criteria described in Section 4.2, when the without project noise levels already exceed 65 dBA, any increase in community noise of greater than 1.5 dBA is considered a significant impact since it likely contributes to an existing noise deficiency. According to the existing off-site project related traffic noise impact analysis shown on Table 7-7, Orange Show Road east of Waterman Avenue is expected to experience a significant cumulative noise impact for the existing with project conditions.

7.3 YEAR 2015 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-8 presents a comparison of the existing without and with Project conditions CNEL noise levels. Table 7-3 shows that the unmitigated exterior noise levels are expected to range from 66.0 to 72.0 dBA CNEL at 100 feet from each roadway's centerline. Table 7-4 presents the existing with Project conditions unmitigated noise contours that are expected to range from 67.1 to 72.9 dBA CNEL at 100 feet from the roadway centerline. As shown on Table 7-8 the Project is expected to generate an unmitigated exterior noise level increase of up to 1.6 dBA CNEL. Based on the cumulative noise impact significance criteria described in Section 4.2, when the without project noise levels already exceed 65 dBA, any increase in community noise greater than 1.5 dBA is considered a significant impact since it likely contributes to an existing noise deficiency. According to the Year 2015 off-site project related traffic noise impact analysis shown on Table 7-8, Orange Show Road east of Waterman Avenue is expected to experience a significant cumulative noise impact for the Year 2015 with project conditions.

7.4 YEAR 2035 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-9 presents a comparison of the existing without and with Project conditions CNEL noise levels. Table 7-5 shows that the unmitigated exterior noise levels are expected to range from 67.2 to 72.7 dBA CNEL at 100 feet from each roadway's centerline. Table 7-6 presents the existing with Project conditions unmitigated noise contours that are expected to range from 68.0 to 73.5 dBA CNEL at 100 feet from the roadway centerline. As shown on Table 7-9 the Project is expected to generate an unmitigated exterior noise level increase of up to 1.4 dBA CNEL. Based on the thresholds of significance, the proposed Project will not create a significant traffic noise level impact on the study area roadway segments for Year 2035 conditions.

TABLE 7-7: EXISTING OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	E St.	n/o Orange Show Rd.	66.6	67.4	0.8	No
2	Waterman Av.	n/o Orange Show Rd.	68.4	69.2	0.8	No
3	Waterman Av.	s/o Orange Show Rd.	68.6	69.6	1.0	No
4	Waterman Av.	n/o Hospitality Ln.	69.2	70.1	1.0	No
5	Waterman Av.	s/o Hospitality Ln.	71.6	72.5	0.9	No
6	Carnegie Dr.	s/o Hospitality Ln.	68.7	69.5	0.8	No
7	Orange Show Rd.	w/o E St.	69.6	70.6	1.0	No
8	Orange Show Rd.	e/o E St.	68.3	69.4	1.1	No
9	Orange Show Rd.	e/o Arrowhead Av.	67.1	68.3	1.2	No
10	Orange Show Rd.	w/o Waterman Av.	66.8	68.0	1.2	No
11	Orange Show Rd.	e/o Waterman Av.	65.7	67.3	1.7	Yes
12	Hospitality Ln.	e/o Waterman Av.	68.6	69.5	0.8	No
13	Hospitality Ln.	w/o Carnegie Dr.	66.1	66.9	0.9	No

[1] Existing noise level exceeds 65 dBA CNEL and the project generates an increase of greater than 1.5 dBA.

TABLE 7-8: YEAR 2015 OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	E St.	n/o Orange Show Rd.	66.9	67.7	0.8	No
2	Waterman Av.	n/o Orange Show Rd.	68.6	69.4	0.8	No
3	Waterman Av.	s/o Orange Show Rd.	68.8	69.8	1.0	No
4	Waterman Av.	n/o Hospitality Ln.	69.6	70.5	1.0	No
5	Waterman Av.	s/o Hospitality Ln.	72.0	72.9	0.9	No
6	Carnegie Dr.	s/o Hospitality Ln.	68.8	69.7	0.9	No
7	Orange Show Rd.	w/o E St.	70.1	71.1	1.0	No
8	Orange Show Rd.	e/o E St.	68.8	69.8	1.0	No
9	Orange Show Rd.	e/o Arrowhead Av.	67.3	68.5	1.2	No
10	Orange Show Rd.	w/o Waterman Av.	67.0	68.2	1.2	No
11	Orange Show Rd.	e/o Waterman Av.	66.0	67.6	1.6	Yes
12	Hospitality Ln.	e/o Waterman Av.	69.1	69.9	0.8	No
13	Hospitality Ln.	w/o Carnegie Dr.	66.2	67.1	0.9	No

[1] Without project noise level exceeds 65 dBA CNEL and the project generates an increase of greater than 1.5 dBA.

TABLE 7-9: YEAR 2035 OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	E St.	n/o Orange Show Rd.	68.6	69.4	0.8	No
2	Waterman Av.	n/o Orange Show Rd.	69.8	70.6	0.8	No
3	Waterman Av.	s/o Orange Show Rd.	69.9	70.9	1.0	No
4	Waterman Av.	n/o Hospitality Ln.	70.5	71.4	0.9	No
5	Waterman Av.	s/o Hospitality Ln.	72.7	73.5	0.9	No
6	Carnegie Dr.	s/o Hospitality Ln.	69.5	70.4	0.9	No
7	Orange Show Rd.	w/o E St.	70.8	71.8	1.0	No
8	Orange Show Rd.	e/o E St.	69.6	70.6	1.0	No
9	Orange Show Rd.	e/o Arrowhead Av.	68.0	69.1	1.1	No
10	Orange Show Rd.	w/o Waterman Av.	68.1	69.2	1.1	No
11	Orange Show Rd.	e/o Waterman Av.	67.6	68.9	1.4	No
12	Hospitality Ln.	e/o Waterman Av.	69.9	70.7	0.8	No
13	Hospitality Ln.	w/o Carnegie Dr.	67.2	68.0	0.9	No

[1] Without project noise level exceeds 65 dBA CNEL and the project generates an increase of greater than 1.5 dBA.

7.5 TRANSPORTATION RELATED PROJECT NOISE IMPACTS

Applying the Thresholds of Significance discussed in Section 4.2 of this report, the proposed Project will create an interim significant traffic noise level impact on Orange Show Road east of Waterman Avenue for Existing and Year 2015 with project conditions. No other study area roadway segments are expected to experience a significant off-site transportation related noise impact. In addition, by Year 2035 the noise level impact on Orange Show Road east of Waterman Avenue is expected to be less than significant. As the overall background traffic volumes increase by Year 2035 conditions, the project related traffic as percentage of the overall traffic will continue to diminish. The transportation related project noise impacts on Orange Show Road east of Waterman Avenue shows a project related impact of 1.7 dBA CNEL for existing conditions that is reduced to 1.6 dBA CNEL for Year 2015 conditions and continues to decline to a less than significant level of 1.4 dBA CNEL by Year 2035 conditions.

8 OPERATIONAL NOISE IMPACTS

This section analyzes the potential operational noise impacts resulting from the development of the proposed Alliance California Gateway South Building 3. Using a stationary-source noise prediction model, calculations of the Project operational noise level impacts were completed.

8.1 OPERATION NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Project site, stationary source noise such as idling trucks, delivery truck activities, parking, backup alarms and the refrigerated containers or reefers are typically evaluated against the policies adopted in the City's Noise Control Ordinance (Chapter 8.54). However, when *such noises are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose…*these activities shall be exempt (Section 8.54.060.B). In effect, the operational stationary source noise level impacts associated with the Alliance California Gateway South Building 3 are considered exempt provided that these activities are consistent with typical industrial land use activities.

8.2 OPERATIONAL NOISE SOURCES

The operational noise impacts associated with the proposed Project are expected to include idling trucks, delivery truck activities, parking, backup alarms and the refrigerated containers or reefers. Exhibit 8-A identifies the location of the nine noise receiver locations used to assess the operational noise level impacts.

8.3 REFERENCE NOISE LEVELS

To estimate the project off-site operational noise impacts, reference noise level measurements were collected from the existing operations of Veg Fresh Farms and FedEx distribution facility located at 500 East Orangethorpe Avenue in the City of Anaheim. The noise levels at the existing Veg Fresh Farms distribution facility are expected to reflect the noise level activities at the project site. The reference noise level measurements were collected on Tuesday, January 22, 2013 and represent the typical 24-hour operations expected at the project site. The reference noise level measurements include the daytime and nighttime noise levels associated with idling trucks, delivery truck activities, parking, backup alarms and the refrigerated containers or reefers.

At a distance of 25 feet from the noise source and with an estimated noise source height of 8 feet, the reference noise level was measured at 69.1 dBA Leq. The reference noise levels describe the worst-case noise condition with full 24-hour daytime and nighttime distribution activities. It is likely that the reference noise levels overstate the noise level impacts that will actually occur at the Alliance California Gateway South Building 3. The specific noise levels at the project site will depend on the actual tenant, the intensity and the daytime / nighttime hours of operation.

EXHIBIT 8-A: NOISE RECEIVER LOCATIONS

LEGEND:
= NOISE RECEIVER LOCATION

N

8.4 PROJECT ONLY OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate Project operational source noise levels that at each of the nine receiver locations. Table 8-1 presents the unmitigated exterior noise levels associated with the Alliance California Gateway South Building 3. The operational noise level calculations shown on Table 8-1 identify the distance from the reference noise source to the noise receivers, the distance attenuation, and the estimated Project related hourly noise levels. The distance attenuation is provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source. Table 8-1 indicates that the hourly noise levels are associated with the Alliance California Gateway South Building 3 operations are expected to range from 37.9 to 52.0 dBA Leq.

TABLE 8-1: OPERATIONAL NOISE LEVEL PROJECTIONSP

Receiver Location[1]	Project Noise[2]	Distance From Source To Receiver (Feet)[3]	Distance Attenuation[4]	Hourly Noise Levels[5]
R1	69.1	880'	-30.9	38.2
R2	69.1	910'	-31.2	37.9
R3	69.1	300'	-21.6	47.5
R4	69.1	220'	-18.9	50.2
R5	69.1	180'	-17.1	52.0
R6	69.1	400'	-24.1	45.0
R7	69.1	230'	-19.3	49.8
R8	69.1	200'	-18.1	51.0
R9	69.1	180'	-17.1	52.0

[1] See Exhibit 8-A for the noise receiver locations.
[2] The reference noise level measurements include the daytime and nighttime noise levels associated with idling trucks, delivery truck activities, parking, backup alarms and the refrigerated containers or reefers. Reference noise level measurements were collected from the existing 24-hour operations of Veg Fresh Farms and FedEx distribution facility located at 500 East Orangethorpe Avenue in the City of Anaheim. The reference noise level measurements were collected on Tuesday, January 22, 2013 and represent the typical 24-hour operations expected at the project site.
[3] Estimated distance to nearest loading dock activities.
[4] Noise levels diminish at a rate 6 dBA per doubling of distance and a reference distance of 25 feet.
[5] Estimated project stationary source noise levels.

8.5 PROJECT OPERATIONAL NOISE IMPACTS

The expected Project operational noise impacts at the nine receiver locations are presented on Tables 8-2 and 8-3. To describe the project operational noise level impacts, the project operational noise levels ranging from 37.9 to 52.0 dBA Leq were combined with the existing ambient noise levels measurements. The difference between the combined project and ambient noise levels and the existing ambient noise levels were then compared with the cumulative significance criteria. The analysis shows that the Project will contribute an operational noise level impact of up to 3.7 dBA Leq at the nearby receiver locations. The project contribution at the receiver locations will vary depending on the existing noise levels at each location. The significance criteria presented in Section 4.2 recognizes that the significance of cumulative noise impacts varies depending on the condition of the environment and the project related noise level increases.

At receiver locations R1 through R6 that are located in close proximity to nearby sources of transportation noise, the project operational noise level contributions will be limited to an impact approaching 0.3 dBA Leq. The expected noise level increase of 0.3 dBA Leq is considered less than significant at receivers R1 through R6 since it does not generate a project related noise level increase of greater than 1.5 dBA when the without project noise levels are greater than 65 dBA.

TABLE 8-2: DAYTIME (7 A.M. TO 10 P.M.) OPERATION NOISE LEVEL IMPACTS

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]
R1	38.2	LT-6	62.6	62.6	0.0
R2	37.9	LT-6	62.6	62.6	0.0
R3	47.5	LT-1	67.2	67.2	0.0
R4	50.2	LT-1	67.2	67.3	0.1
R5	52.0	LT-2	73.8	73.8	0.0
R6	45.0	LT-3	56.9	57.2	0.3
R7	49.8	LT-4	51.3	53.6	2.3
R8	51.0	LT-5	50.6	53.8	3.2
R9	52.0	LT-5	50.6	54.3	3.7

[1] See Exhibit 8-A for the noise receiver locations.
[2] Total project operational noise level with mitigation as shown on Table 8-1.
[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.

TABLE 8-3: NIGHTTIME (10 P.M. TO 7 A.M.) OPERATION NOISE LEVEL IMPACTS

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]
R1	38.2	LT-6	61.0	61.0	0.0
R2	37.9	LT-6	61.0	61.0	0.0
R3	47.5	LT-1	64.8	64.9	0.1
R4	50.2	LT-1	64.8	64.9	0.1
R5	52.0	LT-2	69.7	69.8	0.1
R6	45.0	LT-3	57.4	57.6	0.2
R7	49.8	LT-4	55.3	56.4	1.1
R8	51.0	LT-5	52.3	54.7	2.4
R9	52.0	LT-5	52.3	55.1	2.8

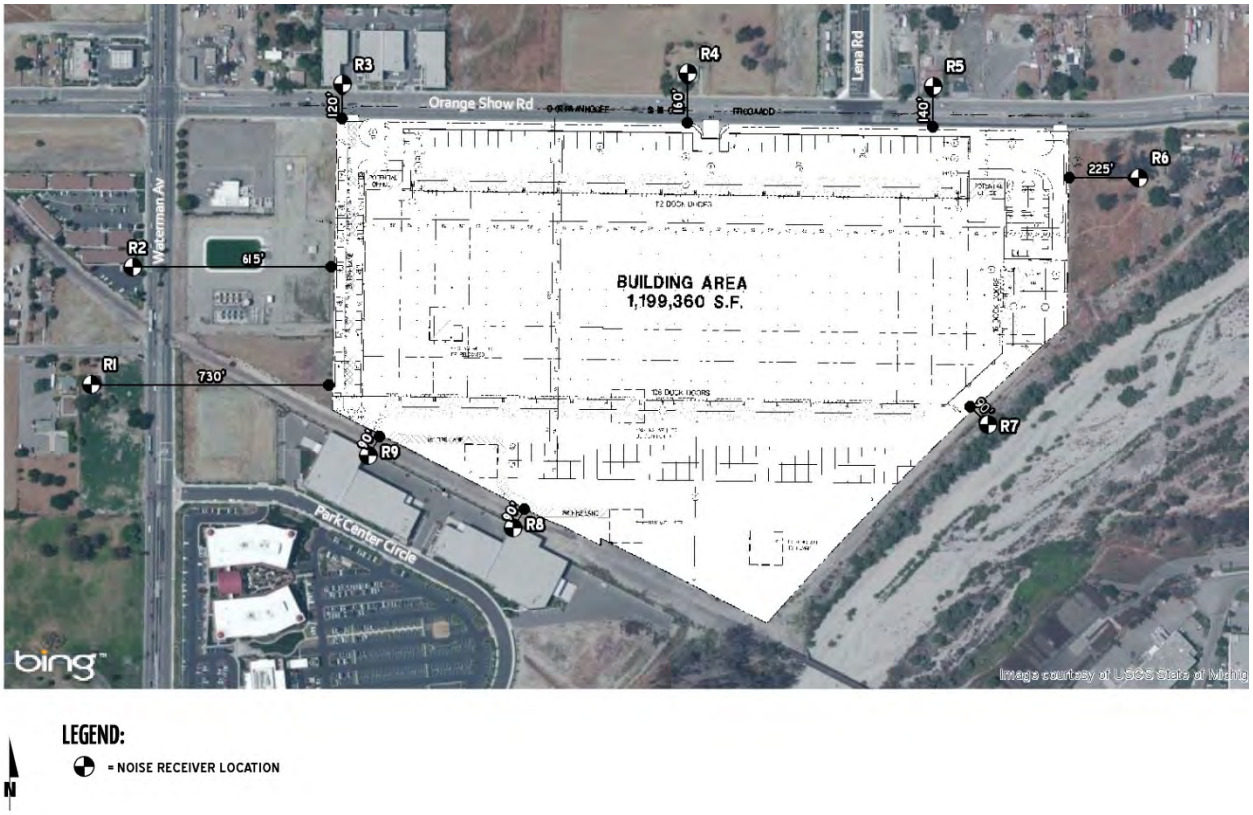
[1] See Exhibit 8-A for the noise receiver locations.
[2] Total project operational noise level with mitigation as shown on Table 8-1.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined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

For locations R7 through R9 where the existing ambient noise levels range from 50.6 to 51.3 dBA Leq, the project operation noise level contributions are expected to approach 3.7 dBA Leq. Since the without project (ambient) noise levels are less than 60 dBA, a significant cumulative noise impact at receiver locations R7 through R9 occurs when the project noise related noise level impacts exceed 5 dBA Leq. The analysis demonstrates that the proposed Project operational noise impacts will be less than significant.

