Nakase Property

NOISE AND VIBRATION IMPACT ANALYSIS

CITY OF LAKE FOREST

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Nakase Property
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
SR-241	State Route 241
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this Noise and Vibration Impact Analysis to determine the potential impacts and the necessary mitigation measures for the proposed Nakase Property development ("Project"). The Project site is located east of Bake Parkway and south of Rancho Parkway in the City of Lake Forest. The proposed Project consists of 675 single-family dwelling units, 101 senior affordable residential units, an elementary school with athletic/sports fields which could accommodate up to 1,000 students, and park/open space uses. This study has been prepared consistent with applicable City of Lake Forest noise standards to address Appendix G of the California Environmental Quality Act (CEQA) Guidelines consistent with the *City of Lake Forest CEQA Significance Thresholds Guide*. (1; 2)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 39 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in *Nakase Property Traffic Impact Analysis*. (3) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Interim Year 2020, 2040 General Plan With Approved Business Park Land Use Without Portola Extension, and 2040 General Plan With Approved Business Park Land Use With Portola Extension conditions consistent with the *Traffic Impact Analysis*. The analysis shows that the unmitigated Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

ON-SITE TRAFFIC NOISE ANALYSIS

A noise impact analysis has been completed to determine the future noise levels that would result from adjacent and dominant traffic noise sources in the Project study area, and to identify potential noise mitigation measures that would achieve acceptable Project exterior and interior noise levels. The primary source of traffic noise affecting the Project site is anticipated to be from State Route 241 (SR-241), Bake Parkway, Rancho Parkway, and Lake Forest Drive. The Project will also experience some background traffic noise impacts from the Project's internal local streets, however, due to the low traffic volume and low speeds of vehicles transiting into the Project site, traffic noise from these roadways will not make a significant contribution to the noise environment beyond of the right-of-way.

EXTERIOR NOISE LEVELS

The future exterior traffic noise levels are shown to range from 51.6 to 64.7 dBA CNEL at the outdoor areas (e.g., residential private yards and school playground and picnic areas) within the Project site with the planned 6-foot high noise barriers for residential uses. No exterior noise barriers are required to satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standard at the school outdoor playground and picnic areas. Therefore, no exterior noise mitigation is

required to satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standards for residential and school land uses. With the planned noise barriers shown on Exhibit ES-A, the future exterior noise levels are considered to be a *less than significant* noise impact. This noise analysis shows that the planned noise barriers will satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standards. The effective noise barrier height represents the minimum wall and/or berm combination height to satisfy the City of Lake Forest exterior noise level standards.

The noise control barriers shall be constructed so that the top of each barrier is 6 feet higher than the pad elevation of the lot it is shielding. When the road is elevated above the pad elevation, the barrier shall extend to the planned 6-foot height above the highest point between the residential home and the road. The barriers shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the roadways. The barrier must present a solid face from top to bottom. All gaps (except for weep holes) should be filled with grout or caulking. The noise barrier shall be constructed using one of the following materials:

- Masonry block;
- Stucco veneer over wood framing (or foam core), or one-inch thick tongue and groove wood of sufficient weight per square foot;
- Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot capable of providing a minimum transmission loss of 20 dBA;
- Earthen berm;
- Any combination of these construction materials.

INTERIOR NOISE LEVELS

This noise analysis evaluates the interior noise levels at the Project buildings based on the City of Lake Forest 45 dBA CNEL interior noise level standards. The Project buildings are shown to require a Noise Reduction (NR) of up to 24.2 dBA and a windows-closed condition requiring a means of mechanical ventilation (e.g. air conditioning). With the following standard building construction noise reduction measures and subsequent, project-specific Final Noise Studies, the Project will satisfy the interior noise level standards:

- Windows/Sliding Glass Doors: All residential and school buildings require windows and sliding glass doors that have well-fitted, well-weather-stripped assemblies, and minimum sound transmission class (STC) ratings of 27.
- Exterior Doors (Non-Glass): All exterior doors shall be well weather-stripped and have well-sealed perimeter gaps to achieve minimum sound transmission class (STC) ratings of 27. (4)
- Exterior Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specification or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.

- Ventilation:
    - Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g. air conditioning) or active ventilation system (e.g. fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.
    - Residential and school exterior vents shall be oriented away from SR-241, Bake Parkway, and Rancho Parkway. If such an orientation cannot be avoided, then an acoustical baffle shall be placed in the attic space behind the vents.
- Final Noise Study: A final noise study shall be prepared prior to obtaining building permits for the Project consistent with the *City of Lake Forest CEQA Significance Thresholds Guide*, Page 19. (2) This report would finalize the measures described in this study using the precise grading plans, architectural floor plans and elevations, and actual building design specifications, and may include additional measures, if necessary, to meet the City of Lake Forest 45 dBA CNEL interior noise level standard. Further, the Final Noise Study for the elementary school shall confirm that school bell and/or public address systems would comply with the City of Lake Forest exterior noise level standards at nearby sensitive receiver locations.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Nakase Property site, this analysis estimates the Project-related stationary-source noise levels at nearby off-site sensitive receiver locations. The normal activities associated with the proposed Nakase Property are anticipated to include playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements. The operational noise analysis shows that the Project-related stationary-source noise levels at the nearby sensitive receiver locations will satisfy the City of Lake Forest exterior noise level standards. Therefore, the operational noise level impacts associated with the proposed Project activities, such as the playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements, are considered *less than significant*.

The residential development within the Project site is not expected to include any specific type of operational noise levels beyond the typical noise sources associated with residential land use (e.g., air conditioning, backyard activities) and is generally considered a noise-sensitive receiving land use. Potential noise levels produced by residential air conditioning units and elementary school bell and/or public address systems are not anticipated to generate noise levels above the Municipal Code exterior noise standards at off-site sensitive receiver locations. Further, these potential noise levels would be reduced by the attenuation provided by intervening structures and distance, in addition to the lower frequencies of noise events (i.e., regular school bells and public addresses) as compared to the operational activities analyzed in this report.

The Final Noise Study for the elementary school, as previously identified for on-site traffic noise, shall confirm that school bell and/or public address systems would comply with the City of Lake Forest exterior noise level standards.

CONSTRUCTION NOISE ANALYSIS

Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the closest point to the nearby receiver locations from primary Project construction activity. Using sample reference noise levels to represent the planned construction activities of the Nakase Property site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. Since the City of Lake Forest General Plan, Municipal Code, and *CEQA Significance Thresholds Guide* do not identify specific construction noise level thresholds, a threshold is identified based on the National Institute for Occupational Safety and Health (NIOSH) limits for construction noise. The results of the analysis show that the Project-related short-term construction noise levels are expected to range from 53.3 to 65.2 dBA L_{eq} and will satisfy the 85 dBA L_{eq} threshold identified by NIOSH at all receiver locations.

CONSTRUCTION VIBRATION ANALYSIS

At distances ranging from 130 to 304 feet from primary Project construction activity, construction vibration velocity levels are expected to range from 0.002 to 0.008 in/sec PPV. Based on the results of the analysis, the Project construction vibration levels will remain below the Caltrans building damage threshold of 0.3 in/sec PPV and human annoyance threshold of 0.04 in/sec PPV at all receiver locations. The Project-related vibration impacts at the nearby sensitive receiver locations, therefore, represent a *less than significant* impact Project construction activities.

CONSTRUCTION NOISE AND VIBRATION BEST PRACTICES

Though construction noise and vibration are temporary, intermittent, will be short in duration, and will not present any long-term impacts, the following best practices, while not required, would further reduce noise and vibration levels produced by the construction equipment to the nearby sensitive residential land uses. The following best practices are consistent with measures identified in the *City of Lake Forest CEQA Significance Thresholds Guide*, as follows:

- *Use noise control devices such as equipment mufflers, enclosures, and barriers. Natural and artificial barriers such as ground elevation changes and existing buildings can shield construction noise. Stage construction operations as far from noise sensitive uses as possible.*
- *Avoid residential areas when planning haul truck routes.*
- *Maintain all sound-reducing devices and restrictions throughout the construction period.*
- *Change the timing and/or sequence of the noisiest construction operations to avoid sensitive times of day.*

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

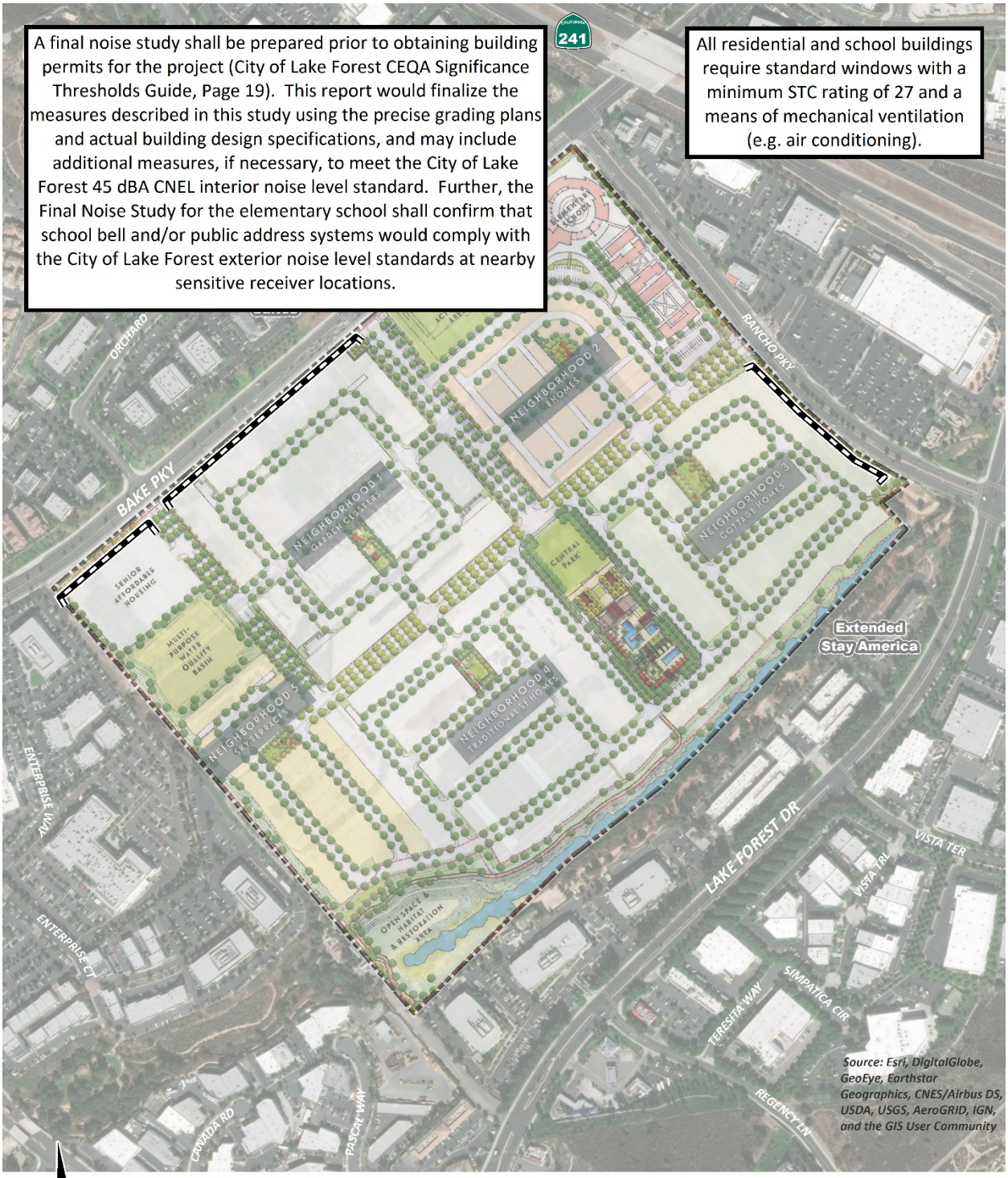
The results of this Nakase Property Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1). Table ES-1 shows the findings of significance

for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise Levels	7	*Less Than Significant*	*n/a*
On-Site Exterior Traffic Noise Levels	8	*Less Than Significant*	*n/a*
On-Site Interior Traffic Noise Levels		*Less Than Significant*	*n/a*
Operational Noise Levels	10	*Less Than Significant*	*n/a*
Construction Noise Levels	11	*Less Than Significant*	*n/a*
Construction Vibration Levels		*Less Than Significant*	*n/a*

EXHIBIT ES-A: SUMMARY OF ON-SITE RECOMMENDATIONS



1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Nakase Property ("Project"). This report briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for transportation 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 and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Nakase Property Project is located east of Bake Parkway and south of Rancho Parkway in the City of Lake Forest, as shown on Exhibit 1-A. The Project site is currently occupied by the Nakase Brothers Wholesale Nursery. State Route 241 (SR-241) is located roughly 300 feet north of the Project site boundaries. Existing residential uses are located west of the Project site, and office and commercial uses are located north, south, east, and west of the Project site. The Serrano Creek Trail runs adjacent to the southern Project site boundaries.

1.2 PROJECT DESCRIPTION

The proposed Project consists of 675 single-family dwelling units, 101 senior affordable residential units, an elementary school with athletic/sports fields which could accommodate up to 1,000 students, and park/open space uses. The proposed residences would predominantly consist of single-family detached units. Any single-family attached units would be located in Neighborhoods 2 and 5., as shown on Exhibit 1-B. The on-site Project-only operational noise sources are expected to include: playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements.

According to the *Traffic Impact Analysis*, the proposed Project is anticipated to generate a net total of approximately 8,789 trip-ends per day on a typical weekday. The Project trips will be 14,122 fewer trips per day, with 1,377 fewer vehicles per hour during the AM peak hour and 1,442 fewer vehicles per hour during the PM peak hour, in comparison to the approved General Plan designation of business park land use for the site. (3)

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: CONCEPTUAL LAND USE PLAN

LEGEND

- Neighborhood 1
- Neighborhood 2
- Neighborhood 3
- Neighborhood 4
- Neighborhood 5
- Senior Affordable Housing
- Elementary School Site
- Parks
- Multi-purpose Water Quality Basin
- Open Space & Habitat & Restoration Area
- Streets
- Bike Trail

FEET: 0, 250, 500, 1000
INCHES: 0, 1/2, 1, 2
SCALE: 1" = 500'

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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. (5) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (6) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

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

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

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

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

as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (5)

2.3.2 Ground Absorption

The propagation path of noise from a highway to a 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. (7)

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 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (5)

2.3.4 Shielding

A large object or barrier in the path between a noise source and a 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. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (7)

2.4 Noise Control

Noise control is the process of obtaining an acceptable noise environment for an 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 these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (7)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (8)

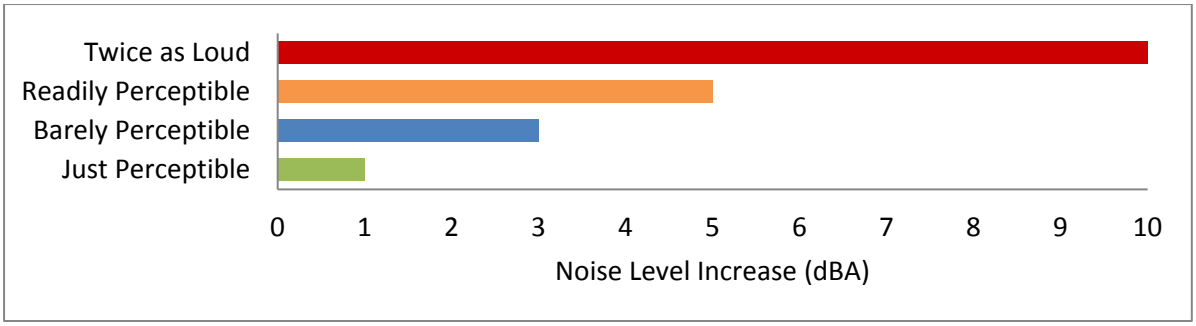
2.7 COMMUNITY RESPONSE TO NOISE

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

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

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. 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. (9) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (9) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. 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*. (7)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



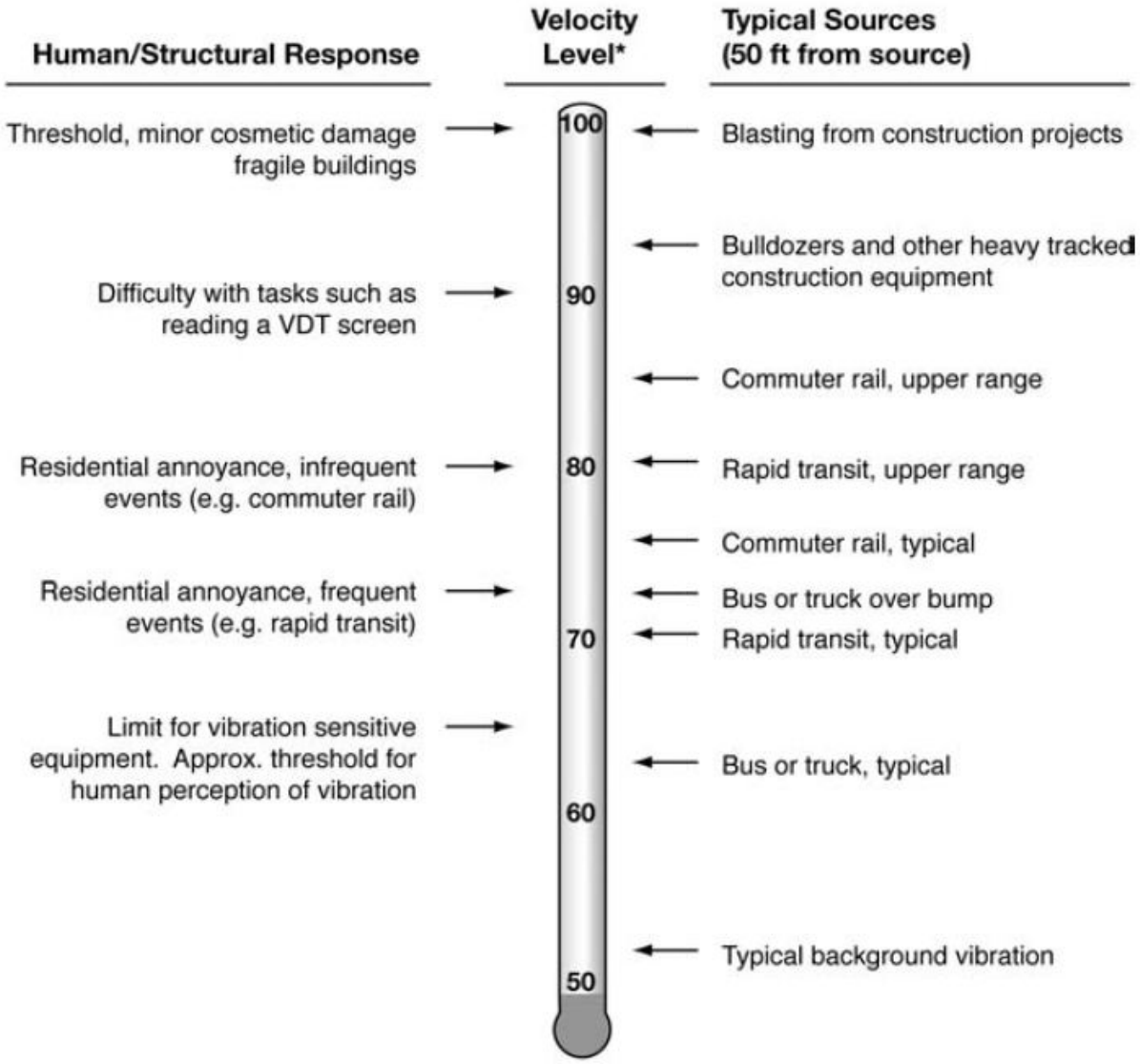
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (10), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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

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



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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for 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.

3.3 CITY OF LAKE FOREST GENERAL PLAN SAFETY AND NOISE ELEMENT

The City of Lake Forest has adopted a Safety and Noise Element of the General Plan to address public safety and quality of life issues. (12) The Safety and Noise Element specifies the maximum exterior and interior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Safety and Noise Element identifies noise standards designed to protect, create, and maintain an environment free from noise that may jeopardize the health or welfare of sensitive receivers, or degrade quality of life.

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Lake Forest Safety and Noise Element are guidelines to evaluate the land use compatibility of transportation related noise. The land use compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Noise/Land Use Noise Compatibility Matrix* (Table SN-3) in the City of Lake Forest General Plan provides guidelines to evaluate the acceptability of transportation related noise level impacts. These guidelines are based on the Governor's Office of Planning and Research and are used to assess the long-term traffic noise impacts on land uses. Noise-sensitive land uses such as single-family residential homes and schools are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 65 dBA CNEL. For *conditionally acceptable* land use, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design*. (12)

EXHIBIT 3-A: NOISE/LAND USE NOISE COMPATIBILITY MATRIX

Land Use Categories	Community Noise Equivalent Level (CNEL)						
	55	60	65	70	75	80	
Residential - Single Family, Multi-family, duplex	A	A	B	C	C		
Residential - Mobile Homes	A	A	B	C	C		
Transient Lodging - Motels, Hotels	A	A	B	B	C	C	
Schools, Libraries, Churches, Hospitals, Nursing/Convalescent Homes, Preschools, Day Care Centers(1)	A	A	B	C	C		
Auditoriums, Concert Halls, Amphitheaters, Meeting Halls	B	B	C	C			
Sports Arenas, Outdoor Spectator Sport, Amusement Parks	A	A	A	B	B		
Playgrounds, Neighborhood Parks	A	A	A	B	C		
Golf Courses, Riding Stables, Cemeteries	A	A	A	A	B	C	C
Office and Professional Buildings	A	A	A	B	B	C	
Commercial Retail, Banks, Restaurants, Theaters	A	A	A	A	B	B	C
Industrial, Manufacturing, Utilities, Wholesale, Service Stations	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

Zone A - Normally Acceptable

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B - Conditionally Acceptable

New construction or development should be undertaken only after detailed analysis of the noise reduction requirement is made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditionaing, will normally suffice.

Zone C - Normally Unacceptable

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Notes:

(1) Religious institutions (Churches, synagogues, temples and other places of worship) of a small size (occupancy of 100 persons or less) may occupy existing buildings within areas of exterior noise levels ranging from 65 to 75 dB CNEL without providing additional noise insulation for the building.

(2) Shaded areas indicate new construction or development should generally not be undertaken.

3.3.2 TRANSPORTATION NOISE STANDARDS

The City of Lake Forest has established the *CEQA Significance Thresholds Guide* provides exterior and interior noise level standards, as shown on Exhibit 3-B. (2) The City of Lake Forest General Plan and *CEQA Significance Thresholds Guide* provide specific noise level standards for all land use categories that are used to regulate transportation-related noise levels for noise sensitive uses.

EXHIBIT 3-B: INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use Categories	Noise Standards[1]	
	Interior[2,3]	Exterior
Residential - Single Family, multi-family, duplex, mobile home	CNEL 45 dB	CNEL 65 dB[4]
Residential - Transient lodging, hotels, motels, nursing homes, hospitals	CNEL 45 dB	CNEL 65 dB[4]
Private offices, church sanctuaries, libraries, board rooms, conference rooms, theaters, auditoriums, concert halls, meeting halls, etc.	L_{eq}(12) 45 dB(A)[2,6]	-
Schools	L_{eq}(12) 45 dB(A)	CNEL 65 dB[5]
General offices, reception, clerical, etc.	L_{eq}(12) 50 dB(A)	-
Bank lobby, retail store, restaurant, typing pool, etc.	L_{eq}(12) 55 dB(A)	-
Manufacturing, kitchen, warehousing, etc.	L_{eq}(12) 65 dB(A)	-
Parks, playgrounds	-	CNEL 65 dB[5]
Golf courses, outdoor spectator sports, amusement parks	-	CNEL 70 dB[5]

[1] "CNEL" = Community Noise Equivalent Level; "L_{eq}(12)" = The A-weighted equivalent sound level averaged over a 12-hour period (usually the hours of operation).
[2] Noise standard with windows closed. Mechanical ventilation shall be provided per UBC requirements to provide a habitable environment.
[3] Indoor environment excluding bathrooms, toilets, closets, and corridors.
[4] Outdoor environment limited to rear yard of single-family homes, multi-family patios and balconies (with a depth of 6' or more) and common recreation areas.
[5] Outdoor environment limited to playground areas, picnic areas, and other areas of frequent human use.
[6] Religious institutions (Churches, temples, and other places of worship) of a small size (occupancy of 100 persons or less) may occupy existing buildings within areas of exterior noise levels ranging from 65 to 75 dB CNEL without providing additional noise insulation for the building.

For noise-sensitive land uses such as the residential homes of the Project, the Safety and Noise Element and *CEQA Significance Thresholds Guide* requires an exterior noise level not to exceed 65 dBA CNEL within outdoor living areas (e.g., rear yards, patios and balconies 6-feet or greater, or common recreation areas). Further, school uses within the proposed Project are required to comply with an exterior noise level of 65 dBA CNEL at outdoor environments (e.g., playground areas, picnic areas, and other areas of frequent human use). In addition, the 24-hour 45 dBA CNEL residential interior noise level standard is used in this noise analysis for school uses to present a conservative approach. This approach is consistent with Tables SN-2 and SN-3 of the General Plan Safety and Noise Element and the *CEQA Significance Thresholds Guide*.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Project, stationary-source (operational) noise such as the proposed playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements are typically evaluated against standards established under a jurisdiction's Municipal Code.

The Project operational noise impacts are governed by the City of Lake Forest Municipal Code, Title 11 – *Peace and Safety*, Division II – *Offenses Against Public Peace*, Chapter 11.16 – *Noise Control*, included in Appendix 3.1. The Municipal Code indicates the *Noise Standards* outlined in Section 11.16.040(A) shall apply to all residential property. The *Noise Standards* limit the allowable exterior noise level to 55 dBA during the daytime hours (7:00 a.m. to 10:00 p.m.), and 50 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.), as shown on Table 3-1. (13) To assess the stationary noise sources in the Project study area, the Municipal Code, Sections 11.16.040(B)(1-5), identify percentile noise level standards. The percentile noise levels represent the noise level standard (as show on Table 3-1) for residential land use for a cumulative period of more than thirty minutes (L_{50}) in any hour. These standards shall not be exceeded for a cumulative period of 30 minutes (L_{50}), or the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes (L_{25}) in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes (L_8) in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute (L_2) in any hour, or the standard plus 20 dBA at any time (L_{max}). (13) These standards are consistent with those identified for operational noise in the *CEQA Significance Thresholds Guide*.

TABLE 3-1: STATIONARY-SOURCE NOISE LEVEL STANDARDS

Land Use	Time Period	Maximum Permissible Exterior Noise Levels[2]				
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
Residential[1]	Daytime (7:00 a.m. - 10:00 p.m.)	55	60	65	70	75
	Nighttime (10:00 p.m. - 7:00 a.m.)	50	55	60	65	70

[1] Source: Sections 11.16.040(A) & (B) of the City of Lake Forest Municipal Code.
[2] The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{25} is the noise level exceeded 25% of the time.

3.5 CONSTRUCTION NOISE STANDARDS

Noise from construction activities are typically limited to the hours of operation established under a City's Municipal Code. However, both the City of Lake Forest Municipal Code and *CEQA Significance Thresholds Guide* consider construction noise exempt from the Municipal Code stationary-source noise level standards (Section 11.16.060 of the Municipal Code), and do not establish a numeric maximum acceptable construction-source noise level threshold for potentially affected receivers, which would allow for a quantified determination of potential impacts under CEQA. Therefore, the following construction noise level threshold is used in this report.

To evaluate whether the Project will generate potentially significant construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (14) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (14) For the purposes of this analysis, the lowest, more conservative construction noise level threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as L_{eq} noise levels. Therefore, the noise level threshold of 85 dBA L_{eq} over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

3.6 CONSTRUCTION VIBRATION STANDARDS

The City of Lake Forest General Plan and Municipal Code do not identify specific vibration level standards. Therefore, applicable vibration standards identified by the California Department of Transportation ("Caltrans") *Transportation and Construction Vibration Guidance Manual* are used in this report. (15) According to the Caltrans vibration manual, large bulldozers, and loaded trucks used during construction activities can produce vibration which can potentially cause annoyance at sensitive land uses within the Project study area, or damage to adjacent structures. The Caltrans vibration manual establishes thresholds for determining potential vibration impacts resulting in building damage for older residential structures of 0.3 in/sec PPV, and for human annoyance of 0.04 in/sec PPV. These Caltrans thresholds are used in this analysis to assess potential impacts at the adjacent sensitive uses to the Project site.

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4 SIGNIFICANCE CRITERIA

This study has been prepared consistent with applicable City of Lake Forest noise standards to address Appendix G of the California Environmental Quality Act (CEQA) Guidelines consistent with the *City of Lake Forest CEQA Significance Thresholds Guide*. (1; 2)Appendix G of the California Environmental Quality Act (CEQA) Guidelines are listed below for reference:

A. 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;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

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

CEQA GUIDELINES NOT FURTHER ANALYZED

The closest airport to the Project site is John Wayne Airport which is located approximately 11 miles northwest of the Project site, and therefore, the Project site is not located within two miles of a public airport or within an airport land use plan; nor is the Project within the vicinity of a private airstrip. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Guidelines E and F.

4.1 CITY OF LAKE FOREST CEQA SIGNIFICANCE THRESHOLDS

Noise level increases resulting from the Project are evaluated consistent with the Appendix G CEQA Guidelines listed above based on the *City of Lake Forest CEQA Significance Thresholds Guide*. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (16) Unfortunately, there is no

completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

The *City of Lake Forest CEQA Significance Thresholds Guide* identifies the following two significance criteria related to potential Project traffic-related noise level increases for CEQA analysis purposes. Project impacts would be considered potentially significant if *both of the following criteria are met*:

- *Project traffic will cause a noise level increase of 3 dB or more on a roadway segment adjacent to a noise sensitive land use. Noise sensitive land uses include the following: residential (single-family, multi-family, mobile home); hotels; motels; nursing homes; hospitals; parks, playgrounds and recreation areas; and schools.*
- *The resulting "future with project" noise level exceeds the noise standard for sensitive land uses as identified in the City of Lake Forest General Plan (refer to Table 3-1 above, Interior and Exterior Noise Standards).*

4.2 SIGNIFICANCE CRITERIA SUMMARY

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

OFF-SITE TRAFFIC NOISE

- When both of the following criteria are met at noise-sensitive land uses (e.g., residential, hotels, motels, nursing homes, hospitals, parks, playgrounds and recreation areas, and schools):
    - Project traffic will cause a noise level increase of 3 dBA CNEL or more on a roadway segment adjacent to a noise-sensitive land use; and
    - The resulting "future with project" noise level exceeds the 65 dBA CNEL exterior noise level standard for sensitive land uses (City of Lake Forest CEQA Significance Thresholds Guide, Section 3.4).

ON-SITE TRAFFIC NOISE

- If the on-site noise levels:
    - exceed the exterior noise level standard of 65 dBA CNEL for outdoor areas (e.g., rear yard of single-family homes, multi-family patios and balconies (with a depth of six feet or more), common recreation areas, playgrounds, or picnic areas); or
    - exceed an interior noise level of 45 dBA CNEL for noise-sensitive uses (City of Lake Forest CEQA Significance Thresholds Guide, Table 3-1).

OPERATIONAL NOISE

- If Project-related operational (stationary source) noise levels exceed the exterior 55 dBA L_{50} daytime or 50 dBA L_{50} nighttime noise level standards for sensitive land uses. These standards shall not be exceeded for a cumulative period of 30 minutes (L_{50}), or the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes (L_{25}) in any hour, or the

standard plus 10 dBA for a cumulative period of more than 5 minutes (L_8) in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute (L_2) in any hour, or the standard plus 20 dBA at any time (L_{max}) (Sections 11.16.040(A) & (B) of the City of Lake Forest Municipal Code, and Table 3-2 of the City of Lake Forest CEQA Significance Thresholds Guide).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities create noise levels which exceed the 85 dBA L_{eq} acceptable noise level threshold at the nearby sensitive receiver locations (NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure); or
- If Project-related construction activities generate vibration levels which exceed the Caltrans building damage vibration level threshold for older residential structures of 0.3 in/sec PPV, or the *distinctly perceptible* human annoyance vibration level threshold of 0.04 in/sec PPV at nearby sensitive receiver locations (Caltrans Transportation and Construction Vibration Guidance Manual, Tables 19 & 20).

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic Noise[1]	Noise-Sensitive	Exterior Noise Level Criteria	≥ 3 dBA CNEL Project Increase & Resulting With Project Noise Level > 65 dBA CNEL	
On-Site Traffic Noise[1]	Residential & School	Exterior Noise Level Standard	65 dBA CNEL	
		Interior Noise Level Standard	45 dBA CNEL	
Operational Noise[1]	Noise-Sensitive	Exterior Noise Level Standards	See Table 3-1.	
Construction Noise & Vibration	Noise-Sensitive	Noise Level Threshold[2]	85 dBA L_{eq}	n/a
		Vibration Level Threshold (Building Damage)[3]	0.3 in/sec PPV	n/a
		Vibration Level Threshold (Distinctly Perceptible)[3]	0.04 in/sec PPV	n/a

[1] Source: City of Lake Forest CEQA Thresholds Guide.
[2] Source: NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure, June 1998.
[3] Source: Caltrans Transportation and Construction Vibration Guidance Manual, September 2013, Tables 19 & 20.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "n/a" = No nighttime construction activity is permitted, so no nighttime construction noise level limits are identified; "PPV" = peak particle velocity

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, eight 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, May 17th, 2017 and on Wednesday, May 31st, 2018. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent any part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (5) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (10)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (10) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby

sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Additional median noise levels (L_{50}) are provided on Table 5-1 consistent with the City of Lake Forest Municipal Code exterior noise level standards. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels on Rancho Parkway adjacent to existing commercial uses north of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 67.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 64.1 dBA L_{eq} with an average nighttime noise level of 60.0 dBA L_{eq}.
- Location L2 represents the noise levels east of the Project site adjacent to an existing pedestrian trail and an Extended Stay America hotel. The noise level measurements collected show an overall 24-hour exterior noise level of 57.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 54.4 dBA L_{eq} with an average nighttime noise level of 50.1 dBA L_{eq}.
- Location L3 represents the noise levels southeast of the Project site at an adjacent pedestrian trail near existing office buildings on Lake Forest Drive. The 24-hour CNEL indicates that the overall exterior noise level is 49.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 46.2 dBA L_{eq} with an average nighttime noise level of 42.3 dBA L_{eq}.
- Location L4 represents the noise levels at the western Project site boundary adjacent to an existing parking lot for office uses. The noise level measurements collected show an overall 24-hour exterior noise level of 57.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 52.2 dBA L_{eq} with an average nighttime noise level of 49.9 dBA L_{eq}.
- Location L5 represents the noise levels southwest of the Project site within an existing parking lot for office uses. The noise level measurements collected show an overall 24-hour exterior noise level of 55.3 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 50.0 dBA L_{eq} with an average nighttime noise level of 48.4 dBA L_{eq}.
- Location L6 represents the noise levels northwest of the Project site near existing residential homes on Agave. The noise level measurements collected show an overall 24-hour exterior noise level of 51.1 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 46.7 dBA L_{eq} with an average nighttime noise level of 43.8 dBA L_{eq}.
- Location L7 represents the noise levels north of the Project site across Bake Parkway adjacent to an existing Staybridge Suites hotel. The noise level measurements collected show an overall 24-hour exterior noise level of 61.1 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 56.6 dBA L_{eq} with an average nighttime noise level of 53.8 dBA L_{eq}.

- Location L8 represents the noise levels at the northwestern Project site boundary adjacent to Bake Parkway. The noise level measurements collected show an overall 24-hour exterior noise level of 79.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 75.1 dBA L_{eq} with an average nighttime noise level of 71.5 dBA L_{eq}.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. The 24-hour existing noise level measurements shown on Table 5-1 present the existing ambient noise conditions.

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

Location[1]	Date	Distance to Project Boundary (Feet)	Description	Energy Average Noise Level (dBA L_{eq})[2]		Average Median Noise Level (dBA L_{50})[2]		CNEL
				Daytime	Nighttime	Daytime	Nighttime	
L1	5/31/2018	140'	Located on Rancho Parkway adjacent to existing commercial uses north of the Project site.	64.1	60.0	58.9	48.0	67.8
L2	5/31/2018	115'	Located east of the Project site adjacent to an existing pedestrian trail and an Extended Stay America hotel.	54.4	50.1	50.8	42.8	57.8
L3	5/31/2018	45'	Located southeast of the Project site at an adjacent pedestrian trail near existing office buildings on Lake Forest Drive.	46.2	42.3	43.2	39.4	49.8
L4	5/17/2017	0'	Located at the western Project site boundary adjacent to an existing parking lot for office uses.	52.2	49.9	48.5	46.6	57.0
L5	5/17/2017	151'	Located southwest of the Project site within an existing parking lot for office uses.	50.0	48.4	47.0	46.1	55.3
L6	5/17/2017	390'	Located northwest of the Project site near existing residential homes on Agave.	46.7	43.8	43.9	41.8	51.1
L7	5/17/2017	250'	Located north of the Project site across Bake Parkway adjacent to an existing Staybridge Suites hotel.	56.6	53.8	54.4	52.0	61.1
L8	5/17/2017	0'	Located at the northwestern Project site boundary adjacent to Bake Parkway.	75.1	71.5	69.5	56.0	79.0

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

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

N

LEGEND:

▲ Noise Measurement Locations

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the potential future Project-related impacts related to traffic noise, operational noise, and construction noise and vibration.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (18) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (19) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 39 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Lake Forest General Plan Circulation Element, and the posted vehicle speeds. For this analysis, soft site conditions are used to analyze the traffic noise impacts within the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Caltrans' research has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model as used in this off-site traffic noise analysis. (20)

The Existing, Interim Year 2020, 2040 General Plan With Approved Business Park Land Use Without Portola Extension, and 2040 General Plan With Approved Business Park Land Use With Portola Extension average daily traffic volumes used for this study are presented on Table 6-2 and are provided by *Nakase Property Traffic Impact Analysis*. (3) Table 6-3 presents the time of day vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. 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	Adjacent Land Use[1]	Distance From Centerline To Nearest Adjacent Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	60'	55
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	60'	50
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	50'	40
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	50'	40
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	30'	45
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	30'	35
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	30'	35
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	30'	35
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	60'	40
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	70'	50
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	60'	50
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	60'	45
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	60'	55
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	60'	60
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	60'	55
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	60'	55
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	60'	55
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	60'	55
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	60'	50
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	60'	50
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	60'	50
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	50'	50
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	50'	50
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	50'	50
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	30'	50
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	30'	50
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	60'	50
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	60'	50
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	50'	50
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	50'	50
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	30'	50
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	30'	50
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	30'	45
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	70'	50
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	70'	50
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	70'	50
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	60'	50
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	60'	55
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	60'	55

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] Distance to adjacent land use is based on the right-of-way distance for each roadway classification provided in the General Plan Circulation Element.
[3] Source: Nakase Property Traffic Impact Analysis, September 2018.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]							
			Existing		Interim Year 2020		2040 General Plan without Portola Extension[2]		2040 General Plan with Portola Extension[2]	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Trabuco Rd.	s/o Bake Pkwy.	18.6	18.9	23.0	23.0	27.0	27.0	34.0	35.0
2	Trabuco Rd.	s/o Lake Forest Dr.	23.2	23.7	33.0	33.0	39.0	39.0	26.0	27.0
3	Rancho Pkwy. S.	s/o Alton Pkwy.	5.6	6.5	9.2	10.3	16.7	15.7	16.6	15.3
4	Rancho Pkwy. S.	n/o Bake Pkwy.	7.2	8.5	9.0	10.0	13.0	12.0	13.0	12.0
5	Rancho Pkwy.	s/o Lake Forest Dr.	15.5	16.9	19.0	19.0	36.0	33.0	35.0	33.0
6	Towne Centre Dr.	s/o Alton Pkwy.	14.5	14.9	14.5	15.1	15.1	15.2	14.9	15.4
7	Towne Centre Dr.	s/o Bake Pkwy.	7.8	8.0	7.9	8.2	9.5	9.4	9.0	8.7
8	Towne Centre Dr.	s/o Lake Forest Dr.	5.2	5.4	5.4	5.4	5.3	5.1	5.7	5.1
9	Portola Pkwy.	s/o Alton Pkwy.	22.4	22.7	27.5	27.7	33.9	34.3	42.2	42.6
10	Portola Pkwy.	n/o Rancho Pkwy.	25.1	25.4	29.0	29.0	35.0	35.0	35.0	35.0
11	Santa Margarita Pkwy.	s/o El Toro Rd.	37.9	38.5	39.0	39.0	49.0	48.0	49.0	48.0
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	35.1	35.6	37.9	37.9	46.7	45.5	46.8	45.5
13	Alton Pkwy.	w/o Irvine Bl.	22.0	22.4	29.1	29.0	33.7	33.7	33.2	33.3
14	Alton Pkwy.	e/o Irvine Bl.	23.9	24.7	25.0	26.0	29.0	28.0	24.0	24.0
15	Alton Pkwy.	w/o Rancho Pkwy. S.	23.3	24.1	35.3	36.8	54.9	53.9	50.7	49.7
16	Bake Pkwy.	w/o Rockfield Bl.	72.2	73.6	74.0	75.0	89.0	88.0	88.0	88.0
17	Bake Pkwy.	e/o Rockfield Bl.	62.8	64.2	66.4	66.8	71.1	70.5	70.7	70.0
18	Bake Pkwy.	e/o Muirlands Bl.	61.1	62.8	63.4	64.0	69.1	68.5	68.5	68.3
19	Bake Pkwy.	e/o Jeronimo Rd.	51.4	53.1	55.7	56.3	60.6	60.0	59.9	59.5
20	Bake Pkwy.	e/o Toledo Wy.	49.3	51.0	51.0	52.0	55.0	55.0	55.0	55.0
21	Bake Pkwy.	e/o Trabuco Rd.	37.4	39.5	36.0	37.0	40.0	39.0	38.0	38.0
22	Bake Pkwy.	w/o Dimension Dr.	27.0	29.2	34.5	35.5	38.6	37.8	37.6	36.9
23	Bake Pkwy.	e/o Dimension Dr.	29.0	31.8	30.0	31.0	40.0	38.0	38.0	37.0
24	Bake Pkwy.	e/o Rancho Pkwy. S.	29.5	30.4	30.0	31.0	37.0	37.0	36.0	37.0
25	Bake Pkwy.	w/o Towne Centre Dr.	27.4	28.5	28.0	29.0	31.0	31.0	31.0	31.0

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]							
			Existing		Interim Year 2020		2040 General Plan without Portola Extension[2]		2040 General Plan with Portola Extension[2]	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
26	Bake Pkwy.	e/o Towne Centre Dr.	17.0	17.5	25.9	25.5	28.4	28.0	28.3	27.9
27	Lake Forest Dr.	w/o Serrano Rd.	35.1	35.6	42.2	42.4	43.8	44.7	43.8	43.8
28	Lake Forest Dr.	e/o Serrano Rd.	37.5	38.0	42.2	42.5	43.2	43.6	42.9	43.6
29	Lake Forest Dr.	e/o Trabuco Rd.	36.9	37.5	39.2	40.1	40.9	40.7	44.7	40.5
30	Lake Forest Dr.	e/o Dimension Dr.	22.3	23.0	28.0	29.0	37.0	35.0	37.0	35.0
31	Lake Forest Dr.	e/o Rancho Pkwy.	16.3	17.2	22.0	23.0	30.0	28.0	29.0	27.0
32	Lake Forest Dr.	e/o Towne Centre Dr.	10.0	10.3	17.7	18.5	21.8	20.0	20.2	19.3
33	Lake Forest Dr.	e/o Portola Pkwy.	8.5	8.8	7.2	7.2	11.1	10.7	10.6	10.7
34	El Toro Rd.	w/o Jeronimo Rd.	39.6	40.1	41.7	42.2	41.4	40.9	41.1	40.9
35	El Toro Rd.	e/o Jeronimo Rd.	39.1	39.6	44.6	45.1	46.4	46.7	46.6	45.9
36	El Toro Rd.	e/o Serrano Rd.	33.0	33.5	43.0	43.0	45.0	44.0	45.0	44.0
37	El Toro Rd.	e/o Trabuco Rd.	35.0	35.2	40.2	40.5	45.4	44.9	44.4	44.1
38	El Toro Rd.	w/o Portola Pkwy.	25.5	25.7	29.0	29.0	33.0	33.0	33.0	33.0
39	El Toro Rd.	e/o Portola Pkwy.	14.8	15.1	28.0	28.3	33.8	33.2	33.7	33.2

[1] Source: Nakase Property Traffic Impact Analysis, September 2018.

[2] 2040 General Plan ADT volumes under without Project conditions include those with the currently approved Business Park land use for the Project site. As such, the with Project ADT volumes under 2040 General Plan scenarios result in reductions in ADT volumes since the ADT volumes from the proposed land use are less than the currently approved Business Park use on some roadway segments.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

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

[1] Source: Typical Southern California vehicle mix & County of Orange Land Use/Noise Compatibility Manual, December 1993.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
SR-241[1]	96.92%	1.97%	1.11%	100.00%
All Roadways[2]	97.42%	1.84%	0.74%	100.00%

[1] Source: Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2016.
[2] Source: County of Orange Land Use/Noise Compatibility Manual, December 1993.

6.1.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 6-5. The average daily traffic volumes for SR-241 are based on a 10-percent increase in existing volumes obtained from the Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System 2016 data. (21) Future traffic volumes on City of Lake Forest roadways are based on General Plan Circulation Element roadway capacity volumes by classification. (22) Soft site conditions were used to analyze the traffic noise impacts within the Project study area which account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research by Caltrans shows that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (20)

As previously described, Table 6-3 presents the time of day vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-5: ON-SITE ROADWAY PARAMETERS

Roadway Segment	Lanes	Classification[1]	Future ADT Volume[2]	Speed Limit (mph)[3]	Site Conditions
SR-241	6	Freeway	44,110	70	Soft
Bake Pkwy.	4	Primary	36,000	50	Soft
Rancho Pkwy.	4	Primary (Commercial)	36,000	45	Soft
Lake Forest Dr.	4	Primary	36,000	50	Soft

[1] Road classifications based upon the City of Lake Forest General Plan Circulation Element, Figure C-1.
[2] Roadway volumes were obtained from the City of Lake Forest General Plan Circulation Element, Page 10, Representative Roadway Capacities. The volume for SR-241 is based on 10-percent growth over data obtained from the Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2016.
[3] Posted speed limits. SR-241 speed is based on a conservative 5 mph above the posted speed limit of 65 mph.

The site plan is used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to any intervening noise barriers, and the building façade. The exterior noise level receivers are placed five feet above the pad elevation in outdoor living areas or at the proposed building façade for first-floor exterior noise level analysis. All second-floor receivers are located at a height of 14 feet.

6.2 Operational Reference Noise Levels and Analysis Methods

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. Based upon these reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at each of the sensitive receiver locations identified in Section 9.

6.2.1 Project Reference Operational Noise Levels

This section provides a detailed description of the reference noise level measurements shown on Table 6-6 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements all operating continuously. These noise level impacts will likely vary throughout the day.

<u>Playground and Sports Field Activity</u>

To represent the potential noise level impacts associated with the Project's playgrounds, a reference noise level measurement was collected on Wednesday, October 8th, 2014 at the Founders Park in the unincorporated community of Ladera Ranch in the County of Orange. The reference noise levels collected at the Founders Park are expected to reflect the noise level activities within the playgrounds and tot lots at the Project site, since the reference noise level measurement includes parents speaking on cell phones, kids playing on swing sets, and background girls youth soccer games, with coaches shouting instructions and people cheering

and clapping. Using the uniform reference distance of 50 feet, the reference playground activity noise level is 41.7 dBA L_{50}. The playground activities are estimated to occur for 60 minutes during the peak hour conditions.

Outdoor Pool/Spa Activity

To represent the noise levels associated with pool activities, Urban Crossroads collected a reference noise level measurement on July 5th, 2017 at the Covenant Hill Clubhouse Pool in the unincorporated community of Ladera Ranch in the County of Orange. The measured reference noise level at the uniform 50-foot reference distance is 48.7 dBA L_{50} for pool activity. The pool activity noise levels include kids playing, running, screaming, splashing, playing with a ball, and parents talking. Noise associated with pool activities is expected to occur for the entire hour (60 minutes).

Dog Park Activity

To describe the potential noise level impacts associated with a dog park, a reference noise level measurement was collected on Wednesday, October 8th, 2014 at La Paws Dog Park in the City of Mission Viejo. The reference noise level measurement at the dog park includes people talking, dogs running, playing fetch, chasing each other, growling, barking and dog owners talking on cell phones. As observed during the noise level measurement, the dual entry gate of the La Paws Dog Park was identified as a key source of noise when opened and closed due to metal hinges squeaking and the metal to metal contact with the gate and its closure. At the normalized reference distance of 50 feet from the noise source, the reference noise level is 38.5 dBA L_{50}. The dog park activities are estimated to operate continuously for up to 60 minutes during the peak hour conditions.

School Parking Lot Vehicle Movements

To determine the noise levels associated with school parking lot vehicle movements, including morning drop-off activities, Urban Crossroads collected reference noise level measurements at the Orange Crescent School, adjacent to Hill Elementary School, in the City of Garden Grove on September 19th, 2018. The reference 1-hour noise level measurement indicates that the parking lot vehicle movements generates noise levels of 50.0 dBA L_{50} at a normalized distance of 50 feet. The school parking lot noise levels are mainly due to cars pulling in and out of spaces, parents dropping children off for school, and background traffic noise levels due to queuing cars. Noise associated with parking lot vehicle movements are estimated to operate continuously for up to 60 minutes during the peak hour conditions..

TABLE 6-6: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Noise Source Height (Feet)	Hourly Activity (Mins)[5]	Reference Noise Level (dBA L_{50})	
					@ Ref. Dist.	@ 50 Feet
Playground/Sports Field Activity[1]	00:15:00	5'	4'	60	61.7	41.7
Outdoor Pool/Spa Activity[2]	00:10:00	5'	4'	60	68.7	48.7
Dog Park Activity[3]	00:15:00	5'	4'	60	58.5	38.5
School Parking Lot Vehicle Movements[4]	01:00:00	50'	5'	60	50.0	50.0

[1] As measured by Urban Crossroads, Inc. on 10/8/2014 at the Founder's Park in Ladera Ranch (County of Orange).
[2] As measured by Urban Crossroads, Inc. on 7/5/2017 at the Covenant Hill Clubhouse pool in the unincorporated community of Ladera Ranch in the County of Orange.
[3] As measured by Urban Crossroads, Inc. on 10/8/2014 at the La Paws Dog Park in the City of Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 9/19/2018 at the parking lot for the Orange Crescent School, adjacent to Hill Elementary School.
[5] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site based on the reference noise level measurement activity.

6.2.2 Operational Noise Analysis Methods

The operational noise level calculations provided in this report account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL_1):

$$SPL_2 = SPL_1 - 20\log(D_2/D_1)$$

Where SPL_2 is the resulting noise level after attenuation, SPL_1 is the source noise level, D_2 is the distance to the reference sound pressure level (SPL_1), and D_1 is the distance to the receiver location.

6.3 Construction Reference Noise Levels and Analysis Methods

To describe the Project construction noise levels, reference measurements were collected for similar activities at several construction sites. The construction noise analysis provided in this report was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction.

6.3.1 Project Reference Construction Noise Levels

Table 6-7 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 6-7 have been adjusted to describe a common reference distance of 50 feet. While some of the reference noise level measurements are provided below

for similar activities, the construction noise analysis relies on the highest reference noise level to present a conservative analysis.

Further, the reference noise level measurements below include multiple pieces of construction equipment operating simultaneously. For example, the reference Dozer Activity noise level measurement includes greater dozer use (e.g., moving of dirt in addition to movement of the equipment) during the measurement period than that of the Truck Pass-Bys and Dozer Activity measurement (e.g., truck pass-by and limited dozer movements). As such, the reference noise levels of similar equipment types vary in Table 6-7 depending on the amount of activity at the time of the measurement period.

TABLE 6-7: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L_{eq})	Reference Noise Levels @ 50 Feet (dBA L_{eq})[5]
1	Truck Pass-Bys & Dozer Activity[1]	30'	63.6	59.2
2	Dozer Activity[1]	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities[2]	30'	71.9	67.5
4	Foundation Trenching[2]	30'	72.6	68.2
5	Rough Grading Activities[2]	30'	77.9	73.5
6	Framing[3]	30'	66.7	62.3
7	Concrete Mixer Truck Movements[4]	50'	71.2	71.2
8	Concrete Paver Activities[4]	30'	70.0	65.6
9	Concrete Mixer Pour & Paving Activities[4]	30'	70.3	65.9
10	Concrete Mixer Backup Alarms & Air Brakes[4]	50'	71.6	71.6
11	Concrete Mixer Pour Activities[4]	50'	67.7	67.7

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[5] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

6.3.2 CONSTRUCTION NOISE ANALYSIS METHODS

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

- Demolition
- Grading

- Infrastructure
- Building Construction
- Paving
- Architectural Coating

The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages used in this analysis are consistent with the data used to support the construction emissions in the *Nakase Property Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (23)

6.4 CONSTRUCTION VIBRATION ASSESSMENT METHODOLOGY

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

While vehicular traffic is rarely perceptible, construction activity has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-8. Based on the reference vibration levels provided by the Federal Transit Administration (FTA) for various construction equipment types, it is possible to estimate the potential building damage and human response (annoyance) using the following vibration assessment methods defined by the FTA and Caltrans. To describe the potential vibration impacts, the following equation is used: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 6-8: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

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7 OFF-SITE 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 *Nakase Property Traffic Impact Analysis*. (3) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Conditions Without/With Project: This scenario refers to the existing present-day noise conditions without and with the proposed Project.
- Interim Year 2020 Without/With Project: This scenario refers to Interim Year noise conditions without and with the proposed Project.
- 2040 General Plan With Approved Business Park Land Use Without Portola Extension Without/With Project: This scenario refers to the background noise conditions at future Year 2040 without and with the proposed Project, and includes all cumulative projects identified in the *Traffic Impact Analysis*.
- 2040 General Plan With Approved Business Park Land Use With Portola Extension Without/With Project: This scenario refers to the background noise conditions at future Year 2040 without and with the proposed Project, and includes all cumulative projects identified in the *Traffic Impact Analysis*.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 and 7-8 present a summary of the exterior traffic noise levels, without barrier attenuation, for the 39 study area roadway segments analyzed from the without Project to the with Project conditions under Existing, Interim Year 2020, 2040 General Plan With Approved Business Park Land Use Without Portola Extension, and 2040 General Plan With Approved Business Park Land Use With Portola Extension conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	71.7	78	168	363
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	71.6	77	166	358
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	63.6	RW	RW	87
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	64.7	RW	RW	103
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	73.1	48	104	224
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.1	31	66	142
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	67.4	RW	44	94
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.7	RW	33	72
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	69.1	RW	112	241
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	71.6	90	193	416
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	73.8	107	230	496
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	72.3	85	183	395
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	72.5	87	188	406
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	73.8	107	231	498
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	72.7	91	196	422
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	77.6	193	416	896
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.0	176	379	817
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	76.9	173	372	802
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.1	131	282	608
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	74.9	127	275	592
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.7	106	228	492
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	72.9	78	167	360
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	73.2	81	175	377
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	73.2	82	177	382
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	76.7	84	182	392
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	74.7	61	132	285
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	73.4	102	219	472
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	73.7	106	229	493
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.2	95	206	443
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	72.0	68	147	317
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	74.5	60	129	277
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	72.4	43	93	200
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	70.5	32	70	150
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.6	121	262	564
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	73.5	120	259	559

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	72.8	108	232	499
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	73.4	101	219	471
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	73.1	97	208	448
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	70.7	67	145	312

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	71.8	79	170	367
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	71.7	78	169	363
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	64.3	RW	RW	96
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	65.4	RW	53	115
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	73.5	51	110	238
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.2	31	67	145
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	67.5	RW	44	96
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.8	RW	34	74
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	69.1	RW	113	243
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	71.7	90	195	419
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	73.8	108	233	502
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	72.3	86	185	399
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	72.5	89	191	411
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	73.9	110	236	509
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	72.9	93	200	431
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	77.7	196	421	908
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.1	179	385	829
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.0	176	379	817
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.2	134	289	622
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.1	130	281	605
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.9	110	237	510
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	73.2	82	176	379
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	73.6	86	186	401

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	73.4	84	181	389
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	76.9	87	187	402
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	74.8	63	135	290
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	73.5	103	221	476
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	73.8	107	231	497
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.3	97	208	448
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	72.2	70	150	323
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	74.7	62	133	287
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	72.5	44	95	204
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	70.7	33	71	154
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.6	122	264	568
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	73.6	121	262	564
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	72.9	109	234	504
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	73.4	102	219	473
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	73.1	97	209	450
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	70.8	68	147	316

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: INTERIM YEAR 2020 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	72.6	90	194	418
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	73.2	98	210	453
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	65.8	RW	56	121
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	65.7	RW	55	119
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	74.0	55	119	257
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.1	31	66	142
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	67.5	RW	44	95
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.8	RW	34	74
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	70.0	60	128	276
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	72.2	99	213	458
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	73.9	109	235	506
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	72.6	90	193	416
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	73.7	105	227	489
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	74.0	110	238	513
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	74.5	120	258	556
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	77.7	196	423	911
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.3	183	394	848
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.1	177	382	822
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.4	138	298	642
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.1	130	281	605
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.5	103	223	480
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	73.9	91	197	424
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	73.3	83	179	386
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	73.3	83	179	386
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	76.8	86	184	397
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.5	81	175	377
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.2	115	248	533
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.2	115	248	533
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.5	99	214	461
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	73.0	79	171	369
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	75.8	73	157	338
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	74.8	63	136	293
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	69.8	RW	62	135
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.8	126	271	583
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.1	131	283	610

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	73.9	128	276	595
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.0	111	240	516
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	73.7	105	227	488
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	73.5	103	221	477

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: INTERIM YEAR 2020 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	72.6	90	194	418
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	73.2	98	210	453
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	66.3	RW	61	131
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	66.1	RW	59	128
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	74.0	55	119	257
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.3	31	68	146
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	67.7	RW	45	97
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.8	RW	34	74
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	70.0	60	129	278
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	72.2	99	213	458
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	73.9	109	235	506
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	72.6	90	193	416
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	73.7	105	227	488
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	74.1	113	244	526
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	74.7	123	266	572
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	77.8	198	427	920
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.3	183	395	851
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.1	178	384	827
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.5	139	300	646
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.1	132	285	613
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.7	105	227	489
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	74.0	93	200	432
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	73.5	85	183	395

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	73.5	85	183	395
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	77.0	88	189	407
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.4	80	173	373
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.3	115	248	535
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.3	115	249	536
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.6	101	217	468
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	73.2	81	175	377
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	76.0	75	162	348
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	75.0	65	140	301
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	69.8	RW	62	135
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.9	127	273	588
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.2	132	285	615
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	73.9	128	276	595
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.1	112	241	519
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	73.7	105	227	488
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	73.5	103	223	480

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: 2040 WITHOUT PORTOLA EXT. WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	73.3	100	216	465
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	73.9	109	235	506
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	68.3	RW	84	180
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	67.3	RW	71	152
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	76.8	85	183	394
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.3	31	68	146
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	68.3	RW	50	107
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.8	RW	34	73
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	70.9	68	148	318
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	73.1	112	241	519
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	74.9	127	273	589
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	73.5	103	222	478
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	74.3	116	250	539
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	74.6	122	263	566
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	76.4	161	347	747
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	78.5	222	478	1031
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.5	191	412	887
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.4	188	404	871
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.8	146	315	679
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.4	137	295	636
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	74.0	111	239	515
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	74.4	98	212	457
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	74.6	101	217	468
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	74.2	96	206	444
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	77.3	92	197	425
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.9	86	186	401
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.4	118	254	547
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.3	117	251	542
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.7	102	220	475
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	74.2	96	206	444
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	77.1	90	193	416
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	75.7	72	156	336
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	71.7	39	83	180
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.8	125	269	581
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.3	135	291	626

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	74.1	132	285	614
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.6	121	260	560
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	74.2	115	247	532
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	74.3	116	251	540

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: 2040 WITHOUT PORTOLA EXT. WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	73.3	100	216	465
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	73.9	109	235	506
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	68.1	RW	80	173
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	66.9	RW	67	145
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	76.4	80	172	371
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.3	32	68	147
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	68.2	RW	49	106
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.6	RW	33	71
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	70.9	69	149	320
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	73.1	112	241	519
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	74.8	125	270	581
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	73.4	101	218	470
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	74.3	116	250	539
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	74.5	119	257	553
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	76.3	159	342	738
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	78.5	220	475	1023
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.5	190	410	882
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.4	186	402	866
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.8	145	313	674
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.4	137	295	636
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.9	109	235	506
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	74.3	97	209	450
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	74.3	97	210	452

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	74.2	96	206	444
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	77.3	92	197	425
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.8	86	184	397
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.5	119	257	554
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.4	117	253	545
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.6	102	220	473
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	74.0	92	199	428
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	76.8	86	184	397
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	75.4	68	147	317
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	71.5	38	81	175
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.7	124	267	576
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.3	136	292	629
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	74.0	130	281	605
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.5	120	258	556
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	74.2	115	247	532
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	74.2	115	248	534

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: 2040 WITH PORTOLA EXT. WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	74.3	117	252	543
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	72.1	83	179	386
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	68.3	RW	83	179
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	67.3	RW	71	152
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	76.6	83	179	386
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.2	31	67	145
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	68.1	RW	48	103
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	66.1	RW	35	76
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	71.8	79	171	368
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	73.1	112	241	519
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	74.9	127	273	589
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	73.5	103	222	479
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	74.2	115	248	534
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	73.8	108	232	499
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	76.1	153	329	708
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	78.5	220	475	1023
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.5	190	410	884
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.4	186	402	866
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.8	145	313	674
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.4	137	295	636
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.8	107	231	497
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	74.3	97	208	449
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	74.3	97	210	452
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	74.1	94	202	436
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	77.3	92	197	425
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.9	86	186	400
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.4	118	254	547
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.3	116	250	539
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	75.0	108	234	504
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	74.2	96	206	444
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	77.0	88	189	407
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	75.4	69	148	320
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	71.5	38	81	174
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.7	124	268	578
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.3	135	292	628

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	74.1	132	285	614
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.5	119	256	552
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	74.2	115	247	532
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	74.3	116	250	539

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: 2040 WITH PORTOLA EXT. WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Trabuco Rd.	s/o Bake Pkwy.	Comm./Office/Public/Res.	74.5	119	257	553
2	Trabuco Rd.	s/o Lake Forest Dr.	Commercial/Residential	72.3	85	184	396
3	Rancho Pkwy. S.	s/o Alton Pkwy.	Mixed-Use (Residential)	68.0	RW	79	170
4	Rancho Pkwy. S.	n/o Bake Pkwy.	Business Park	66.9	RW	67	145
5	Rancho Pkwy.	s/o Lake Forest Dr.	Business Park	76.4	80	172	371
6	Towne Centre Dr.	s/o Alton Pkwy.	Commercial	70.4	32	69	148
7	Towne Centre Dr.	s/o Bake Pkwy.	Commercial/Residential	67.9	RW	47	101
8	Towne Centre Dr.	s/o Lake Forest Dr.	Commercial	65.6	RW	33	71
9	Portola Pkwy.	s/o Alton Pkwy.	Commercial/Residential	71.9	80	172	370
10	Portola Pkwy.	n/o Rancho Pkwy.	Commercial/Residential	73.1	112	241	519
11	Santa Margarita Pkwy.	s/o El Toro Rd.	Residential	74.8	125	270	581
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	Residential	73.4	101	218	470
13	Alton Pkwy.	w/o Irvine Bl.	Business Park	74.3	115	248	535
14	Alton Pkwy.	e/o Irvine Bl.	Business Park	73.8	108	232	499
15	Alton Pkwy.	w/o Rancho Pkwy. S.	Residential	76.0	151	324	699
16	Bake Pkwy.	w/o Rockfield Bl.	Business Park	78.5	220	475	1023
17	Bake Pkwy.	e/o Rockfield Bl.	Business Park	77.5	189	408	878
18	Bake Pkwy.	e/o Muirlands Bl.	Business Park/Residential	77.4	186	401	864
19	Bake Pkwy.	e/o Jeronimo Rd.	Business Park/Residential	75.7	144	311	671
20	Bake Pkwy.	e/o Toledo Wy.	Business Park/Residential	75.4	137	295	636
21	Bake Pkwy.	e/o Trabuco Rd.	Business Park	73.8	107	231	497
22	Bake Pkwy.	w/o Dimension Dr.	Light Industrial/Residential	74.2	95	206	443

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
23	Bake Pkwy.	e/o Dimension Dr.	Light Industrial/Residential	74.2	96	206	444
24	Bake Pkwy.	e/o Rancho Pkwy. S.	Business Park	74.2	96	206	444
25	Bake Pkwy.	w/o Towne Centre Dr.	Commercial	77.3	92	197	425
26	Bake Pkwy.	e/o Towne Centre Dr.	Commercial/Residential	76.8	85	184	396
27	Lake Forest Dr.	w/o Serrano Rd.	Residential	74.4	118	254	547
28	Lake Forest Dr.	e/o Serrano Rd.	Commercial/Residential	74.4	117	253	545
29	Lake Forest Dr.	e/o Trabuco Rd.	Commercial/Residential	74.6	102	219	472
30	Lake Forest Dr.	e/o Dimension Dr.	Commercial	74.0	92	199	428
31	Lake Forest Dr.	e/o Rancho Pkwy.	Commercial/Community Park	76.7	84	180	388
32	Lake Forest Dr.	e/o Towne Centre Dr.	Commercial	75.2	67	144	310
33	Lake Forest Dr.	e/o Portola Pkwy.	Light Industrial	71.5	38	81	175
34	El Toro Rd.	w/o Jeronimo Rd.	Commercial/Residential	73.7	124	267	576
35	El Toro Rd.	e/o Jeronimo Rd.	Residential	74.2	134	289	622
36	El Toro Rd.	e/o Serrano Rd.	Commercial/Residential	74.0	130	281	605
37	El Toro Rd.	e/o Trabuco Rd.	Commercial/Residential	74.4	118	255	549
38	El Toro Rd.	w/o Portola Pkwy.	Residential/Regional Park	74.2	115	247	532
39	El Toro Rd.	e/o Portola Pkwy.	Residential/Regional Park	74.2	115	248	534

[1] Source: City of Lake Forest General Plan Land Use Element, Figure LU-1.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The without Project exterior noise levels are expected to range from 63.6 to 77.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 64.3 to 77.7 dBA CNEL. As shown on Table 7-9 the Project will generate a noise level increase of up to 0.7 dBA CNEL on the study area roadway segments. The Project-related noise level increases are considered *less than significant* under Existing with Project conditions at the noise-sensitive land uses adjacent to roadways conveying Project traffic since they would not result in an exceedance of the 3 dBA CNEL increase criteria identified by the *City of Lake Forest CEQA Significance Thresholds Guide* when the with Project noise level exceeds the 65 dBA CNEL noise level standard for sensitive land uses.

7.3 INTERIM YEAR 2020 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-3 presents the Interim Year without Project conditions CNEL noise levels which are expected to range from 65.7 to 77.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Interim Year with Project conditions will range from 65.8 to 77.8 dBA CNEL. As shown on Table 7-10 the Project will generate a noise level increase of up to 0.5 dBA CNEL on the study area roadway segments. The Project-related noise level increases are considered *less than significant* under Interim Year with Project conditions at the noise-sensitive land uses adjacent to roadways conveying Project traffic since they would not result in an exceedance of the 3 dBA CNEL increase criteria identified by the *City of Lake Forest CEQA Significance Thresholds Guide* when the with Project noise level exceeds the 65 dBA CNEL noise level standard for sensitive land uses.

7.4 2040 WITHOUT PORTOLA EXTENSION PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-5 presents the 2040 General Plan With Approved Business Park Land Use Without Portola Extension without Project conditions CNEL noise levels are expected to range from 65.8 to 78.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the 2040 General Plan With Approved Business Park Land Use Without Portola Extension with Project conditions will range from 65.6 to 78.5 dBA CNEL. As shown on Table 7-11 the Project will generate a noise level increase of up to 0.1 dBA CNEL on the study area roadway segments. The Project-related noise level increases are considered *less than significant* under 2040 General Plan With Approved Business Park Land Use Without Portola Extension with Project conditions at the noise-sensitive land uses adjacent to roadways conveying Project traffic since they would not result in an exceedance of the 3 dBA CNEL increase criteria identified by the *City of Lake Forest CEQA Significance Thresholds Guide* when the with Project noise level exceeds the 65 dBA CNEL noise level standard for sensitive land uses.

7.5 2040 WITH PORTOLA EXTENSION PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-5 presents the 2040 General Plan With Approved Business Park Land Use With Portola Extension without Project conditions CNEL noise levels are expected to range from 66.1 to 78.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the 2040 General Plan With Approved Business Park Land Use With Portola Extension with Project conditions will range from 65.6 to 78.5 dBA CNEL. As shown on Table 7-11 the Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. The Project-related noise level increases are considered *less than significant* under 2040 General Plan With Approved Business Park Land Use With Portola Extension with Project conditions at the noise-sensitive land uses adjacent to roadways conveying Project traffic since they would not result in an exceedance of the 3 dBA CNEL increase criteria identified by the *City of Lake Forest CEQA Significance Thresholds Guide* when the with Project noise level exceeds the 65 dBA CNEL noise level standard for sensitive land uses.