9 CONSTRUCTION NOISE IMPACTS

This section analyzes potential impacts resulting from the short-term off-site construction activities associated with the development of the Project. To assess the construction impacts, nine noise receiver locations as shown on Exhibit 9-A were identified.

EXHIBIT 9-A CONSTRUCTION NOISE RECEIVER LOCATIONS



9.2 CONSTRUCTION NOISE LEVELS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment, including trucks, power tools, concrete mixers and portable generators can reach high levels. Project construction is expected to occur in six stages: site preparation, grading, paving, building construction, architecture coating and off-site utility installation.

In January 2006, the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM) that includes a national database of construction equipment reference noise emission levels.(13) The RCNM equipment database, as shown in Appendix 9.1, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The usage factor is a key input

variable of the RCNM noise prediction model that is used to calculate the average Leq noise levels using the Lmax noise levels measured at a distance of 50 feet

Noise levels generated by heavy construction equipment can range from approximately 70 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 78 dBA measured at 50 feet from the noise source to the receptor would be reduced to 72 dBA at 100 feet from the source to the receptor, and would be further reduced to 66 dBA at 200 feet from the source to the receptor. The construction noise levels including the number and mix of construction equipment by construction phase are consistent with the data used to support the construction emissions in the *Alliance California Gateway South Building 3 Air Quality Impact Analysis* prepared by Urban Crossroads Inc. in September 2013. (14).

This analysis also describes the potential construction impacts related to the planned off-site utility installation. As part of the project development, the project is going to trench in the north two lanes of Orange Show Road from its frontage, east to Waterman Avenue to install a 120-inch subsurface drain line. The construction activities will likely include jack hammers, industrial saws and other heavy equipment. The phase of construction is expect to last for approximately three weeks.

9.3 CONSTRUCTION NOISE ANALYSIS

Using the stationary-source RCNM noise prediction model, calculations of the Project construction noise level impacts at the noise receiver locations were completed. Appendix 9.2 includes the RCNM construction noise level calculations by equipment type for each phase of construction. The analysis shows that the highest construction noise level impacts will occur during the grading and off-site utility installation construction activities. As shown on Table 9-1, the unmitigated peak construction noise levels are expected to range from 66.8 to 88.2 dBA Leq at receiver locations R1 through R9. Provided construction activities take place between the hours of 7:00 a.m. and 8:00 p.m. construction-related noise impacts would be less than significant.

TABLE 9-1: CONSTRUCTION EQUIPMENT NOISE LEVELS

Noise Receptor[1]	Construction Phase Hourly Noise Level (dBA Leq)[2]						
	Site Prep.	Grading	Paving	Building	Arch. Coating	Off-Site Utility	Peak[3]
R1	64.7	66.8	58.4	60.4	53.7	60.8	66.8
R2	66.2	68.3	59.9	61.9	55.2	65.3	68.3
R3	80.3	82.5	74.1	76.1	69.4	88.2	88.2
R4	77.9	80.0	71.6	73.6	66.9	82.2	82.2
R5	79.0	81.1	72.8	74.7	68.1	86.3	86.3
R6	74.9	77.0	68.6	70.6	64.0	73.4	77.0
R7	82.8	85.0	76.6	78.6	71.9	60.6	85.0
R8	82.8	85.0	76.6	78.6	71.9	58.0	85.0
R9	82.8	85.0	76.6	78.6	71.9	59.6	85.0

[1] Noise receiver locations are shown on Exhibit 9-A.
[2] Construction noise calculations by phase are included in Appendix 9-2.
[3] Estimated construction noise levels during peak operating conditions.

9.4 CONSTRUCTION NOISE ABATEMENT MEASURES

Although near-term construction activities would not represent a significant impact due to noise, provided construction activities take place between the hours of 7:00 a.m. and 8:00 p.m., the following noise abatement measures are nonetheless recommended herein to reduce construction-related noise to the maximum feasible extent.

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities shall not occur between the hours of 8:00 p.m. and 7:00 a.m. The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the Project site (i.e., to the east and west) during all project construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 8:00 p.m. and 7:00 a.m.) The Project Applicant shall prepare a haul route exhibit for review and approval by the City of San Bernardino Planning Division prior to commencement of construction activities. The haul route exhibit shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.

9.5 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

To control noise impacts associated with the construction of the proposed project, the City of San Bernardino has established limits to the hours of operation. In effect, if the construction activities are limited to the hours of 7:00 a.m. to 8:00 p.m. the construction noise level impacts are considered exempt from the ambient noise standards of the ordinance. Therefore, the construction of the Project will result in a less-than-significant noise impact. Thus, a less than significant cumulative impact is expected during construction activity.

9 REFERENCES

1. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., October 1998.
2. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requiste to Protect Public Health and Welfare with an Adequate Margin of Safety.* March, 1974. EPA/ONAC 550/9/74-004.
3. **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.* June, 1995.
4. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
5. **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.
6. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
7. **City of San Bernardino.** *General Plan Noise Element.* November 2005.
8. **City of San Bernardino Municipal Code.** *Chapter 8.54 Noise Control.*
9. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters.* 1983.
10. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
11. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Eneryg Mean Emission Levels (Calveno REMELS) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
12. **Urban Crossroads, Inc.** *Alliance California Gateway South Building 3 Traffic Impact Analysis.* September 2013.
13. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.
14. **Urban Crossroads, Inc.** *Alliance California Gateway South Building 3 Air Quality Impact Analysis.* September 2013.

10 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Alliance California Gateway South Building 3 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) 660-1994 ext. 203.

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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

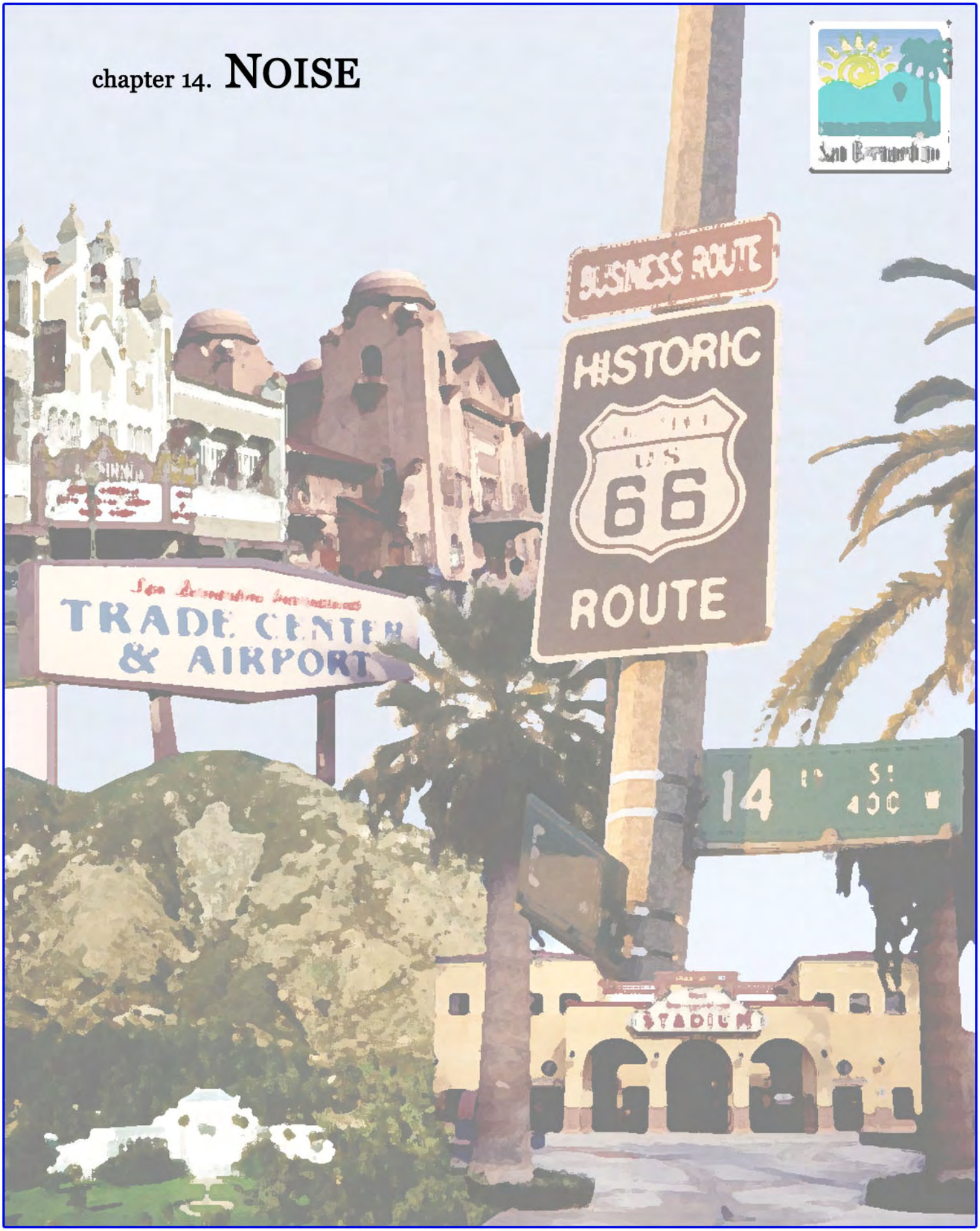
PROFESSIONAL CERTIFICATIONS

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

APPENDIX 3.1:

CITY OF SAN BERNARDINO GENERAL PLAN NOISE ELEMENT

chapter 14. NOISE



Chapter 14. Noise

INTRODUCTION

San Bernardino is affected by several different sources of noise, including automobile, rail, and air traffic, sports events, commercial and industrial activity, and periodic nuisances such as construction. Excessive levels of noise can damage our physical health, psychological stability, social cohesion, property values, and economic productivity. The control of noise, therefore, is an essential component in creating a safe, compatible, and productive environment.

Purpose

The Noise Element provides policy guidance that addresses the generation, mitigation, avoidance, and the control of excessive noise. Specifically, this Element addresses the following issues:

- Land use;
- Transportation related noise generated from roadways, passenger and freight railroad operations, and air flights; and
- Spill over noise from activities such as construction, leaf blowers, and commercial/industrial operations.

Relationship to Other Elements

The Noise Element is closely linked with the Land Use and Circulation Elements as well as the Development Code, which contains the City's noise standards. Together, these guidelines and standards provide for the citywide regulation of excessive noise.

It should be recognized that the City does not have the authority to regulate all sources of noise within the City and various other agencies may supercede City authority. A discussion of these agencies and their roles with respect to regulating noise is provided below. Furthermore, various types of project funding (e.g., State Highway projects, HUD

redevelopment, etc.) could be subject to standards that differ from the City's.

1. Federal Highway Administration

Several major transportation routes traverse the City of San Bernardino: State Routes 18, 30, 330, and 66, as well as Interstates 10 and 215. These routes are subject to federal funding and, as such, are under the purview of the Federal Highway Administration (FHWA), which has its own noise standards. These noise standards are based on Leq and L_{10} values. The FHWA design noise levels are included in Table N-1, FHWA Design Noise Levels.

Table N-1
FHWA Design Noise Levels

Activity Category	*Design Noise Levels* [1]		*Description of Activity Category*
	L_{eq} (dBA)	*L_{10} (dBA)*	
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in Categories A or B, above
D	---	---	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

[1] Either L_{eq} or L_{10} (but not both) design noise levels may be used on a project.

2. U.S. Department of Housing and Urban Development

The Department of Housing and Urban Development (HUD) issues formal requirements related specifically to standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established three zones. These include:

- 65 dBA L_{dn} or less - an acceptable zone where all projects could be approved,

- Exceeding 65 dBA L_{dn} but not exceeding 75 dBA L_{dn} - a normally unacceptable zone where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA L_{dn} area and 10 dBA of attenuation in a 70 to 75 dBA L_{dn} area, and
- Exceeding 75 dBA L_{dn} - an unacceptable zone in which projects would not, as a rule, be approved.

HUD's regulations do not include interior noise standards. Rather, a goal of 45 dBA L_{dn} is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that, using standard construction, any building will provide sufficient attenuation so that if the exterior level is 65 dBA L_{dn} or less, the interior level will be 45 dBA L_{dn} or less. It should be noted, however, that HUD regulations were created solely for residential development requiring government funding and are not related to the operation of other sensitive land uses such as schools or churches.

3. Federal Railroad Administration

The Environmental Protection Agency (EPA) is charged with the regulation of railroad noise under the Noise Control Act. No federal regulations specify absolute levels of acceptable noise that apply directly to railroad noise and compatible land uses along rail lines. While these regulations remain in full force, the EPA Office of Noise Abatement and Control was closed in 1982, leaving the enforcement of EPA regulations to the Federal Railroad Administration (FRA). Table N-2, Summary of EPA/FRA Railroad Noise Standards, summarizes the EPA railroad noise standards that set operating noise standards for railroad equipment and set noise limit standards for new equipment.

Table N-2
Summary of EPA/FRA Railroad Noise Standards

Noise Sources	*Operating Conditions*	*Noise Metric*[1, 2]	*Measured Distance (feet)*	*Standard (dBA)*
Non-Switcher Locomotives built on or before 12/31/79	Stationary	L_{max} (Slow)	100	73
	Idle Stationary	L_{max} (Slow)	100	93
	Non-Idle Moving	L_{ma}x (Fast)	100	95
Switcher Locomotives plus Non-Switcher Locomotives built after 12/31/79	Stationary	L_{max} (Slow)	100	70
	Idle Stationary	L_{max} (Slow)	100	87
	Non-Idle Moving	L_{max} (Fast)	100	90
Rail Cars	Speed $\leq$ 45 mph	L_{max} (Fast)	100	88
	Speed > 45 mph	L_{max} (Fast)	100	93
	Coupling	Adj. Avg. Max.	50	92

[1] Slow and fast exponential-time-weighting is used.
[2] Note that these values are in terms of the Lmax, and can be considerably greater than the Leq typically used in the measurement of obtrusive noise.
Source: United States Environmental Protection Agency Railroad Noise Emission Standard (40 Code of Federal Regulations Part 201).

4. California Department of Health Services

The California Department of Health Services (DHS) Office of Noise Control studied the correlation of noise levels and their effects on various land uses. As a result, the DHS established four categories for judging the severity of noise intrusion on specified land uses.