TABLE 7-9: EXISTING PLUS PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Without Proj. Noise Level Exceeds Standard?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition			
1	Trabuco Rd.	s/o Bake Pkwy.	71.7	71.8	0.1	Yes	Yes	No
2	Trabuco Rd.	s/o Lake Forest Dr.	71.6	71.7	0.1	Yes	Yes	No
3	Rancho Pkwy. S.	s/o Alton Pkwy.	63.6	64.3	0.6	Yes	No	No
4	Rancho Pkwy. S.	n/o Bake Pkwy.	64.7	65.4	0.7	No	-	No
5	Rancho Pkwy.	s/o Lake Forest Dr.	73.1	73.5	0.4	No	-	No
6	Towne Centre Dr.	s/o Alton Pkwy.	70.1	70.2	0.1	No	-	No
7	Towne Centre Dr.	s/o Bake Pkwy.	67.4	67.5	0.1	Yes	Yes	No
8	Towne Centre Dr.	s/o Lake Forest Dr.	65.7	65.8	0.2	No	-	No
9	Portola Pkwy.	s/o Alton Pkwy.	69.1	69.1	0.1	Yes	Yes	No
10	Portola Pkwy.	n/o Rancho Pkwy.	71.6	71.7	0.1	Yes	Yes	No
11	Santa Margarita Pkwy.	s/o El Toro Rd.	73.8	73.8	0.1	Yes	Yes	No
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	72.3	72.3	0.1	Yes	Yes	No
13	Alton Pkwy.	w/o Irvine Bl.	72.5	72.5	0.1	No	-	No
14	Alton Pkwy.	e/o Irvine Bl.	73.8	73.9	0.1	No	-	No
15	Alton Pkwy.	w/o Rancho Pkwy. S.	72.7	72.9	0.1	Yes	Yes	No
16	Bake Pkwy.	w/o Rockfield Bl.	77.6	77.7	0.1	No	-	No
17	Bake Pkwy.	e/o Rockfield Bl.	77.0	77.1	0.1	No	-	No
18	Bake Pkwy.	e/o Muirlands Bl.	76.9	77.0	0.1	Yes	Yes	No
19	Bake Pkwy.	e/o Jeronimo Rd.	75.1	75.2	0.1	Yes	Yes	No
20	Bake Pkwy.	e/o Toledo Wy.	74.9	75.1	0.1	Yes	Yes	No
21	Bake Pkwy.	e/o Trabuco Rd.	73.7	73.9	0.2	No	-	No
22	Bake Pkwy.	w/o Dimension Dr.	72.9	73.2	0.3	Yes	Yes	No
23	Bake Pkwy.	e/o Dimension Dr.	73.2	73.6	0.4	Yes	Yes	No
24	Bake Pkwy.	e/o Rancho Pkwy. S.	73.2	73.4	0.1	No	-	No
25	Bake Pkwy.	w/o Towne Centre Dr.	76.7	76.9	0.2	No	-	No
26	Bake Pkwy.	e/o Towne Centre Dr.	74.7	74.8	0.1	Yes	Yes	No
27	Lake Forest Dr.	w/o Serrano Rd.	73.4	73.5	0.1	Yes	Yes	No
28	Lake Forest Dr.	e/o Serrano Rd.	73.7	73.8	0.1	Yes	Yes	No
29	Lake Forest Dr.	e/o Trabuco Rd.	74.2	74.3	0.1	Yes	Yes	No
30	Lake Forest Dr.	e/o Dimension Dr.	72.0	72.2	0.1	No	-	No
31	Lake Forest Dr.	e/o Rancho Pkwy.	74.5	74.7	0.2	Yes	Yes	No
32	Lake Forest Dr.	e/o Towne Centre Dr.	72.4	72.5	0.1	No	-	No
33	Lake Forest Dr.	e/o Portola Pkwy.	70.5	70.7	0.2	No	-	No
34	El Toro Rd.	w/o Jeronimo Rd.	73.6	73.6	0.1	Yes	Yes	No
35	El Toro Rd.	e/o Jeronimo Rd.	73.5	73.6	0.1	Yes	Yes	No
36	El Toro Rd.	e/o Serrano Rd.	72.8	72.9	0.1	Yes	Yes	No
37	El Toro Rd.	e/o Trabuco Rd.	73.4	73.4	0.0	Yes	Yes	No
38	El Toro Rd.	w/o Portola Pkwy.	73.1	73.1	0.0	Yes	Yes	No
39	El Toro Rd.	e/o Portola Pkwy.	70.7	70.8	0.1	Yes	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Does the without Project off-site traffic noise level already exceed the City of Lake Forest 65 dBA CNEL exterior noise level standard at adjacent noise-sensitive land uses?
[3] Significance Criteria (Section 4).

TABLE 7-10: INTERIM YEAR PLUS PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Without Proj. Noise Level Exceeds Standard?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition			
1	Trabuco Rd.	s/o Bake Pkwy.	72.6	72.6	0.0	Yes	Yes	No
2	Trabuco Rd.	s/o Lake Forest Dr.	73.2	73.2	0.0	Yes	Yes	No
3	Rancho Pkwy. S.	s/o Alton Pkwy.	65.8	66.3	0.5	Yes	Yes	No
4	Rancho Pkwy. S.	n/o Bake Pkwy.	65.7	66.1	0.5	No	-	No
5	Rancho Pkwy.	s/o Lake Forest Dr.	74.0	74.0	0.0	No	-	No
6	Towne Centre Dr.	s/o Alton Pkwy.	70.1	70.3	0.2	No	-	No
7	Towne Centre Dr.	s/o Bake Pkwy.	67.5	67.7	0.2	Yes	Yes	No
8	Towne Centre Dr.	s/o Lake Forest Dr.	65.8	65.8	0.0	No	-	No
9	Portola Pkwy.	s/o Alton Pkwy.	70.0	70.0	0.0	Yes	Yes	No
10	Portola Pkwy.	n/o Rancho Pkwy.	72.2	72.2	0.0	Yes	Yes	No
11	Santa Margarita Pkwy.	s/o El Toro Rd.	73.9	73.9	0.0	Yes	Yes	No
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	72.6	72.6	0.0	Yes	Yes	No
13	Alton Pkwy.	w/o Irvine Bl.	73.7	73.7	0.0	No	-	No
14	Alton Pkwy.	e/o Irvine Bl.	74.0	74.1	0.2	No	-	No
15	Alton Pkwy.	w/o Rancho Pkwy. S.	74.5	74.7	0.2	Yes	Yes	No
16	Bake Pkwy.	w/o Rockfield Bl.	77.7	77.8	0.1	No	-	No
17	Bake Pkwy.	e/o Rockfield Bl.	77.3	77.3	0.0	No	-	No
18	Bake Pkwy.	e/o Muirlands Bl.	77.1	77.1	0.0	Yes	Yes	No
19	Bake Pkwy.	e/o Jeronimo Rd.	75.4	75.5	0.0	Yes	Yes	No
20	Bake Pkwy.	e/o Toledo Wy.	75.1	75.1	0.1	Yes	Yes	No
21	Bake Pkwy.	e/o Trabuco Rd.	73.5	73.7	0.1	No	-	No
22	Bake Pkwy.	w/o Dimension Dr.	73.9	74.0	0.1	Yes	Yes	No
23	Bake Pkwy.	e/o Dimension Dr.	73.3	73.5	0.1	Yes	Yes	No
24	Bake Pkwy.	e/o Rancho Pkwy. S.	73.3	73.5	0.1	No	-	No
25	Bake Pkwy.	w/o Towne Centre Dr.	76.8	77.0	0.2	No	-	No
26	Bake Pkwy.	e/o Towne Centre Dr.	76.5	76.4	0.0	Yes	Yes	No
27	Lake Forest Dr.	w/o Serrano Rd.	74.2	74.3	0.0	Yes	Yes	No
28	Lake Forest Dr.	e/o Serrano Rd.	74.2	74.3	0.0	Yes	Yes	No
29	Lake Forest Dr.	e/o Trabuco Rd.	74.5	74.6	0.1	Yes	Yes	No
30	Lake Forest Dr.	e/o Dimension Dr.	73.0	73.2	0.2	No	-	No
31	Lake Forest Dr.	e/o Rancho Pkwy.	75.8	76.0	0.2	Yes	Yes	No
32	Lake Forest Dr.	e/o Towne Centre Dr.	74.8	75.0	0.2	No	-	No
33	Lake Forest Dr.	e/o Portola Pkwy.	69.8	69.8	0.0	No	-	No
34	El Toro Rd.	w/o Jeronimo Rd.	73.8	73.9	0.1	Yes	Yes	No
35	El Toro Rd.	e/o Jeronimo Rd.	74.1	74.2	0.0	Yes	Yes	No
36	El Toro Rd.	e/o Serrano Rd.	73.9	73.9	0.0	Yes	Yes	No
37	El Toro Rd.	e/o Trabuco Rd.	74.0	74.1	0.0	Yes	Yes	No
38	El Toro Rd.	w/o Portola Pkwy.	73.7	73.7	0.0	Yes	Yes	No
39	El Toro Rd.	e/o Portola Pkwy.	73.5	73.5	0.0	Yes	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Does the without Project off-site traffic noise level already exceed the City of Lake Forest 65 dBA CNEL exterior noise level standard at adjacent noise-sensitive land uses?
[3] Significance Criteria (Section 4).

TABLE 7-11: 2040 WITHOUT PORTOLA EXT. PLUS PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Without Proj. Noise Level Exceeds Standard?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition			
1	Trabuco Rd.	s/o Bake Pkwy.	73.3	73.3	0.0	Yes	Yes	No
2	Trabuco Rd.	s/o Lake Forest Dr.	73.9	73.9	0.0	Yes	Yes	No
3	Rancho Pkwy. S.	s/o Alton Pkwy.	68.3	68.1	0.0	Yes	Yes	No
4	Rancho Pkwy. S.	n/o Bake Pkwy.	67.3	66.9	0.0	No	-	No
5	Rancho Pkwy.	s/o Lake Forest Dr.	76.8	76.4	0.0	No	-	No
6	Towne Centre Dr.	s/o Alton Pkwy.	70.3	70.3	0.0	No	-	No
7	Towne Centre Dr.	s/o Bake Pkwy.	68.3	68.2	0.0	Yes	Yes	No
8	Towne Centre Dr.	s/o Lake Forest Dr.	65.8	65.6	0.0	No	-	No
9	Portola Pkwy.	s/o Alton Pkwy.	70.9	70.9	0.1	Yes	Yes	No
10	Portola Pkwy.	n/o Rancho Pkwy.	73.1	73.1	0.0	Yes	Yes	No
11	Santa Margarita Pkwy.	s/o El Toro Rd.	74.9	74.8	0.0	Yes	Yes	No
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	73.5	73.4	0.0	Yes	Yes	No
13	Alton Pkwy.	w/o Irvine Bl.	74.3	74.3	0.0	No	-	No
14	Alton Pkwy.	e/o Irvine Bl.	74.6	74.5	0.0	No	-	No
15	Alton Pkwy.	w/o Rancho Pkwy. S.	76.4	76.3	0.0	Yes	Yes	No
16	Bake Pkwy.	w/o Rockfield Bl.	78.5	78.5	0.0	No	-	No
17	Bake Pkwy.	e/o Rockfield Bl.	77.5	77.5	0.0	No	-	No
18	Bake Pkwy.	e/o Muirlands Bl.	77.4	77.4	0.0	Yes	Yes	No
19	Bake Pkwy.	e/o Jeronimo Rd.	75.8	75.8	0.0	Yes	Yes	No
20	Bake Pkwy.	e/o Toledo Wy.	75.4	75.4	0.0	Yes	Yes	No
21	Bake Pkwy.	e/o Trabuco Rd.	74.0	73.9	0.0	No	-	No
22	Bake Pkwy.	w/o Dimension Dr.	74.4	74.3	0.0	Yes	Yes	No
23	Bake Pkwy.	e/o Dimension Dr.	74.6	74.3	0.0	Yes	Yes	No
24	Bake Pkwy.	e/o Rancho Pkwy. S.	74.2	74.2	0.0	No	-	No
25	Bake Pkwy.	w/o Towne Centre Dr.	77.3	77.3	0.0	No	-	No
26	Bake Pkwy.	e/o Towne Centre Dr.	76.9	76.8	0.0	Yes	Yes	No
27	Lake Forest Dr.	w/o Serrano Rd.	74.4	74.5	0.1	Yes	Yes	No
28	Lake Forest Dr.	e/o Serrano Rd.	74.3	74.4	0.0	Yes	Yes	No
29	Lake Forest Dr.	e/o Trabuco Rd.	74.7	74.6	0.0	Yes	Yes	No
30	Lake Forest Dr.	e/o Dimension Dr.	74.2	74.0	0.0	No	-	No
31	Lake Forest Dr.	e/o Rancho Pkwy.	77.1	76.8	0.0	Yes	Yes	No
32	Lake Forest Dr.	e/o Towne Centre Dr.	75.7	75.4	0.0	No	-	No
33	Lake Forest Dr.	e/o Portola Pkwy.	71.7	71.5	0.0	No	-	No
34	El Toro Rd.	w/o Jeronimo Rd.	73.8	73.7	0.0	Yes	Yes	No
35	El Toro Rd.	e/o Jeronimo Rd.	74.3	74.3	0.0	Yes	Yes	No
36	El Toro Rd.	e/o Serrano Rd.	74.1	74.0	0.0	Yes	Yes	No
37	El Toro Rd.	e/o Trabuco Rd.	74.6	74.5	0.0	Yes	Yes	No
38	El Toro Rd.	w/o Portola Pkwy.	74.2	74.2	0.0	Yes	Yes	No
39	El Toro Rd.	e/o Portola Pkwy.	74.3	74.2	0.0	Yes	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Does the without Project off-site traffic noise level already exceed the City of Lake Forest 65 dBA CNEL exterior noise level standard at adjacent noise-sensitive land uses?
[3] Significance Criteria (Section 4).

TABLE 7-12: 2040 WITH PORTOLA EXT. PLUS PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Without Proj. Noise Level Exceeds Standard?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition			
1	Trabuco Rd.	s/o Bake Pkwy.	74.3	74.5	0.1	Yes	Yes	No
2	Trabuco Rd.	s/o Lake Forest Dr.	72.1	72.3	0.2	Yes	Yes	No
3	Rancho Pkwy. S.	s/o Alton Pkwy.	68.3	68.0	0.0	Yes	Yes	No
4	Rancho Pkwy. S.	n/o Bake Pkwy.	67.3	66.9	0.0	No	-	No
5	Rancho Pkwy.	s/o Lake Forest Dr.	76.6	76.4	0.0	No	-	No
6	Towne Centre Dr.	s/o Alton Pkwy.	70.2	70.4	0.1	No	-	No
7	Towne Centre Dr.	s/o Bake Pkwy.	68.1	67.9	0.0	Yes	Yes	No
8	Towne Centre Dr.	s/o Lake Forest Dr.	66.1	65.6	0.0	No	-	No
9	Portola Pkwy.	s/o Alton Pkwy.	71.8	71.9	0.0	Yes	Yes	No
10	Portola Pkwy.	n/o Rancho Pkwy.	73.1	73.1	0.0	Yes	Yes	No
11	Santa Margarita Pkwy.	s/o El Toro Rd.	74.9	74.8	0.0	Yes	Yes	No
12	Santa Margarita Pkwy.	s/o Los Alisos Bl.	73.5	73.4	0.0	Yes	Yes	No
13	Alton Pkwy.	w/o Irvine Bl.	74.2	74.3	0.0	No	-	No
14	Alton Pkwy.	e/o Irvine Bl.	73.8	73.8	0.0	No	-	No
15	Alton Pkwy.	w/o Rancho Pkwy. S.	76.1	76.0	0.0	Yes	Yes	No
16	Bake Pkwy.	w/o Rockfield Bl.	78.5	78.5	0.0	No	-	No
17	Bake Pkwy.	e/o Rockfield Bl.	77.5	77.5	0.0	No	-	No
18	Bake Pkwy.	e/o Muirlands Bl.	77.4	77.4	0.0	Yes	Yes	No
19	Bake Pkwy.	e/o Jeronimo Rd.	75.8	75.7	0.0	Yes	Yes	No
20	Bake Pkwy.	e/o Toledo Wy.	75.4	75.4	0.0	Yes	Yes	No
21	Bake Pkwy.	e/o Trabuco Rd.	73.8	73.8	0.0	No	-	No
22	Bake Pkwy.	w/o Dimension Dr.	74.3	74.2	0.0	Yes	Yes	No
23	Bake Pkwy.	e/o Dimension Dr.	74.3	74.2	0.0	Yes	Yes	No
24	Bake Pkwy.	e/o Rancho Pkwy. S.	74.1	74.2	0.1	No	-	No
25	Bake Pkwy.	w/o Towne Centre Dr.	77.3	77.3	0.0	No	-	No
26	Bake Pkwy.	e/o Towne Centre Dr.	76.9	76.8	0.0	Yes	Yes	No
27	Lake Forest Dr.	w/o Serrano Rd.	74.4	74.4	0.0	Yes	Yes	No
28	Lake Forest Dr.	e/o Serrano Rd.	74.3	74.4	0.1	Yes	Yes	No
29	Lake Forest Dr.	e/o Trabuco Rd.	75.0	74.6	0.0	Yes	Yes	No
30	Lake Forest Dr.	e/o Dimension Dr.	74.2	74.0	0.0	No	-	No
31	Lake Forest Dr.	e/o Rancho Pkwy.	77.0	76.7	0.0	Yes	Yes	No
32	Lake Forest Dr.	e/o Towne Centre Dr.	75.4	75.2	0.0	No	-	No
33	Lake Forest Dr.	e/o Portola Pkwy.	71.5	71.5	0.0	No	-	No
34	El Toro Rd.	w/o Jeronimo Rd.	73.7	73.7	0.0	Yes	Yes	No
35	El Toro Rd.	e/o Jeronimo Rd.	74.3	74.2	0.0	Yes	Yes	No
36	El Toro Rd.	e/o Serrano Rd.	74.1	74.0	0.0	Yes	Yes	No
37	El Toro Rd.	e/o Trabuco Rd.	74.5	74.4	0.0	Yes	Yes	No
38	El Toro Rd.	w/o Portola Pkwy.	74.2	74.2	0.0	Yes	Yes	No
39	El Toro Rd.	e/o Portola Pkwy.	74.3	74.2	0.0	Yes	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Does the without Project off-site traffic noise level already exceed the City of Lake Forest 65 dBA CNEL exterior noise level standard at adjacent noise-sensitive land uses?
[3] Significance Criteria (Section 4).

8 ON-SITE NOISE IMPACTS

A noise impact analysis has been completed to determine the noise exposure levels that would result from adjacent and dominant traffic noise sources in the Project study area, and to identify potential noise mitigation measures that would achieve acceptable Project exterior and interior noise levels. The primary source of traffic noise affecting the Project site is anticipated to be from SR-241, Bake Parkway, Rancho Parkway, and Lake Forest Drive. The Project will also experience some background traffic noise impacts from the Project's internal local streets, however, due to the low traffic volume and low speeds of vehicles transiting into the Project site, traffic noise from these roadways will not make a significant contribution to the noise environment beyond of the right-of-way.

8.1 EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model, and the parameters outlined in Section 6, the expected future exterior noise levels are calculated at the noise-sensitive residential and school uses within the Project site. Table 8-1 presents a summary of future exterior noise level impacts at the outdoor areas (e.g., residential private yards and school playgrounds and picnic areas) and first-floor building façade receiver locations. Table 8-1 presents a summary of future exterior noise level impacts with the planned 6-foot high noise barriers. The on-site traffic noise analysis calculations are provided in Appendix 8.1.

The future exterior traffic noise levels are shown to range from 51.6 to 64.7 dBA CNEL at the outdoor areas (e.g., residential private yards and school playground and picnic areas) within the Project site with the planned 6-foot high noise barriers for residential uses. No exterior noise barriers are required to satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standard at the school outdoor playground and picnic areas. Therefore, no exterior noise mitigation is required to satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standards for residential and school land uses. With the planned noise barriers shown on Exhibit ES-A, the future exterior noise levels are considered to be a *less than significant* noise impact. This noise analysis shows that the planned noise barriers will satisfy the City of Lake Forest 65 dBA CNEL exterior noise level standards. The effective noise barrier height represents the minimum wall and/or berm combination height to satisfy the City of Lake Forest exterior noise level standards.

TABLE 8-1: UNMITIGATED EXTERIOR TRAFFIC NOISE LEVELS

On-Site Receiver Location	Roadway	Individual Noise Level With Any Planned Barriers (dBA CNEL)	Total Noise Level With Any Planned Barriers (dBA CNEL)	Exterior Noise Level Threshold (dBA CNEL)	Threshold Exceeded?
Senior Affordable	Bake Pkwy.	55.7	55.7	65	No
Neighborhood 1	Bake Pkwy.	63.1	63.1	65	No
School Playground	Bake Pkwy.	63.1	63.1	65	No
School Picnic Area	SR-241	56.1	64.7	65	No
	Bake Pkwy.	64.0			
School Classroom Building	SR-241	57.0	59.9	65	No
	Rancho Pkwy.	56.8			
School Outdoor Learning Area	SR-241	56.0	61.2	65	No
	Rancho Pkwy.	59.6			
Neighborhood 3	SR-241	53.3	59.9	65	No
	Rancho Pkwy.	56.6			
	Lake Forest Dr.	54.8			
Neighborhood 4	Lake Forest Dr.	51.6	51.6	65	No

8.2 INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Lake Forest interior noise level standards, future noise levels were calculated at the first to fifth-floor building façades.

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (7; 24) However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

8.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Tables 8-2 and 8-3 show that the Project buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 8-2 shows that the future exterior noise levels at the first-floor building façades are expected to range from 51.7 to 62.2 dBA CNEL. The first-floor interior noise level analysis shows that the City of Lake Forest 45 dBA CNEL

residential and school interior noise level standard can be satisfied using standard windows and sliding glass doors with minimum STC ratings of 27.

Table 8-3 shows that the future exterior noise levels at the second-floor building façades are expected to range from 56.9 to 69.2 dBA CNEL. The second-floor interior noise level analysis shows that the City of Lake Forest 45 dBA CNEL residential and school interior noise level standard can be satisfied using standard windows and sliding glass doors with minimum STC ratings of 27. Therefore, impacts related to interior noise levels are *less than significant* and a final noise study will be required as indicated below.

A final noise study shall be prepared prior to obtaining building permits for the Project consistent with the *City of Lake Forest CEQA Significance Thresholds Guide*, Page 19. (2) This report would finalize the measures described in this study using the precise grading plans, architectural floor plans and elevations, and actual building design specifications, and may include additional measures, if necessary, to meet the City of Lake Forest 45 dBA CNEL interior noise level standard.

TABLE 8-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
Senior Affordable	57.0	12.0	25	No	32.0	45	No
Neighborhood 1	62.2	17.2	25	No	37.2	45	No
School Classroom Building	59.9	14.9	25	No	34.9	45	No
Neighborhood 3	60.6	15.6	25	No	35.6	45	No
Neighborhood 4	51.7	6.7	25	No	26.7	45	No

[1] Exterior noise level at the facade with a windows-closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction to satisfy the interior noise standard of 45 dBA CNEL for residential use.
[3] Minimum interior noise reduction with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

TABLE 8-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
Senior Affordable	67.7	22.7	25	No	42.7	45	No
Neighborhood 1	69.2	24.2	25	No	44.2	45	No
School Classroom Building	67.0	22.0	25	No	42.0	45	No
Neighborhood 3	68.8	23.8	25	No	43.8	45	No
Neighborhood 4	56.9	11.9	25	No	31.9	45	No

[1] Exterior noise level at the facade with a windows-closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction to satisfy the interior noise standard of 45 dBA CNEL for residential use.
[3] Minimum interior noise reduction with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following receiver locations as shown on Exhibit 9-A were identified as representative locations for focused analysis based on the *City of Lake Forest CEQA Significance Thresholds Guide* which defines noise-sensitive uses as *residential (single-family, multi-family, mobile home); hotels; motels; nursing homes; hospitals; parks, playgrounds and recreation areas; and schools*. (2) Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Sensitive receivers near the Project site include existing residential homes, hotels, and the existing Serrano Creek trail area, as described below. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this report will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures.

R1: Located approximately 197 feet north of the Project site, R1 represents existing residential homes north of Bake Parkway. A 24-hour noise level measurement was taken near this location, L6, to describe the existing ambient noise environment.

R2: Location R2 represents existing Staybridge Suites hotel north of the Project site at roughly 264 feet across Bake Parkway. A 24-hour noise level measurement was taken near this location, L7, to describe the existing ambient noise environment.

R3: Location R3 represents existing Extended Stay America hotel southeast of the Project site at approximately 216 feet on Lake Forest Drive. A 24-hour noise level measurement was taken near this location, L2, to describe the existing ambient noise environment.

R4: Location R4 represents existing Serrano Creek trail area adjacent to the southern Project site boundary at approximately 80 feet southeast. A 24-hour noise level measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS

LEGEND:

- Receiver Locations
- Distance from receiver to Project site boundary (in feet)
- 6' Existing Barrier Height (in feet)
- Existing Barrier

10 OPERATIONAL IMPACTS

This section analyzes the potential operational noise impacts due to the Project's stationary noise sources on the off-site sensitive receiver locations identified in Section 9. Exhibit 10-A identifies the receiver locations and noise source locations used to assess the Project-related operational noise levels.

10.1 OPERATIONAL NOISE LEVELS

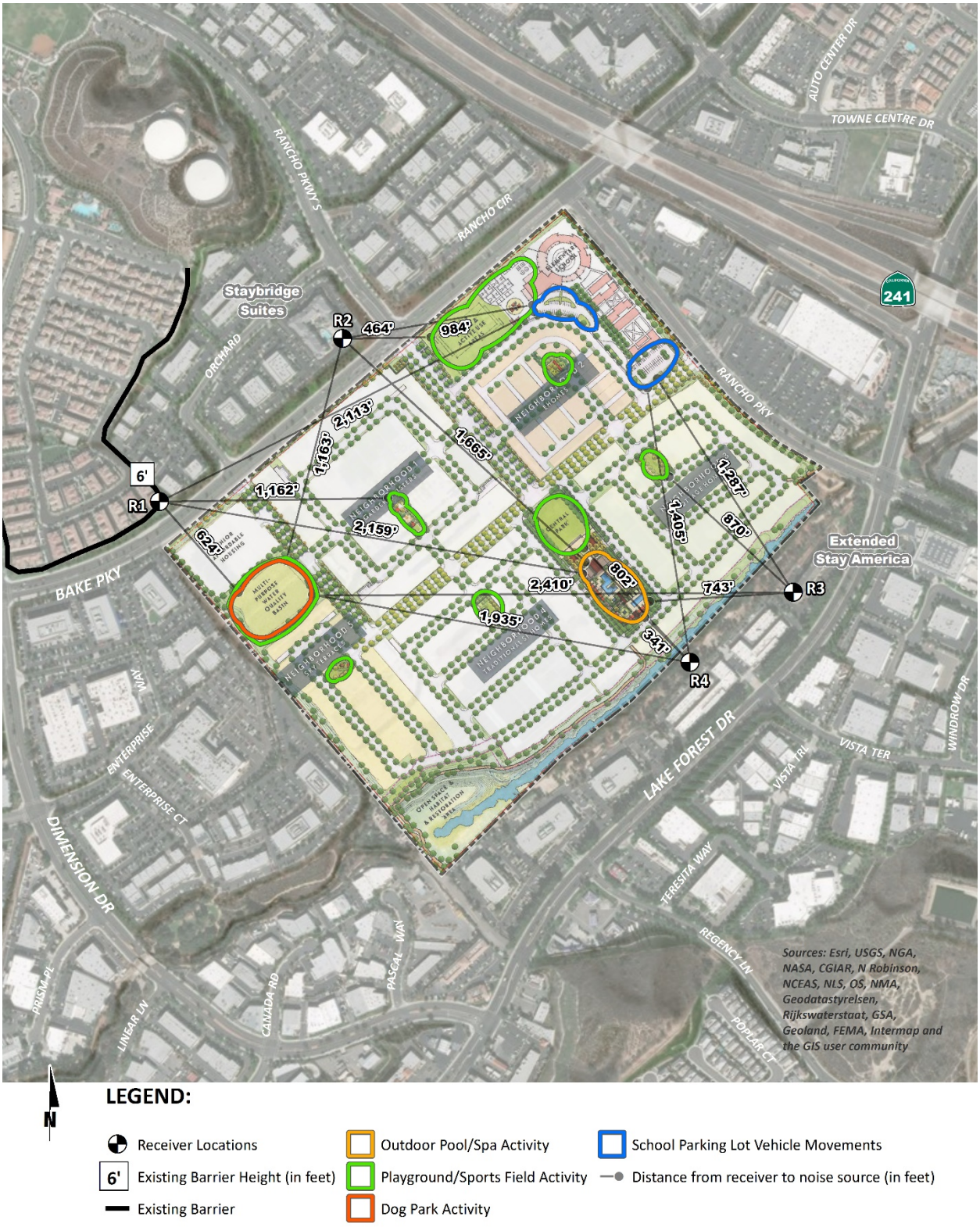
Table 10-1 indicates that the hourly noise levels associated with the playgrounds, sports fields, outdoor pool/spa activities, a dog park, and school parking lot vehicle movements are expected to range from 17.9 to 32.5 dBA L_{50} at the sensitive off-site receiver locations. The operational noise level calculation worksheets are included in Appendix 10.1 and include barrier attenuation provided by existing noise barriers in the Project study area, previously shown on Exhibit 10-A.

TABLE 10-1: UNMITIGATED PROJECT OPERATIONAL NOISE LEVELS

Receiver Location[1]	Noise Source[2]	Project Operational Noise Levels (dBA)[3]				
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (<1 min)
R1	Playground/Sports Field Activity	13.7	16.1	19.0	21.7	25.9
	Outdoor Pool/Spa Activity	10.4	13.4	16.7	19.8	25.2
	Dog Park Activity	10.4	12.9	17.1	24.5	30.5
	School Parking Lot Vehicle Movements	12.0	17.0	23.0	27.0	45.9
	Combined Noise Level:	**17.9**	**21.2**	**25.8**	**30.1**	**46.1**
R2	Playground/Sports Field Activity	22.3	24.7	27.6	30.3	34.5
	Outdoor Pool/Spa Activity	18.3	21.3	24.6	27.7	33.1
	Dog Park Activity	11.2	13.7	17.9	25.3	31.3
	School Parking Lot Vehicle Movements	24.1	29.1	35.1	39.1	58.0
	Combined Noise Level:	**27.1**	**31.0**	**36.2**	**40.1**	**58.0**
R3	Playground/Sports Field Activity	16.9	19.3	22.2	24.9	29.1
	Outdoor Pool/Spa Activity	25.3	28.3	31.6	34.7	40.1
	Dog Park Activity	4.8	7.3	11.5	18.9	24.9
	School Parking Lot Vehicle Movements	21.8	26.8	32.8	36.8	55.7
	Combined Noise Level:	**27.3**	**31.0**	**35.5**	**39.1**	**55.8**
R4	Playground/Sports Field Activity	17.6	20.0	22.9	25.6	29.8
	Outdoor Pool/Spa Activity	32.0	35.0	38.3	41.4	46.8
	Dog Park Activity	6.7	9.2	13.4	20.8	26.8
	School Parking Lot Vehicle Movements	21.0	26.0	32.0	36.0	54.9
	Combined Noise Level:	**32.5**	**35.6**	**39.3**	**42.6**	**55.5**

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Reference noise sources as shown on Table 6-6.
[3] Operational noise level calculations are provided in Appendix 10.1.

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE AND RECEIVER LOCATIONS



10.2 UNMITIGATED OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level threshold based on the City of Lake Forest exterior noise level standards. Table 10-2 shows the operational noise levels associated with Nakase Property Project will satisfy the City of Lake Forest Municipal Code daytime and nighttime exterior noise level standards at all receiver locations, and therefore, are considered a *less than significant* noise impact.

TABLE 10-2: UNMITIGATED OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use	Noise Level at Receiver Locations (dBA)[2]					Threshold Exceeded?[3]
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (<1 min)	
Daytime	**Residential Standards**	**55**	**60**	**65**	**70**	**75**	**-**
Nighttime		**50**	**55**	**60**	**65**	**70**	**-**
R1	Residential	17.9	21.2	25.8	30.1	46.1	No
R2	Hotel	27.1	31.0	36.2	40.1	58.0	No
R3	Hotel	27.3	31.0	35.5	39.1	55.8	No
R4	Recreation	32.5	35.6	39.3	42.6	55.5	No

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Estimated unmitigated Project operational noise levels as shown on Table 10-1.
[3] Do the estimated Project operational noise levels meet the operational noise level standards (Table 3-1)?

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11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction activity boundaries in relation to the nearby sensitive receiver locations.

EXHIBIT 11-A: CONSTRUCTION ACTIVITY AND RECEIVER LOCATIONS

11.1 CONSTRUCTION NOISE ANALYSIS

Tables 11-1 to 11-6 show the Project construction stages and the reference construction noise levels used for each stage. Table 11-7 provides a summary of the noise levels from each stage of construction at each of the sensitive receiver locations. Based on the reference construction noise levels, the Project-related construction noise levels when the highest reference noise level is operating at the edge of primary construction activity nearest each sensitive receiver location will range from 53.3 to 65.2 dBA L_{eq} at the sensitive receiver locations, as shown on Table 11-7.

TABLE 11-1: DEMOLITION ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	64.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	44.0
R2	304'	-15.7	0.0	48.5
R3	266'	-14.5	0.0	49.6
R4	130'	-8.3	0.0	55.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

TABLE 11-2: GRADING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	73.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	53.3
R2	304'	-15.7	0.0	57.8
R3	266'	-14.5	0.0	58.9
R4	130'	-8.3	0.0	65.2

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

TABLE 11-3: INFRASTRUCTURE ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	64.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	44.0
R2	304'	-15.7	0.0	48.5
R3	266'	-14.5	0.0	49.6
R4	130'	-8.3	0.0	55.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

TABLE 11-4: BUILDING CONSTRUCTION ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Framing	62.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	68.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	48.0
R2	304'	-15.7	0.0	52.5
R3	266'	-14.5	0.0	53.6
R4	130'	-8.3	0.0	59.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

TABLE 11-5: PAVING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	51.5
R2	304'	-15.7	0.0	55.9
R3	266'	-14.5	0.0	57.1
R4	130'	-8.3	0.0	63.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

TABLE 11-6: ARCHITECTURAL COATING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Framing	62.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	68.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Calculated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	266'	-14.5	-5.6	48.0
R2	304'	-15.7	0.0	52.5
R3	266'	-14.5	0.0	53.6
R4	130'	-8.3	0.0	59.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Calculated barrier attenuation from existing barriers in the Project study area (Appendix 10.1).

11.2 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the closest point from the edge of primary construction activity to each of the nearby receiver locations. As shown on Table 11-7, the unmitigated construction noise levels are expected to range from 53.3 to 65.2 dBA L_{eq} at the nearby receiver locations.

TABLE 11-7: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels by Stage (dBA L_{eq})						
	Demolition	Grading	Infrastructure	Building Construction	Paving	Architectural Coating	Highest Construction Noise Level[2]
R1	44.0	53.3	44.0	48.0	51.5	48.0	53.3
R2	48.5	57.8	48.5	52.5	55.9	52.5	57.8
R3	49.6	58.9	49.6	53.6	57.1	53.6	58.9
R4	55.9	65.2	55.9	59.9	63.3	59.9	65.2

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Estimated construction noise levels during peak operating conditions.

Table 11-8 shows the highest construction noise levels at the potentially impacted receiver locations are expected to approach 65.2 dBA L_{eq} and, therefore, will satisfy the construction noise level threshold of 85 dBA L_{eq} at all receiver locations. The noise impact due to unmitigated Project construction noise levels is, therefore, considered a *less than significant* impact at all receiver locations.

TABLE 11-8: CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	53.3	85	No
R2	57.8	85	No
R3	58.9	85	No
R4	65.2	85	No

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Estimated construction noise levels during worst-case operating conditions, as shown on Table 11-7.
[3] Construction noise level threshold as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.3 CONSTRUCTION VIBRATION IMPACTS

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

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

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include mobile equipment activities and pile driving, among others. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 11-9 presents the expected Project related vibration levels at distances ranging from 130 to 304 feet from primary Project construction activity.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 0.089 in/sec PPV at 25 feet. At distances ranging from 130 to 304 feet from primary Project construction activities, construction vibration velocity levels are expected to range from 0.002 to 0.008 in/sec PPV, as shown on Table 11-9. Table 11-9 shows that the Project construction vibration levels will remain below the Caltrans building damage threshold of 0.3 in/sec PPV at all receiver locations.

Compared with the Caltrans construction vibration standard for human annoyance, the proposed Project construction activities will remain below the *distinctly perceptible* vibration standard of 0.04 in/sec PPV at all receiver locations. The Project-related vibration impacts at the nearby sensitive receiver locations, therefore, represent a *less than significant* impact Project construction activities.

TABLE 11-9: UNMITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)	Receiver PPV Levels (in/sec)[2]					Thresholds (in/sec PPV)		Threshold Exceeded?[3]	
		Small Bulldozer (< 80k lbs)	Jack-hammer	Loaded Trucks	Large Bulldozer (> 80k lbs)	Highest Vibration Level	Human Annoyance	Building Damage	Human Annoyance	Building Damage
R1	266'	0.000	0.001	0.002	0.003	0.003	0.04	0.3	No	No
R2	304'	0.000	0.001	0.002	0.002	0.002	0.04	0.3	No	No
R3	266'	0.000	0.001	0.002	0.003	0.003	0.04	0.3	No	No
R4	130'	0.000	0.003	0.006	0.008	0.008	0.04	0.3	No	No

[1] Receiver locations are shown on Exhibit 11-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[3] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

SOIL EXPORT TRUCK HAUL TRIPS

The Project site will require up to 150,000 cubic yards of soil export during the construction process. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for the Nakase Property heavy truck activity at normal traffic speeds will approach 0.004 in/sec PPV at 25 feet based on the FTA *Transit Noise Impact and Vibration Assessment.* (10) Truck deliveries transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration levels at nearby homes will remain below the Caltrans building damage threshold of 0.3 in/sec PPV and human annoyance threshold of 0.04 in/sec PPV.

12 REFERENCES

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2. **City of Lake Forest.** *CEQA Significance Thresholds Guide.* March 2009.
3. **Urban Crossroads, Inc.** *Nakase Property Traffic Impact Analysis.* September 2018.
4. **Harris, Cyril M.** *Noise Control in Buildings.* s.l. : McGraw-Hill, Inc., 1994.
5. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
6. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
7. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
8. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
9. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
10. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
11. **Office of Planning and Research.** *State of California General Plan Guidelines.* 2017.
12. **City of Lake Forest.** *General Plan Safety and Noise Element.* June 1994.
13. —. *Municipal Code, Title 11 – Peace and Safety, Division II – Offenses Against Public Peace, Chapter 11.16 – Noise Control.*
14. **National Institute for Occupational Safety and Health.** *Criteria for Recommended Standard: Occupational Noise Exposure.* June 1998.
15. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* September 2013.
16. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
17. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
18. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
19. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
20. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
21. —. *Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System.* 2016.

22. **City of Lake Forest.** *General Plan Circulation Element.* July 2008.
23. **Urban Crossroads, Inc.** *Nakase Property Air Quality Impact Analysis.* September 2018.
24. **California Department of Transportation.** *Traffic Noise Analysis Protocol.* May 2011.

13 CERTIFICATION

The contents of this report represent an accurate depiction of the noise environment and impacts associated with the proposed Nakase Property Project. The information contained in this report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF LAKE FOREST MUNICIPAL CODE

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Chapter 11.16 NOISE CONTROL

11.16.010 Declaration of policy.

In order to control unnecessary, excessive and annoying sounds, it is hereby declared to be the policy of the City to prohibit such sounds generated from all sources as specified in this chapter.

It is determined that certain sound levels are detrimental to the public health, welfare and safety, and contrary to public interest. (Ord. 171 § 1, 2007)

11.16.020 Definitions.

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

"Ambient noise level" shall mean the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

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

"Decibel (dB)" shall mean a unit which denotes the ratio between two (2) quantities which are proportional to power: the number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

"Dwelling unit" shall have the same meaning as in Section 9.04.030(D).

"Emergency machinery, vehicle or work" shall mean any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

"Fixed noise source" shall mean a stationary device which creates sounds while fixed or motionless, including but not limited to industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

"Grading" shall mean any excavating or filling of earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

"Impact noise" shall mean the noise produced by the collision of one (1) mass in motion with a second mass which may be either in motion or at rest.

"Mobile noise source" shall mean any noise source other than a fixed noise source.

"Noise level" shall mean the "A" weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty (20) micronewtons per square meter. The unit of measurement shall be designated as dBa.

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

"Residential property" shall mean a parcel of real property that is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and transitory lodgings.

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

"Sound level meter" shall mean an instrument meeting American National Standard Institute's Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

"Sound pressure level" of a sound, in decibels, shall mean twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated. (Ord. 297 § 14, 2017; Ord. 171 § 1, 2007)

11.16.025 Measurement of noise levels.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in Section 11.16.020. The location selected for measuring exterior noise levels shall be at any point on the affected property. Interior noise measurements shall be made within the affected dwelling unit. The measurement shall be made at a point at least four (4) feet from the wall, ceiling, or floor nearest the alleged offensive noise source and may be made with the windows of the affected unit open. (Ord. 171 § 1, 2007)

11.16.030 Designated noise zone.

The entire territory of the City of Lake Forest is hereby designated as "Noise Zone 1." (Ord. 171 § 1, 2007)

11.16.040 Exterior noise standards.

A. The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

NOISE STANDARDS

Noise Zone	Noise Level	Time Period
1	55 dBa	7:00 a.m.—10.00 p.m.
1	50 dBa	10:00 p.m.—7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dBa.

B. It shall be unlawful for any person at any location to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or

2. The noise standard plus five (5) dBa for a cumulative period of more than fifteen (15) minutes in any hour; or

3. The noise standard plus ten (10) dBa for a cumulative period of more than five (5) minutes in any hour; or

4. The noise standard plus fifteen (15) dBa for a cumulative period of more than one (1) minute in any hour; or

5. The noise standard plus twenty (20) dBa for any period of time.

C. In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth (5th) noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level. (Ord. 171 § 1, 2007)

11.16.050 Interior noise standards.

A. The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

INTERIOR NOISE STANDARDS

Noise Zone	Noise Level	Time Period

1	55 dBa	7:00 a.m.—10:00 p.m.
1	45 dBa	10:00 p.m.—7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dBa.

B. It shall be unlawful for any person at any location to create any noise, or to allow the creation of any noise, on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property, to exceed:

1. The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

2. The interior noise standard plus five (5) dBa for a cumulative period of more than one (1) minute in any hour; or

3. The interior noise standard plus ten (10) dBa for any period of time.

C. In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third (3rd) noise limit category the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level. (Ord. 171 § 1, 2007)

11.16.060 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

A. Activities not constituting "special events" conducted on the grounds of any public or private nursery, elementary, intermediate or secondary school or college.

B. "Special events" as defined in Section 5.05.020 provided said events are conducted pursuant to a special event permit issued as described in Chapter 5.05. However, this exemption shall not preclude use of the standards set forth in Section 11.16.040 ("Exterior noise standards") or Section 11.16.050 ("Interior noise standards") as a guide for the application, review, or issuance of a special event permit.

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

D. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday.

E. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

F. Mobile noise sources associated with agricultural operations, provided such operations do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday.

G. Mobile noise sources associated with agricultural pest control through pesticide application, provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

H. Noise sources associated with the maintenance of real property, provided said activities take place between 7:00 a.m. and 8:00 p.m. on any day except Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday.

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

J. Noise sources associated with solid waste collection and removal, provided such activities take place between 6:00 a.m. and 6:00 p.m. Monday through Friday where audible in residential areas; or between 7:00 a.m. and 6:00 p.m. on Saturdays where audible in residential areas; or between 5:00 a.m. and 9:00 p.m. any day where such activity is not audible in residential areas; or as otherwise provided in an approved franchise agreement between a waste hauler and the City. (Ord. 300 § 7, 2017; Ord. 171 § 1, 2007)

11.16.070 Schools, hospitals and churches—Special provisions.

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in Section 11.16.040 prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth (1/10) of a mile of the institution indicating the presence of a school, church or hospital. (Ord. 171 § 1, 2007)

11.16.080 Motor vehicle racing.

It is unlawful to conduct motor vehicle racing, testing, timing or similar noise-producing activities at raceways, speedways, off-road vehicle courses, drag strips or other similar places, including, but not limited to, the operation of midget race cars, drag cars, motorcycles, off-road vehicles, and specialty automobiles, between the hours of eleven-thirty p.m. and eight a.m. (Ord. 171 § 1, 2007)

11.16.090 Enforcement.

The City's law enforcement personnel, the County Health Officer and their duly authorized representatives are authorized, pursuant to Penal Code Section 836.5, to arrest any person without a warrant when they have reasonable cause to believe that such person has committed a misdemeanor in their presence.

No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his duty. (Ord. 171 § 1, 2007)

11.16.100 Variance procedure.

The owner or operator of a noise source which violates any of the provisions of this chapter may file an application with the Health Officer for a variance from the provisions thereof wherein said owner or operator shall set forth all actions taken to comply with said provisions, the reasons why immediate compliance cannot be achieved, a proposed method of achieving compliance, and a proposed time schedule for its accomplishment. Said application shall be accompanied by a fee in the amount of seventy-five dollars ($75.00). A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one (1) application. Upon receipt of said application and fee, the Health Officer shall refer it with his recommendation thereon within thirty (30) days to the Noise Variance Board for action thereon in accordance with the provisions of this chapter.

An applicant for a variance shall remain subject to prosecution under the terms of this chapter until a variance is granted. (Ord. 171 § 1, 2007)

11.16.110 Noise Variance Board.

The City Council shall, by resolution, appoint the Noise Variance Board, which may be composed of the City Council, Planning Commission, or any other members the City Council may select. The City Council may adopt reasonable rules and regulations for procedures to be used by the Board in carrying out its functions under the provisions of this chapter, or may allow the Board to establish such rules and regulations.

The Noise Variance Board shall evaluate all applications for variance from the requirements of this chapter and may grant said variances with respect to time for compliance, subject to such terms, conditions and requirements as it may deem reasonable to achieve maximum compliance with the provisions of this chapter. Said terms, conditions, and requirements may include but shall not be limited to limitations on noise levels and operating hours. Each such variance shall set forth in detail the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations said Board shall consider the magnitude of nuisance caused by the offensive noise; the uses of property within the area of impingement by the noise; the time factors related to study, design, financing and construction of remedial work; the economic factors related to age and useful life of equipment; and the general public interest and welfare. Any variance granted by said Board shall be by resolution and shall be transmitted to the Development Services Department and the Health Officer for enforcement. Any violation of the terms of said variance shall be unlawful.

Meetings of the Noise Variance Board shall be held at such times and locations as said Board shall determine. All such meetings shall be open to the public.

Traveling and other expenses incurred by each Board member in the performance of his or her official duties shall be reimbursed at a rate determined by resolution of the City Council. (Ord. 171 § 1, 2007)

View the mobile version.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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L1
33, 40' 18.600000", 117, 39' 53.730000"

L1_N
33, 40' 18.600000", 117, 39' 53.730000"

L1_NE
33, 40' 18.600000", 117, 39' 53.730000"

L1_S
33, 40' 18.600000", 117, 39' 53.730000"

L1_SW
33, 40' 19.640000", 117, 39' 54.920000"

L2_W
33, 40' 8.440000", 117, 39' 43.180000"

L3_E
33, 39' 59.570000", 117, 39' 50.300000"

L3_NE
33, 39' 59.570000", 117, 39' 50.300000"

L3_SW
33, 39' 59.570000", 117, 39' 50.300000"

L4
33, 40' 1.680000", 117, 39' 51.970000"

L4_E
33, 39' 59.960000", 117, 40' 17.570000"

L4_N
33, 39' 59.980000", 117, 40' 17.570000"

L4_S
33, 39' 59.980000", 117, 40' 17.600000"

L4_SW
33, 39' 59.960000", 117, 40' 17.570000"

L5_E
33, 39' 58.790000", 117, 40' 20.490000"

L5_N
33, 39' 58.790000", 117, 40' 20.490000"

L5_SW
33, 39' 58.790000", 117, 40' 20.490000"

L5_W
33, 39' 58.790000", 117, 40' 20.490000"

L6
33, 40' 9.490000", 117, 40' 25.150000"

L6_N
33, 40' 9.600000", 117, 40' 25.200000"

L6_SE
33, 40' 9.650000", 117, 40' 25.230000"

L6_W
33, 40' 9.730000", 117, 40' 25.510000"

L7_N
33, 40' 15.250000", 117, 40' 13.070000"

L7_NW
33, 40' 15.250000", 117, 40' 13.070000"

L7_S
33, 40' 15.250000", 117, 40' 13.070000"

L8_N
33, 40' 15.460000", 117, 40' 14.300000"

L8_NE
33, 40' 15.460000", 117, 40' 14.300000"

L8_SW
33, 40' 15.460000", 117, 40' 14.300000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

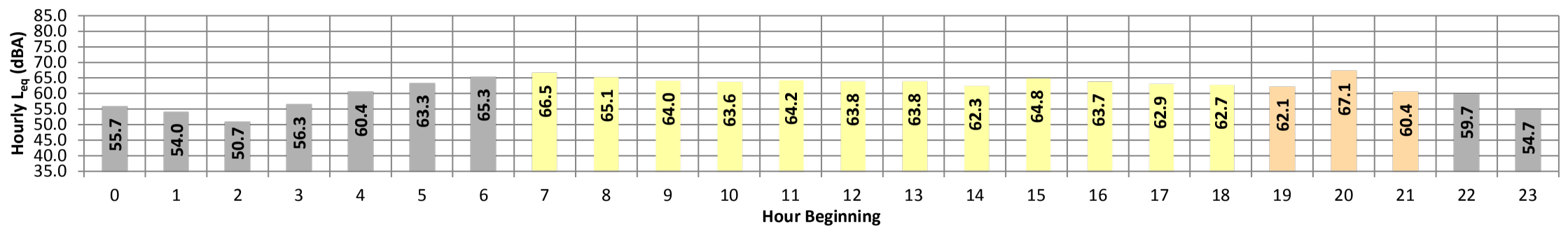
Date: Thursday, May 31, 2018
Project: Nakase

Location: L1 - Located on Rancho Parkway adjacent to existing commercial uses north of the Project site.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	55.7	88.6	39.4	65.0	62.0	58.0	55.0	46.0	43.0	41.0	40.0	39.0	55.7	10.0	65.7
	1	54.0	72.4	39.3	64.0	62.0	60.0	59.0	48.0	44.0	41.0	39.0	39.0	54.0	10.0	64.0
	2	50.7	76.1	39.4	63.0	60.0	53.0	49.0	44.0	41.0	40.0	39.0	39.0	50.7	10.0	60.7
	3	56.3	75.8	40.7	69.0	67.0	62.0	59.0	48.0	45.0	41.0	41.0	41.0	56.3	10.0	66.3
	4	60.4	75.1	41.0	72.0	70.0	68.0	66.0	56.0	49.0	44.0	43.0	41.0	60.4	10.0	70.4
	5	63.3	82.0	43.3	73.0	71.0	69.0	68.0	62.0	54.0	47.0	46.0	45.0	63.3	10.0	73.3
	6	65.3	80.7	47.5	74.0	73.0	71.0	70.0	65.0	59.0	52.0	51.0	49.0	65.3	10.0	75.3
Day	7	66.5	82.4	48.4	74.0	73.0	72.0	71.0	67.0	62.0	53.0	52.0	50.0	66.5	0.0	66.5
	8	65.1	76.0	48.6	73.0	72.0	70.0	70.0	66.0	61.0	52.0	51.0	50.0	65.1	0.0	65.1
	9	64.0	83.7	46.4	72.0	71.0	69.0	68.0	64.0	59.0	50.0	49.0	47.0	64.0	0.0	64.0
	10	63.6	87.1	46.9	71.0	69.0	68.0	67.0	62.0	57.0	50.0	49.0	48.0	63.6	0.0	63.6
	11	64.2	83.9	46.2	73.0	71.0	69.0	68.0	64.0	59.0	51.0	50.0	48.0	64.2	0.0	64.2
	12	63.8	82.2	46.5	72.0	70.0	69.0	68.0	64.0	60.0	52.0	51.0	49.0	63.8	0.0	63.8
	13	63.8	81.5	46.4	73.0	71.0	68.0	67.0	64.0	60.0	51.0	50.0	48.0	63.8	0.0	63.8
	14	62.3	77.6	45.7	71.0	69.0	67.0	66.0	63.0	58.0	50.0	49.0	47.0	62.3	0.0	62.3
	15	64.8	86.2	48.3	74.0	73.0	70.0	68.0	64.0	60.0	52.0	51.0	50.0	64.8	0.0	64.8
	16	63.7	84.3	46.7	71.0	69.0	68.0	67.0	64.0	60.0	53.0	51.0	49.0	63.7	0.0	63.7
	17	62.9	76.9	46.4	70.0	69.0	68.0	67.0	63.0	60.0	53.0	51.0	49.0	62.9	0.0	62.9
	18	62.7	79.9	45.9	70.0	69.0	67.0	67.0	63.0	59.0	53.0	51.0	49.0	62.7	0.0	62.7
Evening	19	62.1	80.4	44.5	70.0	69.0	67.0	66.0	62.0	58.0	51.0	49.0	47.0	62.1	5.0	67.1
	20	67.1	99.4	44.5	71.0	69.0	67.0	66.0	61.0	56.0	49.0	48.0	46.0	67.1	5.0	72.1
	21	60.4	78.1	44.1	69.0	68.0	66.0	65.0	60.0	54.0	48.0	46.0	45.0	60.4	5.0	65.4
Night	22	59.7	84.8	42.4	68.0	66.0	64.0	62.0	56.0	50.0	45.0	44.0	43.0	59.7	10.0	69.7
	23	54.7	72.4	41.1	66.0	64.0	61.0	59.0	50.0	47.0	43.0	42.0	41.0	54.7	10.0	64.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	62.3	76.0	45.7	70.0	69.0	67.0	66.0	62.0	57.0	50.0	49.0	47.0
	Max	66.5	87.1	48.6	74.0	73.0	72.0	71.0	67.0	62.0	53.0	52.0	50.0
Energy Average		64.1	Average:		72.0	70.5	68.8	67.8	64.0	59.6	51.7	50.4	48.7
Evening	Min	60.4	78.1	44.1	69.0	68.0	66.0	65.0	60.0	54.0	48.0	46.0	45.0
	Max	67.1	99.4	44.5	71.0	69.0	67.0	66.0	62.0	58.0	51.0	49.0	47.0
Energy Average		64.2	Average:		70.0	68.7	66.7	65.7	61.0	56.0	49.3	47.7	46.0
Night	Min	50.7	72.4	39.3	63.0	60.0	53.0	49.0	44.0	41.0	40.0	39.0	39.0
	Max	65.3	88.6	47.5	74.0	73.0	71.0	70.0	65.0	59.0	52.0	51.0	49.0
Energy Average		60.0	Average:		68.2	66.1	62.9	60.8	52.8	48.0	43.8	42.8	41.9

24-Hour L_{eq} (dBA)

63.0

24-Hour CNEL (dBA)

67.8

24-Hour Noise Level Measurement Summary

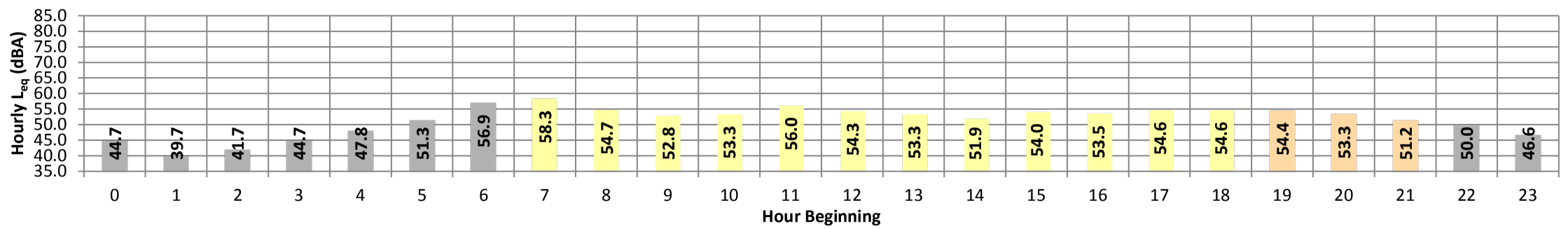
Date: Thursday, May 31, 2018
Project: Nakase

Location: L2 - Located east of the Project site adjacent to an existing pedestrian trail and an Extended Stay America hotel.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	44.7	65.9	36.3	57.0	52.0	47.0	45.0	41.0	38.0	36.0	36.0	36.0	44.7	10.0	54.7
	1	39.7	57.1	36.3	49.0	46.0	43.0	42.0	38.0	36.0	36.0	36.0	36.0	39.7	10.0	49.7
	2	41.7	63.3	36.3	50.0	47.0	44.0	42.0	39.0	37.0	36.0	36.0	36.0	41.7	10.0	51.7
	3	44.7	64.7	36.3	54.0	52.0	48.0	47.0	43.0	40.0	38.0	36.0	36.0	44.7	10.0	54.7
	4	47.8	61.3	37.6	57.0	55.0	52.0	51.0	48.0	45.0	40.0	39.0	38.0	47.8	10.0	57.8
	5	51.3	70.9	39.1	60.0	59.0	55.0	54.0	51.0	48.0	44.0	43.0	41.0	51.3	10.0	61.3
	6	56.9	70.5	44.1	65.0	64.0	62.0	61.0	57.0	53.0	48.0	47.0	45.0	56.9	10.0	66.9
Day	7	58.3	80.2	46.5	66.0	64.0	62.0	61.0	58.0	55.0	51.0	50.0	48.0	58.3	0.0	58.3
	8	54.7	71.1	43.3	64.0	62.0	59.0	57.0	54.0	51.0	48.0	47.0	45.0	54.7	0.0	54.7
	9	52.8	72.7	43.1	61.0	59.0	57.0	56.0	52.0	50.0	46.0	45.0	44.0	52.8	0.0	52.8
	10	53.3	67.9	43.3	61.0	60.0	58.0	56.0	53.0	51.0	47.0	46.0	45.0	53.3	0.0	53.3
	11	56.0	71.7	46.1	63.0	61.0	60.0	59.0	56.0	54.0	49.0	49.0	47.0	56.0	0.0	56.0
	12	54.3	68.9	44.6	63.0	62.0	59.0	57.0	54.0	51.0	48.0	47.0	46.0	54.3	0.0	54.3
	13	53.3	69.5	43.2	61.0	60.0	58.0	56.0	53.0	51.0	47.0	47.0	45.0	53.3	0.0	53.3
	14	51.9	66.3	42.6	60.0	58.0	56.0	55.0	52.0	49.0	46.0	45.0	44.0	51.9	0.0	51.9
	15	54.0	70.7	45.3	63.0	61.0	58.0	56.0	53.0	51.0	48.0	48.0	47.0	54.0	0.0	54.0
	16	53.5	67.7	42.9	62.0	60.0	58.0	57.0	53.0	50.0	47.0	47.0	45.0	53.5	0.0	53.5
	17	54.6	78.0	44.0	63.0	60.0	58.0	56.0	52.0	50.0	47.0	46.0	45.0	54.6	0.0	54.6
	18	54.6	70.9	45.1	64.0	62.0	59.0	57.0	53.0	51.0	48.0	48.0	47.0	54.6	0.0	54.6
Evening	19	54.4	74.7	44.5	63.0	61.0	59.0	57.0	53.0	51.0	48.0	47.0	46.0	54.4	5.0	59.4
	20	53.3	72.6	43.3	65.0	61.0	56.0	54.0	51.0	49.0	47.0	46.0	44.0	53.3	5.0	58.3
	21	51.2	70.0	42.7	60.0	58.0	55.0	53.0	50.0	48.0	46.0	45.0	44.0	51.2	5.0	56.2
Night	22	50.0	68.8	40.3	60.0	58.0	54.0	51.1	48.0	46.0	43.0	42.0	41.0	50.0	10.0	60.0
	23	46.6	69.0	38.1	57.0	53.0	50.0	49.0	45.0	42.0	40.0	39.0	39.0	46.6	10.0	56.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	51.9	66.3	42.6	60.0	58.0	56.0	55.0	52.0	49.0	46.0	45.0	44.0
	Max	58.3	80.2	46.5	66.0	64.0	62.0	61.0	58.0	55.0	51.0	50.0	48.0
Energy Average		54.6	Average:		62.6	60.8	58.5	56.9	53.6	51.2	47.7	47.1	45.7
Evening	Min	51.2	70.0	42.7	60.0	58.0	55.0	53.0	50.0	48.0	46.0	45.0	44.0
	Max	54.4	74.7	44.5	65.0	61.0	59.0	57.0	53.0	51.0	48.0	47.0	46.0
Energy Average		53.2	Average:		62.7	60.0	56.7	54.7	51.3	49.3	47.0	46.0	44.7
Night	Min	39.7	57.1	36.3	49.0	46.0	43.0	42.0	38.0	36.0	36.0	36.0	36.0
	Max	56.9	70.9	44.1	65.0	64.0	62.0	61.0	57.0	53.0	48.0	47.0	45.0
Energy Average		50.1	Average:		56.6	54.0	50.6	49.1	45.6	42.8	40.1	39.3	38.7

24-Hour L_{eq} (dBA)

53.2

24-Hour CNEL (dBA)

57.8

24-Hour Noise Level Measurement Summary

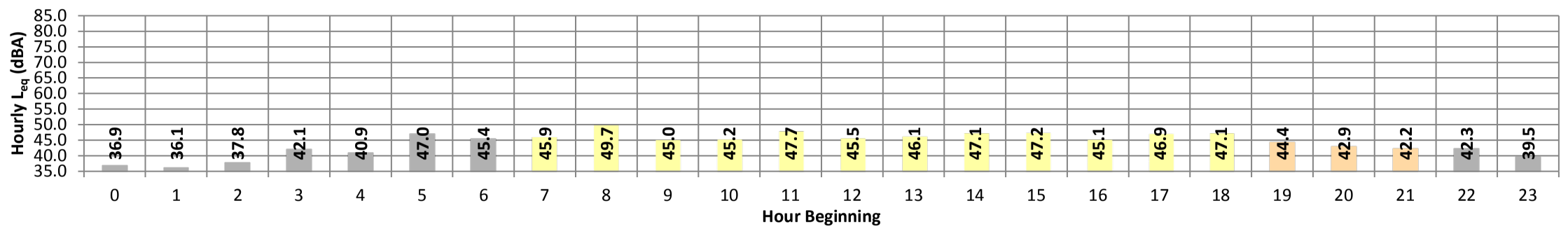
Date: Thursday, May 31, 2018
Project: Nakase

Location: L3 - Located southeast of the Project site at an adjacent pedestrian trail near existing office buildings on Lake Forest Drive.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	36.9	50.6	36.1	42.0	41.0	39.0	38.0	36.0	36.0	36.0	36.0	36.0	36.9	10.0	46.9
	1	36.1	51.8	36.1	39.0	39.0	37.0	36.0	36.0	36.0	36.0	36.0	36.0	36.1	10.0	46.1
	2	37.8	48.6	36.1	42.0	41.0	40.0	40.0	39.0	36.0	36.0	36.0	36.0	37.8	10.0	47.8
	3	42.1	49.2	38.8	45.0	45.0	44.0	44.0	43.0	41.0	39.0	39.0	39.0	42.1	10.0	52.1
	4	40.9	47.6	38.7	44.0	43.0	42.0	42.0	41.0	40.0	39.0	39.0	39.0	40.9	10.0	50.9
	5	47.0	60.6	38.9	56.0	55.0	53.0	51.0	46.0	43.0	40.0	39.0	39.0	47.0	10.0	57.0
	6	45.4	62.7	40.1	53.0	51.0	48.0	47.0	45.0	43.0	42.0	41.0	40.0	45.4	10.0	55.4
Day	7	45.9	65.8	40.7	53.0	52.0	49.0	48.0	45.0	44.0	42.0	42.0	41.0	45.9	0.0	45.9
	8	49.7	69.7	39.1	62.0	55.0	52.0	50.0	46.0	44.0	42.0	41.0	40.0	49.7	0.0	49.7
	9	45.0	64.4	39.1	54.0	51.0	48.0	47.0	44.0	42.0	40.0	40.0	39.0	45.0	0.0	45.0
	10	45.2	58.6	39.1	52.0	51.0	49.0	48.0	45.0	43.0	41.0	41.0	40.0	45.2	0.0	45.2
	11	47.7	64.8	39.1	57.0	56.0	53.0	50.0	46.0	43.0	41.0	40.0	40.0	47.7	0.0	47.7
	12	45.5	63.6	39.1	52.0	51.0	48.0	48.0	45.0	43.0	41.0	41.0	40.0	45.5	0.0	45.5
	13	46.1	63.4	39.1	55.0	52.0	49.0	48.0	45.0	43.0	41.0	40.0	39.0	46.1	0.0	46.1
	14	47.1	68.6	39.1	55.0	53.0	50.0	49.0	46.0	44.0	42.0	41.0	39.0	47.1	0.0	47.1
	15	47.2	66.0	41.8	53.0	51.0	50.0	49.0	47.0	46.0	44.0	43.0	43.0	47.2	0.0	47.2
	16	45.1	62.5	40.8	51.0	51.0	48.0	47.0	45.0	43.0	42.0	42.0	41.0	45.1	0.0	45.1
	17	46.9	67.1	39.6	56.0	54.0	50.0	48.0	45.0	43.0	41.0	40.0	40.0	46.9	0.0	46.9
	18	47.1	67.5	40.7	55.0	53.0	51.0	49.0	46.0	44.0	42.0	42.0	41.0	47.1	0.0	47.1
Evening	19	44.4	58.1	39.1	50.0	48.0	47.0	46.0	44.0	43.0	41.0	40.0	40.0	44.4	5.0	49.4
	20	42.9	56.9	39.1	48.0	47.0	45.0	44.0	43.0	42.0	40.0	40.0	39.0	42.9	5.0	47.9
	21	42.2	50.9	39.0	46.0	45.0	44.0	44.0	42.0	41.0	40.0	39.0	39.0	42.2	5.0	47.2
Night	22	42.3	53.0	36.1	48.0	47.0	45.0	44.0	42.0	41.0	39.0	39.0	39.0	42.3	10.0	52.3
	23	39.5	50.8	36.1	45.0	43.0	42.0	41.0	39.0	39.0	36.0	36.0	36.0	39.5	10.0	49.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	45.0	58.6	39.1	51.0	51.0	48.0	47.0	44.0	42.0	40.0	40.0	39.0
	Max	49.7	69.7	41.8	62.0	56.0	53.0	50.0	47.0	46.0	44.0	43.0	43.0
Energy Average		46.8	Average:		54.6	52.5	49.8	48.4	45.4	43.5	41.6	41.1	40.3
Evening	Min	42.2	50.9	39.0	46.0	45.0	44.0	44.0	42.0	41.0	40.0	39.0	39.0
	Max	44.4	58.1	39.1	50.0	48.0	47.0	46.0	44.0	43.0	41.0	40.0	40.0
Energy Average		43.3	Average:		48.0	46.7	45.3	44.7	43.0	42.0	40.3	39.7	39.3
Night	Min	36.1	47.6	36.1	39.0	39.0	37.0	36.0	36.0	36.0	36.0	36.0	36.0
	Max	47.0	62.7	40.1	56.0	55.0	53.0	51.0	46.0	43.0	42.0	41.0	40.0
Energy Average		42.3	Average:		46.0	45.0	43.3	42.6	40.8	39.4	38.1	37.9	37.8

24-Hour L_{eq} (dBA)

45.2

24-Hour CNEL (dBA)

49.8

24-Hour Noise Level Measurement Summary

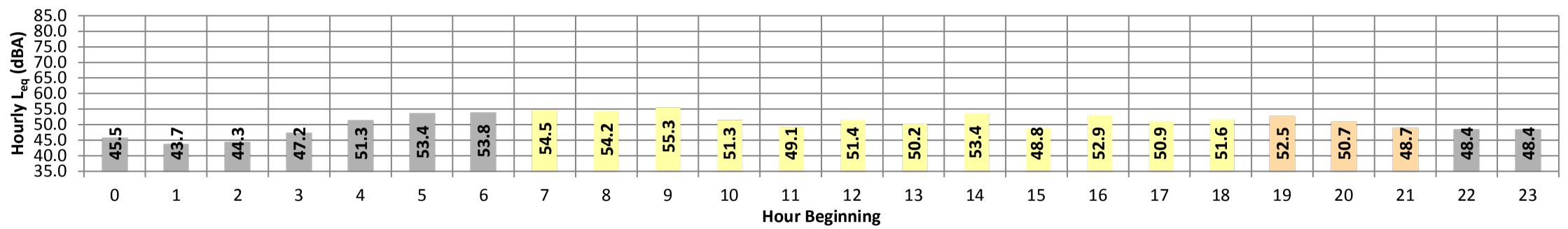
Date: Wednesday, May 17, 2017
Project: Nakase

Location: L4 - Located at the western Project site boundary adjacent to an existing parking lot for office uses.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	45.5	54.9	40.3	51.0	51.0	49.0	49.0	46.0	43.0	41.0	41.0	41.0	45.5	10.0	55.5
	1	43.7	55.0	40.3	51.0	49.0	47.0	46.0	43.0	42.0	41.0	40.0	40.0	43.7	10.0	53.7
	2	44.3	54.6	40.3	50.0	49.0	48.0	47.0	44.0	43.0	41.0	41.0	41.0	44.3	10.0	54.3
	3	47.2	56.0	41.5	53.0	52.0	51.0	50.0	48.0	45.0	42.0	42.0	41.0	47.2	10.0	57.2
	4	51.3	67.6	42.5	56.0	56.0	55.0	54.0	52.0	50.0	46.0	45.0	43.0	51.3	10.0	61.3
	5	53.4	72.1	45.7	59.0	58.0	56.0	55.0	53.0	51.0	48.0	47.0	47.0	53.4	10.0	63.4
	6	53.8	67.7	45.8	63.0	61.0	58.0	56.0	53.0	51.0	48.0	48.0	47.0	53.8	10.0	63.8
Day	7	54.5	70.6	44.8	65.0	62.0	59.0	57.0	53.0	51.0	47.0	46.0	45.0	54.5	0.0	54.5
	8	54.2	74.2	43.3	65.0	62.0	57.0	55.0	52.0	50.0	46.0	45.0	44.0	54.2	0.0	54.2
	9	55.3	81.1	44.0	64.0	59.0	55.0	53.0	51.0	49.0	46.0	45.0	44.0	55.3	0.0	55.3
	10	51.3	69.1	43.1	62.0	57.0	53.0	52.0	50.0	48.0	45.0	44.0	43.0	51.3	0.0	51.3
	11	49.1	64.4	43.1	57.0	55.0	52.0	51.0	49.0	47.0	45.0	44.0	43.0	49.1	0.0	49.1
	12	51.4	69.0	42.7	64.0	60.0	55.0	52.0	49.0	47.0	44.0	44.0	43.0	51.4	0.0	51.4
	13	50.2	68.8	42.5	61.0	58.0	53.0	51.0	48.0	46.0	44.0	44.0	43.0	50.2	0.0	50.2
	14	53.4	72.1	43.2	65.0	63.0	57.0	54.0	49.0	47.0	45.0	44.0	44.0	53.4	0.0	53.4
	15	48.8	65.4	42.3	56.0	54.0	52.0	51.0	49.0	47.0	44.0	44.0	43.0	48.8	0.0	48.8
	16	52.9	75.0	43.8	61.0	57.0	54.0	53.0	50.0	49.0	46.0	45.0	44.0	52.9	0.0	52.9
	17	50.9	58.6	44.5	56.0	55.0	54.0	53.0	51.0	50.0	47.0	46.0	45.0	50.9	0.0	50.9
	18	51.6	62.7	44.0	57.0	56.0	55.0	54.0	52.0	50.0	47.0	46.0	45.0	51.6	0.0	51.6
Evening	19	52.5	69.1	44.0	57.0	56.0	55.0	55.0	53.0	51.0	47.0	46.0	45.0	52.5	5.0	57.5
	20	50.7	60.9	42.6	56.0	55.0	54.0	54.0	51.0	49.0	45.0	44.0	43.0	50.7	5.0	55.7
	21	48.7	57.0	41.6	53.0	53.0	52.0	51.0	49.0	47.0	44.0	43.0	42.0	48.7	5.0	53.7
Night	22	48.4	60.0	41.2	54.0	53.0	52.0	51.0	49.0	47.0	43.0	43.0	41.0	48.4	10.0	58.4
	23	48.4	65.8	40.7	54.0	53.0	52.0	51.0	49.0	47.0	42.0	42.0	41.0	48.4	10.0	58.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.8	58.6	42.3	56.0	54.0	52.0	51.0	48.0	46.0	44.0	44.0	43.0
	Max	55.3	81.1	44.8	65.0	63.0	59.0	57.0	53.0	51.0	47.0	46.0	45.0
Energy Average		52.4	Average:		61.1	58.2	54.7	53.0	50.3	48.4	45.5	44.8	43.8
Evening	Min	48.7	57.0	41.6	53.0	53.0	52.0	51.0	49.0	47.0	44.0	43.0	42.0
	Max	52.5	69.1	44.0	57.0	56.0	55.0	55.0	53.0	51.0	47.0	46.0	45.0
Energy Average		50.9	Average:		55.3	54.7	53.7	53.3	51.0	49.0	45.3	44.3	43.3
Night	Min	43.7	54.6	40.3	50.0	49.0	47.0	46.0	43.0	42.0	41.0	40.0	40.0
	Max	53.8	72.1	45.8	63.0	61.0	58.0	56.0	53.0	51.0	48.0	48.0	47.0
Energy Average		49.9	Average:		54.6	53.6	52.0	51.0	48.6	46.6	43.6	43.2	42.4