Figure N-1, Land Use Compatibility for Community Noise Exposure, presents a land use compatibility chart for community noise prepared by the California Office of Noise Control. It identifies “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable” exterior noise levels for various land uses. A “conditionally acceptable” designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a “normally acceptable” designation indicates that standard construction can occur with no special noise reduction requirements.

Figure N-1 Land Use Compatibility for Community Noise Exposure

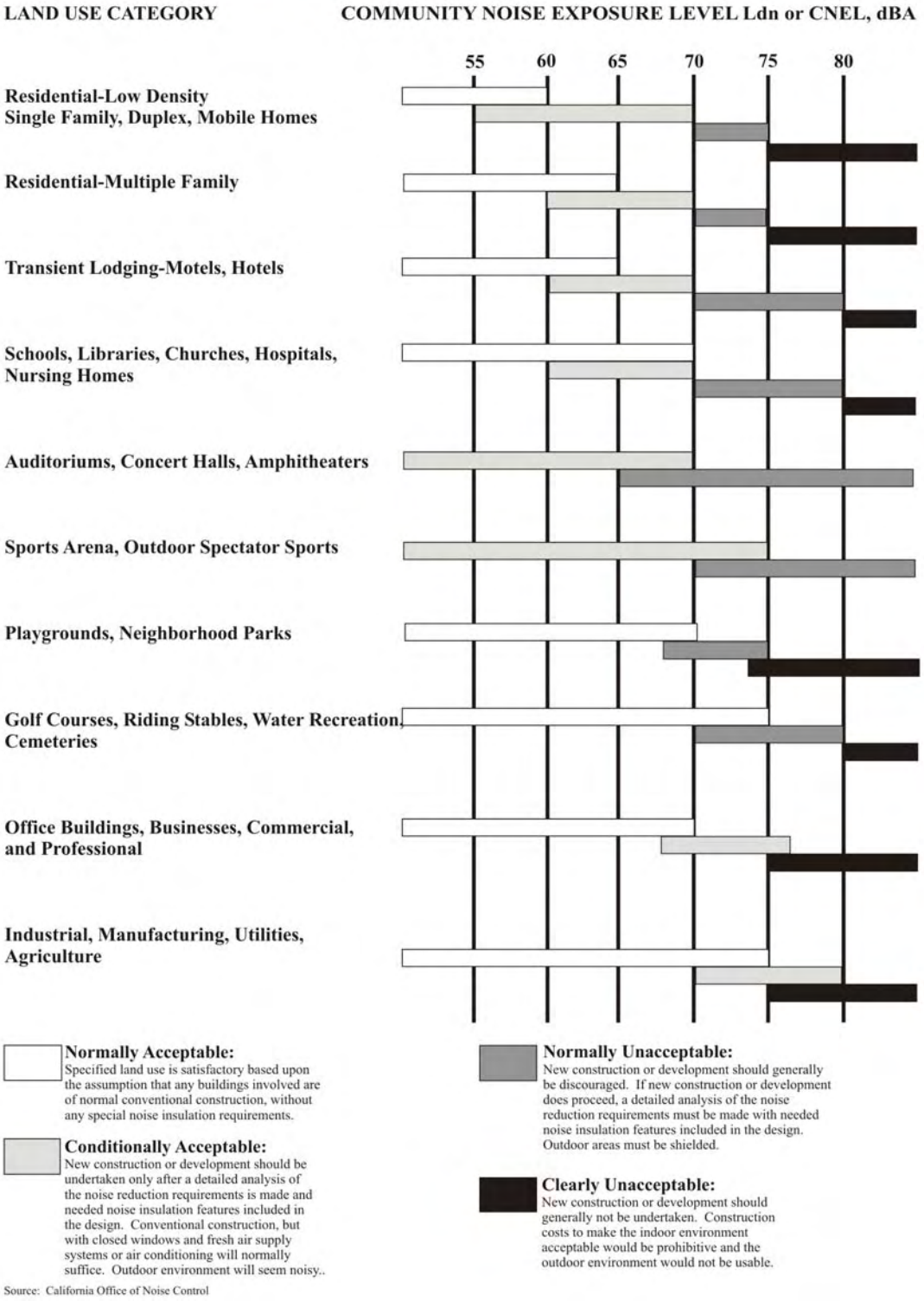


Table N-3, State of California Interior and Exterior Noise Standards, includes the State interior and exterior noise standards for varying land uses. It is important to note that the exterior noise levels are to be attained in "habitable" exterior areas and need not encompass the entirety of a property.

Table N-3
State of California Interior and Exterior Noise Standards

Land Use		***CNEL (dBA)***	
Categories	***Uses***	***Interior*** [1]	***Exterior*** [2]
Residential	Single and multi-family, duplex	45[3]	65
	Mobile homes	----	65[4]
Commercial	Hotel, motel, transient housing	45	---
	Commercial retail, bank, restaurant	55	---
	Office building, research and development, professional offices	50	---
	Amphitheater, concert hall, auditorium, movie theater	45	---
	Gymnasium (Multipurpose)	50	---
	Sports Club	55	---
	Manufacturing, warehousing, wholesale, utilities	65	---
	Movie Theaters	45	---
Institutional/ Public	Hospital, school classrooms/playgrounds	45	65
	Church, library	45	---
Open Space	Parks	---	65

[1] Indoor environment excluding: bathrooms, kitchens, toilets, closets, and corridors

[2] Outdoor environment limited to:

- Private yard of single-family dwellings
- Multi-family private patios or balconies accessed from within the dwelling (Balconies 6 feet deep or less are exempt)
- Mobile home parks
- Park picnic areas
- School playgrounds
- Hospital patios

[3] Noise level requirement with closed windows, mechanical ventilation or other means of natural ventilation shall be provided as per Chapter 12, Section 1205 of the Uniform Building Code.

[4] Exterior noise levels should be such that interior noise levels will not exceed 45 dBA CNEL.

5. City of San Bernardino Noise Ordinance

The City of San Bernardino Noise Ordinance (Section 19.20.030.15 of the Development Code) specifies the maximum acceptable levels of noise for residential uses in the City. These standards indicate that exterior noise

levels at residential locations should not exceed a CNEL of 65 dB while interior levels shall not exceed an annual CNEL of 45 dB in any habitable room. Chapter 12, Airport Overlay District, of the Development Code provides additional noise standards related to the flight operations of the San Bernardino International Airport and Trade Center within the 65 dB noise contours.

Definitions

The following is a list of commonly used terms and abbreviations that may be found within this element or when discussing the topic of noise. It is important to become familiar with the definitions listed in order to better understand the importance of the Noise Element within the City of San Bernardino General Plan.

- **Ambient Noise** – The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

- **Intrusive Noise** – That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing noise level.

- **dB (Decibel)** – The unit of measure that denotes the ratio between two quantities that are proportional to power; the number of decibels corresponding to the ratio of the two amounts of power is based on a logarithmic scale.

- **dBA (A-weighted decibel)** – The A-weighted decibel scale discriminates against upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale is based on a reference pressure level of 20 micropascals (zero dBA). The scale ranges from zero for the average least perceptible sound to about 130 for the average pain level.

- **L_{50}** – The A-weighted sound level that is exceeded 50% of the sample time. Alternatively, the A-weighted sound level that is exceeded 30 minutes in a 60-minute period (similarly, L_{10}, L_{25}, etc.). These values are typically used to demonstrate compliance with noise restrictions included in the City noise ordinance.

- **L_{eq} (Equivalent Energy Level)** – The average acoustic energy content of noise during the time it lasts. The L_{eq} of a time-varying

noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure, no matter what time of day they occur.

- **L_{dn} (Day-Night Average Level)** – The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour.

- **CNEL (Community Noise Equivalent Level)** – The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

- **Noise Contours** – Lines drawn around a noise source indicating equal levels of noise exposure. CNEL and L_{dn} are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

- **Vibration** – Another community annoyance related to noise is vibration. As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized by displacement, velocity, and/or acceleration. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration.

  Vibration can be felt outdoors, but the perceived intensity of vibration impacts are much greater indoors, due to the shaking of the structure. Some of the most common sources of vibration come from trains and/or transit vehicles, construction equipment, airplanes, and large vehicles. Several land uses are especially sensitive to vibration, and therefore have a lower vibration threshold. These uses include, but are not limited to, concert halls, hospitals, libraries, vibration-sensitive research operations, residential areas, schools, and offices.

ACHIEVING THE VISION

As San Bernardino has developed and expanded its boundaries over time, there are numerous areas of the City that are impacted by noise. For instance, many residences are located near industrial areas or adjacent to busy streets or rail lines. The Citizens of San Bernardino are concerned about the effects of noise on their health and serenity and of the need to provide the range of uses needed to maintain a high quality of life.

There are several techniques to deal with noise impacts: applying noise attenuation techniques, limiting certain kinds of development near noise-producing land uses, implementing design and building techniques in site layouts and construction, and setting and enforcing standards for noise-producing land uses.

The Noise Element is responsive to our Vision because it represents our stated desires to:

- Manage and mitigate the impacts from truck traffic to decrease congestion and noise pollution;
- Locate future residential uses and other sensitive receptors away from existing noise sources; and
- Develop and employ measures to decrease the impacts associated with air and rail operations on sensitive receptors such as residences and schools.

GOALS AND POLICIES

The following presents the goals and policies for noise related issues in the City of San Bernardino planning area.

Land Use Planning and Design

As San Bernardino grows, the increases in population, employment, and tourist activity may generate more traffic and attract additional noise producing uses. Additionally, some undeveloped and underdeveloped areas are designated for land uses that may be noise-sensitive and are located in proximity to roadways, railroads, and transit facilities. As a result, land use compatibility in relation to noise is an important consideration in the planning and design process.

To identify potential mitigation to address noise abatement strategies, noise evaluations should be conducted when a proposed project places sensitive land uses and major noise generators within close proximity to each other. The City currently uses the project review process to identify potential noise issues and works with developers or landowners to apply site planning and other strategies to reduce noise impacts. A developer, for example, could take advantage of the natural shape and contours of a site to arrange buildings and other uses in a manner that would reduce, and possibly eliminate, noise impacts. Examples of other site and architectural techniques could include:

- Increasing the distance between noise source and receiver.
- Placing non-noise sensitive land uses such as parking lots, maintenance facilities and utility areas between the noise source and receiver.
- Using non-noise sensitive structures such as garages to shield noise-sensitive areas.
- Orienting buildings to shield outdoor spaces from a noise source.
- Locating bedrooms in residential developments on the side of the house facing away from major roads.

Goal 14.1	Ensure that residents are protected from excessive noise through careful land planning.

Policies:

14.1.1 Minimize, reduce, or prohibit, as may be required, the new development of housing, health care facilities, schools, libraries, religious facilities, and other noise sensitive uses in areas where existing or future noise levels exceed an Ldn of 65 dB(A) exterior and an Ldn of 45 dB(A) interior if the noise cannot be reduced to these levels. (LU-1)

14.1.2 Require that automobile and truck access to commercial properties abutting residential parcels be located at the maximum practical distance from the residential parcel. (LU-1)

14.1.3 Require that all parking for commercial uses abutting residential areas be enclosed within a structure, buffered by walls, and/or limited hours of operation. (LU-1)

14.1.4 Prohibit the development of new or expansion of existing industrial, commercial, or other uses that generate noise impacts on housing, schools, health care facilities or other sensitive uses above a Ldn of 65 dB(A). (LU-1)

Transportation Related Noise Sources

San Bernardino has long been a hub of transportation and includes several major highways (such as State Routes 18, 30, 330, and 66, as well as Interstates 10 and 215), major arterials, railways, and the San Bernardino International Airport and Trade Center. These transportation facilities, while important components to mobility and economic vitality, are the major contributors of noise in San Bernardino. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

Local government has little direct control of some of the transportation related noise at the source. These levels are set by state and federal agencies. However, the City does have some control over transportation noise that exceeds State and/or federal standards through the enforcement of the Municipal Code.

The most effective method the City has to mitigate transportation noise is through the application of noise barriers and site design review. The effect of a noise barrier is critically dependent on the distance between the noise source and the receiver. A noise barrier effect occurs when the barrier penetrates the "line of sight" between the source and receiver: the greater the penetration or height of the barrier, the greater the noise reduction. Additional attenuation can be achieved depending upon the source of transportation related noise.

1. Roadways

Roadways are a significant source of noise in the City. Sound emanates from vehicle engines and from the tires rolling over the pavement. One way the City can control vehicle noise is through speed reduction. A change of just 5 miles per hour can change the resultant noise by approximately one to two dBA. The difference in noise associated with a reduction of 10 miles per hour reduction could be roughly equivalent to reducing the traffic volume by one-half.

The City also has some control over traffic-generated noise through weight limitations and the designation of truck routes. Medium trucks, (i.e., those with a gross vehicle weight between 5 and 13.25 tons) produce as much acoustical energy as approximately 5 to 16 automobiles depending on the speed, with slower speeds demonstrating greater differential. Similarly, heavy trucks (i.e., those with a gross vehicle weight in excess of 13.25 tons) produce as much acoustical energy as 10 to 60 automobiles.

The City can further reduce traffic-generated noise by ensuring that street paving is maintained and bumps and dips are eliminated. Poor paving causes vehicles to bounce and this bouncing exacerbates the noise due to the rattling of the vehicle. Noise contours for the City's roadways and freeways are presented in Figure N-2, *Future Roadway Noise Contours*.

2. Aircraft

The San Bernardino International Airport (SBIA) accommodates cargo, airlines, and general aviation with the capacity to provide regional air traffic for domestic and international service, both commercial and cargo along with the necessary support facilities for major and smaller airlines.

Airport operations generate noise nuisances that could negatively impact nearby residences and businesses. The number of people exposed to airport noise should be minimized by limiting the development of sensitive land uses, such as residences, hospitals, and schools, within

Airport Noise Contours

As of the writing of this General Plan, the Airport Master Plan and the Comprehensive Land Use Plan (CLUP) for SBIA were in the process of being prepared. As a consequence, the precise noise contours were not available to include in this Plan. However, relative policies have been included in the General Plan. Upon adoption of the Airport Master Plan and CLUP, the new noise contours will be incorporated into Figure LU-4 of this General Plan.

specified noise contours. For planning purposes, federal and state laws have established well-defined regulations for acceptable noise levels with the basic criterion set at a maximum 65 decibel (dB) Community Noise Equivalent Level (CNEL) value. The noise contours for the San Bernardino International Airport are defined in the Comprehensive Land Use Plan (CLUP) for the SBIA and shown in Figure LU-4, San Bernardino International Airport Planning Boundaries. While there are some acceptable mitigation within the noise contours, avoidance by noise sensitive uses is often the best remedy. Conversely, those land uses with the fewest people or those that generate significant noise levels themselves (e.g. industrial uses), are ideally suited to locate within these noise contours.

Overflight creates another noise concern. An overflight is a distinctly visible and audible passage of an aircraft, not necessarily one that is directly overhead. Overflight often extends past the boundary of the defined CNEL contour and creates an annoyance. The SBIA has limited control of overflight impacts but provide policy guidance for minimizing these impacts in the CLUP.

Airport Related Policies in our General Plan

The San Bernardino International Airport (SBIA) influences many aspects of our community: from land use and economics, to circulation, noise, and safety. Accordingly, see related discussions/policies in the Land Use (Chapter 2) and Noise (Chapter 14) Chapters.

In addition, local helicopter air traffic is commonplace throughout the City. News and other helicopters (e.g., freeway traffic report helicopters) fly through the area. Helicopter use for fire and police and at hospitals is considered as an emergency activity and is addressed by FAA regulations. There are currently five heliports in San Bernardino (National Orange Show, Red Dog Properties, San Bernardino Community Hospital, SCE Eastern Division, and in the Tri-City area).