24-Hour L_{eq} (dBA)

51.4

24-Hour CNEL (dBA)

57.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

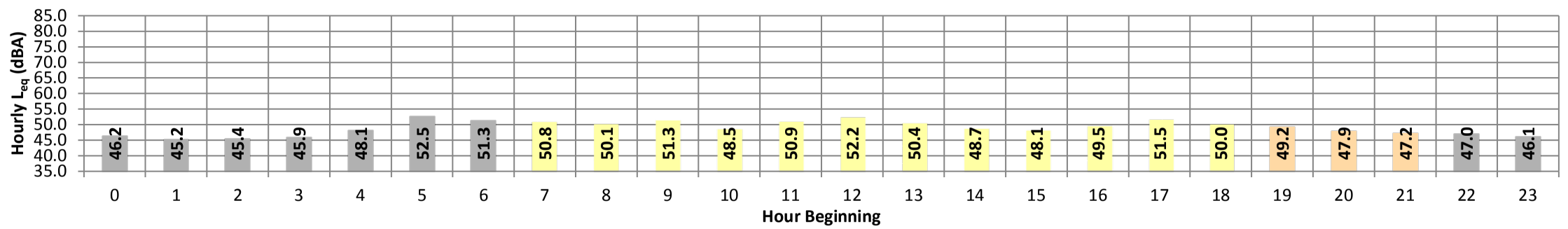
Date: Wednesday, May 17, 2017
Project: Nakase

Location: L5 - Located southwest of the Project site within an existing parking lot for office uses.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.2	57.5	43.3	50.0	49.0	48.0	48.0	46.0	45.0	44.0	44.0	44.0	46.2	10.0	56.2
	1	45.2	52.5	43.2	49.0	48.0	47.0	46.0	45.0	44.0	44.0	44.0	43.0	45.2	10.0	55.2
	2	45.4	51.8	43.3	49.0	47.0	46.0	46.0	45.0	45.0	44.0	44.0	43.0	45.4	10.0	55.4
	3	45.9	53.2	43.4	49.0	48.0	47.0	47.0	46.0	45.0	44.0	44.0	44.0	45.9	10.0	55.9
	4	48.1	56.4	44.0	51.0	51.0	50.0	50.0	48.0	47.0	45.0	45.0	44.0	48.1	10.0	58.1
	5	52.5	70.2	46.4	64.0	61.0	53.0	52.0	50.0	49.0	47.0	47.0	47.0	52.5	10.0	62.5
	6	51.3	69.9	46.8	58.0	56.0	54.0	53.0	51.0	49.0	48.0	48.0	47.0	51.3	10.0	61.3
Day	7	50.8	63.9	46.6	58.0	56.0	54.0	53.0	50.0	49.0	48.0	47.0	47.0	50.8	0.0	50.8
	8	50.1	64.1	45.4	58.0	56.0	53.0	52.0	49.0	48.0	47.0	46.0	46.0	50.1	0.0	50.1
	9	51.3	71.9	44.1	61.0	59.0	56.0	54.0	49.0	47.0	45.0	45.0	44.0	51.3	0.0	51.3
	10	48.5	64.7	43.2	58.0	56.0	53.0	50.0	47.0	45.0	44.0	44.0	43.0	48.5	0.0	48.5
	11	50.9	69.9	44.8	59.0	59.0	56.0	54.0	49.0	47.0	46.0	46.0	45.0	50.9	0.0	50.9
	12	52.2	68.5	45.4	64.0	61.0	57.0	54.0	49.0	48.0	46.0	46.0	46.0	52.2	0.0	52.2
	13	50.4	67.6	45.4	60.0	58.0	55.0	53.0	49.0	47.0	46.0	46.0	45.0	50.4	0.0	50.4
	14	48.7	63.9	44.9	56.0	54.0	51.0	50.0	48.0	47.0	46.0	46.0	45.0	48.7	0.0	48.7
	15	48.1	65.5	44.1	58.0	55.0	50.0	48.0	46.0	46.0	45.0	45.0	44.0	48.1	0.0	48.1
	16	49.5	70.2	44.5	58.0	56.0	54.0	52.0	48.0	46.0	45.0	45.0	45.0	49.5	0.0	49.5
	17	51.5	66.6	45.1	61.0	59.0	57.0	55.0	50.0	47.0	46.0	46.0	46.0	51.5	0.0	51.5
	18	50.0	67.0	45.3	58.0	56.0	53.0	51.0	49.0	47.0	46.0	46.0	45.0	50.0	0.0	50.0
Evening	19	49.2	63.2	45.3	56.0	54.0	51.0	50.0	49.0	48.0	46.0	46.0	45.0	49.2	5.0	54.2
	20	47.9	58.4	44.9	53.0	51.0	49.0	49.0	48.0	47.0	46.0	46.0	45.0	47.9	5.0	52.9
	21	47.2	56.9	44.1	51.0	50.0	49.0	48.0	47.0	46.0	45.0	45.0	44.0	47.2	5.0	52.2
Night	22	47.0	51.9	43.3	50.0	49.0	49.0	48.0	47.0	46.0	45.0	44.0	44.0	47.0	10.0	57.0
	23	46.1	54.1	43.2	49.0	49.0	48.0	47.0	46.0	45.0	44.0	44.0	43.0	46.1	10.0	56.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.1	63.9	43.2	56.0	54.0	50.0	48.0	46.0	45.0	44.0	44.0	43.0
	Max	52.2	71.9	46.6	64.0	61.0	57.0	55.0	50.0	49.0	48.0	47.0	47.0
Energy Average		50.3	Average:		59.1	57.1	54.1	52.2	48.6	47.0	45.8	45.7	45.1
Evening	Min	47.2	56.9	44.1	51.0	50.0	49.0	48.0	47.0	46.0	45.0	45.0	44.0
	Max	49.2	63.2	45.3	56.0	54.0	51.0	50.0	49.0	48.0	46.0	46.0	45.0
Energy Average		48.2	Average:		53.3	51.7	49.7	49.0	48.0	47.0	45.7	45.7	44.7
Night	Min	45.2	51.8	43.2	49.0	47.0	46.0	46.0	45.0	44.0	44.0	44.0	43.0
	Max	52.5	70.2	46.8	64.0	61.0	54.0	53.0	51.0	49.0	48.0	48.0	47.0
Energy Average		48.4	Average:		52.1	50.9	49.1	48.6	47.1	46.1	45.0	44.9	44.3

24-Hour L_{eq} (dBA)

49.4

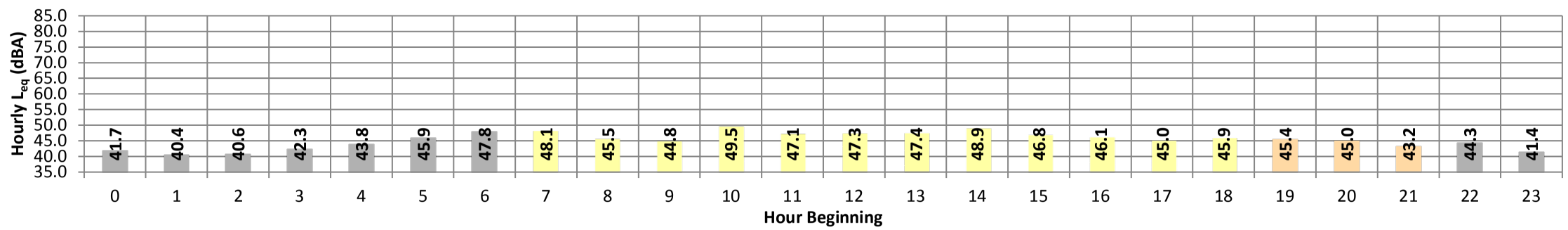
24-Hour CNEL (dBA)

55.3

24-Hour Noise Level Measurement Summary

Date: Wednesday, May 17, 2017
Project: Nakase
Location: L6 - Located northwest of the Project site near existing residential homes on Agave.
Meter: Piccolo I
JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	41.7	52.8	39.2	47.0	46.0	45.0	44.0	41.0	40.0	39.0	39.0	39.0	41.7	10.0	51.7
	1	40.4	52.5	37.6	46.0	45.0	42.0	41.0	40.0	39.0	39.0	39.0	38.0	40.4	10.0	50.4
	2	40.6	46.9	38.9	44.0	43.0	42.0	41.0	40.0	40.0	39.0	39.0	39.0	40.6	10.0	50.6
	3	42.3	60.2	39.3	47.0	46.0	44.0	44.0	42.0	41.0	40.0	40.0	39.0	42.3	10.0	52.3
	4	43.8	52.3	40.6	47.0	46.0	45.0	45.0	44.0	43.0	42.0	41.0	41.0	43.8	10.0	53.8
	5	45.9	56.7	42.9	50.0	49.0	48.0	47.0	46.0	45.0	44.0	44.0	43.0	45.9	10.0	55.9
	6	47.8	69.2	42.7	53.0	52.0	51.0	50.0	47.0	46.0	45.0	44.0	44.0	47.8	10.0	57.8
Day	7	48.1	68.8	40.6	56.0	55.0	53.0	51.0	48.0	45.0	42.0	42.0	41.0	48.1	0.0	48.1
	8	45.5	58.5	39.7	52.0	51.0	48.0	47.0	46.0	44.0	42.0	41.0	40.0	45.5	0.0	45.5
	9	44.8	59.4	40.4	53.0	50.0	47.0	46.0	44.0	43.0	41.0	41.0	40.0	44.8	0.0	44.8
	10	49.5	64.6	40.4	60.0	58.0	54.0	52.0	47.0	45.0	43.0	42.0	41.0	49.5	0.0	49.5
	11	47.1	63.7	41.3	54.0	54.0	52.0	50.0	46.0	44.0	42.0	42.0	42.0	47.1	0.0	47.1
	12	47.3	65.8	40.5	57.0	53.0	50.0	49.0	46.0	45.0	42.0	42.0	41.0	47.3	0.0	47.3
	13	47.4	64.4	40.5	56.0	53.0	50.0	50.0	47.0	45.0	42.0	41.0	41.0	47.4	0.0	47.4
	14	48.9	76.0	40.1	54.0	52.0	50.0	49.0	46.0	44.0	42.0	41.0	41.0	48.9	0.0	48.9
	15	46.8	61.3	39.3	55.0	53.0	51.0	50.0	46.0	44.0	41.0	41.0	40.0	46.8	0.0	46.8
	16	46.1	62.4	40.5	54.0	52.0	50.0	49.0	45.0	44.0	41.0	41.0	40.0	46.1	0.0	46.1
	17	45.0	61.5	39.7	52.0	50.0	47.0	46.0	44.0	43.0	41.0	41.0	40.0	45.0	0.0	45.0
	18	45.9	68.6	41.3	52.0	50.0	48.0	47.0	45.0	44.0	42.0	42.0	42.0	45.9	0.0	45.9
Evening	19	45.4	63.3	41.4	52.0	50.0	48.0	47.0	45.0	44.0	42.0	42.0	42.0	45.4	5.0	50.4
	20	45.0	65.8	40.8	51.0	48.0	46.0	45.0	44.0	43.0	42.0	41.0	41.0	45.0	5.0	50.0
	21	43.2	59.4	40.4	49.0	47.0	45.0	44.0	43.0	42.0	41.0	40.0	40.0	43.2	5.0	48.2
Night	22	44.3	54.0	40.4	49.0	49.0	48.0	48.0	43.0	42.0	41.0	41.0	40.0	44.3	10.0	54.3
	23	41.4	48.9	39.3	45.0	45.0	43.0	43.0	41.0	40.0	39.0	39.0	39.0	41.4	10.0	51.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	44.8	58.5	39.3	52.0	50.0	47.0	46.0	44.0	43.0	41.0	41.0	40.0
	Max	49.5	76.0	41.3	60.0	58.0	54.0	52.0	48.0	45.0	43.0	42.0	42.0
Energy Average		47.1	Average:		54.6	52.6	50.0	48.8	45.8	44.2	41.8	41.4	40.8
Evening	Min	43.2	59.4	40.4	49.0	47.0	45.0	44.0	43.0	42.0	41.0	40.0	40.0
	Max	45.4	65.8	41.4	52.0	50.0	48.0	47.0	45.0	44.0	42.0	42.0	42.0
Energy Average		44.6	Average:		50.7	48.3	46.3	45.3	44.0	43.0	41.7	41.0	41.0
Night	Min	40.4	46.9	37.6	44.0	43.0	42.0	41.0	40.0	39.0	39.0	39.0	38.0
	Max	47.8	69.2	42.9	53.0	52.0	51.0	50.0	47.0	46.0	45.0	44.0	44.0
Energy Average		43.8	Average:		47.6	46.8	45.3	44.8	42.7	41.8	40.9	40.7	40.2

24-Hour L_{eq} (dBA)

45.8

24-Hour CNEL (dBA)

51.1

24-Hour Noise Level Measurement Summary

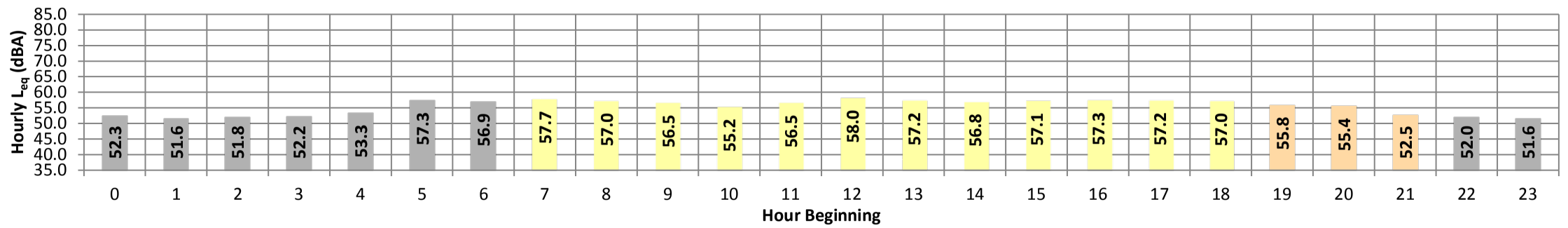
Date: Wednesday, May 17, 2017
Project: Nakase

Location: L7 - Located north of the Project site across Bake Parkway adjacent to an existing Staybridge Suites hotel.

Meter: Piccolo I

JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	52.3	60.0	48.8	55.0	54.0	53.0	53.0	52.0	52.0	50.0	50.0	49.0	52.3	10.0	62.3
	1	51.6	65.4	49.0	55.0	53.0	53.0	52.0	51.0	51.0	50.0	49.0	49.0	51.6	10.0	61.6
	2	51.8	57.4	49.4	54.0	54.0	53.0	52.0	52.0	51.0	50.0	50.0	49.0	51.8	10.0	61.8
	3	52.2	59.9	49.5	56.0	55.0	54.0	53.0	52.0	51.0	50.0	50.0	50.0	52.2	10.0	62.2
	4	53.3	62.7	48.9	57.0	56.0	56.0	55.0	53.0	52.0	51.0	50.0	49.0	53.3	10.0	63.3
	5	57.3	70.3	50.6	67.0	65.0	62.0	60.0	56.0	54.0	52.0	51.0	51.0	57.3	10.0	67.3
	6	56.9	73.9	51.5	64.0	63.0	60.0	59.0	57.0	55.0	53.0	53.0	52.0	56.9	10.0	66.9
Day	7	57.7	73.9	51.7	66.0	64.0	61.0	60.0	57.0	56.0	53.0	53.0	52.0	57.7	0.0	57.7
	8	57.0	73.7	48.9	64.0	62.0	60.0	59.0	57.0	55.0	52.0	51.0	49.0	57.0	0.0	57.0
	9	56.5	73.2	48.9	65.0	64.0	61.0	59.0	56.0	54.0	51.0	50.0	49.0	56.5	0.0	56.5
	10	55.2	72.3	48.5	62.0	60.0	58.0	57.0	55.0	53.0	50.0	50.0	49.0	55.2	0.0	55.2
	11	56.5	71.0	50.2	63.0	61.0	60.0	59.0	57.0	55.0	52.0	51.0	50.0	56.5	0.0	56.5
	12	58.0	69.9	49.3	67.0	66.0	64.0	61.0	57.0	55.0	52.0	51.0	50.0	58.0	0.0	58.0
	13	57.2	74.9	49.5	66.0	64.0	61.0	59.0	57.0	55.0	52.0	51.0	50.0	57.2	0.0	57.2
	14	56.8	77.4	49.4	64.0	62.0	60.0	59.0	57.0	55.0	52.0	51.0	50.0	56.8	0.0	56.8
	15	57.1	74.8	49.2	66.0	63.0	60.0	58.0	56.0	54.0	52.0	51.0	50.0	57.1	0.0	57.1
	16	57.3	74.7	50.7	66.0	63.0	60.0	59.0	57.0	55.0	52.0	52.0	51.0	57.3	0.0	57.3
	17	57.2	72.7	50.6	63.0	62.0	60.0	59.0	57.0	56.0	53.0	52.0	51.0	57.2	0.0	57.2
	18	57.0	70.7	50.0	65.0	63.0	62.0	60.0	56.0	54.0	52.0	51.0	50.0	57.0	0.0	57.0
Evening	19	55.8	68.6	49.1	63.0	61.0	59.0	58.0	56.0	54.0	51.0	51.0	50.0	55.8	5.0	60.8
	20	55.4	77.7	49.6	64.0	61.0	58.0	56.0	54.0	53.0	51.0	50.0	50.0	55.4	5.0	60.4
	21	52.5	60.9	49.0	56.0	55.0	54.0	54.0	53.0	52.0	50.0	50.0	49.0	52.5	5.0	57.5
Night	22	52.0	61.5	48.4	56.0	55.0	54.0	54.0	52.0	51.0	49.0	49.0	49.0	52.0	10.0	62.0
	23	51.6	66.0	47.6	56.0	54.0	53.0	53.0	52.0	51.0	49.0	48.0	48.0	51.6	10.0	61.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	55.2	69.9	48.5	62.0	60.0	58.0	57.0	55.0	53.0	50.0	50.0	49.0
	Max	58.0	77.4	51.7	67.0	66.0	64.0	61.0	57.0	56.0	53.0	53.0	52.0
Energy Average		57.0	Average:		64.8	62.8	60.6	59.1	56.6	54.8	51.9	51.2	50.1
Evening	Min	52.5	60.9	49.0	56.0	55.0	54.0	54.0	53.0	52.0	50.0	50.0	49.0
	Max	55.8	77.7	49.6	64.0	61.0	59.0	58.0	56.0	54.0	51.0	51.0	50.0
Energy Average		54.8	Average:		61.0	59.0	57.0	56.0	54.3	53.0	50.7	50.3	49.7
Night	Min	51.6	57.4	47.6	54.0	53.0	53.0	52.0	51.0	51.0	49.0	48.0	48.0
	Max	57.3	73.9	51.5	67.0	65.0	62.0	60.0	57.0	55.0	53.0	53.0	52.0
Energy Average		53.8	Average:		57.8	56.6	55.3	54.6	53.0	52.0	50.4	50.0	49.6

24-Hour L_{eq} (dBA)

55.8

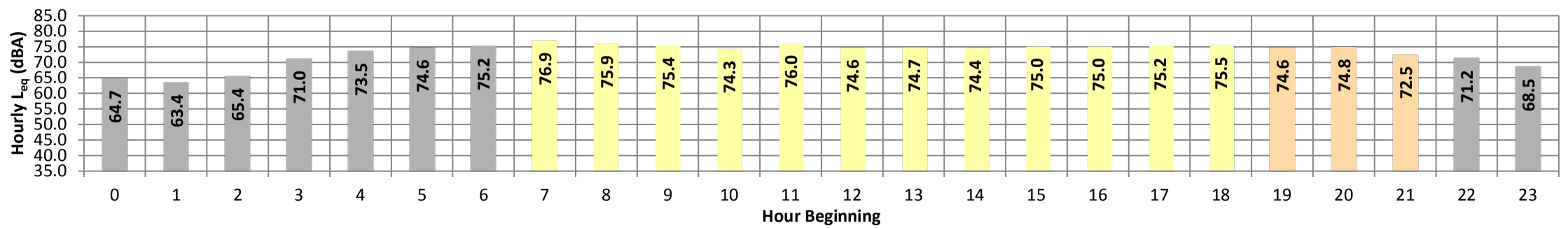
24-Hour CNEL (dBA)

61.1

24-Hour Noise Level Measurement Summary

Date: Wednesday, May 17, 2017
Project: Nakase
Location: L8 - Located at the northwestern Project site boundary adjacent to Bake Parkway.
Meter: Piccolo I
JN: 11049
Analyst: A. Wolfe

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	64.7	84.5	39.5	78.0	75.0	70.0	67.0	57.0	46.0	41.0	41.0	40.0	64.7	10.0	74.7
	1	63.4	84.1	39.4	77.0	73.0	68.0	65.0	52.0	43.0	40.0	39.0	39.0	63.4	10.0	73.4
	2	65.4	87.6	39.4	79.0	76.0	69.0	66.0	53.0	44.0	41.0	40.0	39.0	65.4	10.0	75.4
	3	71.0	88.1	39.4	83.0	82.0	78.0	76.0	65.0	54.0	42.0	41.0	41.0	71.0	10.0	81.0
	4	73.5	87.9	41.8	84.0	83.0	81.0	79.0	71.0	63.0	48.0	46.0	43.0	73.5	10.0	83.5
	5	74.6	88.0	44.8	84.0	83.0	82.0	80.0	73.0	67.0	54.0	52.0	48.0	74.6	10.0	84.6
	6	75.2	88.9	50.3	83.0	83.0	81.0	80.0	75.0	70.0	57.0	55.0	52.0	75.2	10.0	85.2
Day	7	76.9	97.8	50.6	84.0	83.0	82.0	81.0	78.0	72.0	59.0	56.0	53.0	76.9	0.0	76.9
	8	75.9	95.7	48.3	84.0	83.0	81.0	81.0	77.0	70.0	59.0	57.0	52.0	75.9	0.0	75.9
	9	75.4	102.5	47.3	82.0	82.0	80.0	79.0	74.0	69.0	58.0	55.0	52.0	75.4	0.0	75.4
	10	74.3	86.3	46.5	83.0	82.0	80.0	79.0	75.0	68.0	56.0	53.0	50.0	74.3	0.0	74.3
	11	76.0	90.4	48.6	84.0	83.0	81.0	80.0	77.0	72.0	61.0	59.0	55.0	76.0	0.0	76.0
	12	74.6	87.5	51.2	82.0	82.0	81.0	80.0	75.0	69.0	60.0	58.0	55.0	74.6	0.0	74.6
	13	74.7	96.8	48.7	83.0	82.0	80.0	79.0	75.0	69.0	59.0	56.0	52.0	74.7	0.0	74.7
	14	74.4	88.2	49.1	83.0	82.0	81.0	79.0	75.0	69.0	59.0	56.0	51.0	74.4	0.0	74.4
	15	75.0	91.9	49.0	83.0	82.0	80.0	80.0	76.0	70.0	60.0	58.0	53.0	75.0	0.0	75.0
	16	75.0	88.8	53.1	82.0	81.0	80.0	79.0	76.0	71.0	61.0	59.0	56.0	75.0	0.0	75.0
	17	75.2	86.9	50.1	82.0	81.0	80.0	79.0	77.0	72.0	60.0	58.0	54.0	75.2	0.0	75.2
	18	75.5	90.6	47.9	83.0	82.0	81.0	80.0	76.0	70.0	59.0	57.0	52.0	75.5	0.0	75.5
Evening	19	74.6	87.1	48.4	83.0	82.0	81.0	80.0	75.0	68.0	57.0	54.0	51.0	74.6	5.0	79.6
	20	74.8	91.2	43.8	83.0	82.0	81.0	80.0	75.0	68.0	55.0	52.0	47.0	74.8	5.0	79.8
	21	72.5	86.2	42.0	82.0	81.0	79.0	78.0	71.0	65.0	53.0	50.0	44.0	72.5	5.0	77.5
Night	22	71.2	87.7	42.3	82.0	81.0	78.0	76.0	69.0	62.0	49.0	47.0	44.0	71.2	10.0	81.2
	23	68.5	86.8	41.0	80.0	79.0	76.0	73.0	64.0	55.0	44.0	43.0	41.0	68.5	10.0	78.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	74.3	86.3	46.5	82.0	81.0	80.0	79.0	74.0	68.0	56.0	53.0	50.0
	Max	76.9	102.5	53.1	84.0	83.0	82.0	81.0	78.0	72.0	61.0	59.0	56.0
Energy Average		75.3	Average:		82.9	82.1	80.6	79.7	75.9	70.1	59.3	56.8	52.9
Evening	Min	72.5	86.2	42.0	82.0	81.0	79.0	78.0	71.0	65.0	53.0	50.0	44.0
	Max	74.8	91.2	48.4	83.0	82.0	81.0	80.0	75.0	68.0	57.0	54.0	51.0
Energy Average		74.1	Average:		82.7	81.7	80.3	79.3	73.7	67.0	55.0	52.0	47.3
Night	Min	63.4	84.1	39.4	77.0	73.0	68.0	65.0	52.0	43.0	40.0	39.0	39.0
	Max	75.2	88.9	50.3	84.0	83.0	82.0	80.0	75.0	70.0	57.0	55.0	52.0
Energy Average		71.5	Average:		81.1	79.4	75.9	73.6	64.3	56.0	46.2	44.9	43.0

24-Hour L_{eq} (dBA)

74.0

24-Hour CNEL (dBA)

79.0

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,860	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.13	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-17.37	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-21.32	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	64.1	62.6	56.2	54.7	63.2	63.4
Heavy Trucks:	64.1	62.7	53.7	54.9	63.3	63.4
Vehicle Noise:	72.3	70.5	67.6	62.7	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	157	337	727
CNEL:	78	168	363	782

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,320	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.25	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-15.99	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-19.95	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	68.6	66.8	60.8	69.4	70.0
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	64.5	63.1	54.0	55.3	63.6	63.8
Vehicle Noise:	72.2	70.4	67.4	62.6	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	333	718
CNEL:	77	166	358	771

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	560	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.96	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-21.20	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-25.15	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	56.2	54.6	48.3	46.7	55.2	55.4
Heavy Trucks:	57.5	56.0	47.0	48.3	56.6	56.7
Vehicle Noise:	64.2	62.5	59.2	54.6	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	38	81	175
CNEL:	19	40	87	187

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	720	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.87	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-20.10	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-24.06	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.3	61.4	59.6	53.5	62.2	62.8
Medium Trucks:	57.2	55.7	49.4	47.8	56.3	56.5
Heavy Trucks:	58.6	57.1	48.1	49.3	57.7	57.8
Vehicle Noise:	65.3	63.5	60.3	55.7	64.3	64.7

Centerline Distance to Noise Contour (in feet)

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

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,550 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.05	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-17.29	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-21.24	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	65.6	64.1	57.8	56.2	64.7	64.9
Heavy Trucks:	66.4	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	73.7	71.9	68.8	64.1	72.7	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	451
CNEL:	48	104	224	484

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.75	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.48	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.44	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.7	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	64.6	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.6	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	133	286
CNEL:	31	66	142	306

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.94	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-19.18	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-23.13	4.63	-1.20	-5.77	0.000	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:	60.0	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	61.9	60.4	51.4	52.7	61.0	61.1
Vehicle Noise:	68.0	66.3	62.9	58.5	67.0	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	189
CNEL:	20	44	94	202

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.70	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.94	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.89	4.63	-1.20	-5.77	0.000	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:	58.3	56.8	50.4	48.9	57.3	57.6
Heavy Trucks:	60.1	58.7	49.6	50.9	59.2	59.4
Vehicle Noise:	66.3	64.5	61.1	56.7	65.2	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	145
CNEL:	15	33	72	154

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.06	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-15.18	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-19.13	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.6	60.1	53.7	52.2	60.7	60.9
Heavy Trucks:	62.9	61.5	52.5	53.7	62.1	62.2
Vehicle Noise:	69.6	67.9	64.6	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	225	485
CNEL:	52	112	241	519

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,510 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.59	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-15.65	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-19.61	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	68.6	66.8	60.8	69.4	70.0
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.5	63.0	54.0	55.3	63.6	63.7
Vehicle Noise:	72.2	70.4	67.4	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	180	387	834
CNEL:	90	193	416	896

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,790 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.38	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.86	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.82	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	66.2	64.7	58.3	56.8	65.3	65.5
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.3	72.6	69.5	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	214	462	996
CNEL:	107	230	496	1,070

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,510 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.4	61.3	69.9	70.5
Medium Trucks:	64.8	63.3	56.9	55.4	63.8	64.1
Heavy Trucks:	65.6	64.2	55.2	56.4	64.8	64.9
Vehicle Noise:	72.9	71.1	68.0	63.3	71.8	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	369	794
CNEL:	85	183	395	852

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.60	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.64	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.59	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.8	61.7	70.3	70.9
Medium Trucks:	64.8	63.3	57.0	55.4	63.9	64.1
Heavy Trucks:	64.9	63.4	54.4	55.7	64.0	64.1
Vehicle Noise:	73.0	71.3	68.3	63.4	72.0	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	175	377	813
CNEL:	87	188	406	875

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

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:	60 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.58	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.65	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.61	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.1	71.8	72.4
Medium Trucks:	66.1	64.6	58.2	56.7	65.1	65.4
Heavy Trucks:	65.8	64.3	55.3	56.6	64.9	65.0
Vehicle Noise:	74.3	72.6	69.7	64.7	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	214	462	995
CNEL:	107	231	498	1,072

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,330 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.85	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.39	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.34	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	62.0	70.6	71.2
Medium Trucks:	65.1	63.6	57.2	55.7	64.1	64.4
Heavy Trucks:	65.1	63.7	54.7	55.9	64.3	64.4
Vehicle Noise:	73.3	71.5	68.5	63.7	72.2	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	182	392	845
CNEL:	91	196	422	909

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	72,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	7,220 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.76	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.48	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.43	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.6	74.7	72.9	66.9	75.5	76.1
Medium Trucks:	70.0	68.5	62.1	60.6	69.0	69.3
Heavy Trucks:	70.0	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	78.2	76.4	73.5	68.6	77.1	77.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	180	387	833	1,795
CNEL:	193	416	896	1,931

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	62,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,280 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.16	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.08	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.04	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.0	74.1	72.3	66.3	74.9	75.5
Medium Trucks:	69.4	67.9	61.5	60.0	68.4	68.7
Heavy Trucks:	69.4	68.0	59.0	60.2	68.6	68.7
Vehicle Noise:	77.6	75.8	72.9	68.0	76.5	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	164	352	759	1,636
CNEL:	176	379	817	1,760

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	61,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,110 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.04	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.20	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.16	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.9	74.0	72.2	66.2	74.8	75.4
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.5
Heavy Trucks:	69.3	67.9	58.8	60.1	68.4	68.6
Vehicle Noise:	77.5	75.7	72.7	67.9	76.4	76.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	161	346	746	1,606
CNEL:	173	372	802	1,728

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	51,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,140 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.70	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.54	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.49	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.0	72.1	70.3	64.2	72.9	73.5
Medium Trucks:	67.5	66.0	59.7	58.1	66.6	66.8
Heavy Trucks:	67.9	66.5	57.5	58.7	67.1	67.2
Vehicle Noise:	75.7	73.9	70.9	66.1	74.6	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	122	263	566	1,220
CNEL:	131	282	608	1,310

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	49,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,930 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.52	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.72	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.67	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.8	71.9	70.1	64.1	72.7	73.3
Medium Trucks:	67.3	65.8	59.5	57.9	66.4	66.6
Heavy Trucks:	67.8	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	75.5	73.7	70.7	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	256	551	1,186
CNEL:	127	275	592	1,275

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,740 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.32	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.92	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.87	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	66.1	64.6	58.3	56.7	65.2	65.4
Heavy Trucks:	66.6	65.1	56.1	57.4	65.7	65.8
Vehicle Noise:	74.3	72.5	69.5	64.7	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	213	458	987
CNEL:	106	228	492	1,060

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.91	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-15.33	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-19.29	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.1	62.0	70.6	71.2
Medium Trucks:	65.3	63.8	57.4	55.9	64.3	64.6
Heavy Trucks:	65.7	64.3	55.2	56.5	64.9	65.0
Vehicle Noise:	73.4	71.7	68.6	63.8	72.4	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	335	722
CNEL:	78	167	360	775

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-15.02	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.98	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	65.6	64.1	57.7	56.2	64.7	64.9
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	73.7	72.0	68.9	64.2	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	351	757
CNEL:	81	175	377	813

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,950 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.29	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.95	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.90	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.4	71.0	71.6
Medium Trucks:	65.7	64.2	57.8	56.3	64.7	65.0
Heavy Trucks:	66.1	64.7	55.6	56.9	65.2	65.4
Vehicle Noise:	73.8	72.1	69.0	64.2	72.8	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	355	765
CNEL:	82	177	382	822

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,740 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.97	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.27	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.23	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	69.2	67.7	61.3	59.8	68.3	68.5
Heavy Trucks:	69.6	68.2	59.1	60.4	68.7	68.9
Vehicle Noise:	77.3	75.5	72.5	67.7	76.3	76.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	169	364	785
CNEL:	84	182	392	844

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,700 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.10	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-17.34	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-21.30	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.9	63.8	72.4	73.0
Medium Trucks:	67.1	65.6	59.3	57.7	66.2	66.4
Heavy Trucks:	67.5	66.1	57.0	58.3	66.7	66.8
Vehicle Noise:	75.2	73.5	70.4	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	265	571
CNEL:	61	132	285	614