3. Railways

Another prevalent source of noise in the City is from railroad operations. Within the San Bernardino planning area, trains travel on three different rail lines that include: (1) The Cajon Pass Line; (2) The Main Line-Redlands, which extends eastward to the City of Redlands; and, (3) The Main Line-Colton, which extends westward to the City of Colton.

Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) also operate rail lines within the City. These rail lines include: (1) The Santa Fe Subdivision Two Line; (2) The Santa Fe Subdivision Three Line; and, (3) The Santa Fe Cajon Pass Line. Each route contributes a different level of noise to the City resulting from the different volumes of train traffic that occur on each line.

Railroad noise is dependant on a number of factors including the number of operations per day, the times these operations occur, the numbers of

engines and railcars, the speed, the type of rail (i.e., continuous or bolted), and whether at-grade rail crossings exist that require engineers to sound a warning horn. Noise contours for railway operations are presented in Figure N-2, *Future Roadway Noise Contours*.

Future Roadway Noise Contours

60 CNEL
65 CNEL
70 CNEL

City Boundary
Sphere of Influence Boundary

The City of
SAN BERNARDINO
General Plan

Figure N-2

Goal 14.2	Encourage the reduction of noise from transportation-related noise sources such as motor vehicles, aircraft operations, and railroad movements.

Policies:

14.2.1 Work with Caltrans to landscape or install mitigation elements along freeways and highways adjacent to existing residential subdivisions or noise-sensitive uses to reduce noise impacts. (N-1)

14.2.2 Employ noise mitigation practices when designing future streets and highways, and when improvements occur along existing road segments. Mitigation measures should emphasize the establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas. (N-1)

14.2.3 Require that development that increases the ambient noise level adjacent to noise-sensitive land uses provide appropriate mitigation measures. (LU-1)

14.2.4 Maintain roadways so that the paving is in good condition and free of cracks, bumps, and potholes. (A-2)

14.2.5 Require sound walls, berms, and landscaping along existing and future highways and railroad right-of-ways to beautify the landscape and reduce noise. (N-1)

14.2.6 Buffer residential neighborhoods from noise caused by train operations and increasing high traffic volumes along major arterials and freeways. (N-1)

14.2.7 Require heliports/helistops to comply with Federal Aviation Administration standards.

14.2.8 Minimize noise attributable to vehicular travel in residential neighborhoods by inhibiting through trips by the use of cul-de-sacs, one-way streets, and other traffic controls.

14.2.9 Enforce sections of the California Vehicle Code related to mufflers and modified exhaust systems.

14.2.10 Provide for the development of alternate transportation modes such as bicycle paths and pedestrian walkways to minimize the number of automobile trips. (LU-1)

14.2.11 Require that new equipment and vehicles purchased by the City comply with noise performance standards consistent with the best available noise reduction technology. (A-3)

14.2.12 Require that commercial and industrial uses implement transportation demand management programs consistent with the Air Quality Management Plan that provide incentives for car pooling, van pools, and the use of public transit to reduce traffic and associated noise levels in the City. (LU-1)

14.2.13 Work with local agencies and businesses to provide public transit services that reduce traffic and associated noise.

14.2.14 Work with public transit agencies to ensure that the buses, vans, and other vehicles used do not generate excessive noise levels.

14.2.15 Work with all railroad operators in the City to properly maintain lines and establish operational restrictions during the early morning and late evening hours to reduce impacts in residential areas and other noise sensitive areas.

14.2.16 Work with all railroad operators to install noise mitigation features where operations impact existing adjacent residential or other noise-sensitive uses.

14.2.17 Ensure that new development is compatible with the noise compatibility criteria and noise contours as defined in the Comprehensive Land Use Plan for the SBIA and depicted in Figure LU-4.

14.2.18 Limit the development of sensitive land uses located within the 65 decibel (dB) Community Noise Equivalent Level (CNEL) contour, as defined in the Comprehensive Land Use Plan for the SBIA and depicted in Figure LU-4.

14.2.19 As may be necessary, require acoustical analysis and ensure the provision of effective noise mitigation measures for sensitive land uses, especially residential uses, in areas significantly impacted by noise.

Non-Transportation Related Noise Sources

The City currently has a diverse collection of land uses, most of which generate their own noise. Industrial facilities generate noise through various processes that involve the use of heavy equipment and machinery. Commercial facilities and residential units can generate noise from the use of heating, ventilating, air conditioning (HVAC) units, pool and spa pumps, as well as landscape maintenance equipment. Additionally, schoolyard activities, barking dogs, and residential parties can also be sources of nuisance noise.

Mixed-use areas that place more sensitive residential uses alongside or above commercial uses can present their own problems. Requiring that the commercial aspect meet a residential standard could make commercial operations difficult and offer an unfair competitive advantage to a similar operation placed in a dedicated commercial zone. Alternatively, applying a commercial standard to a mixed-use project could result in unacceptable noise levels at the residential portion of the structure/site. Still, mixed-use projects offer several advantages from both an air quality and transportation perspective, and should be encouraged.

Another source of noise comes from the operations of trucks and trains within the City. As previously mentioned, the operation of railroad trains and heavy trucks is preempted from local noise regulation while operating on public roads and dedicated right-of-ways. However, noise is also generated by operations (e.g., idling, loading, and unloading) that occur at facilities. Once on private property, these sources are no longer considered preempted and the City has authority to regulate this noise if it "spills" into adjacent areas.

Finally, construction in all land use zones can temporarily elevate noise. The City recognizes that construction is a necessity; still, various measures are available to reduce this nuisance (and potentially hazardous) noise when necessary.

Goal 14.3	Protect residents from the negative effects of "spill over" or nuisance noise.

Policies:

14.3.1 Require that construction activities adjacent to residential units be limited as necessary to prevent adverse noise impacts. (LU-1)

14.3.2 Require that construction activities employ feasible and practical techniques that minimize the noise impacts on adjacent uses. (LU-1)

14.3.3 Adopt and enforce a standard for exterior noise levels for all commercial uses that prevents adverse levels of discernible noise on adjoining residential properties. (A-1)

14.3.4 Adopt and enforce a standard for exterior noise levels from the use of leaf blowers, motorized lawn mowers, parking lot sweepers, or other high-noise equipment on commercial properties if their activity will result in noise that adversely affects abutting residential parcels. (A-1)

14.3.5 Require that the hours of truck deliveries to commercial properties abutting residential uses be limited unless there is no feasible alternative or there are overriding transportation benefits by scheduling deliveries at another hour. (LU-1)

14.3.6 Ensure that buildings are constructed soundly to prevent adverse noise transmission between differing uses located in the same structure and individual residences in multi-family buildings. (LU-1)

14.3.7 Require that commercial uses in structures containing residences on upper floors not be noise intensive. (LU-1)

14.3.8 Require common walls and floors between commercial and residential uses be constructed to minimize the transmission of noise and vibration. (LU-1)

APPENDIX 3.2:

CITY OF SAN BERNARDINO NOISE ORDINANCE

any stationary engine driven by means of internal combustion of gases therein, within the City of San Bernardino without placing upon the exhaust thereof a muffler or other device so as to silence the noise or report caused by the escaping of such gases from and through such exhaust. (Ord. 465 §1, 9-5-11.)

8.51.020 Violation - Penalty.

Any person, firm or corporation violating any provision of this chapter is guilty of an infraction, which upon conviction thereof is punishable in accordance with the provisions of §1.12.010 of this Code. (Ord. MC-460, 5-13-85; Ord. 465 §2, 9-5-11.)

Chapter 8.54
NOISE CONTROL

Sections:

8.54.010 Purpose and Intent.
8.54.020 Prohibited Acts.
8.54.030 Issuance of Written Notice and Impoundment.
8.54.040 Cost Recovery for Second Response.
8.54.050 Controlled Hours of Operation.
8.54.060 Exemptions.
8.54.070 Disturbances From Construction Activity.
8.54.080 Violation - Penalty
8.54.090 Severability.

8.54.010 Purpose and Intent.

A. It is the purpose and intent of these regulations to establish community-wide noise standards. It is further the purpose of these regulations to recognize that the existence of excessive noise within the City is a condition which is detrimental to the health, safety, welfare, and quality of life of the citizens and shall be regulated in the public interest.

B. In furtherance of the foregoing purpose, it is found and declared as follows:

1. The making, creation, or maintenance of such loud, unnecessary, unnatural, or unusual noises that are prolonged, unusual, annoying, disturbing and unnatural in their time, place, and use are a detriment to public health, comfort, convenience, safety, general welfare, and the peace and quiet of the City and its inhabitants; and

2. The public interest and necessity of 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, comfort, convenience, safety, general welfare and property, and the peace and quiet of the City and its inhabitants.

(Ord. MC-1246, 5-21-07; Ord. 1925 §1, 11-5-51.)

8.54.020 Prohibited Acts.

It shall be unlawful for any person to engage in the following activities:

A. Sounding any horn or signal device on any automobile, motorcycle, bus, or other motor vehicle in any other manner or circumstances or for any other purpose than required or permitted by the California Vehicle Code, or other laws, for an unnecessary or unreasonable period of time;

B. Racing the engine of any motor vehicle while the vehicle is not in motion, except when necessary to do so in the course of repairing, adjusting, or testing the same.

C. Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler, or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured.

D. Using, operating, or permitting to be played, used or operated any radio receiving set, musical instrument, phonograph, or other sound amplification or production equipment for producing or reproducing sound in such a manner as to disturb the peace, quiet, or comfort of neighboring persons, or at any time with louder volume than is necessary for the convenient hearing of the person or persons who are in the room, vehicle, or other enclosure in which such machine or device is operated, and who are voluntary listeners thereto and that is:

1. Plainly audible across property boundaries;

2. Plainly audible through partitions common to two residences within a building;

3. Plainly audible at a distance of 50 feet in any direction from the source of the music or sound between the hours of 8:00 a.m. and 10:00 p.m.; or

4. Plainly audible at a distance of 25 feet in any direction from the source of the music or sound between the hours of 10:00 p.m. and 8:00 a.m.

E. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or any motor vehicle burglar alarm, except for emergency purposes or for testing, unless such alarm is terminated within fifteen minutes of activation.

F. Yelling, shouting, whistling, or singing in a loud and boisterous manner on the public streets so as to disturb the quiet, comfort, or repose of persons in any office, dwelling, hotel, or other type of residence, or neighborhood.

G. The keeping of any animal, fowl, or bird which by causing frequent or long continued noise disturbs the comfort, quiet, or repose of any person or neighborhood.

H. The unnecessary or excessive blowing of whistles, sounding of horns, ringing of bells, or use of signaling devices by operators of trains, motor trucks, and other transportation equipment.

I. The creation of loud and excessive noise in connection with the loading or unloading of motor trucks and other vehicles.

J. The shouting and crying of peddlers, hawkers, and vendors which disturbs the peace and quiet of any considerable number of persons or neighborhood.

K. The doing of automobile, automotive body or fender repair work, or other work on metal objects and metal parts in a residential district so as to cause loud and excessive noise which disturbs the peace, quiet, and repose of any person occupying adjoining or closely situated property or neighborhood.

L. The operation or use between the hours of 10:00 p.m. and 8:00 a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City.

M. Creating excessive noise adjacent to any school, church, court, or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets indicating the presence of a school, institution of learning, church, court, or hospital.

N. Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary, or unusual noise that disturbs the comfort, repose, health, peace and quiet, or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated include, but are not limited to, the following:

1. The level of noise;

2. The level of background noise;

3. The proximity of the noise to sleeping facilities;

4. The nature and zoning of the areas within which the noise emanates;

5. The density of the inhabitation of the area within which the noise emanates;

6. The time of day or night the noise occurs;

7. The duration of the noise;

8. Whether the noise is recurrent, intermittent, or constant; and

9. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. MC-1246, 5-21-07; Ord. 2102, 1956; Ord. 1925 §2, 1951.)

8.54.030 Issuance of Written Notice and Impoundment.

A. Any officer who encounters a violation of this section may issue a written notice to the Responsible Person demanding immediate abatement of the violation. The written notice shall inform the recipient that a second violation of the same provision within a seventy two (72) hour period may result in the issuance of a criminal citation, the imposition of criminal and civil penalties, and confiscation and impoundment, as evidence, of the components that are amplifying or transmitting the prohibited noise.

1. Responsible Person means (a) any person who owns, leases, or is lawfully in charge of the property or motor vehicle where the noise violation takes place, or (b) any person who owns or controls the source of the noise or violation. If the Responsible Person is a minor, then the parent or guardian who has custody of the child at the time of the violation shall be the Responsible Person who is liable under this chapter.

B. Any officer who encounters a second violation of this chapter within a seventy two (72) hour period following the issuance of a written notice is empowered to confiscate and impound, as evidence, any or all of the components amplifying or transmitting the sound. The immediate confiscation of a motor vehicle to which a component is attached may be made if the same may not be removed without causing harm to the vehicle or component.

C. Any person claiming legal ownership of the items confiscated and impounded under this chapter may request the return of the item by filing a written request with the police department within seven (7) calendar days of the confiscation. Such requests shall be processed in accordance with the procedures adopted by the department.

(Ord. MC-1246, 5-21-07; Ord. MC-649, 1-3-89; Ord. 1925 §3, 1951.)

8.54.040 Cost Recovery for Second Response.

A. Whenever any officer issues a written notice to a responsible person to discontinue a noise violation, the Responsible Person shall be liable for the actual cost of each subsequent response required to abate the violation within seventy two (72) hours of the issuance of the written warning.

B. The bill for the response charge shall be served upon the Responsible Person within thirty (30) days after the violation. If the Responsible Person has no last known business or residence address, the location of the violation shall be deemed to be the proper address for service. The bill shall include a notice of the right of the person being charged to request a hearing to dispute the imposition of the response charge or the amount of the charge.

C. The response charge shall be deemed to be a civil debt to the City.
(Ord. MC-1246, 5-21-07; Ord. MC-460, 5-13-85; Ord. 1925 §5, 1951.)

8.54.050 Controlled Hours of Operation.

It shall be unlawful for any person to engage in the following activities other than between the hours of 8:00 a.m. and 8:00 p.m. in residential zones and other than between the hours of 7:00 a.m. and 8:00 p.m. in all other zones:

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

B. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous, or unnecessary noise within one thousand (1,000) feet of a residence.

C. Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house, or any other structure.

D. Operate or permit the use of gasoline or electric powered leaf blowers, such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters, and other property.

E. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the City Manager.

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

G. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand (10,000) pounds, or of any auxiliary equipment attached to such a vehicle, including, but not limited to, refrigerated truck compressors for a period longer than fifteen (15) minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of said vehicle is restricted by other traffic.

H. Repair, rebuild, reconstruct, or dismantle any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines.
(Ord. MC-1246, 5-21-07)

8.54.060 Exemptions.

The following activities and noise sources shall be exempt from the provisions of this chapter:

A. The use of horns, sirens, or other signaling or warning devices by persons vested with legal authority to use the same, and in pursuit of their lawful duties, such as on ambulances, fire, police, or other governmental or official equipment.

B. Such noises as are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose, except where there is evidence that such noise is a nuisance and that such a nuisance is a result of the employment of unnecessary and injurious methods of operation.

C. Activities conducted on the grounds of any public or private school during regular hours of operation.

D. Outdoor gatherings, public dances, shows, and sporting and entertainment events provided said events are authorized by the City.

E. Activities conducted at public spaces during regular hours of operation.

F. Any mechanical devices, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, or work.

G. Construction, repair, or excavation necessary for the immediate preservation of life or property.

H. Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including, but not limited to, trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.

I. Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures.

J. Any activity to the extent that regulation thereof has been preempted by State or Federal law.

K. Sounds generated in connection with speech or communication protected by the United States Constitution or the California Constitution, except to the extent such sounds are subject to permissible time, place, and manner restrictions.

(Ord. MC-1246, 5-21-07)

8.54.070 Disturbances from Construction Activity.

No person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m. (Ord. MC-1246, 5-21-07)

8.54.080 Violation - Penalty.

Any person violating any of the provisions of this Chapter is guilty of an infraction or a misdemeanor, which upon conviction thereof is punishable in accordance with the provisions of Section 1.12.010 of this code. (Ord. MC-1246, 5-21-07)

8.54.090 Severability.

The provisions of this Chapter are severable, and, if any sentence, section or other part of this Chapter should be found to be invalid, such invalidity shall not affect the remaining provisions, and the remaining provisions shall continue in full force and effect. (Ord. MC-1246, 5-21-07)

Chapter 8.57
SOUND VEHICLES

Sections:

8.57.010 Definitions.
8.57.020 Exclusions and exceptions.
8.57.030 Sound vehicles prohibited in certain places.
8.57.040 Registration required.
8.57.050 Filing changes in application.
8.57.060 Registration and identification.
8.57.070 Regulation for use.
8.57.080 Commercial advertising by sound truck prohibited.
8.57.090 Violation-Penalty.

8.57.010 Definitions.

A. "Person" as used in this Chapter includes the singular and the plural and also means and includes any person, firm, corporation, association, club, partnership, society or any other form of association or organization.

B. "Sound vehicle" means any vehicle which carries or is equipped with any instrument or device for the production or reproduction of music, spoken words or other sounds, or any loudspeaker, or other sound-amplifying device designed to enlarge the volume of sound produced by any instrument or by the human voice, which instrument or device is used or intended to be used for the purpose of advertising or calling attention to any article, thing or event, or for the purpose of addressing the public or of attracting the attention of the public, along or upon the public streets or ways along which such vehicle travels.

(Ord. 2096 §1, 1956.)

8.57.020 Exclusions and exceptions.

The definition set forth in Section 8.57.010 shall not be deemed to include:

A. Vehicles used only in a parade conducted pursuant to a permit issued by the Common Council;

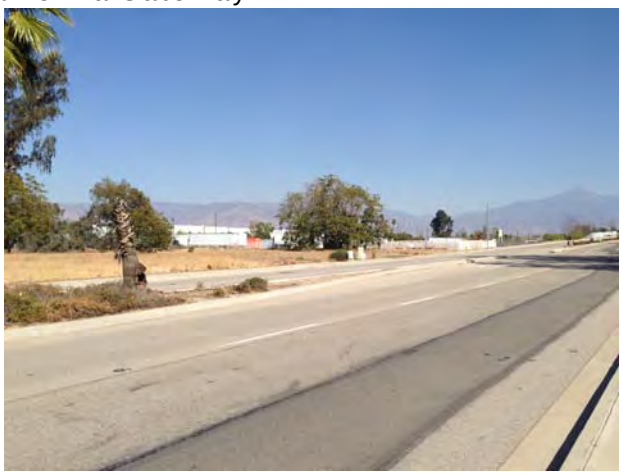
B. A vehicle equipped with a siren or horn designed and used for the purpose of warning traffic because of such equipment or use, nor any vehicle operated

APPENDIX 5.1:

STUDY AREA PHOTOS

JN:08878 Alliance California Gateway

L2 - 34° 4' 47.68"117° 16' 11.74"



L2 - 34° 4' 47.09"117° 16' 11.08"

L2 - 34° 4' 46.95"117° 16' 10.94"

L4 - 34° 4' 39.89"117° 16' 11.96"

L4 - 34° 4' 39.97"117° 16' 11.93"

L4 - 34° 4' 40.08"117° 16' 11.74"

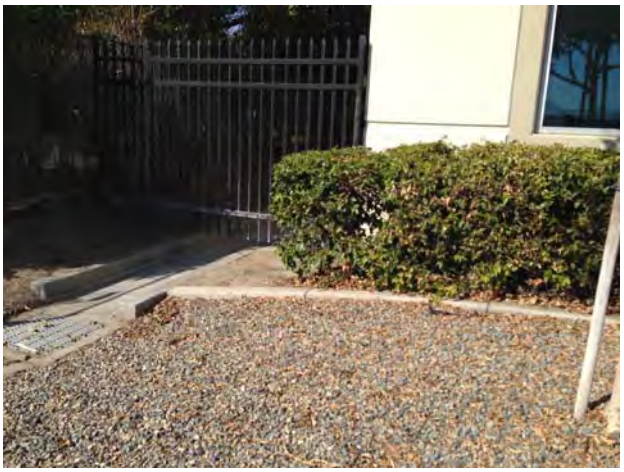
L3 - 34° 4' 44.71"117° 16' 9.9"

L3 - 34° 4' 44.79"117° 16' 10.07"

- 34° 4' 44.85"117° 16' 10.37"

- 34° 4' 46.54"117° 16' 11.25"

- 34° 4' 46.55"117° 16' 11.19"



L1 - 34° 4' 47.65"117° 16' 37.56"

L1 - 34° 4' 47.66"117° 16' 37.59"

L1 - 34° 4' 47.68"117° 16' 37.64"

L6 - 34° 4' 40.54"117° 16' 43.05"

L6 - 34° 4' 41.22"117° 16' 44.84"

L6 - 34° 4' 41.21"117° 16' 44.86"

L5 - 34° 4' 34.23"117° 16' 34.26"

L5 - 34° 4' 35.76"117° 16' 33.82"

APPENDIX 5.2:

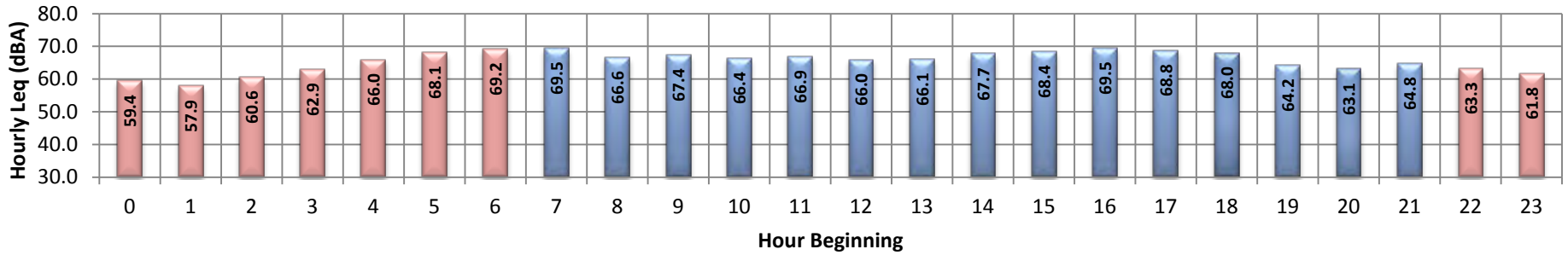
NOISE LEVEL MEASUREMENT WORKSHEETS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis
Location: L1 - Located north of Orangeshow Road in the nearby business center

Job Number: 8878
Analyst: Bill Lawson
Date: 10/21/2103

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):	67.2	66.9	63.1	69.5	
Nighttime Hourly (10pm-7am):	64.8	63.2	57.9	69.2	
24-Hour:	66.5	65.5	57.9	69.5	71.8

Hourly Summary

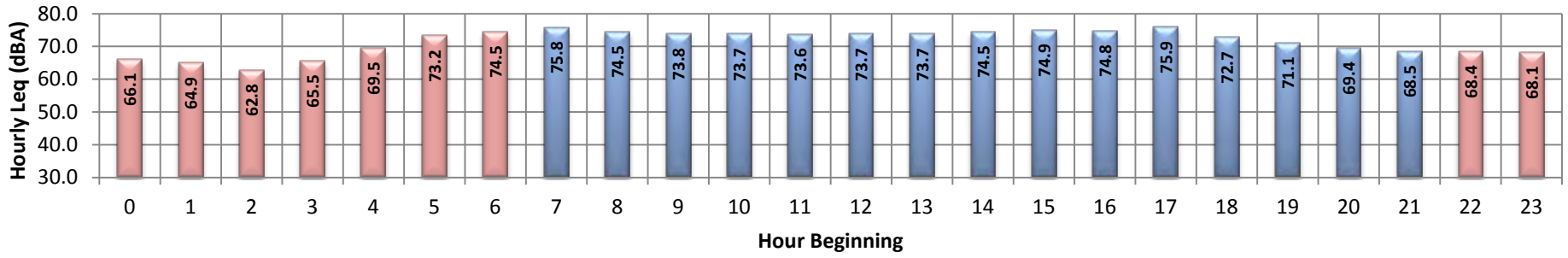
Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	0	59.4	81.0	48.7	72.5	69.5	63.0	58.5	52.0	51.0	50.0	49.5	49.0
	1	57.9	76.9	48.7	71.0	68.0	62.0	58.5	52.5	51.0	50.0	49.5	49.0
	2	60.6	83.5	47.6	73.5	70.0	63.5	61.0	53.5	51.0	49.0	48.5	48.0
	3	62.9	81.7	49.1	75.5	74.0	69.0	65.0	57.0	54.0	52.0	51.0	50.0
	4	66.0	83.4	51.4	77.5	75.5	72.5	70.0	63.5	57.5	53.5	52.5	52.0
	5	68.1	88.7	53.1	78.5	76.5	74.5	72.5	65.5	60.0	56.0	55.0	53.5
	6	69.2	83.3	57.6	78.5	77.5	75.5	74.0	68.5	63.5	59.5	59.0	58.0
Day	7	69.5	83.0	52.7	78.5	77.0	75.5	74.5	70.0	64.0	56.5	55.5	53.5
	8	66.6	81.7	48.2	75.5	74.5	73.0	72.0	66.5	60.5	52.5	50.5	49.5
	9	67.4	83.0	46.1	77.5	76.0	74.0	72.5	67.0	60.0	50.0	49.0	47.5
	10	66.4	82.8	45.6	76.5	75.0	73.0	72.0	65.5	58.5	49.0	48.0	46.5
	11	66.9	85.6	45.1	76.0	75.0	73.0	72.0	67.0	60.5	49.5	48.5	47.0
	12	66.0	81.3	45.2	75.5	74.5	72.5	71.0	66.0	59.5	49.5	48.5	47.0
	13	66.1	89.0	46.4	75.5	74.0	71.5	70.5	65.5	59.5	50.0	49.0	47.5
	14	67.7	81.6	47.0	77.0	75.5	73.5	72.5	68.0	61.5	51.5	50.0	48.5
	15	68.4	83.6	48.2	77.0	76.0	74.0	73.0	69.0	63.5	53.5	52.0	49.5
	16	69.5	84.2	49.8	78.0	77.0	75.0	74.0	70.0	65.0	54.0	52.0	50.5
	17	68.8	87.0	51.6	77.5	76.0	74.5	73.5	69.5	64.0	55.0	54.0	53.0
	18	68.0	92.5	51.4	77.0	75.0	72.5	71.0	64.0	57.5	53.5	53.0	52.0
	19	64.2	79.3	51.1	75.0	74.0	71.5	69.0	61.5	55.5	52.5	52.5	51.5
	20	63.1	81.9	51.9	74.5	73.0	70.0	67.5	59.5	55.0	53.0	53.0	52.5
	21	64.8	90.5	51.6	75.5	73.5	70.0	67.5	59.0	55.5	53.5	53.0	52.5
Night	22	63.3	83.4	50.2	75.5	73.5	69.5	66.5	58.0	54.5	52.0	51.5	51.0
	23	61.8	81.9	48.4	74.5	72.0	67.0	63.5	55.0	52.5	50.5	49.5	49.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis
Job Number: 8878
Location: L2 - Located in the center median island north of Orangeshow Road opposite the nearby homes
Analyst: Bill Lawson
Date: 10/21/2103

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):	73.8	73.4	68.5	75.9	
Nighttime Hourly (10pm-7am):	69.7	68.1	62.8	74.5	
24-Hour:	72.7	71.4	62.8	75.9	77.2

Hourly Summary

Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	0	66.1	88.0	47.9	80.0	75.5	69.0	64.5	53.5	51.5	49.5	49.0	48.5
	1	64.9	90.1	47.9	78.5	74.5	64.0	58.5	52.5	51.0	49.5	49.0	48.5
	2	62.8	86.1	46.3	75.5	72.0	68.5	64.0	52.5	50.5	48.0	47.5	46.5
	3	65.5	86.7	48.5	79.5	77.0	70.0	65.0	55.5	53.5	51.0	50.0	49.5
	4	69.5	87.3	52.2	82.5	80.5	77.0	73.5	60.0	55.0	53.5	53.0	52.5
	5	73.2	99.0	53.2	84.5	82.5	80.0	77.5	67.0	58.5	55.5	55.0	54.0
	6	74.5	88.2	55.8	84.0	83.5	81.5	80.5	73.5	63.0	57.5	57.0	56.5
Day	7	75.8	92.3	56.7	85.0	84.0	82.5	81.0	76.0	68.0	59.5	58.5	57.5
	8	74.5	87.7	51.8	84.5	83.5	81.5	80.0	74.5	65.5	56.5	55.0	53.5
	9	73.8	91.0	45.6	84.0	83.0	80.5	79.0	73.0	63.5	51.0	49.0	46.5
	10	73.7	90.1	42.5	84.0	82.5	80.0	78.5	73.0	63.5	50.0	48.5	45.5
	11	73.6	90.1	42.9	83.5	82.5	80.5	79.0	73.0	64.5	49.5	47.0	45.0
	12	73.7	89.3	44.2	83.5	82.0	80.5	79.0	73.5	64.5	49.0	47.5	45.5
	13	73.7	90.8	44.6	84.0	82.5	80.0	78.5	73.0	65.0	50.0	48.0	46.5
	14	74.5	95.1	47.0	84.5	83.0	80.5	79.0	74.0	66.5	52.0	50.0	48.0
	15	74.9	92.2	48.1	84.0	82.5	81.0	80.0	75.5	68.5	54.5	52.5	50.0
	16	74.8	89.1	48.4	83.5	82.5	81.0	79.5	75.5	69.5	55.0	53.0	50.0
	17	75.9	89.4	50.0	84.0	83.5	82.0	81.0	76.5	71.0	56.0	54.0	52.0
	18	72.7	91.6	50.0	83.5	82.0	79.5	78.0	71.5	61.5	52.5	52.0	51.0
	19	71.1	93.8	49.0	83.0	80.5	77.5	75.0	67.0	57.5	51.5	50.5	50.0
	20	69.4	88.4	48.9	82.0	80.0	76.5	73.5	61.5	53.5	50.5	50.0	49.5
	21	68.5	87.3	48.8	81.5	79.5	75.0	72.0	60.5	55.0	51.5	51.0	50.0
Night	22	68.4	93.6	50.1	81.5	78.5	74.0	71.0	58.0	54.0	52.0	51.5	51.0
	23	68.1	94.3	49.8	80.5	78.0	73.0	68.5	56.5	54.0	51.5	51.0	50.5

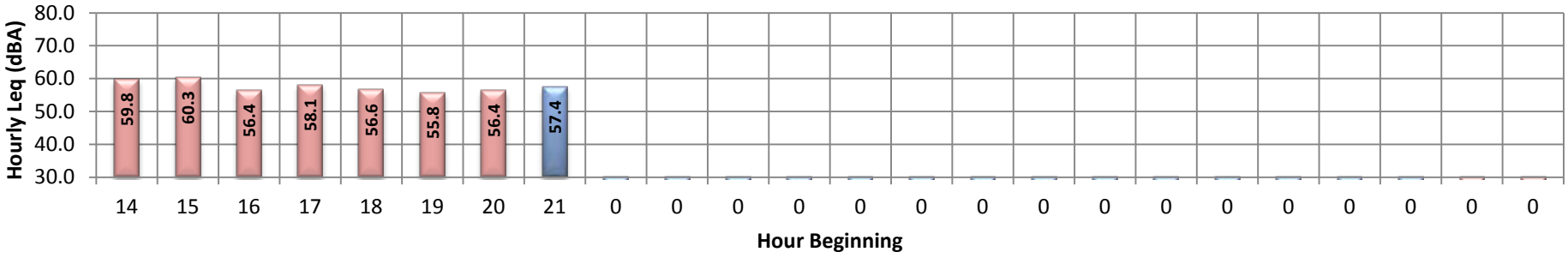
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis
Location: L3 - East of the project site near the adjacent residential home