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,510 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.04	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.19	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.15	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.6	71.2	71.8
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	66.3	64.9	55.8	57.1	65.4	65.6
Vehicle Noise:	74.0	72.2	69.2	64.4	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	439	946
CNEL:	102	219	472	1,016

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,750 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.33	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.91	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.86	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	66.2	64.7	58.3	56.7	65.2	65.4
Heavy Trucks:	66.6	65.1	56.1	57.4	65.7	65.8
Vehicle Noise:	74.3	72.5	69.5	64.7	73.3	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	213	459	989
CNEL:	106	229	493	1,062

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,690	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.26	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.98	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.93	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	67.1	65.6	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	191	412	889
CNEL:	95	206	443	955

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.07	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-16.16	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-20.12	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.9	69.0	67.2	61.2	69.8	70.4
Medium Trucks:	64.5	63.0	56.6	55.1	63.5	63.7
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.6	70.8	67.8	63.0	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	635
CNEL:	68	147	317	682

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,630	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.29	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-17.53	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-21.48	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.7	63.6	72.2	72.9
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.0	73.3	70.2	65.5	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	258	555
CNEL:	60	129	277	597

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,000	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.41	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-19.65	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-23.60	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.2	69.3	67.6	61.5	70.1	70.7
Medium Trucks:	64.8	63.3	57.0	55.4	63.9	64.1
Heavy Trucks:	65.2	63.8	54.7	56.0	64.3	64.5
Vehicle Noise:	72.9	71.2	68.1	63.3	71.9	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	186	401
CNEL:	43	93	200	431

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	850 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.66	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-19.90	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-23.85	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.2	67.3	65.6	59.5	68.1	68.7
Medium Trucks:	63.0	61.5	55.2	53.6	62.1	62.3
Heavy Trucks:	63.8	62.4	53.4	54.6	63.0	63.1
Vehicle Noise:	71.1	69.3	66.2	61.5	70.0	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	32	70	150	324

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,960 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.57	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.67	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.63	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.7	71.4	72.0
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.4	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	74.2	72.4	69.4	64.6	73.1	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	243	525	1,130
CNEL:	121	262	564	1,214

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,910 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.51	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.73	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.68	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.7	62.7	71.3	71.9
Medium Trucks:	66.0	64.5	58.1	56.6	65.0	65.3
Heavy Trucks:	66.4	65.0	55.9	57.2	65.5	65.7
Vehicle Noise:	74.1	72.3	69.3	64.5	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	112	241	520	1,121
CNEL:	120	259	559	1,204

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

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:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.78	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.46	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.42	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	61.9	70.6	71.2
Medium Trucks:	65.2	63.7	57.4	55.8	64.3	64.5
Heavy Trucks:	65.6	64.2	55.2	56.4	64.8	64.9
Vehicle Noise:	73.4	71.6	68.6	63.8	72.3	72.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	216	465	1,001
CNEL:	108	232	499	1,075

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.21	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.16	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.6	71.2	71.8
Medium Trucks:	65.9	64.4	58.0	56.4	64.9	65.1
Heavy Trucks:	66.3	64.8	55.8	57.1	65.4	65.5
Vehicle Noise:	74.0	72.2	69.2	64.4	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	438	944
CNEL:	101	219	471	1,014

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,550	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.24	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.00	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.95	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.4	71.0	71.6
Medium Trucks:	65.5	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.5	64.1	55.0	56.3	64.6	64.8
Vehicle Noise:	73.7	71.9	68.9	64.1	72.6	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	193	416	897
CNEL:	97	208	448	965

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.12	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-18.36	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-22.31	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.1	61.6	55.2	53.7	62.2	62.4
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	71.3	69.5	66.6	61.7	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	290	624
CNEL:	67	145	312	671

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,890	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.06	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-17.30	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-21.25	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.8	68.9	67.1	61.1	69.7	70.3
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	64.2	62.8	53.7	55.0	63.3	63.5
Vehicle Noise:	72.4	70.6	67.6	62.8	71.3	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	341	735
CNEL:	79	170	367	790

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

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:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.34	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-15.90	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-19.86	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	66.9	60.9	69.5	70.1
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.4
Heavy Trucks:	64.6	63.2	54.1	55.4	63.7	63.9
Vehicle Noise:	72.3	70.5	67.5	62.7	71.3	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	157	338	728
CNEL:	78	169	363	782

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	650	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.31	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-20.55	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-24.50	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	60.9	59.2	53.1	61.7	62.3
Medium Trucks:	56.8	55.3	48.9	47.4	55.8	56.1
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	64.8	63.1	59.8	55.3	63.8	64.3

Centerline Distance to Noise Contour (in feet)

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

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	850	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.15	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-19.38	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-23.34	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.0	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	58.0	56.5	50.1	48.5	57.0	57.2
Heavy Trucks:	59.3	57.9	48.8	50.1	58.4	58.5
Vehicle Noise:	66.0	64.3	61.0	56.4	65.0	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	107	231
CNEL:	25	53	115	247

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,690	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.33	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-16.91	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-20.87	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.6	62.5	71.1	71.7
Medium Trucks:	66.0	64.5	58.1	56.6	65.1	65.3
Heavy Trucks:	66.8	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	74.1	72.3	69.2	64.5	73.0	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	478
CNEL:	51	110	238	512

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.87	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.37	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.32	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.6	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	62.9	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	64.7	63.3	54.2	55.5	63.8	63.9
Vehicle Noise:	70.8	69.1	65.7	61.3	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	135	292
CNEL:	31	67	145	312

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	800 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.83	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-19.07	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-23.02	4.63	-1.20	-5.77	0.000	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:	60.2	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	62.0	60.6	51.5	52.8	61.1	61.2
Vehicle Noise:	68.1	66.4	63.0	58.6	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	89	193
CNEL:	21	44	96	206

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	540 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.54	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.77	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.73	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.5	54.5	63.1	63.7
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	60.3	58.8	49.8	51.1	59.4	59.5
Vehicle Noise:	66.4	64.7	61.3	56.9	65.4	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	74	158

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,270 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.12	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-15.12	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-19.07	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.0	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	69.7	68.0	64.7	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	227	489
CNEL:	52	113	243	524

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.64	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-15.60	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-19.55	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	68.6	66.9	60.8	69.4	70.0
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	64.5	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	72.2	70.5	67.4	62.6	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	181	390	841
CNEL:	90	195	419	903

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,850 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.45	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.79	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.75	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.0	63.0	71.6	72.2
Medium Trucks:	66.3	64.8	58.4	56.9	65.3	65.6
Heavy Trucks:	66.7	65.3	56.2	57.5	65.8	66.0
Vehicle Noise:	74.4	72.6	69.6	64.8	73.4	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	217	467	1,006
CNEL:	108	233	502	1,081

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,560 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.56	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-13.67	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-17.63	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.1	69.2	67.4	61.4	70.0	70.6
Medium Trucks:	64.8	63.3	57.0	55.4	63.9	64.1
Heavy Trucks:	65.7	64.3	55.2	56.5	64.8	64.9
Vehicle Noise:	72.9	71.2	68.0	63.3	71.9	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	372	802
CNEL:	86	185	399	860

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.68	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.56	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.51	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	64.9	63.4	57.0	55.5	64.0	64.2
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	73.1	71.3	68.4	63.5	72.1	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	177	382	823
CNEL:	89	191	411	885

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,470	vehicles
Vehicle Speed:	60	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.73	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.51	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.47	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.2	64.7	58.4	56.8	65.3	65.5
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	74.5	72.7	69.8	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	219	472	1,018
CNEL:	110	236	509	1,096

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,410	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.00	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.24	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.20	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	65.2	63.7	57.4	55.8	64.3	64.5
Heavy Trucks:	65.3	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	73.4	71.7	68.7	63.8	72.4	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	186	401	864
CNEL:	93	200	431	929

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	73,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,360	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.85	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.39	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.35	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.7	74.8	73.0	67.0	75.6	76.2
Medium Trucks:	70.1	68.6	62.2	60.7	69.1	69.4
Heavy Trucks:	70.1	68.7	59.6	60.9	69.2	69.4
Vehicle Noise:	78.3	76.5	73.5	68.7	77.2	77.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	182	392	844	1,818
CNEL:	196	421	908	1,956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	64,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,420	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.25	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.99	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.94	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.4	66.4	75.0	75.6
Medium Trucks:	69.5	68.0	61.6	60.1	68.5	68.8
Heavy Trucks:	69.5	68.1	59.1	60.3	68.7	68.8
Vehicle Noise:	77.7	75.9	73.0	68.1	76.6	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	166	358	771	1,660
CNEL:	179	385	829	1,786

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	62,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,280 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.16	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.08	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.04	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.0	74.1	72.3	66.3	74.9	75.5
Medium Trucks:	69.4	67.9	61.5	60.0	68.4	68.7
Heavy Trucks:	69.4	68.0	59.0	60.2	68.6	68.7
Vehicle Noise:	77.6	75.8	72.9	68.0	76.5	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	164	352	759	1,636
CNEL:	176	379	817	1,760

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	53,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,310 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.40	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.35	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.1	72.2	70.4	64.4	73.0	73.6
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	66.9
Heavy Trucks:	68.1	66.7	57.6	58.9	67.2	67.4
Vehicle Noise:	75.8	74.0	71.0	66.2	74.8	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	579	1,246
CNEL:	134	289	622	1,339

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	51,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.67	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.57	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.53	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.9	72.0	70.3	64.2	72.8	73.4
Medium Trucks:	67.5	66.0	59.6	58.1	66.5	66.8
Heavy Trucks:	67.9	66.5	57.4	58.7	67.1	67.2
Vehicle Noise:	75.6	73.9	70.8	66.0	74.6	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	563	1,213
CNEL:	130	281	605	1,304

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,950 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.56	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.68	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.64	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.2	63.1	71.7	72.3
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	66.8	65.4	56.3	57.6	65.9	66.1
Vehicle Noise:	74.5	72.8	69.7	64.9	73.5	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	220	475	1,023
CNEL:	110	237	510	1,099

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,920 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.25	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.99	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.95	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.3	71.0	71.6
Medium Trucks:	65.6	64.1	57.8	56.2	64.7	64.9
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	73.8	72.0	69.0	64.2	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	164	353	760
CNEL:	82	176	379	817

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,180 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.62	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.62	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.58	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.8	62.7	71.3	71.9
Medium Trucks:	66.0	64.5	58.1	56.6	65.1	65.3
Heavy Trucks:	66.4	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	74.1	72.4	69.3	64.6	73.1	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	374	805
CNEL:	86	186	401	865

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,040 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.42	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.82	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.77	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.6	62.5	71.1	71.8
Medium Trucks:	65.8	64.3	57.9	56.4	64.9	65.1
Heavy Trucks:	66.2	64.8	55.8	57.0	65.4	65.5
Vehicle Noise:	73.9	72.2	69.1	64.4	72.9	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	168	362	781
CNEL:	84	181	389	839

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,850 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.14	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.10	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.05	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.8	73.9	72.1	66.1	74.7	75.3
Medium Trucks:	69.4	67.9	61.5	60.0	68.4	68.7
Heavy Trucks:	69.8	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.5	75.7	72.7	67.9	76.4	76.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	174	374	806
CNEL:	87	187	402	866

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,750 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.02	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-17.22	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-21.17	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	63.9	72.6	73.2
Medium Trucks:	67.3	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.4	73.6	70.6	65.8	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	270	582
CNEL:	63	135	290	626

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,560 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.11	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.13	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.09	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.7	62.6	71.3	71.9
Medium Trucks:	65.9	64.4	58.1	56.5	65.0	65.2
Heavy Trucks:	66.3	64.9	55.9	57.1	65.5	65.6
Vehicle Noise:	74.1	72.3	69.3	64.5	73.0	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	206	443	955
CNEL:	103	221	476	1,026

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,800 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.85	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.80	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.2
Medium Trucks:	66.2	64.7	58.3	56.8	65.3	65.5
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.3	72.6	69.5	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	997
CNEL:	107	231	497	1,071

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,750 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.33	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.91	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.86	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.4	72.1	72.7
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.8	73.1	70.1	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	194	417	898
CNEL:	97	208	448	965

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,300 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.21	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-16.03	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-19.99	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.4	61.3	69.9	70.5
Medium Trucks:	64.6	63.1	56.7	55.2	63.6	63.9
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	72.7	71.0	67.9	63.1	71.7	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	301	648
CNEL:	70	150	323	697

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.05	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-17.29	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-21.25	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.6	71.7	69.9	63.9	72.5	73.1
Medium Trucks:	67.2	65.7	59.3	57.8	66.2	66.5
Heavy Trucks:	67.6	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	75.3	73.5	70.5	65.7	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	267	576
CNEL:	62	133	287	618

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.28	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-19.52	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-23.47	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	65.0	63.4	57.1	55.5	64.0	64.2
Heavy Trucks:	65.3	63.9	54.9	56.1	64.5	64.6
Vehicle Noise:	73.1	71.3	68.3	63.5	72.0	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	88	190	409
CNEL:	44	95	204	439

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	880 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.51	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-19.74	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-23.70	4.63	-1.20	-5.77	0.000	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:	63.2	61.7	55.3	53.8	62.2	62.5
Heavy Trucks:	64.0	62.6	53.5	54.8	63.1	63.3
Vehicle Noise:	71.2	69.5	66.3	61.7	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	143	309
CNEL:	33	71	154	332

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,010 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.62	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.62	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.57	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.8	71.4	72.0
Medium Trucks:	66.1	64.6	58.2	56.7	65.1	65.4
Heavy Trucks:	66.5	65.1	56.0	57.3	65.6	65.8
Vehicle Noise:	74.2	72.5	69.4	64.6	73.2	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	114	246	529	1,140
CNEL:	122	264	568	1,224

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,960 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.57	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.67	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.63	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.7	71.4	72.0
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.4	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	74.2	72.4	69.4	64.6	73.1	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	243	525	1,130
CNEL:	121	262	564	1,214

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,350 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.84	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.40	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.35	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.1	62.0	70.6	71.2
Medium Trucks:	65.3	63.8	57.4	55.9	64.3	64.6
Heavy Trucks:	65.7	64.3	55.3	56.5	64.9	65.0
Vehicle Noise:	73.4	71.7	68.6	63.8	72.4	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	218	469	1,011
CNEL:	109	234	504	1,086

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,520 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.06	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.18	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.14	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.6	71.2	71.8
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	66.3	64.9	55.8	57.1	65.4	65.6
Vehicle Noise:	74.0	72.3	69.2	64.4	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	440	948
CNEL:	102	219	473	1,018

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,570	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.28	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.96	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.92	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.4	71.0	71.6
Medium Trucks:	65.5	64.0	57.6	56.1	64.6	64.8
Heavy Trucks:	65.5	64.1	55.1	56.3	64.7	64.8
Vehicle Noise:	73.7	71.9	69.0	64.1	72.7	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	194	419	902
CNEL:	97	209	450	970

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,510	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.03	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-18.27	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-22.23	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	63.2	61.7	55.3	53.8	62.2	62.5
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	71.4	69.6	66.7	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	294	633
CNEL:	68	147	316	681

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,300	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.79	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.44	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.40	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	68.0	61.9	70.5	71.1
Medium Trucks:	65.0	63.5	57.2	55.6	64.1	64.3
Heavy Trucks:	65.1	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	73.2	71.4	68.5	63.6	72.2	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	180	389	837
CNEL:	90	194	418	901

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

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:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.78	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.46	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.42	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	65.6	64.1	57.7	56.2	64.7	64.9
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	73.7	72.0	68.9	64.1	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	196	421	908
CNEL:	98	210	453	975

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	920 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.80	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-19.04	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-23.00	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.3	62.4	60.7	54.6	63.2	63.8
Medium Trucks:	58.3	56.8	50.4	48.9	57.4	57.6
Heavy Trucks:	59.6	58.2	49.2	50.4	58.8	58.9
Vehicle Noise:	66.3	64.6	61.3	56.8	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	113	244
CNEL:	26	56	121	261

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	900 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.90	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-19.14	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-23.09	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	58.2	56.7	50.3	48.8	57.3	57.5
Heavy Trucks:	59.5	58.1	49.1	50.3	58.7	58.8
Vehicle Noise:	66.2	64.5	61.2	56.7	65.2	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	111	240
CNEL:	26	55	119	257

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,900 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.84	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-16.40	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-20.36	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.1	63.0	71.6	72.2
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	74.6	72.8	69.7	65.0	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	111	240	516
CNEL:	55	119	257	554

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.75	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.48	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.44	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.7	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	64.6	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.6	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	133	286
CNEL:	31	66	142	306

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	790 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.88	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-19.12	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-23.08	4.63	-1.20	-5.77	0.000	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	62.2	56.1	64.7	65.4
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	68.1	66.4	62.9	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	191
CNEL:	20	44	95	204

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	540 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.54	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.77	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.73	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.5	54.5	63.1	63.7
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	60.3	58.8	49.8	51.1	59.4	59.5
Vehicle Noise:	66.4	64.7	61.3	56.9	65.4	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	74	158

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,750 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.95	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.28	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.24	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	63.8	62.4	53.4	54.6	63.0	63.1
Vehicle Noise:	70.5	68.8	65.5	61.0	69.5	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	258	556
CNEL:	60	128	276	596

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-15.02	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.98	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.1	69.2	67.4	61.4	70.0	70.6
Medium Trucks:	64.7	63.2	56.8	55.3	63.7	64.0
Heavy Trucks:	65.1	63.7	54.6	55.9	64.2	64.4
Vehicle Noise:	72.8	71.0	68.0	63.2	71.8	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	198	426	918
CNEL:	99	213	458	987

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.0	71.7	72.3
Medium Trucks:	66.3	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,015
CNEL:	109	235	506	1,090

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,790 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-13.40	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-17.36	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	65.1	63.6	57.2	55.7	64.2	64.4
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	73.2	71.4	68.3	63.6	72.2	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	180	388	836
CNEL:	90	193	416	896

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.82	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.42	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.38	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.0	62.9	71.6	72.2
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.1	64.7	55.6	56.9	65.2	65.3
Vehicle Noise:	74.2	72.5	69.5	64.6	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	211	455	980
CNEL:	105	227	489	1,054

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,500 vehicles
Vehicle Speed:	60 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.78	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.46	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.42	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.3	72.0	72.6
Medium Trucks:	66.3	64.8	58.4	56.9	65.3	65.6
Heavy Trucks:	66.0	64.5	55.5	56.8	65.1	65.2
Vehicle Noise:	74.5	72.8	69.9	64.9	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	221	476	1,026
CNEL:	110	238	513	1,105

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,530	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.66	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.58	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.54	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.8	63.8	72.4	73.0
Medium Trucks:	66.9	65.4	59.0	57.5	65.9	66.2
Heavy Trucks:	66.9	65.5	56.5	57.7	66.1	66.2
Vehicle Noise:	75.1	73.3	70.4	65.5	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	240	517	1,114
CNEL:	120	258	556	1,199

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,400	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.87	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.37	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.32	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.7	74.8	73.0	67.0	75.6	76.2
Medium Trucks:	70.1	68.6	62.2	60.7	69.1	69.4
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	78.3	76.5	73.6	68.7	77.2	77.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	183	393	847	1,825
CNEL:	196	423	911	1,963

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	66,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,640	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.40	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.84	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.80	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.2	74.3	72.6	66.5	75.1	75.7
Medium Trucks:	69.6	68.1	61.8	60.2	68.7	68.9
Heavy Trucks:	69.7	68.2	59.2	60.4	68.8	68.9
Vehicle Noise:	77.8	76.1	73.1	68.2	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	170	366	788	1,698
CNEL:	183	394	848	1,827

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	63,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,340	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.20	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.04	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.00	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.0	74.1	72.4	66.3	74.9	75.5
Medium Trucks:	69.4	67.9	61.6	60.0	68.5	68.7
Heavy Trucks:	69.5	68.0	59.0	60.2	68.6	68.7
Vehicle Noise:	77.6	75.9	72.9	68.0	76.6	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	165	355	764	1,646
CNEL:	177	382	822	1,771

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	55,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,570 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.05	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.19	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.14	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.6	73.2	73.8
Medium Trucks:	67.9	66.4	60.0	58.5	66.9	67.2
Heavy Trucks:	68.3	66.9	57.8	59.1	67.4	67.6
Vehicle Noise:	76.0	74.3	71.2	66.4	75.0	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	129	277	597	1,287
CNEL:	138	298	642	1,383

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	51,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.67	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.57	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.53	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.9	72.0	70.3	64.2	72.8	73.4
Medium Trucks:	67.5	66.0	59.6	58.1	66.5	66.8
Heavy Trucks:	67.9	66.5	57.4	58.7	67.1	67.2
Vehicle Noise:	75.6	73.9	70.8	66.0	74.6	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	563	1,213
CNEL:	130	281	605	1,304

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,600 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.15	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.08	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.04	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.7	62.7	71.3	71.9
Medium Trucks:	66.0	64.5	58.1	56.6	65.0	65.3
Heavy Trucks:	66.4	65.0	55.9	57.2	65.5	65.7
Vehicle Noise:	74.1	72.4	69.3	64.5	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	447	962
CNEL:	103	223	480	1,034

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,450 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.97	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.27	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.22	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.1	71.7	72.3
Medium Trucks:	66.4	64.9	58.5	56.9	65.4	65.6
Heavy Trucks:	66.8	65.3	56.3	57.6	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.5	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	183	394	850
CNEL:	91	197	424	913

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.36	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.88	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.83	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.5	71.1	71.7
Medium Trucks:	65.8	64.2	57.9	56.3	64.8	65.0
Heavy Trucks:	66.2	64.7	55.7	57.0	65.3	65.4
Vehicle Noise:	73.9	72.1	69.1	64.3	72.8	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	167	359	774
CNEL:	83	179	386	832

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.36	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.88	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.83	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.5	71.1	71.7
Medium Trucks:	65.8	64.2	57.9	56.3	64.8	65.0
Heavy Trucks:	66.2	64.7	55.7	57.0	65.3	65.4
Vehicle Noise:	73.9	72.1	69.1	64.3	72.8	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	167	359	774
CNEL:	83	179	386	832

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.06	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.18	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.13	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.7	73.8	72.0	66.0	74.6	75.2
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.6
Heavy Trucks:	69.7	68.3	59.2	60.5	68.8	68.9
Vehicle Noise:	77.4	75.6	72.6	67.8	76.4	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	172	370	797
CNEL:	86	184	397	856

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,590 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.72	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.51	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.47	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.4	73.5	71.7	65.6	74.3	74.9
Medium Trucks:	69.0	67.5	61.1	59.5	68.0	68.2
Heavy Trucks:	69.3	67.9	58.9	60.1	68.5	68.6
Vehicle Noise:	77.1	75.3	72.3	67.5	76.0	76.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	351	756
CNEL:	81	175	377	813

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,220 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.39	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.35	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	496	1,069
CNEL:	115	248	533	1,149

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,220 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.39	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.35	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	496	1,069
CNEL:	115	248	533	1,149

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,920 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.52	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.71	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.67	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.7	63.6	72.2	72.9
Medium Trucks:	66.9	65.4	59.0	57.5	66.0	66.2
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.0	73.3	70.2	65.5	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	199	429	925
CNEL:	99	214	461	994

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.06	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-15.18	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-19.13	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.2	62.2	70.8	71.4
Medium Trucks:	65.5	63.9	57.6	56.0	64.5	64.7
Heavy Trucks:	65.9	64.4	55.4	56.7	65.0	65.1
Vehicle Noise:	73.6	71.8	68.8	64.0	72.5	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	159	343	739
CNEL:	79	171	369	794

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.02	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.22	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.18	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.6	72.7	71.0	64.9	73.5	74.2
Medium Trucks:	68.3	66.7	60.4	58.8	67.3	67.5
Heavy Trucks:	68.6	67.2	58.2	59.4	67.8	67.9
Vehicle Noise:	76.3	74.6	71.5	66.8	75.3	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	315	678
CNEL:	73	157	338	729

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,770 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.07	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-17.17	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-21.12	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	64.0	72.6	73.2
Medium Trucks:	67.3	65.8	59.4	57.9	66.4	66.6
Heavy Trucks:	67.7	66.3	57.2	58.5	66.8	67.0
Vehicle Noise:	75.4	73.7	70.6	65.8	74.4	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	126	272	587
CNEL:	63	136	293	630

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	720 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.38	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-20.62	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-24.57	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.3	60.8	54.4	52.9	61.4	61.6
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	70.4	68.6	65.5	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	126	270
CNEL:	29	62	135	290

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,170 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.79	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.45	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.40	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.0	63.0	71.6	72.2
Medium Trucks:	66.3	64.7	58.4	56.8	65.3	65.5
Heavy Trucks:	66.7	65.2	56.2	57.5	65.8	65.9
Vehicle Noise:	74.4	72.6	69.6	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	117	252	543	1,170
CNEL:	126	271	583	1,257

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,460 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.08	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.15	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.11	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	67.0	65.5	56.5	57.7	66.1	66.2
Vehicle Noise:	74.7	72.9	69.9	65.1	73.6	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	122	264	568	1,223
CNEL:	131	283	610	1,314

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,300 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.93	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.31	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.27	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.2	63.1	71.7	72.3
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	66.8	65.4	56.3	57.6	65.9	66.1
Vehicle Noise:	74.5	72.8	69.7	64.9	73.5	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	257	554	1,194
CNEL:	128	276	595	1,283

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,020 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.63	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.60	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.56	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.2	71.8	72.4
Medium Trucks:	66.5	65.0	58.6	57.0	65.5	65.7
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.1
Vehicle Noise:	74.6	72.8	69.8	65.0	73.6	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	223	481	1,035
CNEL:	111	240	516	1,112

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.80	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.44	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.39	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.1	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	74.2	72.5	69.5	64.6	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	211	454	977
CNEL:	105	227	488	1,051

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2020
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.65	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.59	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.55	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.8	71.4	72.0
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	65.9	64.5	55.4	56.7	65.1	65.2
Vehicle Noise:	74.1	72.3	69.3	64.5	73.0	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	206	443	955
CNEL:	103	221	477	1,027

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,300 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.79	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-16.44	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-20.40	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	68.0	61.9	70.5	71.1
Medium Trucks:	65.0	63.5	57.2	55.6	64.1	64.3
Heavy Trucks:	65.1	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	73.2	71.4	68.5	63.6	72.2	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	180	389	837
CNEL:	90	194	418	901

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

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:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.78	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-14.46	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-18.42	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	65.6	64.1	57.7	56.2	64.7	64.9
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	73.7	72.0	68.9	64.1	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	196	421	908
CNEL:	98	210	453	975

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.31	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-18.55	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-22.51	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	62.9	61.2	55.1	63.7	64.3
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	60.1	58.7	49.6	50.9	59.3	59.4
Vehicle Noise:	66.8	65.1	61.8	57.3	65.8	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	57	122	263
CNEL:	28	61	131	281

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,000 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.44	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-18.68	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-22.63	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	58.7	57.2	50.8	49.3	57.7	57.9
Heavy Trucks:	60.0	58.6	49.5	50.8	59.1	59.3
Vehicle Noise:	66.7	65.0	61.7	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	55	120	257
CNEL:	28	59	128	276

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,900 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.84	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-16.40	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-20.36	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.1	63.0	71.6	72.2
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	74.6	72.8	69.7	65.0	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	111	240	516
CNEL:	55	119	257	554

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,510 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.93	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.31	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.26	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.0	58.9	67.6	68.2
Medium Trucks:	62.9	61.4	55.0	53.5	62.0	62.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	70.9	69.2	65.7	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	137	294
CNEL:	31	68	146	314

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	820 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.72	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-18.96	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-22.92	4.63	-1.20	-5.77	0.000	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:	60.3	58.8	52.4	50.8	59.3	59.5
Heavy Trucks:	62.1	60.7	51.6	52.9	61.2	61.4
Vehicle Noise:	68.2	66.5	63.1	58.7	67.2	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	42	91	196
CNEL:	21	45	97	209

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	540	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.54	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.77	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.73	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.5	54.5	63.1	63.7
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	60.3	58.8	49.8	51.1	59.4	59.5
Vehicle Noise:	66.4	64.7	61.3	56.9	65.4	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	74	158

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	40	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.99	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.25	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.21	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.6	66.7	64.9	58.8	67.5	68.1
Medium Trucks:	62.5	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	63.8	62.4	53.4	54.6	63.0	63.1
Vehicle Noise:	70.6	68.8	65.6	61.0	69.5	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	60	129	278	598

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-15.02	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.98	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.1	69.2	67.4	61.4	70.0	70.6
Medium Trucks:	64.7	63.2	56.8	55.3	63.7	64.0
Heavy Trucks:	65.1	63.7	54.6	55.9	64.2	64.4
Vehicle Noise:	72.8	71.0	68.0	63.2	71.8	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	198	426	918
CNEL:	99	213	458	987

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.0	71.7	72.3
Medium Trucks:	66.3	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,015
CNEL:	109	235	506	1,090

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,790 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-13.40	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-17.36	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	65.1	63.6	57.2	55.7	64.2	64.4
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	73.2	71.4	68.3	63.6	72.2	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	180	388	836
CNEL:	90	193	416	896

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.80	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.44	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.39	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.1	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	74.2	72.5	69.5	64.6	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	211	454	977
CNEL:	105	227	488	1,051

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,600 vehicles
Vehicle Speed:	60 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.95	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.29	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.24	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.7
Medium Trucks:	66.5	65.0	58.6	57.0	65.5	65.7
Heavy Trucks:	66.1	64.7	55.7	56.9	65.3	65.4
Vehicle Noise:	74.7	72.9	70.1	65.1	73.7	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	105	227	489	1,053
CNEL:	113	244	526	1,134

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,680 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.84	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.40	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.36	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	64.0	72.6	73.2
Medium Trucks:	67.1	65.6	59.2	57.7	66.1	66.3
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	75.3	73.5	70.5	65.7	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	115	247	532	1,146
CNEL:	123	266	572	1,232

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	75,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,500	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.93	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.31	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.27	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.8	74.9	73.1	67.0	75.7	76.3
Medium Trucks:	70.2	68.7	62.3	60.7	69.2	69.4
Heavy Trucks:	70.2	68.8	59.7	61.0	69.3	69.5
Vehicle Noise:	78.3	76.6	73.6	68.8	77.3	77.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	184	397	855	1,841
CNEL:	198	427	920	1,981

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	66,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,680	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.43	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.81	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.77	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.3	74.4	72.6	66.5	75.2	75.8
Medium Trucks:	69.7	68.1	61.8	60.2	68.7	68.9
Heavy Trucks:	69.7	68.3	59.2	60.5	68.8	69.0
Vehicle Noise:	77.8	76.1	73.1	68.2	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	170	367	791	1,705
CNEL:	183	395	851	1,834

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	64,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,400	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.24	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.00	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.95	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.4	66.4	75.0	75.6
Medium Trucks:	69.5	68.0	61.6	60.1	68.5	68.7
Heavy Trucks:	69.5	68.1	59.0	60.3	68.6	68.8
Vehicle Noise:	77.7	75.9	72.9	68.1	76.6	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	166	357	769	1,657
CNEL:	178	384	827	1,782

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	56,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	5,630	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.10	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.14	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.10	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.4	72.5	70.7	64.6	73.3	73.9
Medium Trucks:	67.9	66.4	60.1	58.5	67.0	67.2
Heavy Trucks:	68.3	66.9	57.9	59.1	67.5	67.6
Vehicle Noise:	76.1	74.3	71.3	66.5	75.0	75.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	279	602	1,296
CNEL:	139	300	646	1,392

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	52,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,200 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.75	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.49	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.44	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.0	72.1	70.3	64.3	72.9	73.5
Medium Trucks:	67.6	66.1	59.7	58.2	66.6	66.9
Heavy Trucks:	68.0	66.6	57.5	58.8	67.1	67.3
Vehicle Noise:	75.7	74.0	70.9	66.1	74.7	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	123	265	571	1,229
CNEL:	132	285	613	1,321

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.96	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.9	62.8	71.4	72.0
Medium Trucks:	66.1	64.6	58.2	56.7	65.1	65.4
Heavy Trucks:	66.5	65.1	56.1	57.3	65.7	65.8
Vehicle Noise:	74.2	72.5	69.4	64.6	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	211	455	980
CNEL:	105	227	489	1,053

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,550 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.09	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.14	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.10	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.3	63.2	71.8	72.4
Medium Trucks:	66.5	65.0	58.6	57.1	65.5	65.8
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	74.6	72.9	69.8	65.0	73.6	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	402	866
CNEL:	93	200	432	930

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.73	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.69	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	66.3	64.9	55.8	57.1	65.5	65.6
Vehicle Noise:	74.0	72.3	69.2	64.4	73.0	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	367	791
CNEL:	85	183	395	850

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.73	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.69	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	66.3	64.9	55.8	57.1	65.5	65.6
Vehicle Noise:	74.0	72.3	69.2	64.4	73.0	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	367	791
CNEL:	85	183	395	850

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.02	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.98	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.8	73.9	72.2	66.1	74.7	75.4
Medium Trucks:	69.4	67.9	61.6	60.0	68.5	68.7
Heavy Trucks:	69.8	68.4	59.4	60.6	69.0	69.1
Vehicle Noise:	77.5	75.8	72.7	68.0	76.5	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	176	379	815
CNEL:	88	189	407	876

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,550 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.66	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.58	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.54	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.3	73.4	71.6	65.6	74.2	74.8
Medium Trucks:	68.9	67.4	61.0	59.5	67.9	68.2
Heavy Trucks:	69.3	67.8	58.8	60.1	68.4	68.5
Vehicle Noise:	77.0	75.2	72.2	67.4	76.0	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	347	748
CNEL:	80	173	373	804

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,240 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.87	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.37	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.33	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.5	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	67.1	65.7	56.6	57.9	66.3	66.4
Vehicle Noise:	74.8	73.1	70.0	65.2	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	498	1,073
CNEL:	115	248	535	1,153

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,250 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.88	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.36	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.32	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.5	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.8	66.0
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.8	73.1	70.0	65.2	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	232	499	1,075
CNEL:	115	249	536	1,154

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,010 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.62	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.62	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.57	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.4	71.5	69.8	63.7	72.3	73.0
Medium Trucks:	67.0	65.5	59.1	57.6	66.1	66.3
Heavy Trucks:	67.4	66.0	57.0	58.2	66.6	66.7
Vehicle Noise:	75.1	73.4	70.3	65.6	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	436	939
CNEL:	101	217	468	1,009

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-15.02	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.98	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	65.6	64.1	57.7	56.2	64.7	64.9
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	73.7	72.0	68.9	64.2	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	351	757
CNEL:	81	175	377	813

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,300 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.21	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.03	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.99	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.8	72.9	71.2	65.1	73.7	74.3
Medium Trucks:	68.4	66.9	60.6	59.0	67.5	67.7
Heavy Trucks:	68.8	67.4	58.4	59.6	68.0	68.1
Vehicle Noise:	76.5	74.8	71.7	67.0	75.5	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	324	699
CNEL:	75	162	348	751

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,850 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.26	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.98	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.93	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.9	72.0	70.2	64.2	72.8	73.4
Medium Trucks:	67.5	66.0	59.6	58.1	66.5	66.8
Heavy Trucks:	67.9	66.5	57.4	58.7	67.0	67.1
Vehicle Noise:	75.6	73.8	70.8	66.0	74.6	75.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	281	604
CNEL:	65	140	301	649

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	720 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.38	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-20.62	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-24.57	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.3	60.8	54.4	52.9	61.4	61.6
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	70.4	68.6	65.5	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	126	270
CNEL:	29	62	135	290