Job Number: 8878
Analyst: Bill Lawson
Date: 10/20/2013

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):					
Nighttime Hourly (10pm-7am):	56.9				
24-Hour:					

Hourly Summary

Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	14	59.8	89.8	43.6	68.0	64.5	60.0	57.5	53.0	50.0	47.0	46.0	45.5
	15	60.3	85.7	46.5	71.0	66.0	61.5	59.5	54.5	51.5	48.5	47.5	47.0
	16	56.4	74.6	46.9	65.5	63.0	60.0	59.0	55.5	53.0	49.5	49.0	48.5
	17	58.1	81.2	48.3	66.0	63.5	61.0	59.5	56.5	54.0	51.0	50.5	49.5
	18	56.6	68.0	50.9	64.0	62.5	60.0	59.0	56.5	55.0	53.0	52.5	52.0
	19	55.8	68.2	50.6	63.0	61.5	59.5	58.5	56.0	54.0	52.5	52.0	51.5
	20	56.4	72.4	46.9	65.5	64.0	60.5	59.0	55.5	53.5	49.5	49.0	48.0
Day	21	57.4	77.4	49.3	67.0	64.5	61.5	59.5	55.5	53.5	51.0	50.5	50.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Night	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

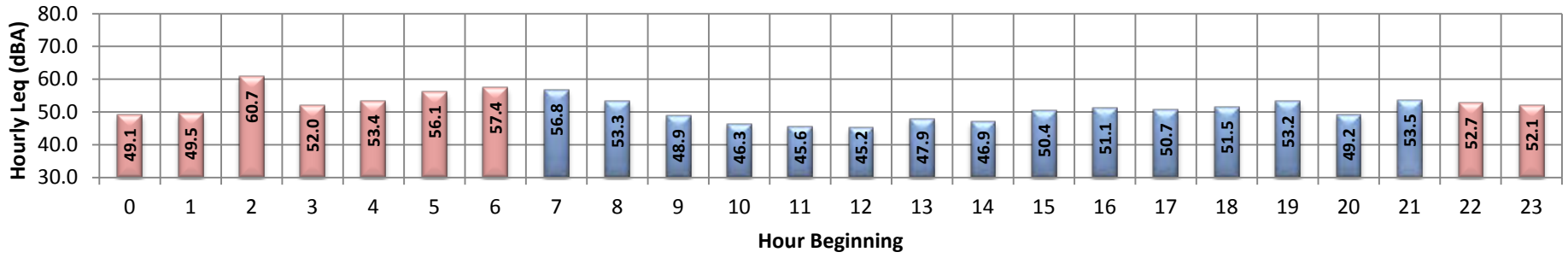
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis
Location: L4 - Located east of the loading dock area near the Santa Ana River

Job Number: 8878
Analyst: Bill Lawson
Date: 10/21/2103

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):	51.3	50.0	45.2	56.8	
Nighttime Hourly (10pm-7am):	55.3	53.7	49.1	60.7	
24-Hour:	53.2	51.4	45.2	60.7	61.4

Hourly Summary

Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	0	49.1	55.9	46.4	51.5	51.0	50.5	50.0	49.5	48.5	47.5	47.5	47.0
	1	49.5	58.5	46.4	52.5	52.0	51.0	50.5	49.5	49.0	47.5	47.5	47.0
	2	60.7	77.7	45.4	74.0	72.0	69.0	62.5	50.5	49.0	47.0	46.5	46.0
	3	52.0	57.5	48.4	55.0	54.5	53.5	53.0	52.5	51.5	50.0	49.5	49.0
	4	53.4	60.7	50.6	56.0	55.5	55.0	54.5	53.5	53.0	51.5	51.5	51.0
	5	56.1	68.0	52.9	60.5	58.5	57.5	57.0	56.0	55.5	54.0	53.5	53.0
	6	57.4	62.1	54.2	59.5	59.0	59.0	58.5	58.0	57.0	55.5	55.5	55.0
Day	7	56.8	66.3	52.2	59.0	58.5	58.0	57.5	57.0	56.5	55.0	54.5	53.5
	8	53.3	67.7	49.1	57.0	55.5	55.0	54.5	53.5	53.0	51.0	50.5	50.0
	9	48.9	61.7	43.4	56.0	54.5	52.0	51.5	49.0	47.5	45.0	44.5	44.0
	10	46.3	57.1	41.9	52.5	51.5	49.5	48.5	46.5	45.0	43.0	42.5	42.0
	11	45.6	59.9	41.2	51.5	50.5	49.0	48.0	45.5	44.0	42.5	42.0	41.5
	12	45.2	55.0	41.4	51.5	50.5	48.5	47.5	45.0	44.0	42.5	42.0	42.0
	13	47.9	64.5	41.6	59.5	55.0	50.5	49.0	46.0	44.5	43.0	42.5	42.0
	14	46.9	64.3	43.0	53.0	51.5	49.0	48.5	46.5	45.5	44.0	43.5	43.0
	15	50.4	72.1	43.5	58.5	56.0	52.0	50.5	47.5	46.5	45.5	45.0	44.5
	16	51.1	71.9	44.2	62.5	56.0	53.0	51.5	49.0	47.5	45.5	45.0	44.5
	17	50.7	67.6	46.0	59.5	57.0	53.5	52.0	50.0	48.5	47.0	47.0	46.5
	18	51.5	67.9	46.7	61.0	58.0	54.0	52.5	50.5	49.5	48.0	47.5	47.5
	19	53.2	76.9	46.8	61.0	56.5	53.0	52.0	50.0	49.0	47.5	47.5	47.0
	20	49.2	59.2	46.1	53.0	52.5	51.5	51.0	49.5	48.5	47.5	47.0	46.5
	21	53.5	75.7	46.0	60.5	58.5	55.5	54.0	51.5	50.0	48.0	47.5	46.5
Night	22	52.7	70.7	47.4	60.0	57.0	53.5	53.0	52.0	51.0	49.5	48.5	48.0
	23	52.1	60.7	48.9	55.5	54.5	54.0	53.5	52.5	51.5	50.5	50.0	49.5

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis

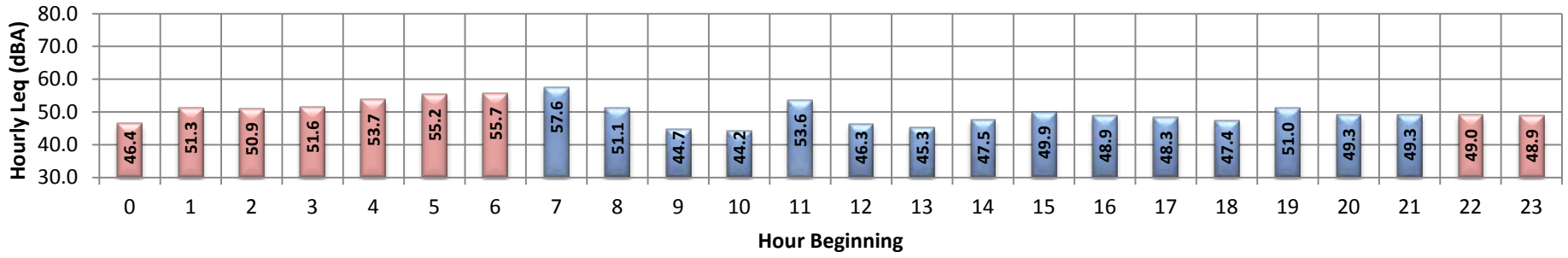
Location: L5 - Located southwest of the project site in the Park Center Circle business center

Job Number: 8878

Analyst: Bill Lawson

Date: 10/21/2103

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):	50.6	49.0	44.2	57.6	
Nighttime Hourly (10pm-7am):	52.3	51.4	46.4	55.7	
24-Hour:	51.3	49.9	44.2	57.6	58.7

Hourly Summary

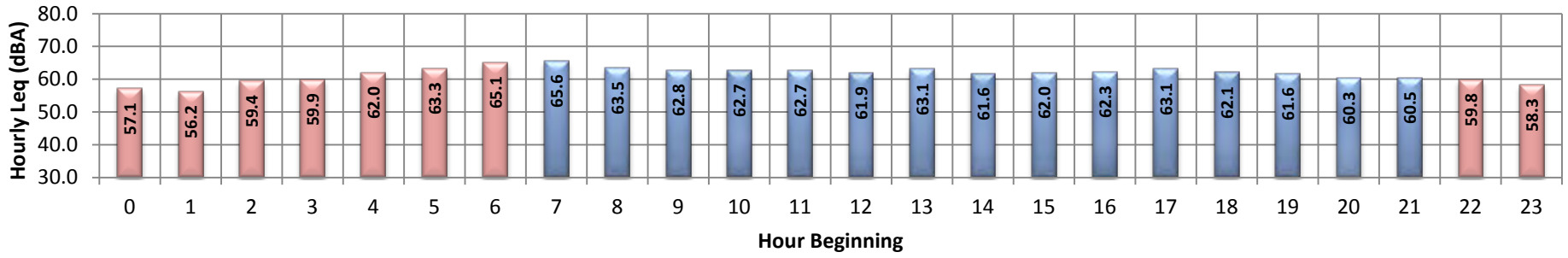
Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	0	46.4	52.9	43.9	50.0	49.0	48.0	47.5	46.5	46.0	45.0	44.5	44.5
	1	51.3	65.9	43.6	64.0	62.5	57.0	48.5	47.0	46.0	45.0	45.0	44.5
	2	50.9	63.9	44.6	61.0	60.5	54.5	51.5	49.0	48.0	46.5	46.0	45.0
	3	51.6	57.4	48.2	54.0	54.0	53.0	53.0	52.0	51.0	50.0	49.5	49.0
	4	53.7	58.8	50.5	56.0	56.0	55.5	55.0	54.0	53.5	52.0	51.5	51.0
	5	55.2	64.2	52.0	58.5	57.5	57.0	56.5	55.5	54.5	53.5	53.0	52.5
	6	55.7	59.3	52.9	57.5	57.0	57.0	56.5	56.0	55.5	54.0	54.0	53.5
Day	7	57.6	79.9	49.7	68.5	66.0	62.5	59.0	55.0	54.0	52.0	51.5	51.0
	8	51.1	71.7	42.4	56.5	55.0	54.0	53.5	52.5	48.5	45.0	44.0	43.5
	9	44.7	57.1	41.1	50.0	49.0	47.5	47.0	45.0	43.5	42.5	42.0	41.5
	10	44.2	63.3	39.4	51.0	49.5	48.0	46.5	44.0	42.5	40.5	40.5	39.5
	11	53.6	77.1	39.4	68.5	65.0	55.0	50.5	45.0	43.0	40.5	40.5	40.5
	12	46.3	63.3	39.4	58.0	55.5	50.0	47.5	44.5	42.5	40.5	40.5	39.5
	13	45.3	64.0	38.7	53.5	52.0	49.0	48.0	45.0	43.0	40.5	40.5	39.5
	14	47.5	67.0	40.5	58.5	55.0	49.5	47.5	45.0	43.5	41.5	41.5	40.5
	15	49.9	72.5	40.5	61.5	59.5	53.0	50.0	46.5	44.5	42.5	42.0	41.0
	16	48.9	65.7	42.8	58.0	55.0	51.5	50.5	48.0	47.0	45.5	44.5	43.5
	17	48.3	67.0	43.6	56.5	53.5	50.0	49.0	47.5	46.5	45.5	45.0	44.5
	18	47.4	58.6	44.1	54.0	53.0	50.5	49.0	47.0	46.0	45.5	45.0	44.5
	19	51.0	75.0	43.5	53.5	51.5	49.5	49.0	47.0	46.0	44.5	44.5	44.0
	20	49.3	69.3	43.8	61.0	55.0	49.5	49.0	47.0	46.0	45.0	44.5	44.0
	21	49.3	67.5	43.5	59.0	55.0	50.5	49.0	47.5	46.5	45.0	44.5	44.0
Night	22	49.0	58.1	45.0	53.5	52.5	51.5	50.5	49.5	48.5	46.5	46.5	45.5
	23	48.9	58.3	44.7	52.0	52.0	51.0	50.5	49.5	48.5	46.5	46.0	45.5

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Alliance Gateway South Building 3 Noise Impact Analysis
Job Number: 8878
Location: L6 - East of the project site near the railroad track adjacent to the Valley Business Park
Analyst: Bill Lawson
Date: 10/21/2103

Hourly Leq dBA Readings (unadjusted)



Time Period	*Energy Average (Leq)*	*Average (Leq)*	*Minimum (Leq)*	*Maximum (Leq)*	*CNEL*
Daytime Hourly (7am-10pm):	62.6	62.4	60.3	65.6	
Nighttime Hourly (10pm-7am):	61.0	60.1	56.2	65.1	
24-Hour:	62.1	61.5	56.2	65.6	67.9

Hourly Summary

Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Night	0	57.1	86.5	48.9	67.5	65.0	62.0	60.5	54.5	52.0	50.5	50.0	49.5
	1	56.2	73.6	47.9	66.0	64.0	61.5	59.5	54.5	52.5	51.0	50.5	49.5
	2	59.4	75.8	47.4	69.5	68.0	65.0	64.0	59.0	53.5	49.5	49.0	48.5
	3	59.9	80.0	50.5	69.0	67.0	65.5	64.0	59.5	56.0	53.5	53.0	52.0
	4	62.0	78.5	52.3	70.0	69.0	67.0	66.0	62.0	59.0	55.0	54.0	53.5
	5	63.3	79.8	54.3	71.0	69.0	67.5	66.5	63.5	61.0	58.0	57.0	56.0
	6	65.1	79.0	58.0	71.5	70.5	69.0	68.0	65.5	63.5	60.5	60.0	59.5
Day	7	65.6	81.9	53.0	72.5	71.0	69.5	69.0	66.5	64.0	59.0	57.5	55.5
	8	63.5	83.1	48.2	70.5	69.5	68.0	67.0	64.0	61.5	55.0	53.5	51.0
	9	62.8	85.6	45.6	70.5	69.5	67.5	66.5	63.5	60.5	52.5	50.0	48.0
	10	62.7	88.5	43.5	71.0	69.0	67.0	66.0	63.0	59.5	51.5	50.0	47.5
	11	62.7	85.2	44.6	71.5	69.5	67.0	65.5	62.5	59.5	51.5	49.5	47.0
	12	61.9	82.3	44.6	70.5	69.0	67.0	65.5	62.5	59.0	51.5	49.5	48.0
	13	63.1	90.8	45.1	72.5	70.0	67.0	65.5	62.5	58.5	51.0	49.0	46.5
	14	61.6	81.3	47.0	71.0	69.0	66.5	65.0	62.0	58.5	51.5	50.0	48.5
	15	62.0	80.8	46.8	70.5	69.0	66.5	65.5	62.5	59.0	52.0	50.5	48.5
	16	62.3	82.4	48.0	70.0	68.5	66.5	65.5	63.0	60.0	54.5	52.5	50.5
	17	63.1	81.3	48.3	70.5	68.5	67.0	66.0	64.0	61.0	55.0	53.5	51.0
	18	62.1	83.2	50.0	70.0	68.5	66.5	65.5	62.5	59.5	54.0	53.0	51.5
	19	61.6	81.9	49.3	70.5	68.5	66.0	65.0	61.5	58.0	52.5	51.5	50.5
	20	60.3	80.1	48.8	69.0	67.0	65.0	64.0	60.5	57.0	53.0	52.5	51.5
	21	60.5	83.5	49.2	68.5	67.5	65.0	64.0	61.0	57.5	53.0	52.5	51.0
Night	22	59.8	79.8	49.1	68.0	66.5	65.0	64.0	60.0	56.0	52.0	51.5	50.5
	23	58.3	75.3	48.0	68.0	66.0	64.0	62.5	57.5	54.5	50.5	50.0	49.0

URBAN CROSSROADS

APPENDIX 7.1:

TRAFFIC NOISE CONTOUR WORKSHEETS

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,340	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.28	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-17.08	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.91	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.6	53.6	62.2	62.8
Medium Trucks:	58.3	56.8	50.4	48.9	57.4	57.6
Heavy Trucks:	63.9	62.4	53.4	54.7	63.0	63.1
Vehicle Noise:	67.2	65.6	61.0	57.8	66.2	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	121	261	561
CNEL:	59	127	274	591

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,130	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.73	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.07	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.89	-4.41	-1.20	*-5.16*	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:	65.3	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	60.3	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.1
Vehicle Noise:	69.2	67.6	63.0	59.8	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	76	165	355	765
CNEL:	81	173	374	805

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,020	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.50	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.30	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.12	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	65.6	64.2	55.2	56.4	64.8	64.9
Vehicle Noise:	69.0	67.4	62.8	59.5	68.0	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	74	159	343	738
CNEL:	78	167	361	777

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,430	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.30	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.49	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.32	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.9	64.0	62.2	56.2	64.8	65.4
Medium Trucks:	60.9	59.4	53.0	51.5	59.9	60.2
Heavy Trucks:	66.4	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	69.8	68.2	63.6	60.4	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	83	180	387	835
CNEL:	88	189	408	879

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,290	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.77	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-12.03	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.85	-4.41	-1.20	*-5.16*	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	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	63.4	61.9	55.5	53.9	62.4	62.6
Heavy Trucks:	68.9	67.5	58.5	59.7	68.1	68.2
Vehicle Noise:	72.3	70.6	66.0	62.8	71.3	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	122	263	566	1,219
CNEL:	128	277	596	1,284

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Orange Show Rd.
Road Segment: w/o E St.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,670	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.71	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.09	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.91	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.3	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	66.9	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	70.2	68.6	64.0	60.8	69.2	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	89	192	413	889
CNEL:	94	202	434	936

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,180	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.83	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.97	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.79	-4.41	-1.20	*-5.16*	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	63.5	61.8	55.7	64.3	64.9
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	66.0	64.6	55.5	56.8	65.1	65.2
Vehicle Noise:	69.3	67.7	63.1	59.9	68.4	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	78	167	360	777
CNEL:	82	176	379	818

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Orange Show Rd.
Road Segment: e/o E St.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,990	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.44	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.36	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.19	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.0	63.1	61.4	55.3	63.9	64.5
Medium Trucks:	60.0	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	65.6	64.2	55.1	56.4	64.7	64.9
Vehicle Noise:	68.9	67.3	62.7	59.5	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	73	157	339	731
CNEL:	77	166	357	769

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,520	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.73	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.53	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.36	-4.41	-1.20	*-5.16*	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:	63.9	62.0	60.2	54.1	62.8	63.4
Medium Trucks:	58.9	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	64.4	63.0	54.0	55.2	63.6	63.7
Vehicle Noise:	67.8	66.1	61.5	58.3	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	132	283	611
CNEL:	64	139	298	643

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,090	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.18	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-17.98	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-16.80	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.4	60.5	58.7	52.7	61.3	61.9
Medium Trucks:	57.4	55.9	49.5	48.0	56.5	56.7
Heavy Trucks:	63.0	61.5	52.5	53.8	62.1	62.2
Vehicle Noise:	66.3	64.7	60.1	56.9	65.3	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	49	105	227	489
CNEL:	52	111	239	515

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,410	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.06	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.86	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.68	-4.41	-1.20	*-5.16*	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	61.6	59.9	53.8	62.4	63.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.4
Vehicle Noise:	67.4	65.8	61.2	58.0	66.5	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	58	125	270	581
CNEL:	61	132	284	611

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,150	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.77	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.03	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.85	-4.41	-1.20	*-5.16*	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	63.5	61.7	55.6	64.3	64.9
Medium Trucks:	60.4	58.9	52.5	50.9	59.4	59.6
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	69.3	67.6	63.0	59.8	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	77	166	357	769
CNEL:	81	175	376	810

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,190	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.80	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-17.60	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-16.42	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.8	60.9	59.1	53.1	61.7	62.3
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.1
Heavy Trucks:	63.3	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	66.7	65.1	60.5	57.3	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	112	241	519
CNEL:	55	118	253	546

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,030	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.45	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.10	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.48	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.0	63.1	61.4	55.3	63.9	64.5
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.6
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.6
Vehicle Noise:	69.8	68.2	63.1	60.4	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	84	182	391	843
CNEL:	88	190	409	882

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,350	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.32	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.87	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.25	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.6	53.5	62.2	62.8
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	65.5	64.1	55.1	56.3	64.7	64.8
Vehicle Noise:	68.1	66.5	61.3	58.7	67.1	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	64	138	298	642
CNEL:	67	145	312	672

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,240	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.88	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.67	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.05	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.8	55.7	64.4	65.0
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	70.3	68.7	63.5	60.9	69.3	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	90	194	418	900
CNEL:	94	203	437	942

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,530 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.41	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.14	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.53	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.3	56.3	64.9	65.5
Medium Trucks:	61.2	59.7	53.4	51.8	60.3	60.5
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	70.8	69.2	64.0	61.4	69.8	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	210	453	976
CNEL:	102	220	474	1,021

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,200 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.80	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.75	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.13	-4.41	-1.20	-5.16	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	63.5	61.7	55.7	64.3	64.9
Medium Trucks:	60.6	59.1	52.8	51.2	59.7	59.9
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	70.2	68.6	63.4	60.8	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	889
CNEL:	93	200	432	930

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,370 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.78	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-11.77	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-9.15	-4.41	-1.20	-5.16	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	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	63.6	62.1	55.8	54.2	62.7	62.9
Heavy Trucks:	70.6	69.2	60.2	61.4	69.8	69.9
Vehicle Noise:	73.2	71.6	66.4	63.8	72.2	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	303	652	1,405
CNEL:	147	317	682	1,470

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Orange Show Rd.
Road Segment: w/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,800 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.85	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.70	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.08	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.8	56.7	65.3	65.9
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	68.7	67.3	58.2	59.5	67.8	68.0
Vehicle Noise:	71.2	69.6	64.5	61.8	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	225	485	1,044
CNEL:	109	235	507	1,093

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Orange Show Rd.
Road Segment: e/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,130 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.66	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.89	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.27	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.3	61.6	55.5	64.1	64.8
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	67.5	66.1	57.0	58.3	66.6	66.8
Vehicle Noise:	70.0	68.5	63.3	60.6	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	404	870
CNEL:	91	196	423	911

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.75	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.30	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.68	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.8	61.9	60.2	54.1	62.7	63.3
Medium Trucks:	59.1	57.6	51.2	49.7	58.1	58.4
Heavy Trucks:	66.1	64.7	55.6	56.9	65.2	65.4
Vehicle Noise:	68.6	67.0	61.9	59.2	67.7	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	325	701
CNEL:	73	158	340	734

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,650 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.45	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.00	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.38	-4.41	-1.20	-5.16	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:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	66.4	65.0	55.9	57.2	65.5	65.7
Vehicle Noise:	68.9	67.3	62.2	59.5	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	341	734
CNEL:	77	165	357	768

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,330 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.39	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.93	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.32	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	61.3	59.5	53.5	62.1	62.7
Medium Trucks:	58.5	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	65.4	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	68.0	66.4	61.2	58.6	67.0	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	636
CNEL:	67	143	309	665

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,170	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.74	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.81	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.19	-4.41	-1.20	*-5.16*	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:	65.3	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	60.6	59.1	52.7	51.2	59.6	59.9
Heavy Trucks:	67.6	66.2	57.1	58.4	66.7	66.8
Vehicle Noise:	70.1	68.5	63.4	60.7	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	88	190	409	881
CNEL:	92	199	428	922

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,440	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.97	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.77	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.59	-4.41	-1.20	*-5.16*	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	61.7	60.0	53.9	62.5	63.1
Medium Trucks:	58.6	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	64.2	62.8	53.7	55.0	63.3	63.4
Vehicle Noise:	67.5	65.9	61.3	58.1	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	127	273	589
CNEL:	62	134	288	620

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,210	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.80	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-17.34	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.73	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.8	60.9	59.1	53.1	61.7	62.3
Medium Trucks:	58.0	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	67.6	66.0	60.8	58.2	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	60	129	277	597
CNEL:	62	135	290	625

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,130	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.73	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.07	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.89	-4.41	-1.20	*-5.16*	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:	65.3	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	60.3	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.1
Vehicle Noise:	69.2	67.6	63.0	59.8	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	76	165	355	765
CNEL:	81	173	374	805

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,240 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.95	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.85	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.67	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	60.5	59.0	52.7	51.1	59.6	59.8
Heavy Trucks:	66.1	64.7	55.6	56.9	65.2	65.4
Vehicle Noise:	69.4	67.8	63.2	60.0	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	367	791
CNEL:	83	179	386	833

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	47,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,720 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.19	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-11.61	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.44	-4.41	-1.20	-5.16	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	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	63.8	62.3	55.9	54.4	62.8	63.1
Heavy Trucks:	69.3	67.9	58.9	60.1	68.5	68.6
Vehicle Noise:	72.7	71.0	66.4	63.2	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	280	603	1,300
CNEL:	137	295	635	1,368

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,670 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.71	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.09	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.91	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	66.9	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	70.2	68.6	64.0	60.8	69.2	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	889
CNEL:	94	202	434	936

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,260 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.99	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.81	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.64	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.9	64.5	65.1
Medium Trucks:	60.6	59.1	52.7	51.2	59.6	59.9
Heavy Trucks:	66.1	64.7	55.7	56.9	65.3	65.4
Vehicle Noise:	69.5	67.9	63.2	60.0	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	171	369	795
CNEL:	84	180	389	837

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Orange Show Rd.
Road Segment: w/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,000	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.58	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.41	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.8	64.9	63.1	57.1	65.7	66.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.9	61.1
Heavy Trucks:	67.4	65.9	56.9	58.2	66.5	66.6
Vehicle Noise:	70.7	69.1	64.5	61.3	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	446	961
CNEL:	101	218	470	1,012

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,580	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.56	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.36	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.19	-4.41	-1.20	-5.16	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:	64.0	62.1	60.4	54.3	62.9	63.5
Medium Trucks:	59.0	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	64.6	63.2	54.1	55.4	63.7	63.9
Vehicle Noise:	67.9	66.3	61.7	58.5	67.0	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	135	291	627
CNEL:	66	142	306	660

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,230	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.93	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.87	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.69	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	60.5	59.0	52.7	51.1	59.6	59.8
Heavy Trucks:	66.1	64.7	55.6	56.9	65.2	65.3
Vehicle Noise:	69.4	67.8	63.2	60.0	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	366	788
CNEL:	83	179	385	830

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,480	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.85	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.65	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.47	-4.41	-1.20	-5.16	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	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	58.7	57.2	50.9	49.3	57.8	58.0
Heavy Trucks:	64.3	62.9	53.8	55.1	63.4	63.6
Vehicle Noise:	67.6	66.0	61.4	58.2	66.7	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	278	600
CNEL:	63	136	293	632

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,170	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.87	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.67	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.49	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.8	59.1	53.0	61.6	62.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.5
Vehicle Noise:	66.6	65.0	60.4	57.2	65.6	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	238	513
CNEL:	54	116	251	540

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,240	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.62	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.42	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.24	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.0	61.1	59.3	53.2	61.9	62.5
Medium Trucks:	58.0	56.5	50.1	48.6	57.0	57.3
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	66.9	65.2	60.6	57.4	65.9	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	115	247	533
CNEL:	56	121	261	561

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 Without Project
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,370	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.20	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.60	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.43	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	60.8	59.3	52.9	51.4	59.8	60.1
Heavy Trucks:	66.3	64.9	55.9	57.1	65.5	65.6
Vehicle Noise:	69.7	68.1	63.4	60.2	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	177	381	821
CNEL:	86	186	401	864

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,450	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.01	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.56	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.94	-4.41	-1.20	-5.16	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	61.7	59.9	53.9	62.5	63.1
Medium Trucks:	58.8	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	65.8	64.4	55.4	56.6	65.0	65.1
Vehicle Noise:	68.4	66.8	61.6	59.0	67.4	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	673
CNEL:	70	152	327	705

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,140 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.68	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.87	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.25	-4.41	-1.20	-5.16	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:	65.3	63.4	61.6	55.5	64.2	64.8
Medium Trucks:	60.5	59.0	52.7	51.1	59.6	59.8
Heavy Trucks:	67.5	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	70.1	68.5	63.3	60.7	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	188	405	873
CNEL:	91	197	424	913

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,770 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.80	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.75	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.13	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	68.6	67.2	58.2	59.4	67.8	67.9
Vehicle Noise:	71.2	69.6	64.4	61.8	70.2	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	223	481	1,037
CNEL:	108	234	504	1,085

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,350 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.09	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.46	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.85	-4.41	-1.20	-5.16	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:	65.7	63.8	62.0	56.0	64.6	65.2
Medium Trucks:	60.9	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	67.9	66.5	57.5	58.7	67.1	67.2
Vehicle Noise:	70.5	68.9	63.7	61.1	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	200	431	929
CNEL:	97	209	451	972

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	48,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,800 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.19	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-11.36	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-8.74	-4.41	-1.20	-5.16	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	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	71.0	69.6	60.6	61.8	70.2	70.3
Vehicle Noise:	73.6	72.0	66.8	64.2	72.6	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	150	322	694	1,495
CNEL:	157	337	727	1,565

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,290	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.97	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.57	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.96	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.8	64.5	65.1
Medium Trucks:	60.8	59.3	52.9	51.4	59.9	60.1
Heavy Trucks:	67.8	66.4	57.4	58.6	67.0	67.1
Vehicle Noise:	70.4	68.8	63.6	61.0	69.4	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	197	424	913
CNEL:	96	206	444	956

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Orange Show Rd.
Road Segment: e/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,360	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.10	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.44	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.83	-4.41	-1.20	-5.16	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:	65.7	63.8	62.0	56.0	64.6	65.2
Medium Trucks:	60.9	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	67.9	66.5	57.5	58.7	67.1	67.2
Vehicle Noise:	70.5	68.9	63.7	61.1	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	932
CNEL:	98	210	453	975

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Orange Show Rd.
Road Segment: w/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,130	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.33	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.22	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.60	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	62.2	60.7	54.3	52.8	61.2	61.5
Heavy Trucks:	69.2	67.7	58.7	60.0	68.3	68.4
Vehicle Noise:	71.7	70.1	65.0	62.3	70.8	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	112	242	522	1,125
CNEL:	118	254	546	1,177

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,720	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.27	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.82	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.20	-4.41	-1.20	-5.16	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:	64.3	62.4	60.7	54.6	63.2	63.8
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	66.6	65.1	56.1	57.4	65.7	65.8
Vehicle Noise:	69.1	67.5	62.4	59.7	68.2	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	163	350	754
CNEL:	79	170	367	790

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,610	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.56	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.10	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.49	-4.41	-1.20	-5.16	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:	64.0	62.1	60.4	54.3	62.9	63.5
Medium Trucks:	59.3	57.8	51.4	49.9	58.3	58.6
Heavy Trucks:	66.3	64.9	55.8	57.1	65.4	65.6
Vehicle Noise:	68.8	67.2	62.1	59.4	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	156	335	722
CNEL:	76	163	351	756

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,390	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.16	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.39	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.77	-4.41	-1.20	-5.16	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:	65.7	63.8	62.1	56.0	64.6	65.3
Medium Trucks:	61.0	59.5	53.1	51.6	60.0	60.3
Heavy Trucks:	68.0	66.6	57.5	58.8	67.1	67.3
Vehicle Noise:	70.5	69.0	63.8	61.1	69.6	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	436	939
CNEL:	98	212	456	983