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,220 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.84	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.39	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.35	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.1	63.0	71.6	72.2
Medium Trucks:	66.3	64.8	58.4	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.4	72.7	69.6	64.8	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	118	254	547	1,179
CNEL:	127	273	588	1,267

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,510 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.13	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.11	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.06	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.4	63.3	71.9	72.5
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	67.0	65.6	56.5	57.8	66.2	66.3
Vehicle Noise:	74.7	73.0	69.9	65.1	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	123	266	572	1,233
CNEL:	132	285	615	1,324

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,300 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.93	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.31	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.27	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.2	63.1	71.7	72.3
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	66.8	65.4	56.3	57.6	65.9	66.1
Vehicle Noise:	74.5	72.8	69.7	64.9	73.5	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	257	554	1,194
CNEL:	128	276	595	1,283

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,050 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.67	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.57	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.53	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.3	63.2	71.8	72.4
Medium Trucks:	66.5	65.0	58.6	57.1	65.5	65.8
Heavy Trucks:	66.9	65.5	56.4	57.7	66.1	66.2
Vehicle Noise:	74.6	72.9	69.8	65.0	73.6	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	483	1,041
CNEL:	112	241	519	1,118

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.80	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.44	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.39	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.1	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	74.2	72.5	69.5	64.6	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	211	454	977
CNEL:	105	227	488	1,051

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: IY 2020 + P
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,830 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.70	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.54	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.50	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.9	62.8	71.4	72.0
Medium Trucks:	65.9	64.4	58.1	56.5	65.0	65.2
Heavy Trucks:	66.0	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	74.1	72.3	69.4	64.5	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	446	962
CNEL:	103	223	480	1,034

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,700	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.75	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	65.7	64.2	57.9	56.3	64.8	65.0
Heavy Trucks:	65.7	64.3	55.3	56.5	64.9	65.0
Vehicle Noise:	73.9	72.1	69.2	64.3	72.9	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	433	932
CNEL:	100	216	465	1,003

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.0	71.7	72.3
Medium Trucks:	66.3	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,015
CNEL:	109	235	506	1,090

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,670	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.79	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-16.45	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-20.41	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	60.9	59.4	53.0	51.5	59.9	60.2
Heavy Trucks:	62.2	60.8	51.7	53.0	61.4	61.5
Vehicle Noise:	68.9	67.2	63.9	59.4	67.9	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	168	362
CNEL:	39	84	180	388

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,300	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.30	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-17.54	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-21.49	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.2	56.1	64.7	65.3
Medium Trucks:	59.8	58.3	51.9	50.4	58.9	59.1
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	67.8	66.1	62.8	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	142	307
CNEL:	33	71	152	328

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,600 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.61	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-13.63	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-17.58	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.5	73.6	71.8	65.8	74.4	75.0
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.6
Heavy Trucks:	70.1	68.7	59.6	60.9	69.2	69.4
Vehicle Noise:	77.3	75.6	72.4	67.8	76.3	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	367	791
CNEL:	85	183	394	848

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,510 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.93	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.31	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.26	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.0	58.9	67.6	68.2
Medium Trucks:	62.9	61.4	55.0	53.5	62.0	62.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	70.9	69.2	65.7	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	137	294
CNEL:	31	68	146	314

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	950 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.08	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-18.32	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-22.28	4.63	-1.20	-5.77	0.000	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:	60.9	59.4	53.0	51.5	59.9	60.2
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	68.9	67.2	63.7	59.3	67.9	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	100	216
CNEL:	23	50	107	231

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.62	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.86	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.81	4.63	-1.20	-5.77	0.000	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	60.4	54.4	63.0	63.6
Medium Trucks:	58.4	56.9	50.5	49.0	57.4	57.6
Heavy Trucks:	60.2	58.8	49.7	51.0	59.3	59.5
Vehicle Noise:	66.3	64.6	61.2	56.8	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	68	146
CNEL:	16	34	73	156

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,390	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.86	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-13.38	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-17.33	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	63.4	61.9	55.5	54.0	62.5	62.7
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	71.4	69.7	66.4	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	639
CNEL:	68	148	318	685

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.16	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	65.5	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	73.6	71.9	68.8	64.0	72.6	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	483	1,041
CNEL:	112	241	519	1,118

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	49,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.3	65.8	59.5	57.9	66.4	66.6
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	75.4	73.7	70.7	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	118	255	548	1,181
CNEL:	127	273	589	1,269

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,670	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	4.74	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-12.50	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-16.45	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.5	71.2	71.8
Medium Trucks:	66.0	64.5	58.1	56.6	65.1	65.3
Heavy Trucks:	66.9	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	74.1	72.4	69.2	64.5	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	446	960
CNEL:	103	222	478	1,030

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,370 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.45	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.78	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.74	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.9	73.1	70.2	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	501	1,080
CNEL:	116	250	539	1,162

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	60 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	1.42	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-15.81	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-19.77	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	64.0	72.6	73.2
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	75.2	73.4	70.5	65.6	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	244	526	1,132
CNEL:	122	263	566	1,220

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,490 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	4.57	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.67	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.62	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.4	73.5	71.7	65.7	74.3	74.9
Medium Trucks:	68.8	67.3	60.9	59.4	67.9	68.1
Heavy Trucks:	68.8	67.4	58.4	59.6	68.0	68.1
Vehicle Noise:	77.0	75.2	72.3	67.4	76.0	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	150	322	694	1,496
CNEL:	161	347	747	1,609

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	89,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	8,900 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	6.67	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-10.57	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-14.52	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	77.5	75.6	73.8	67.8	76.4	77.0
Medium Trucks:	70.9	69.4	63.0	61.5	69.9	70.2
Heavy Trucks:	70.9	69.5	60.5	61.7	70.1	70.2
Vehicle Noise:	79.1	77.3	74.4	69.5	78.0	78.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	206	445	958	2,064
CNEL:	222	478	1,031	2,220

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	71,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,110	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.70	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.54	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.50	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.5	74.6	72.9	66.8	75.4	76.0
Medium Trucks:	69.9	68.4	62.1	60.5	69.0	69.2
Heavy Trucks:	70.0	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	78.1	76.3	73.4	68.5	77.1	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	178	383	825	1,777
CNEL:	191	412	887	1,912

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	69,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,910	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.57	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.67	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.62	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.4	74.5	72.7	66.7	75.3	75.9
Medium Trucks:	69.8	68.3	61.9	60.4	68.9	69.1
Heavy Trucks:	69.8	68.4	59.4	60.6	69.0	69.1
Vehicle Noise:	78.0	76.2	73.3	68.4	76.9	77.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	174	376	809	1,744
CNEL:	188	404	871	1,876

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,060	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.42	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-11.82	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-15.78	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.7	72.8	71.0	65.0	73.6	74.2
Medium Trucks:	68.2	66.7	60.4	58.8	67.3	67.5
Heavy Trucks:	68.7	67.2	58.2	59.4	67.8	67.9
Vehicle Noise:	76.4	74.6	71.6	66.8	75.3	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	136	293	632	1,361
CNEL:	146	315	679	1,463

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

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:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.00	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.24	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.20	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.5	73.2	73.8
Medium Trucks:	67.8	66.3	60.0	58.4	66.9	67.1
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	75.9	74.2	71.2	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	592	1,276
CNEL:	137	295	636	1,371

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.61	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.63	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.58	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.2	71.8	72.4
Medium Trucks:	66.4	64.9	58.6	57.0	65.5	65.7
Heavy Trucks:	66.9	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	74.6	72.8	69.8	65.0	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	222	479	1,032
CNEL:	111	239	515	1,109

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,860 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.46	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.78	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.74	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.9	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	67.3	65.8	56.8	58.1	66.4	66.5
Vehicle Noise:	75.0	73.2	70.2	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	197	425	916
CNEL:	98	212	457	984

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.61	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.63	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.58	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.4	71.5	69.8	63.7	72.3	72.9
Medium Trucks:	67.0	65.5	59.1	57.6	66.1	66.3
Heavy Trucks:	67.4	66.0	57.0	58.2	66.6	66.7
Vehicle Noise:	75.1	73.4	70.3	65.5	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	435	938
CNEL:	101	217	468	1,008

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-14.73	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.69	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.5	66.4	75.0	75.6
Medium Trucks:	69.7	68.2	61.9	60.3	68.8	69.0
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	77.8	76.1	73.0	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	184	396	853
CNEL:	92	197	425	916

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,840 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.12	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.11	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.07	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.8	73.9	72.1	66.0	74.7	75.3
Medium Trucks:	69.4	67.9	61.5	59.9	68.4	68.6
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.5	75.7	72.7	67.9	76.4	76.9

Centerline Distance to Noise Contour (in feet)

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

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,380 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.01	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.23	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.19	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.5	72.2	72.8
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	67.2	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.0	73.2	70.2	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	236	509	1,096
CNEL:	118	254	547	1,178

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,320 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.95	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.29	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.25	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	74.9	73.1	70.1	65.3	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	234	504	1,086
CNEL:	117	251	542	1,167

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,090 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.71	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.53	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.49	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.9	63.8	72.4	73.0
Medium Trucks:	67.1	65.6	59.2	57.7	66.1	66.4
Heavy Trucks:	67.5	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	75.2	73.5	70.4	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	205	442	952
CNEL:	102	220	475	1,023

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.36	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-14.88	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.83	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.0	74.1	72.3	66.3	74.9	75.5
Medium Trucks:	69.6	68.1	61.7	60.2	68.6	68.9
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.2
Vehicle Noise:	77.7	75.9	72.9	68.1	76.7	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	180	387	834
CNEL:	90	193	416	896

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000	
Medium Trucks:	4.000	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.98	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.26	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.22	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.6	72.7	70.9	64.9	73.5	74.1
Medium Trucks:	68.2	66.7	60.3	58.8	67.3	67.5
Heavy Trucks:	68.6	67.2	58.1	59.4	67.7	67.9
Vehicle Noise:	76.3	74.6	71.5	66.7	75.3	75.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	674
CNEL:	72	156	336	724

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,110	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.50	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-18.74	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-22.69	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	72.2	70.5	67.3	62.7	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	168	361
CNEL:	39	83	180	387

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,140	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.76	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.48	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.43	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.0	62.9	71.6	72.2
Medium Trucks:	66.2	64.7	58.4	56.8	65.3	65.5
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.3	72.6	69.6	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	251	540	1,164
CNEL:	125	269	581	1,251

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,640	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.26	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-12.98	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-16.94	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.5	63.4	72.0	72.7
Medium Trucks:	66.7	65.2	58.8	57.3	65.8	66.0
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.8	73.1	70.0	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	271	583	1,256
CNEL:	135	291	626	1,350

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.12	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.11	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.07	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	67.0	65.6	56.5	57.8	66.1	66.3
Vehicle Noise:	74.7	73.0	69.9	65.1	73.7	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	123	265	571	1,231
CNEL:	132	285	614	1,322

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.16	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.08	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.03	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.4	71.5	69.8	63.7	72.3	72.9
Medium Trucks:	67.0	65.5	59.1	57.6	66.0	66.3
Heavy Trucks:	67.4	66.0	56.9	58.2	66.5	66.7
Vehicle Noise:	75.1	73.4	70.3	65.5	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	112	242	521	1,123
CNEL:	121	260	560	1,206

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.36	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.88	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.83	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	494	1,065
CNEL:	115	247	532	1,146

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ Approved Use w/o
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,380 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.47	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.77	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.73	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.9	73.1	70.2	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	502	1,082
CNEL:	116	251	540	1,164

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,700 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-15.75	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-19.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	65.7	64.2	57.9	56.3	64.8	65.0
Heavy Trucks:	65.7	64.3	55.3	56.5	64.9	65.0
Vehicle Noise:	73.9	72.1	69.2	64.3	72.9	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	433	932
CNEL:	100	216	465	1,003

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.0	71.7	72.3
Medium Trucks:	66.3	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,015
CNEL:	109	235	506	1,090

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,570	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.52	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-16.72	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-20.67	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	60.6	59.1	52.8	51.2	59.7	59.9
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	68.7	66.9	63.6	59.1	67.6	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	161	348
CNEL:	37	80	173	372

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,200	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.65	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-17.89	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-21.84	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.5	58.0	51.6	50.0	58.5	58.7
Heavy Trucks:	60.8	59.3	50.3	51.6	59.9	60.0
Vehicle Noise:	67.5	65.8	62.5	57.9	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	135	291
CNEL:	31	67	145	311

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

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:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.23	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-14.00	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-17.96	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.1	73.2	71.5	65.4	74.0	74.6
Medium Trucks:	68.9	67.4	61.0	59.5	68.0	68.2
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.0	75.2	72.1	67.4	75.9	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	346	746
CNEL:	80	172	371	800

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.96	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.28	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.24	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.9	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	64.8	63.3	54.3	55.6	63.9	64.0
Vehicle Noise:	70.9	69.2	65.8	61.4	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	137	296
CNEL:	32	68	147	316

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	940 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.13	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-18.37	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-22.32	4.63	-1.20	-5.77	0.000	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:	60.9	59.3	53.0	51.4	59.9	60.1
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	61.9
Vehicle Noise:	68.8	67.1	63.7	59.3	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	100	215
CNEL:	23	49	106	229

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	510 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.78	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-21.02	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.98	4.63	-1.20	-5.77	0.000	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	60.3	54.2	62.8	63.5
Medium Trucks:	58.2	56.7	50.3	48.8	57.2	57.5
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	66.2	64.5	61.0	56.6	65.2	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	66	143
CNEL:	15	33	71	152

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,430 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.91	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-13.32	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-17.28	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	61.9	55.6	54.0	62.5	62.7
Heavy Trucks:	64.8	63.3	54.3	55.6	63.9	64.0
Vehicle Noise:	71.5	69.8	66.5	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	644
CNEL:	69	149	320	690

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,500 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.16	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	65.5	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	73.6	71.9	68.8	64.0	72.6	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	483	1,041
CNEL:	112	241	519	1,118

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

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:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.40	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.83	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.79	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	63.9	72.6	73.2
Medium Trucks:	67.2	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.4	73.6	70.6	65.8	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	117	251	541	1,165
CNEL:	125	270	581	1,252

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,550 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	4.63	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-12.61	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-16.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.5	62.4	71.0	71.7
Medium Trucks:	65.9	64.4	58.0	56.5	65.0	65.2
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.0	72.2	69.1	64.4	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	438	944
CNEL:	101	218	470	1,013

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,370 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.45	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.78	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.74	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.9	73.1	70.2	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	501	1,080
CNEL:	116	250	539	1,162

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

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:	60	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	1.27	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-15.97	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-19.92	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.9	63.8	72.4	73.1
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	66.5	65.0	56.0	57.2	65.6	65.7
Vehicle Noise:	75.0	73.3	70.4	65.4	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	238	513	1,106
CNEL:	119	257	553	1,192

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	53,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	5,390	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	4.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-12.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.3	73.4	71.7	65.6	74.2	74.8
Medium Trucks:	68.7	67.2	60.9	59.3	67.8	68.0
Heavy Trucks:	68.7	67.3	58.3	59.5	67.9	68.0
Vehicle Noise:	76.9	75.1	72.2	67.3	75.9	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	148	318	686	1,477
CNEL:	159	342	738	1,589

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	88,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	8,800	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	6.62	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-10.62	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-14.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	77.5	75.6	73.8	67.7	76.4	77.0
Medium Trucks:	70.9	69.3	63.0	61.4	69.9	70.1
Heavy Trucks:	70.9	69.5	60.4	61.7	70.0	70.2
Vehicle Noise:	79.0	77.3	74.3	69.4	78.0	78.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	205	441	951	2,048
CNEL:	220	475	1,023	2,204

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,050	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.66	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.58	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.53	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.5	74.6	72.8	66.8	75.4	76.0
Medium Trucks:	69.9	68.4	62.0	60.5	68.9	69.2
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	78.1	76.3	73.4	68.5	77.0	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	177	381	820	1,767
CNEL:	190	410	882	1,901

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	68,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,850 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.53	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.70	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.66	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.4	74.5	72.7	66.7	75.3	75.9
Medium Trucks:	69.8	68.3	61.9	60.4	68.8	69.0
Heavy Trucks:	69.8	68.4	59.3	60.6	68.9	69.1
Vehicle Noise:	77.9	76.2	73.2	68.4	76.9	77.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	173	373	805	1,733
CNEL:	186	402	866	1,865

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,000 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.37	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-11.87	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-15.82	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.6	72.7	71.0	64.9	73.5	74.1
Medium Trucks:	68.2	66.7	60.3	58.8	67.2	67.5
Heavy Trucks:	68.6	67.2	58.2	59.4	67.8	67.9
Vehicle Noise:	76.3	74.6	71.5	66.7	75.3	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	291	628	1,352
CNEL:	145	313	674	1,453

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

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:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.00	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.24	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.20	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.5	73.2	73.8
Medium Trucks:	67.8	66.3	60.0	58.4	66.9	67.1
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	75.9	74.2	71.2	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	592	1,276
CNEL:	137	295	636	1,371

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.69	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.0	71.7	72.3
Medium Trucks:	66.3	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.5	72.7	69.7	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,015
CNEL:	109	235	506	1,090

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,780 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.37	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.87	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.83	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.8	65.3	58.9	57.3	65.8	66.0
Heavy Trucks:	67.2	65.7	56.7	58.0	66.3	66.4
Vehicle Noise:	74.9	73.1	70.1	65.3	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	195	419	903
CNEL:	97	209	450	970

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,800 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.85	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.80	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	74.9	73.2	70.1	65.3	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	195	421	906
CNEL:	97	210	452	974

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-14.73	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.69	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.5	66.4	75.0	75.6
Medium Trucks:	69.7	68.2	61.9	60.3	68.8	69.0
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	77.8	76.1	73.0	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	184	396	853
CNEL:	92	197	425	916

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

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:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.06	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.18	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.13	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.7	73.8	72.0	66.0	74.6	75.2
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.6
Heavy Trucks:	69.7	68.3	59.2	60.5	68.8	68.9
Vehicle Noise:	77.4	75.6	72.6	67.8	76.4	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	172	370	797
CNEL:	86	184	397	856

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,470	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.09	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.14	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.10	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.4	71.5	69.7	63.6	72.3	72.9
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.0	73.3	70.3	65.5	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	239	516	1,111
CNEL:	119	257	554	1,194

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,360	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.99	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.25	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.21	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.8
Medium Trucks:	66.8	65.3	58.9	57.4	65.9	66.1
Heavy Trucks:	67.2	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	74.9	73.2	70.1	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	235	507	1,093
CNEL:	117	253	545	1,174

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,070	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.69	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.55	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.51	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.8	63.8	72.4	73.0
Medium Trucks:	67.1	65.6	59.2	57.7	66.1	66.4
Heavy Trucks:	67.5	66.1	57.0	58.3	66.6	66.8
Vehicle Noise:	75.2	73.5	70.4	65.6	74.2	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	440	949
CNEL:	102	220	473	1,019

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,500 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.21	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.16	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.1	71.8	72.4
Medium Trucks:	66.4	64.9	58.6	57.0	65.5	65.7
Heavy Trucks:	66.8	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	74.5	72.8	69.8	65.0	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	185	398	858
CNEL:	92	199	428	922

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.06	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.18	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.13	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.7	73.8	72.0	66.0	74.6	75.2
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.6
Heavy Trucks:	69.7	68.3	59.2	60.5	68.8	68.9
Vehicle Noise:	77.4	75.6	72.6	67.8	76.4	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	172	370	797
CNEL:	86	184	397	856

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,000 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.60	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.64	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.59	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.2	72.3	70.6	64.5	73.1	73.7
Medium Trucks:	67.8	66.3	60.0	58.4	66.9	67.1
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	75.9	74.2	71.1	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	637
CNEL:	68	147	317	684

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,070 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.66	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-18.90	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-22.85	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	352
CNEL:	38	81	175	378

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,090	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.71	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.53	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.49	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	66.2	64.7	58.3	56.8	65.2	65.4
Heavy Trucks:	66.6	65.2	56.1	57.4	65.7	65.9
Vehicle Noise:	74.3	72.5	69.5	64.7	73.3	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	115	249	536	1,155
CNEL:	124	267	576	1,241

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,670	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.28	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-12.95	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-16.91	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	67.2	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.9	73.1	70.1	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	586	1,262
CNEL:	136	292	629	1,355

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,400	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.17	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.3	63.2	71.8	72.4
Medium Trucks:	66.5	65.0	58.6	57.1	65.5	65.8
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	74.6	72.9	69.8	65.0	73.6	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	563	1,212
CNEL:	130	281	605	1,303

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,490	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.11	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.12	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.08	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.4	71.5	69.7	63.7	72.3	72.9
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	67.4	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.1	73.3	70.3	65.5	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	240	517	1,115
CNEL:	120	258	556	1,198

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.36	0.25	-1.20	*-4.85*	0.000	0.000
Medium Trucks:	82.40	-14.88	0.27	-1.20	*-5.01*	0.000	0.000
Heavy Trucks:	86.40	-18.83	0.25	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	494	1,065
CNEL:	115	247	532	1,146

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2040 w/ App. Use, w/o Porto
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,320 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.39	0.25	-1.20	*-4.85*	0.000	0.000
Medium Trucks:	82.40	-14.85	0.27	-1.20	*-5.01*	0.000	0.000
Heavy Trucks:	86.40	-18.81	0.25	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	496	1,070
CNEL:	115	248	534	1,151

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.75	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.7	63.6	72.2	72.8
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.9	73.1	70.2	65.3	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	234	504	1,087
CNEL:	117	252	543	1,169

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.74	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-15.50	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-19.45	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.3	61.3	69.9	70.5
Medium Trucks:	64.6	63.1	56.7	55.2	63.6	63.8
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	72.7	70.9	67.9	63.1	71.7	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	167	359	774
CNEL:	83	179	386	832

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,660	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.76	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-16.48	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-20.43	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	65.0	63.2	57.2	65.8	66.4
Medium Trucks:	60.9	59.4	53.0	51.5	59.9	60.1
Heavy Trucks:	62.2	60.8	51.7	53.0	61.3	61.5
Vehicle Noise:	68.9	67.2	63.9	59.3	67.9	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	168	361
CNEL:	39	83	179	387

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,300	vehicles
Vehicle Speed:	40	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.30	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-17.54	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-21.49	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.2	56.1	64.7	65.3
Medium Trucks:	59.8	58.3	51.9	50.4	58.9	59.1
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	67.8	66.1	62.8	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	142	307
CNEL:	33	71	152	328

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,500 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.49	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-13.75	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-17.70	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.4	73.5	71.7	65.7	74.3	74.9
Medium Trucks:	69.2	67.7	61.3	59.8	68.2	68.5
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.2
Vehicle Noise:	77.2	75.5	72.3	67.6	76.2	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	167	360	776
CNEL:	83	179	386	832

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.87	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.37	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.32	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.6	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	62.9	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	64.7	63.3	54.2	55.5	63.8	63.9
Vehicle Noise:	70.8	69.1	65.7	61.3	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	135	292
CNEL:	31	67	145	312

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	900 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.32	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-18.56	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-22.51	4.63	-1.20	-5.77	0.000	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:	60.7	59.2	52.8	51.3	59.7	59.9
Heavy Trucks:	62.5	61.1	52.0	53.3	61.6	61.8
Vehicle Noise:	68.6	66.9	63.5	59.1	67.6	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	97	208
CNEL:	22	48	103	223

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	570 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.30	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-20.54	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.49	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.4	62.5	60.8	54.7	63.3	63.9
Medium Trucks:	58.7	57.2	50.8	49.3	57.7	58.0
Heavy Trucks:	60.5	59.1	50.0	51.3	59.6	59.8
Vehicle Noise:	66.7	64.9	61.5	57.1	65.6	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	71	154
CNEL:	16	35	76	164

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,220	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.81	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-12.42	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-16.38	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	64.4	62.8	56.5	54.9	63.4	63.6
Heavy Trucks:	65.7	64.2	55.2	56.5	64.8	64.9
Vehicle Noise:	72.4	70.7	67.4	62.8	71.4	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	159	343	740
CNEL:	79	171	368	792

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.16	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	65.5	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	73.6	71.9	68.8	64.0	72.6	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	483	1,041
CNEL:	112	241	519	1,118

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	49,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,900	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.49	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.74	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.70	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.3	65.8	59.5	57.9	66.4	66.6
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	75.4	73.7	70.7	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	118	255	548	1,181
CNEL:	127	273	589	1,269

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,680	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	4.75	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-12.49	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-16.44	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.5	71.2	71.8
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	66.9	65.4	56.4	57.7	66.0	66.1
Vehicle Noise:	74.1	72.4	69.2	64.5	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	446	962
CNEL:	103	222	479	1,032

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,320 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.39	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.85	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.81	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	496	1,070
CNEL:	115	248	534	1,151

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,400 vehicles
Vehicle Speed:	60 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.60	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.64	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.59	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.2	71.8	72.4
Medium Trucks:	66.1	64.6	58.2	56.7	65.2	65.4
Heavy Trucks:	65.8	64.4	55.3	56.6	64.9	65.1
Vehicle Noise:	74.4	72.6	69.7	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	998
CNEL:	108	232	499	1,075

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	50,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	4.23	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-13.01	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-16.97	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.1	73.2	71.4	65.3	74.0	74.6
Medium Trucks:	68.5	67.0	60.6	59.0	67.5	67.7
Heavy Trucks:	68.5	67.1	58.0	59.3	67.6	67.8
Vehicle Noise:	76.6	74.9	71.9	67.1	75.6	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	142	306	658	1,418
CNEL:	153	329	708	1,526

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	88,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	8,800 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	6.62	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-10.62	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-14.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	77.5	75.6	73.8	67.7	76.4	77.0
Medium Trucks:	70.9	69.3	63.0	61.4	69.9	70.1
Heavy Trucks:	70.9	69.5	60.4	61.7	70.0	70.2
Vehicle Noise:	79.0	77.3	74.3	69.4	78.0	78.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	205	441	951	2,048
CNEL:	220	475	1,023	2,204

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,070	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.67	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.57	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.52	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.5	74.6	72.8	66.8	75.4	76.0
Medium Trucks:	69.9	68.4	62.0	60.5	68.9	69.2
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	78.1	76.3	73.4	68.5	77.0	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	177	381	822	1,770
CNEL:	190	410	884	1,905

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	68,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,850	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.53	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.70	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.66	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.4	74.5	72.7	66.7	75.3	75.9
Medium Trucks:	69.8	68.3	61.9	60.4	68.8	69.0
Heavy Trucks:	69.8	68.4	59.3	60.6	68.9	69.1
Vehicle Noise:	77.9	76.2	73.2	68.4	76.9	77.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	173	373	805	1,733
CNEL:	186	402	866	1,865

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	59,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	5,990	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.37	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-11.87	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-15.83	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.6	72.7	71.0	64.9	73.5	74.1
Medium Trucks:	68.2	66.7	60.3	58.8	67.2	67.5
Heavy Trucks:	68.6	67.2	58.1	59.4	67.8	67.9
Vehicle Noise:	76.3	74.6	71.5	66.7	75.3	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	291	627	1,351
CNEL:	145	313	674	1,451

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

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:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.00	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.24	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.20	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.5	73.2	73.8
Medium Trucks:	67.8	66.3	60.0	58.4	66.9	67.1
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	75.9	74.2	71.2	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	592	1,276
CNEL:	137	295	636	1,371

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,800	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.85	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.80	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.2
Medium Trucks:	66.2	64.7	58.3	56.8	65.3	65.5
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.3	72.6	69.5	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	997
CNEL:	107	231	497	1,071

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,760	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.34	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.90	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.85	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.4	72.1	72.7
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.9	73.1	70.1	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	194	418	900
CNEL:	97	208	449	967

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,800	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.85	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.80	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	74.9	73.2	70.1	65.3	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	195	421	906
CNEL:	97	210	452	974

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.15	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.08	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.04	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	67.0	65.5	56.5	57.7	66.1	66.2
Vehicle Noise:	74.7	72.9	69.9	65.1	73.6	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	188	406	874
CNEL:	94	202	436	939

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-14.73	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.69	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.5	66.4	75.0	75.6
Medium Trucks:	69.7	68.2	61.9	60.3	68.8	69.0
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	77.8	76.1	73.0	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	184	396	853
CNEL:	92	197	425	916

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,830 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.11	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.13	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.08	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.7	73.8	72.1	66.0	74.6	75.2
Medium Trucks:	69.3	67.8	61.5	59.9	68.4	68.6
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.4	75.7	72.6	67.9	76.4	76.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	372	802
CNEL:	86	186	400	862

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,380 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.01	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.23	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.19	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.5	72.2	72.8
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	67.2	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.0	73.2	70.2	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	236	509	1,096
CNEL:	118	254	547	1,178

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

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:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.92	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.32	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.28	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	67.2	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.9	73.1	70.1	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	502	1,081
CNEL:	116	250	539	1,162

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,470 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.09	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.14	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.10	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.9	72.0	70.3	64.2	72.8	73.4
Medium Trucks:	67.5	66.0	59.6	58.1	66.5	66.8
Heavy Trucks:	67.9	66.5	57.4	58.7	67.0	67.2
Vehicle Noise:	75.6	73.9	70.8	66.0	74.6	75.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	218	469	1,010
CNEL:	108	234	504	1,085

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.22	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.02	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.98	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.8	73.9	72.2	66.1	74.7	75.4
Medium Trucks:	69.4	67.9	61.6	60.0	68.5	68.7
Heavy Trucks:	69.8	68.4	59.4	60.6	69.0	69.1
Vehicle Noise:	77.5	75.8	72.7	68.0	76.5	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	176	379	815
CNEL:	88	189	407	876

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.64	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.59	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.55	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.6	73.2	73.8
Medium Trucks:	67.9	66.4	60.0	58.5	66.9	67.2
Heavy Trucks:	68.3	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	76.0	74.2	71.2	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	641
CNEL:	69	148	320	688

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,060	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.70	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-18.94	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-22.89	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.1	54.6	63.0	63.3
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	72.0	70.3	67.1	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	350
CNEL:	38	81	174	375

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,110	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.73	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.51	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.46	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	66.2	64.7	58.3	56.8	65.2	65.5
Heavy Trucks:	66.6	65.2	56.1	57.4	65.7	65.9
Vehicle Noise:	74.3	72.6	69.5	64.7	73.3	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	250	538	1,159
CNEL:	124	268	578	1,245

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,660	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.28	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-12.96	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-16.92	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.4	72.1	72.7
Medium Trucks:	66.7	65.2	58.9	57.3	65.8	66.0
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	74.9	73.1	70.1	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	271	585	1,260
CNEL:	135	292	628	1,353

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	98	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	70.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.12	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.11	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.07	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.0	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	67.0	65.6	56.5	57.8	66.1	66.3
Vehicle Noise:	74.7	73.0	69.9	65.1	73.7	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	123	265	571	1,231
CNEL:	132	285	614	1,322

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,440 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.07	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.17	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.13	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.7	63.6	72.2	72.8
Medium Trucks:	66.9	65.4	59.0	57.5	65.9	66.2
Heavy Trucks:	67.3	65.9	56.8	58.1	66.5	66.6
Vehicle Noise:	75.0	73.3	70.2	65.4	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	238	514	1,106
CNEL:	119	256	552	1,189

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.36	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.88	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.83	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	494	1,065
CNEL:	115	247	532	1,146

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,370 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.45	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.78	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.74	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.9	73.1	70.2	65.3	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	501	1,080
CNEL:	116	250	539	1,162

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Trabuco Rd.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,500 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.62	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.62	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.58	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.8	63.7	72.4	73.0
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.1
Vehicle Noise:	75.0	73.3	70.3	65.4	74.0	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	111	239	514	1,108
CNEL:	119	257	553	1,192

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Trabuco Rd.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,700 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.91	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-15.33	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-19.29	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	65.1	63.7	54.7	55.9	64.3	64.4
Vehicle Noise:	72.9	71.1	68.1	63.3	71.8	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	369	794
CNEL:	85	184	396	853

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy. S.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,530 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.41	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-16.83	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-20.79	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.9	56.8	65.4	66.0
Medium Trucks:	60.5	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	68.5	66.8	63.5	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	159	342
CNEL:	37	79	170	366

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy. S.
Road Segment: n/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,200 vehicles
Vehicle Speed:	40 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.65	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-17.89	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-21.84	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.5	58.0	51.6	50.0	58.5	58.7
Heavy Trucks:	60.8	59.3	50.3	51.6	59.9	60.0
Vehicle Noise:	67.5	65.8	62.5	57.9	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	135	291
CNEL:	31	67	145	311

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rancho Pkwy.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

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:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.23	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-14.00	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-17.96	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.1	73.2	71.5	65.4	74.0	74.6
Medium Trucks:	68.9	67.4	61.0	59.5	68.0	68.2
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.0	75.2	72.1	67.4	75.9	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	346	746
CNEL:	80	172	371	800

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

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:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.02	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-16.22	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-20.18	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.1	59.0	67.6	68.3
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	71.0	69.3	65.8	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	298
CNEL:	32	69	148	319

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Bake Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.46	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-18.70	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-22.66	4.63	-1.20	-5.77	0.000	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:	60.5	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	62.3	60.9	51.9	53.1	61.5	61.6
Vehicle Noise:	68.5	66.8	63.3	59.0	67.5	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	22	47	101	218

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Towne Centre Dr.
Road Segment: s/o Lake Forest Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	510 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-3.78	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	75.75	-21.02	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	81.57	-24.98	4.63	-1.20	-5.77	0.000	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	60.3	54.2	62.8	63.5
Medium Trucks:	58.2	56.7	50.3	48.8	57.2	57.5
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	66.2	64.5	61.0	56.6	65.2	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	66	143
CNEL:	15	33	71	152

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Portola Pkwy.
Road Segment: s/o Alton Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,260 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.85	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-12.38	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-16.34	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	68.5	66.8	60.7	69.3	69.9
Medium Trucks:	64.4	62.9	56.5	55.0	63.4	63.7
Heavy Trucks:	65.7	64.3	55.3	56.5	64.9	65.0
Vehicle Noise:	72.4	70.7	67.4	62.9	71.4	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	160	346	745
CNEL:	80	172	370	797

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Portola Pkwy.
Road Segment: n/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,500 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-14.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-18.16	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	65.5	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	73.6	71.9	68.8	64.0	72.6	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	483	1,041
CNEL:	112	241	519	1,118

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o El Toro Rd.
Project Name: Nakase
Job Number: 11049

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:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.40	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.83	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.79	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.7	71.8	70.0	63.9	72.6	73.2
Medium Trucks:	67.2	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.4	73.6	70.6	65.8	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	117	251	541	1,165
CNEL:	125	270	581	1,252

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Santa Margarita Pkwy.
Road Segment: s/o Los Alisos Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,550 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	4.63	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	79.45	-12.61	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	84.25	-16.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.5	62.4	71.0	71.7
Medium Trucks:	65.9	64.4	58.0	56.5	65.0	65.2
Heavy Trucks:	66.7	65.3	56.3	57.5	65.9	66.0
Vehicle Noise:	74.0	72.2	69.1	64.4	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	203	438	944
CNEL:	101	218	470	1,013

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: w/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,330 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.40	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-14.84	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-18.79	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	66.7	65.2	56.2	57.5	65.8	65.9
Vehicle Noise:	74.8	73.1	70.1	65.2	73.8	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	497	1,072
CNEL:	115	248	535	1,153

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: e/o Irvine Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,400	vehicles
Vehicle Speed:	60	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	73.22	0.60	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	83.68	-16.64	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	87.33	-20.59	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.2	71.8	72.4
Medium Trucks:	66.1	64.6	58.2	56.7	65.2	65.4
Heavy Trucks:	65.8	64.4	55.3	56.6	64.9	65.1
Vehicle Noise:	74.4	72.6	69.7	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	998
CNEL:	108	232	499	1,075