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,410	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.13	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.68	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.06	-4.41	-1.20	-5.16	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	61.6	59.8	53.7	62.4	63.0
Medium Trucks:	58.7	57.2	50.8	49.3	57.8	58.0
Heavy Trucks:	65.7	64.3	55.2	56.5	64.8	65.0
Vehicle Noise:	68.2	66.7	61.5	58.9	67.3	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	307	661
CNEL:	69	149	321	692

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2015 With Project
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,270	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.59	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.13	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.52	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	58.3	56.7	50.4	48.8	57.3	57.5
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	67.8	66.2	61.0	58.4	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	286	616
CNEL:	65	139	299	645

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,120 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.71	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.09	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.91	-4.41	-1.20	-5.16	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:	65.3	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.6
Heavy Trucks:	65.9	64.4	55.4	56.6	65.0	65.1
Vehicle Noise:	69.2	67.6	63.0	59.8	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	164	354	762
CNEL:	80	173	372	803

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,890 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.06	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.74	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.57	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	64.7	63.0	56.9	65.5	66.2
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	70.5	68.9	64.3	61.1	69.6	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	435	937
CNEL:	99	213	458	987

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,790 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.90	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.89	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.72	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	70.4	68.8	64.2	61.0	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	197	425	915
CNEL:	96	208	447	964

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,300 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.63	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.17	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.99	-4.41	-1.20	-5.16	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:	67.2	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	62.2	60.7	54.4	52.8	61.3	61.5
Heavy Trucks:	67.8	66.4	57.3	58.6	66.9	67.0
Vehicle Noise:	71.1	69.5	64.9	61.7	70.2	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	221	475	1,024
CNEL:	108	232	500	1,078

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,430 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.80	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-11.00	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-9.83	-4.41	-1.20	-5.16	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	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	64.4	62.9	56.5	55.0	63.4	63.7
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	73.3	71.7	67.0	63.8	72.3	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	143	307	662	1,427
CNEL:	150	324	697	1,502

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Orange Show Rd.
Road Segment: w/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.94	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-12.86	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.69	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	62.5	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	68.1	66.7	57.6	58.9	67.2	67.4
Vehicle Noise:	71.4	69.8	65.2	62.0	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	498	1,073
CNEL:	113	243	524	1,130

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,650 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.68	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.12	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.94	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	66.8	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	70.2	68.5	63.9	60.7	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	191	411	884
CNEL:	93	201	432	931

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,690 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.75	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.05	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.88	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	61.3	59.8	53.5	51.9	60.4	60.6
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	70.2	68.6	64.0	60.8	69.3	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	415	893
CNEL:	94	203	437	941

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,840	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.10	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.70	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.53	-4.41	-1.20	*-5.16*	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:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	68.6	67.0	62.3	59.1	67.6	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	69	149	322	694
CNEL:	73	157	339	730

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,680	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.30	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.10	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.92	-4.41	-1.20	*-5.16*	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:	64.3	62.4	60.6	54.6	63.2	63.8
Medium Trucks:	59.3	57.8	51.4	49.9	58.3	58.6
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	68.2	66.6	62.0	58.7	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	65	141	303	653
CNEL:	69	148	319	687

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,920	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.28	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.52	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.34	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	65.4	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	68.8	67.1	62.5	59.3	67.8	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	71	154	331	713
CNEL:	75	162	349	751

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,890	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	2.06	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.74	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.57	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.6	64.7	63.0	56.9	65.5	66.2
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	70.5	68.9	64.3	61.1	69.6	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	94	202	435	937
CNEL:	99	213	458	987

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.27%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	3.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.68	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.48	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.30	-4.41	-1.20	-5.16	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	58.9	57.4	51.0	49.5	58.0	58.2
Heavy Trucks:	64.5	63.0	54.0	55.3	63.6	63.7
Vehicle Noise:	67.8	66.2	61.6	58.4	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	286	616
CNEL:	65	140	301	648

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Waterman Av.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,800 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.85	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.70	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.08	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.8	56.7	65.3	65.9
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	68.7	67.3	58.2	59.5	67.8	68.0
Vehicle Noise:	71.2	69.6	64.5	61.8	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	225	485	1,044
CNEL:	109	235	507	1,093

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: E St.
Road Segment: n/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,130 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.66	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.89	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.27	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.3	61.6	55.5	64.1	64.8
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	67.5	66.1	57.0	58.3	66.6	66.8
Vehicle Noise:	70.0	68.5	63.3	60.6	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	404	870
CNEL:	91	196	423	911

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Waterman Av.
Road Segment: s/o Orange Show Rd.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,990 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.13	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.41	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.80	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	62.0	60.5	54.1	52.6	61.0	61.3
Heavy Trucks:	69.0	67.5	58.5	59.8	68.1	68.2
Vehicle Noise:	71.5	69.9	64.8	62.1	70.6	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	235	506	1,091
CNEL:	114	246	530	1,142

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Waterman Av.
Road Segment: n/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,400 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.69	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-12.86	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.24	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	62.5	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	69.5	68.1	59.1	60.3	68.7	68.8
Vehicle Noise:	72.1	70.5	65.3	62.7	71.1	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	256	552	1,188
CNEL:	124	268	577	1,244

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Carnegie Dr.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,680 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.66	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.89	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.27	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	64.3	62.6	56.5	65.1	65.8
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	68.5	67.1	58.0	59.3	67.6	67.8
Vehicle Noise:	71.0	69.5	64.3	61.6	70.1	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	218	471	1,014
CNEL:	106	229	493	1,061

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Waterman Av.
Road Segment: s/o Hospitality Ln.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	55,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,500 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.78	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-10.77	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-8.15	-4.41	-1.20	-5.16	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	67.5	65.7	59.6	68.3	68.9
Medium Trucks:	64.6	63.1	56.8	55.2	63.7	63.9
Heavy Trucks:	71.6	70.2	61.2	62.4	70.8	70.9
Vehicle Noise:	74.2	72.6	67.4	64.8	73.2	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	164	353	760	1,637
CNEL:	171	369	796	1,714

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Orange Show Rd.
Road Segment: w/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,670 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.02	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-12.52	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-9.91	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	62.9	61.4	55.0	53.5	61.9	62.1
Heavy Trucks:	69.9	68.4	59.4	60.6	69.0	69.1
Vehicle Noise:	72.4	70.8	65.6	63.0	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	580	1,250
CNEL:	131	282	607	1,309

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Orange Show Rd.
Road Segment: e/o E St.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,820	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.88	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.67	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.05	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	68.7	67.3	58.3	59.5	67.9	68.0
Vehicle Noise:	71.3	69.7	64.5	61.9	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	105	226	487	1,049
CNEL:	110	237	510	1,098

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Orange Show Rd.
Road Segment: w/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,050	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.49	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.05	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.44	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	60.3	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	69.9	68.3	63.1	60.5	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	183	394	848
CNEL:	89	191	412	888

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Orange Show Rd.
Road Segment: e/o Arrowhead Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,980	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.34	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.20	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.59	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	60.2	58.7	52.3	50.8	59.2	59.5
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	69.7	68.1	63.0	60.3	68.8	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	179	385	829
CNEL:	87	187	403	867

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Orange Show Rd.
Road Segment: e/o Waterman Av.
Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,920	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.21	-4.42	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.34	-4.41	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-12.72	-4.41	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	60.1	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	69.6	68.0	62.8	60.2	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	175	377	812
CNEL:	85	183	394	850

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Hospitality Ln.
Road Segment: e/o Waterman Av.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,910	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	2.01	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.53	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.92	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.6	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	61.9	60.3	54.0	52.4	60.9	61.1
Heavy Trucks:	68.8	67.4	58.4	59.6	68.0	68.1
Vehicle Noise:	71.4	69.8	64.6	62.0	70.4	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	107	231	497	1,071
CNEL:	112	242	520	1,121

Wednesday, November 06, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Hospitality Ln.
Road Segment: w/o Carnegie Dr.

Project Name: Alliance California Gatewa
Job Number: 8878

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,560	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.70%
Medium Trucks:	84.8%	4.9%	10.3%	2.58%
Heavy Trucks:	86.5%	2.7%	10.8%	4.72%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	96.954
Medium Trucks:	96.862
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.69	-4.42	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.24	-4.41	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.63	-4.41	-1.20	*-5.16*	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	66.1	64.7	55.7	56.9	65.3	65.4
Vehicle Noise:	68.7	67.1	61.9	59.3	67.7	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	71	152	328	707
CNEL:	74	159	343	740

Wednesday, November 06, 2013

APPENDIX 9.1:

RCNM EQUIPMENT DATABASE

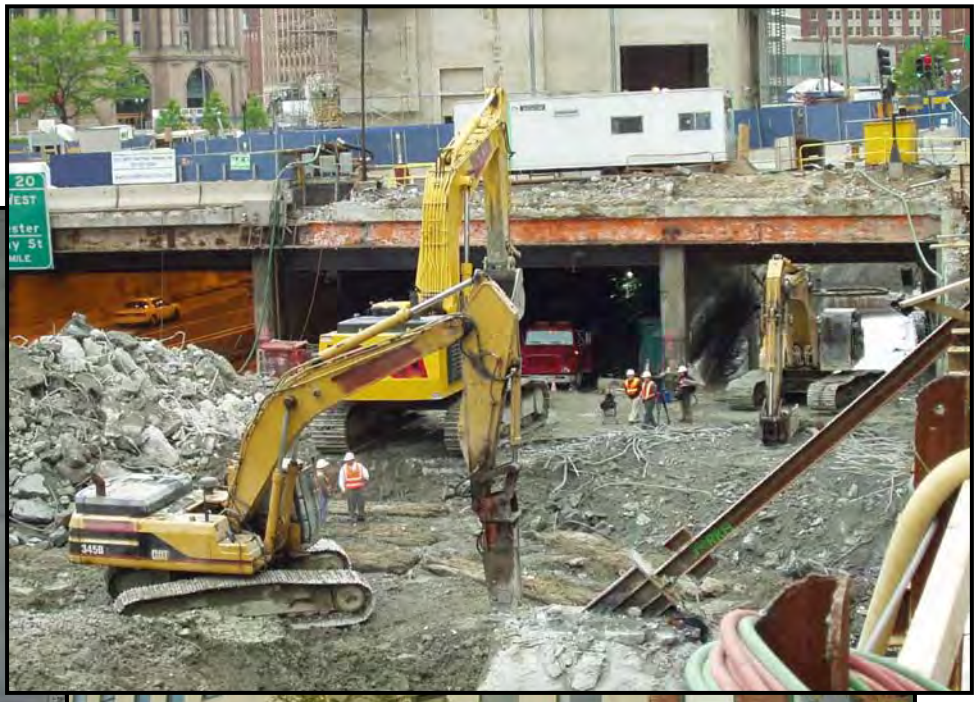
U.S. Department
of Transportation

**Federal Highway
Administration**

FHWA
Roadway Construction Noise Model
User's Guide

FHWA-HEP-05-054
DOT-VNTSC-FHWA-05-01

Final Report
January 2006



Prepared for
U.S. Department of Transportation
Federal Highway Administration
Office of Natural and Human Environment
Washington, DC 20590

Prepared by
U.S. Department of Transportation
Research and Innovative Technology Administration
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Acoustics Facility
Cambridge, MA 02142

Table 1. CA/T equipment noise emissions and acoustical usage factors database.

CA/T Noise Emission Reference Levels and Usage Factors					
filename: EQUIPLST.xls					
revised: 7/26/05		Acoustical	Spec 721.560	Actual Measured	No. of Actual
	Impact	Use Factor	Lmax @ 50ft	Lmax @ 50ft	Data Samples
Equipment Description	Device ?	(%)	(dBA, slow)	(dBA, slow)	(Count)
				(samples averaged)	
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5

APPENDIX 9.2:

PROJECT CONSTRUCTION NOISE ANALYSIS WORKSHEETS

Table A-1

Site Preparation Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Scraper	3	40%	3.2	84.0	84.8
Grader	1	40%	3.2	85.0	81.0
Rubber Tired Dozer	2	40%	3.2	79.0	78.0
Tractor/Loader/Backhoe	4	40%	3.2	78.0	80.0
Water Truck	2	40%	3.2	76.0	75.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					88.0

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	730'	-23.3		64.7
R2	615'	-21.8		66.2
R3	120'	-7.6		80.3
R4	160'	-10.1		77.9
R5	140'	-8.9		79.0
R6	225'	-13.1		74.9
R7	90'	-5.1		82.8
R8	90'	-5.1		82.8
R9	90'	-5.1		82.8

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

Table A-2

Grading Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Scraper	6	40%	3.2	84.0	87.8
Grader	2	40%	3.2	85.0	84.0
Rubber Tired Dozer	2	40%	3.2	79.0	78.0
Tractor/Loader/Backhoe	2	40%	3.2	78.0	77.0
Excavator	1	40%	3.2	81.0	77.0
Water Truck	2	40%	3.2	76.0	75.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					90.1

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	730'	-23.3		66.8
R2	615'	-21.8		68.3
R3	120'	-7.6		82.5
R4	160'	-10.1		80.0
R5	140'	-8.9		81.1
R6	225'	-13.1		77.0
R7	90'	-5.1		85.0
R8	90'	-5.1		85.0
R9	90'	-5.1		85.0

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

Table A-3

Paving Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Pavers	2	50%	4.0	77.0	77.0
Paving Equipment	2	40%	3.2	76.0	75.0
Air Compressor	2	40%	3.2	78.0	77.0
Water Truck	1	40%	3.2	76.0	72.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					81.7

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	730'	-23.3		58.4
R2	615'	-21.8		59.9
R3	120'	-7.6		74.1
R4	160'	-10.1		71.6
R5	140'	-8.9		72.8
R6	225'	-13.1		68.6
R7	90'	-5.1		76.6
R8	90'	-5.1		76.6
R9	90'	-5.1		76.6

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

Table A-4

Building Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Forklift	5	20%	1.6	75.0	75.0
Cranes	2	16%	1.3	81.0	76.1
Generator Set	2	50%	4.0	81.0	81.0
Welder	2	40%	3.2	74.0	73.0
Water Truck	1	40%	3.2	76.0	72.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					83.7

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	730'	-23.3		60.4
R2	615'	-21.8		61.9
R3	120'	-7.6		76.1
R4	160'	-10.1		73.6
R5	140'	-8.9		74.7
R6	225'	-13.1		70.6
R7	90'	-5.1		78.6
R8	90'	-5.1		78.6
R9	90'	-5.1		78.6

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

Table A-5

Architecture Coating Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Air Compressor	2	40%	3.2	78.0	77.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					77.0

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	730'	-23.3		53.7
R2	615'	-21.8		55.2
R3	120'	-7.6		69.4
R4	160'	-10.1		66.9
R5	140'	-8.9		68.1
R6	225'	-13.1		64.0
R7	90'	-5.1		71.9
R8	90'	-5.1		71.9
R9	90'	-5.1		71.9

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

Table A-6

Off-Site Utility Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Jack Hammer	1	20%	1.6	89.0	82.0
Concrete/Industrial Saw	1	20%	1.6	90.0	83.0
Street Sweeper	1	10%	0.8	82.0	72.0
Tractor/Loader/Backhoe	2	40%	3.2	78.0	77.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					86.3

Construction Noise Receiver Location[4]	Distance To Property Line (In Feet)[5]	Distance Attenuation	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	940'	-25.5		60.8
R2	560'	-21.0		65.3
R3	40'	1.9		88.2
R4	80'	-4.1		82.2
R5	50'	0.0		86.3
R6	220'	-12.9		73.4
R7	960'	-25.7		60.6
R8	1,300'	-28.3		58.0
R9	1,080'	-26.7		59.6

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

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A.

[5] Distance from the nearest point of construction activity to the nearest receiver.

[6] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.