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Alton Pkwy.
Road Segment: w/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	49,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,970	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	4.14	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-13.10	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-17.05	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.0	73.1	71.3	65.3	73.9	74.5
Medium Trucks:	68.4	66.9	60.5	59.0	67.4	67.7
Heavy Trucks:	68.4	67.0	57.9	59.2	67.5	67.7
Vehicle Noise:	76.6	74.8	71.8	67.0	75.5	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	302	650	1,400
CNEL:	151	324	699	1,506

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	88,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	8,800	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	6.62	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-10.62	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-14.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	77.5	75.6	73.8	67.7	76.4	77.0
Medium Trucks:	70.9	69.3	63.0	61.4	69.9	70.1
Heavy Trucks:	70.9	69.5	60.4	61.7	70.0	70.2
Vehicle Noise:	79.0	77.3	74.3	69.4	78.0	78.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	205	441	951	2,048
CNEL:	220	475	1,023	2,204

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Rockfield Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	7,000	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.63	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.61	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.57	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.5	74.6	72.8	66.7	75.4	76.0
Medium Trucks:	69.9	68.4	62.0	60.4	68.9	69.1
Heavy Trucks:	69.9	68.5	59.4	60.7	69.0	69.2
Vehicle Noise:	78.0	76.3	73.3	68.5	77.0	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	176	379	816	1,759
CNEL:	189	408	878	1,892

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Muirlands Bl.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	68,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	6,830	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	5.52	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	82.40	-11.72	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	86.40	-15.67	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.4	74.5	72.7	66.6	75.3	75.9
Medium Trucks:	69.8	68.2	61.9	60.3	68.8	69.0
Heavy Trucks:	69.8	68.4	59.3	60.6	68.9	69.1
Vehicle Noise:	77.9	76.2	73.2	68.3	76.9	77.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	173	373	803	1,730
CNEL:	186	401	864	1,861

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	59,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	5,950	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.34	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-11.90	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-15.86	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.6	72.7	70.9	64.9	73.5	74.1
Medium Trucks:	68.2	66.7	60.3	58.8	67.2	67.4
Heavy Trucks:	68.6	67.2	58.1	59.4	67.7	67.8
Vehicle Noise:	76.3	74.5	71.5	66.7	75.3	75.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	134	290	624	1,345
CNEL:	144	311	671	1,445

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Toledo Wy.
Project Name: Nakase
Job Number: 11049

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:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	5.00	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-12.24	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-16.20	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.5	73.2	73.8
Medium Trucks:	67.8	66.3	60.0	58.4	66.9	67.1
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	75.9	74.2	71.2	66.4	74.9	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	592	1,276
CNEL:	137	295	636	1,371

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,800	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.85	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.80	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.2
Medium Trucks:	66.2	64.7	58.3	56.8	65.3	65.5
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.3	72.6	69.5	64.8	73.3	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	997
CNEL:	107	231	497	1,071

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,690 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.26	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.98	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.93	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	67.1	65.6	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	191	412	889
CNEL:	95	206	443	955

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Rancho Pkwy. S.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.96	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.92	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.3
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	96	206	444	956

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: w/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-14.73	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-18.69	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	76.1	74.2	72.5	66.4	75.0	75.6
Medium Trucks:	69.7	68.2	61.9	60.3	68.8	69.0
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	77.8	76.1	73.0	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	184	396	853
CNEL:	92	197	425	916

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bake Pkwy.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

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:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.05	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.19	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.15	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.7	73.8	72.0	66.0	74.6	75.2
Medium Trucks:	69.3	67.8	61.4	59.9	68.3	68.6
Heavy Trucks:	69.7	68.2	59.2	60.5	68.8	68.9
Vehicle Noise:	77.4	75.6	72.6	67.8	76.3	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	369	795
CNEL:	85	184	396	854

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: w/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,380 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.01	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.23	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.19	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.5	72.2	72.8
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	67.2	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.0	73.2	70.2	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	236	509	1,096
CNEL:	118	254	547	1,178

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,360 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.99	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.25	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.21	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.2	71.3	69.6	63.5	72.1	72.8
Medium Trucks:	66.8	65.3	58.9	57.4	65.9	66.1
Heavy Trucks:	67.2	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	74.9	73.2	70.1	65.4	73.9	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	109	235	507	1,093
CNEL:	117	253	545	1,174

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,050 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:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.67	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-13.57	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-17.53	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.5	71.6	69.8	63.8	72.4	73.0
Medium Trucks:	67.1	65.6	59.2	57.6	66.1	66.3
Heavy Trucks:	67.5	66.0	57.0	58.3	66.6	66.7
Vehicle Noise:	75.2	73.4	70.4	65.6	74.2	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	439	946
CNEL:	102	219	472	1,016

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Dimension Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,500	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:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	43.405
Medium Trucks:	43.313
Heavy Trucks:	43.405

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	0.82	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-14.21	0.83	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-18.16	0.82	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.2	63.1	71.8	72.4
Medium Trucks:	66.4	64.9	58.6	57.0	65.5	65.7
Heavy Trucks:	66.8	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	74.5	72.8	69.8	65.0	73.5	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	185	398	858
CNEL:	92	199	428	922

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Rancho Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,700	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.91	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-15.33	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-19.29	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.5	73.6	71.9	65.8	74.4	75.0
Medium Trucks:	69.1	67.6	61.3	59.7	68.2	68.4
Heavy Trucks:	69.5	68.1	59.1	60.3	68.7	68.8
Vehicle Noise:	77.2	75.5	72.4	67.7	76.2	76.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	168	361	778
CNEL:	84	180	388	835

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Towne Centre Dr.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,930	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.45	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	81.00	-16.79	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	85.38	-20.75	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.1	72.2	70.4	64.4	73.0	73.6
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	67.0
Heavy Trucks:	68.1	66.6	57.6	58.9	67.2	67.3
Vehicle Noise:	75.8	74.0	71.0	66.2	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	289	622
CNEL:	67	144	310	668

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lake Forest Dr.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,070	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	30.0	feet
Centerline Dist. to Observer:	30.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.187
Medium Trucks:	24.021
Heavy Trucks:	24.188

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.66	4.63	-1.20	-4.81	0.000	0.000
Medium Trucks:	79.45	-18.90	4.67	-1.20	-5.14	0.000	0.000
Heavy Trucks:	84.25	-22.85	4.63	-1.20	-5.77	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	352
CNEL:	38	81	175	378

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: w/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,090 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.71	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.53	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.49	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	66.2	64.7	58.3	56.8	65.2	65.4
Heavy Trucks:	66.6	65.2	56.1	57.4	65.7	65.9
Vehicle Noise:	74.3	72.5	69.5	64.7	73.3	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	115	249	536	1,155
CNEL:	124	267	576	1,241

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Jeronimo Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,590 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.21	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.03	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-16.98	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.1	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.7	65.2	58.8	57.3	65.7	65.9
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	74.8	73.0	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	579	1,247
CNEL:	134	289	622	1,340

Tuesday, July 10, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Serrano Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,400 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	98 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	70.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	50.080
Medium Trucks:	50.000
Heavy Trucks:	50.080

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.03	-0.11	-1.20	-4.86	0.000	0.000
Medium Trucks:	81.00	-13.21	-0.10	-1.20	-5.00	0.000	0.000
Heavy Trucks:	85.38	-17.17	-0.11	-1.20	-5.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.9	71.0	69.3	63.2	71.8	72.4
Medium Trucks:	66.5	65.0	58.6	57.1	65.5	65.8
Heavy Trucks:	66.9	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	74.6	72.9	69.8	65.0	73.6	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	563	1,212
CNEL:	130	281	605	1,303

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Trabuco Rd.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,410 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	74 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.04	0.25	-1.20	-4.85	0.000	0.000
Medium Trucks:	81.00	-13.20	0.27	-1.20	-5.01	0.000	0.000
Heavy Trucks:	85.38	-17.16	0.25	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	73.3	71.4	69.6	63.6	72.2	72.8
Medium Trucks:	66.9	65.4	59.0	57.4	65.9	66.1
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.5
Vehicle Noise:	75.0	73.2	70.2	65.4	74.0	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	511	1,101
CNEL:	118	255	549	1,183

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: w/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

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:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.36	0.25	-1.20	*-4.85*	0.000	0.000
Medium Trucks:	82.40	-14.88	0.27	-1.20	*-5.01*	0.000	0.000
Heavy Trucks:	86.40	-18.83	0.25	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	73.2	71.3	69.5	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.7	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	107	230	494	1,065
CNEL:	115	247	532	1,146

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: El Toro Rd.
Road Segment: e/o Portola Pkwy.
Project Name: Nakase
Job Number: 11049

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,320	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	74	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.329
Medium Trucks:	47.244
Heavy Trucks:	47.329

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.39	0.25	-1.20	*-4.85*	0.000	0.000
Medium Trucks:	82.40	-14.85	0.27	-1.20	*-5.01*	0.000	0.000
Heavy Trucks:	86.40	-18.81	0.25	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	73.2	71.3	69.6	63.5	72.1	72.7
Medium Trucks:	66.6	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	66.6	65.2	56.2	57.4	65.8	65.9
Vehicle Noise:	74.8	73.0	70.1	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	107	230	496	1,070
CNEL:	115	248	534	1,151

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APPENDIX 8.1:

ON-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Senior Affordable	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	110.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	699.0	feet
Road Elevation:	705.0	feet
Barrier Elevation:	705.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	707.000		
Medium Trucks:	709.000		
Heavy Trucks:	713.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	110.655
Medium Trucks:	110.594
Heavy Trucks:	110.594

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-5.28	-1.20	*2.20*	-12.560	-15.560
Medium Trucks:	78.79	-14.08	-5.27	-1.20	*2.07*	-12.391	-15.391
Heavy Trucks:	83.02	-18.04	-5.27	-1.20	*1.82*	-11.940	-14.940

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	58.2	56.7	50.4	48.8	57.3	57.5
Heavy Trucks:	58.5	57.1	48.0	49.3	57.7	57.8
Vehicle Noise:	68.7	66.9	64.4	59.0	67.6	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.2	53.3	51.6	45.5	54.1	54.7
Medium Trucks:	45.8	44.3	38.0	36.4	44.9	45.1
Heavy Trucks:	46.6	45.1	36.1	37.4	45.7	45.8
Vehicle Noise:	56.2	54.4	51.9	46.6	55.2	55.7

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	83	179	385	829

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 1	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	75.0	feet
Centerline Dist. to Observer:	85.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	707.0	feet
Road Elevation:	701.0	feet
Barrier Elevation:	707.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	703.000		
Medium Trucks:	705.000		
Heavy Trucks:	709.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	83.541
Medium Trucks:	83.296
Heavy Trucks:	82.967

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-3.45	-1.20	*0.23*	-7.010	-10.010
Medium Trucks:	78.79	-14.08	-3.43	-1.20	*0.18*	-6.640	-9.640
Heavy Trucks:	83.02	-18.04	-3.40	-1.20	*0.10*	-6.000	-9.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.6	67.7	66.0	59.9	68.5	69.1
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	60.4	59.0	49.9	51.2	59.5	59.7
Vehicle Noise:	70.5	68.7	66.2	60.9	69.5	70.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.6	60.7	59.0	52.9	61.5	62.1
Medium Trucks:	53.4	51.9	45.6	44.0	52.5	52.7
Heavy Trucks:	54.4	53.0	43.9	45.2	53.5	53.7
Vehicle Noise:	63.7	61.9	59.3	54.0	62.6	63.1

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	85	183	394	849

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Playground	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	80.0	feet
Centerline Dist. to Observer:	240.0	feet
Barrier Distance to Observer:	160.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	700.0	feet
Road Elevation:	700.0	feet
Barrier Elevation:	700.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	702.000		
Medium Trucks:	704.000		
Heavy Trucks:	708.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	239.343
Medium Trucks:	239.326
Heavy Trucks:	239.343

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-10.30	-1.20	*-0.08*	0.000	0.000
Medium Trucks:	78.79	-14.08	-10.30	-1.20	*-0.17*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-10.30	-1.20	*-0.45*	0.000	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:	53.2	51.7	45.3	43.8	52.3	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

Mitigated Noise Levels (with 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:	53.2	51.7	45.3	43.8	52.3	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	84	180	388	836

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	110.0	feet
Centerline Dist. to Observer:	757.0	feet
Barrier Distance to Observer:	647.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	735.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	722.146
Medium Trucks:	722.227
Heavy Trucks:	753.613

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.50	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	82.53	-14.37	-17.50	-1.20	*0.00*	-4.900	-7.900
Heavy Trucks:	85.83	-16.86	-17.78	-1.20	*-0.03*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	57.0	50.9	59.5	60.2
Medium Trucks:	49.5	48.0	41.6	40.1	48.5	48.7
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	61.3	59.5	57.2	51.6	60.2	60.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.2	53.3	51.6	45.5	54.1	54.8
Medium Trucks:	44.6	43.1	36.7	35.2	43.6	43.8
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	56.7	54.9	52.0	47.1	55.6	56.1

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	184	396	853	1,837

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	210.0	feet
Barrier Distance to Observer:	140.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	724.0	feet
Road Elevation:	730.0	feet
Barrier Elevation:	730.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	732.000		
Medium Trucks:	734.000		
Heavy Trucks:	738.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	209.249
Medium Trucks:	209.287
Heavy Trucks:	209.421

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-9.43	-1.20	*-0.01*	0.000	0.000
Medium Trucks:	78.79	-14.08	-9.43	-1.20	*-0.06*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-9.43	-1.20	*-0.26*	0.000	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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.3	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

Mitigated Noise Levels (with 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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.3	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	84	180	388	836

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	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:	627.0	feet
Barrier Distance to Observer:	527.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	586.838
Medium Trucks:	586.940
Heavy Trucks:	623.232

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-16.15	-1.20	*0.09*	-5.900	-8.900
Medium Trucks:	82.53	-14.37	-16.15	-1.20	*0.03*	-5.300	-8.300
Heavy Trucks:	85.83	-16.86	-16.54	-1.20	*-0.01*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.3	60.9	61.5
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	62.6	60.8	58.5	53.0	61.6	62.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.4	46.4	55.0	55.6
Medium Trucks:	45.5	44.0	37.7	36.1	44.6	44.8
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	57.6	55.8	52.9	48.0	56.6	57.0

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	187	403	868	1,870

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	120.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	119.577
Medium Trucks:	119.638
Heavy Trucks:	119.882

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-5.78	-1.20	*0.85*	-9.850	-12.850
Medium Trucks:	77.62	-13.63	-5.79	-1.20	*0.75*	-9.500	-12.500
Heavy Trucks:	82.14	-17.58	-5.80	-1.20	*0.56*	-8.800	-11.800

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:	57.0	55.5	49.1	47.6	56.1	56.3
Heavy Trucks:	57.6	56.1	47.1	48.4	56.7	56.8
Vehicle Noise:	67.0	65.2	62.6	57.4	66.0	66.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.5	46.4	55.0	55.6
Medium Trucks:	47.5	46.0	39.6	38.1	46.6	46.8
Heavy Trucks:	48.8	47.3	38.3	39.6	47.9	48.0
Vehicle Noise:	57.3	55.5	52.8	47.7	56.3	56.8

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	70	150	324	698

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	105.0	feet
Centerline Dist. to Observer:	740.0	feet
Barrier Distance to Observer:	635.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	775.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	703.102
Medium Trucks:	703.191
Heavy Trucks:	737.118

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.32	-1.20	*0.08*	-5.800	-8.800
Medium Trucks:	82.53	-14.37	-17.32	-1.20	*0.03*	-5.300	-8.300
Heavy Trucks:	85.83	-16.86	-17.63	-1.20	*-0.01*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	58.9	57.2	51.1	59.7	60.3
Medium Trucks:	49.6	48.1	41.8	40.2	48.7	48.9
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	61.5	59.6	57.4	51.8	60.4	60.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.0	53.1	51.4	45.3	53.9	54.5
Medium Trucks:	44.3	42.8	36.5	34.9	43.4	43.6
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	56.5	54.8	51.8	46.9	55.5	56.0

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	184	397	856	1,844

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	78.0	feet
Centerline Dist. to Observer:	130.0	feet
Barrier Distance to Observer:	52.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	128.390
Medium Trucks:	128.469
Heavy Trucks:	128.785

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-6.25	-1.20	*0.18*	-6.640	-9.640
Medium Trucks:	77.62	-13.63	-6.25	-1.20	*0.10*	-6.000	-9.000
Heavy Trucks:	82.14	-17.58	-6.27	-1.20	*0.02*	-5.200	-8.200

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	56.5	55.0	48.7	47.1	55.6	55.8
Heavy Trucks:	57.1	55.7	46.6	47.9	56.2	56.4
Vehicle Noise:	66.6	64.7	62.2	56.9	65.5	66.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.9	57.0	55.2	49.2	57.8	58.4
Medium Trucks:	50.5	49.0	42.7	41.1	49.6	49.8
Heavy Trucks:	51.9	50.5	41.4	42.7	51.0	51.2
Vehicle Noise:	60.2	58.4	55.6	50.6	59.1	59.6

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	70	152	327	705

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**30.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	280.0	feet
Centerline Dist. to Observer:	1,024.0	feet
Barrier Distance to Observer:	744.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	########
Medium Trucks:	########
Heavy Trucks:	########

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-19.70	-1.20	*0.03*	-5.300	-8.300
Medium Trucks:	82.53	-14.37	-19.70	-1.20	*0.01*	-5.100	-8.100
Heavy Trucks:	85.83	-16.86	-19.70	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.4	56.5	54.8	48.7	57.3	57.9
Medium Trucks:	47.3	45.8	39.4	37.9	46.3	46.5
Heavy Trucks:	48.1	46.6	37.6	38.9	47.2	47.3
Vehicle Noise:	59.1	57.3	55.0	49.5	58.0	58.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	42.2	40.7	34.3	32.8	41.2	41.4
Heavy Trucks:	43.2	41.7	32.7	34.0	42.3	42.4
Vehicle Noise:	53.9	52.0	49.7	44.2	52.8	53.3

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	178	383	825	1,777

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	80.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	79.971
Medium Trucks:	79.882
Heavy Trucks:	79.882

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-3.16	-1.20	*2.22*	-12.586	-15.586
Medium Trucks:	77.62	-13.63	-3.16	-1.20	*2.03*	-12.339	-15.339
Heavy Trucks:	82.14	-17.58	-3.16	-1.20	*1.69*	-11.680	-14.680

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.6	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	60.2	58.8	49.7	51.0	59.4	59.5
Vehicle Noise:	69.6	67.8	65.3	60.0	68.6	69.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.0	54.1	52.3	46.3	54.9	55.5
Medium Trucks:	47.3	45.8	39.4	37.9	46.3	46.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	57.2	55.4	52.7	47.6	56.1	56.6

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	70	150	323	697

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	369.0	feet
Centerline Dist. to Observer:	379.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	378.616
Medium Trucks:	378.632
Heavy Trucks:	378.698

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-13.29	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	78.79	-14.08	-13.29	-1.20	*0.04*	-5.400	-8.400
Heavy Trucks:	83.02	-18.04	-13.29	-1.20	*0.03*	-5.300	-8.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.8	57.9	56.1	50.1	58.7	59.3
Medium Trucks:	50.2	48.7	42.3	40.8	49.3	49.5
Heavy Trucks:	50.5	49.1	40.0	41.3	49.6	49.8
Vehicle Noise:	60.7	58.9	56.4	51.0	59.6	60.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	54.4	52.5	50.7	44.7	53.3	53.9
Medium Trucks:	44.8	43.3	36.9	35.4	43.9	44.1
Heavy Trucks:	45.2	43.8	34.7	36.0	44.3	44.5
Vehicle Noise:	55.3	53.5	51.0	45.6	54.2	54.8

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	83	180	387	834

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 4	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	600.0	feet
Centerline Dist. to Observer:	610.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	696.0	feet
Road Elevation:	702.0	feet
Barrier Elevation:	702.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	704.000		
Medium Trucks:	706.000		
Heavy Trucks:	710.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	609.783
Medium Trucks:	609.793
Heavy Trucks:	609.833

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-16.40	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	78.79	-14.08	-16.40	-1.20	*0.04*	-5.400	-8.400
Heavy Trucks:	83.02	-18.04	-16.40	-1.20	*0.04*	-5.400	-8.400

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	47.1	45.6	39.2	37.7	46.2	46.4
Heavy Trucks:	47.4	46.0	36.9	38.2	46.5	46.7
Vehicle Noise:	57.6	55.8	53.3	47.9	56.5	57.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.3	49.4	47.6	41.6	50.2	50.8
Medium Trucks:	41.7	40.2	33.8	32.3	40.8	41.0
Heavy Trucks:	42.0	40.6	31.5	32.8	41.1	41.3
Vehicle Noise:	52.2	50.4	47.9	42.5	51.1	51.6

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	83	180	387	834

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Senior Affordable	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	120.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	699.0	feet
Road Elevation:	705.0	feet
Barrier Elevation:	705.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	707.000		
Medium Trucks:	709.000		
Heavy Trucks:	713.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	119.638
Medium Trucks:	119.577
Heavy Trucks:	119.577

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-5.79	-1.20	*1.21*	-10.720	-13.720
Medium Trucks:	78.79	-14.08	-5.78	-1.20	*1.08*	-10.460	-13.460
Heavy Trucks:	83.02	-18.04	-5.78	-1.20	*0.85*	-9.850	-12.850

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:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	58.0	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	68.2	66.4	63.9	58.5	67.1	67.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.8	55.5	56.1
Medium Trucks:	47.3	45.8	39.4	37.9	46.3	46.5
Heavy Trucks:	48.1	46.7	37.7	38.9	47.3	47.4
Vehicle Noise:	57.6	55.8	53.2	47.9	56.5	57.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 1	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	75.0	feet
Centerline Dist. to Observer:	95.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	707.0	feet
Road Elevation:	701.0	feet
Barrier Elevation:	707.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	703.000		
Medium Trucks:	705.000		
Heavy Trucks:	709.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	93.516
Medium Trucks:	93.271
Heavy Trucks:	92.942

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-4.18	-1.20	*0.26*	-7.220	-10.220
Medium Trucks:	78.79	-14.08	-4.17	-1.20	*0.19*	-6.720	-9.720
Heavy Trucks:	83.02	-18.04	-4.14	-1.20	*0.08*	-5.800	-8.800

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	59.3	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	59.6	58.2	49.2	50.4	58.8	58.9
Vehicle Noise:	69.8	68.0	65.5	60.2	68.7	69.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.7	59.8	58.0	52.0	60.6	61.2
Medium Trucks:	52.6	51.1	44.8	43.2	51.7	51.9
Heavy Trucks:	53.8	52.4	43.4	44.6	53.0	53.1
Vehicle Noise:	62.8	61.0	58.3	53.2	61.7	62.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Playground	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	80.0	feet
Centerline Dist. to Observer:	240.0	feet
Barrier Distance to Observer:	160.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	700.0	feet
Road Elevation:	700.0	feet
Barrier Elevation:	700.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	702.000		
Medium Trucks:	704.000		
Heavy Trucks:	708.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	239.343
Medium Trucks:	239.326
Heavy Trucks:	239.343

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-10.30	-1.20	*-0.08*	0.000	0.000
Medium Trucks:	78.79	-14.08	-10.30	-1.20	*-0.17*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-10.30	-1.20	*-0.45*	0.000	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:	53.2	51.7	45.3	43.8	52.3	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

Mitigated Noise Levels (with 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:	53.2	51.7	45.3	43.8	52.3	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	110.0	feet
Centerline Dist. to Observer:	757.0	feet
Barrier Distance to Observer:	647.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	735.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	722.146
Medium Trucks:	722.227
Heavy Trucks:	753.613

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.50	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	82.53	-14.37	-17.50	-1.20	*0.00*	-4.900	-7.900
Heavy Trucks:	85.83	-16.86	-17.78	-1.20	*-0.03*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	57.0	50.9	59.5	60.2
Medium Trucks:	49.5	48.0	41.6	40.1	48.5	48.7
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	61.3	59.5	57.2	51.6	60.2	60.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.2	53.3	51.6	45.5	54.1	54.8
Medium Trucks:	44.6	43.1	36.7	35.2	43.6	43.8
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	56.7	54.9	52.0	47.1	55.6	56.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	210.0	feet
Barrier Distance to Observer:	140.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	724.0	feet
Road Elevation:	730.0	feet
Barrier Elevation:	730.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	732.000		
Medium Trucks:	734.000		
Heavy Trucks:	738.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	209.249
Medium Trucks:	209.287
Heavy Trucks:	209.421

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-9.43	-1.20	*-0.01*	0.000	0.000
Medium Trucks:	78.79	-14.08	-9.43	-1.20	*-0.06*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-9.43	-1.20	*-0.26*	0.000	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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.3	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

Mitigated Noise Levels (with 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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.3	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	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:	627.0	feet
Barrier Distance to Observer:	527.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	586.838
Medium Trucks:	586.940
Heavy Trucks:	623.232

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-16.15	-1.20	*0.09*	-5.900	-8.900
Medium Trucks:	82.53	-14.37	-16.15	-1.20	*0.03*	-5.300	-8.300
Heavy Trucks:	85.83	-16.86	-16.54	-1.20	*-0.01*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.3	60.9	61.5
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	62.6	60.8	58.5	53.0	61.6	62.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.4	46.4	55.0	55.6
Medium Trucks:	45.5	44.0	37.7	36.1	44.6	44.8
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	57.6	55.8	52.9	48.0	56.6	57.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	120.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	119.577
Medium Trucks:	119.638
Heavy Trucks:	119.882

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-5.78	-1.20	*0.85*	-9.850	-12.850
Medium Trucks:	77.62	-13.63	-5.79	-1.20	*0.75*	-9.500	-12.500
Heavy Trucks:	82.14	-17.58	-5.80	-1.20	*0.56*	-8.800	-11.800

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:	57.0	55.5	49.1	47.6	56.1	56.3
Heavy Trucks:	57.6	56.1	47.1	48.4	56.7	56.8
Vehicle Noise:	67.0	65.2	62.6	57.4	66.0	66.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.5	46.4	55.0	55.6
Medium Trucks:	47.5	46.0	39.6	38.1	46.6	46.8
Heavy Trucks:	48.8	47.3	38.3	39.6	47.9	48.0
Vehicle Noise:	57.3	55.5	52.8	47.7	56.3	56.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	105.0	feet
Centerline Dist. to Observer:	740.0	feet
Barrier Distance to Observer:	635.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	775.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	703.102
Medium Trucks:	703.191
Heavy Trucks:	737.118

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.32	-1.20	*0.08*	-5.800	-8.800
Medium Trucks:	82.53	-14.37	-17.32	-1.20	*0.03*	-5.300	-8.300
Heavy Trucks:	85.83	-16.86	-17.63	-1.20	*-0.01*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	58.9	57.2	51.1	59.7	60.3
Medium Trucks:	49.6	48.1	41.8	40.2	48.7	48.9
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	61.5	59.6	57.4	51.8	60.4	60.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.0	53.1	51.4	45.3	53.9	54.5
Medium Trucks:	44.3	42.8	36.5	34.9	43.4	43.6
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	56.5	54.8	51.8	46.9	55.5	56.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	78.0	feet
Centerline Dist. to Observer:	130.0	feet
Barrier Distance to Observer:	52.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	128.390
Medium Trucks:	128.469
Heavy Trucks:	128.785

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-6.25	-1.20	*0.18*	-6.640	-9.640
Medium Trucks:	77.62	-13.63	-6.25	-1.20	*0.10*	-6.000	-9.000
Heavy Trucks:	82.14	-17.58	-6.27	-1.20	*0.02*	-5.200	-8.200

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	56.5	55.0	48.7	47.1	55.6	55.8
Heavy Trucks:	57.1	55.7	46.6	47.9	56.2	56.4
Vehicle Noise:	66.6	64.7	62.2	56.9	65.5	66.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.9	57.0	55.2	49.2	57.8	58.4
Medium Trucks:	50.5	49.0	42.7	41.1	49.6	49.8
Heavy Trucks:	51.9	50.5	41.4	42.7	51.0	51.2
Vehicle Noise:	60.2	58.4	55.6	50.6	59.1	59.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**30.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	280.0	feet
Centerline Dist. to Observer:	1,034.0	feet
Barrier Distance to Observer:	754.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	########
Medium Trucks:	########
Heavy Trucks:	########

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-19.77	-1.20	*0.03*	-5.300	-8.300
Medium Trucks:	82.53	-14.37	-19.77	-1.20	*0.01*	-5.100	-8.100
Heavy Trucks:	85.83	-16.86	-19.77	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	47.2	45.7	39.3	37.8	46.2	46.5
Heavy Trucks:	48.0	46.6	37.5	38.8	47.1	47.3
Vehicle Noise:	59.1	57.2	54.9	49.4	58.0	58.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	53.1	51.2	49.4	43.4	52.0	52.6
Medium Trucks:	42.1	40.6	34.2	32.7	41.1	41.4
Heavy Trucks:	43.1	41.7	32.6	33.9	42.2	42.4
Vehicle Noise:	53.8	52.0	49.6	44.1	52.7	53.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	96.0	feet
Barrier Distance to Observer:	26.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	94.690
Medium Trucks:	94.602
Heavy Trucks:	94.602

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-4.26	-1.20	*0.97*	-10.210	-13.210
Medium Trucks:	77.62	-13.63	-4.26	-1.20	*0.81*	-9.730	-12.730
Heavy Trucks:	82.14	-17.58	-4.26	-1.20	*0.52*	-8.600	-11.600

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.1	57.7	48.6	49.9	58.2	58.4
Vehicle Noise:	68.5	66.7	64.2	58.9	67.5	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.3	55.4	53.6	47.6	56.2	56.8
Medium Trucks:	48.8	47.3	40.9	39.4	47.9	48.1
Heavy Trucks:	50.5	49.1	40.0	41.3	49.6	49.8
Vehicle Noise:	58.6	56.8	54.0	49.0	57.5	58.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	369.0	feet
Centerline Dist. to Observer:	389.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	388.591
Medium Trucks:	388.607
Heavy Trucks:	388.673

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-13.46	-1.20	*0.02*	-5.200	-8.200
Medium Trucks:	78.79	-14.08	-13.46	-1.20	*0.01*	-5.100	-8.100
Heavy Trucks:	83.02	-18.04	-13.46	-1.20	*0.01*	-5.100	-8.100

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.6	57.7	55.9	49.9	58.5	59.1
Medium Trucks:	50.0	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	50.3	48.9	39.9	41.1	49.5	49.6
Vehicle Noise:	60.5	58.7	56.2	50.9	59.4	60.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	54.4	52.5	50.7	44.7	53.3	53.9
Medium Trucks:	44.9	43.4	37.1	35.5	44.0	44.2
Heavy Trucks:	45.2	43.8	34.8	36.0	44.4	44.5
Vehicle Noise:	55.3	53.5	51.0	45.7	54.3	54.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 4	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	600.0	feet
Centerline Dist. to Observer:	620.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	696.0	feet
Road Elevation:	702.0	feet
Barrier Elevation:	702.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	704.000		
Medium Trucks:	706.000		
Heavy Trucks:	710.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	619.758
Medium Trucks:	619.768
Heavy Trucks:	619.808

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-16.50	-1.20	*0.02*	-5.200	-8.200
Medium Trucks:	78.79	-14.08	-16.50	-1.20	*0.02*	-5.200	-8.200
Heavy Trucks:	83.02	-18.04	-16.50	-1.20	*0.01*	-5.100	-8.100

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	47.0	45.5	39.1	37.6	46.1	46.3
Heavy Trucks:	47.3	45.9	36.8	38.1	46.4	46.6
Vehicle Noise:	57.5	55.7	53.2	47.8	56.4	56.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.4	49.5	47.7	41.7	50.3	50.9
Medium Trucks:	41.8	40.3	33.9	32.4	40.9	41.1
Heavy Trucks:	42.2	40.8	31.7	33.0	41.3	41.5
Vehicle Noise:	52.3	50.5	48.0	42.6	51.2	51.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Senior Affordable	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	120.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	699.0	feet
Road Elevation:	705.0	feet
Barrier Elevation:	705.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	707.000		
Medium Trucks:	709.000		
Heavy Trucks:	713.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	118.794
Medium Trucks:	118.710
Heavy Trucks:	118.642

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-5.74	-1.20	*-0.03*	0.000	0.000
Medium Trucks:	78.79	-14.08	-5.74	-1.20	*-0.05*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-5.73	-1.20	*-0.12*	0.000	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	63.7	57.6	66.2	66.8
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.1
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	68.2	66.4	63.9	58.6	67.2	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.3	65.4	63.7	57.6	66.2	66.8
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.1
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	68.2	66.4	63.9	58.6	67.2	67.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 1	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	75.0	feet
Centerline Dist. to Observer:	95.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	707.0	feet
Road Elevation:	701.0	feet
Barrier Elevation:	707.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	703.000		
Medium Trucks:	705.000		
Heavy Trucks:	709.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.000
Medium Trucks:	94.641
Heavy Trucks:	94.047

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-4.28	-1.20	*-0.50*	0.000	0.000
Medium Trucks:	78.79	-14.08	-4.26	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-4.22	-1.20	*-0.87*	0.000	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:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	59.6	58.1	49.1	50.4	58.7	58.8
Vehicle Noise:	69.7	67.9	65.4	60.1	68.6	69.2

Mitigated Noise Levels (with 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:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	59.6	58.1	49.1	50.4	58.7	58.8
Vehicle Noise:	69.7	67.9	65.4	60.1	68.6	69.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Playground	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	80.0	feet
Centerline Dist. to Observer:	240.0	feet
Barrier Distance to Observer:	160.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	700.0	feet
Road Elevation:	700.0	feet
Barrier Elevation:	700.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	702.000		
Medium Trucks:	704.000		
Heavy Trucks:	708.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	239.625
Medium Trucks:	239.533
Heavy Trucks:	239.399

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-10.31	-1.20	*-0.33*	0.000	0.000
Medium Trucks:	78.79	-14.08	-10.31	-1.20	*-0.49*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-10.31	-1.20	*-0.92*	0.000	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	53.0	61.7	62.3
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.8	60.9	59.1	53.0	61.7	62.3
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.5
Heavy Trucks:	53.5	52.1	43.0	44.3	52.6	52.7
Vehicle Noise:	63.7	61.8	59.4	54.0	62.6	63.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	110.0	feet
Centerline Dist. to Observer:	757.0	feet
Barrier Distance to Observer:	647.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	735.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	721.792
Medium Trucks:	753.069
Heavy Trucks:	753.213

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.50	-1.20	*0.01*	-5.100	-8.100
Medium Trucks:	82.53	-14.37	-17.77	-1.20	*0.00*	0.000	0.000
Heavy Trucks:	85.83	-16.86	-17.77	-1.20	*-0.07*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	57.0	50.9	59.6	60.2
Medium Trucks:	49.2	47.7	41.3	39.8	48.2	48.5
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	61.3	59.4	57.2	51.6	60.2	60.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.5	53.6	51.9	45.8	54.5	55.1
Medium Trucks:	49.2	47.7	41.3	39.8	48.2	48.5
Heavy Trucks:	50.0	48.6	39.5	40.8	49.1	49.3
Vehicle Noise:	57.3	55.6	52.5	47.8	56.3	56.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Bake Pkwy.	*Job Number:*	11049
Lot No:	School Picnic Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	210.0	feet
Barrier Distance to Observer:	140.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	724.0	feet
Road Elevation:	730.0	feet
Barrier Elevation:	730.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	732.000		
Medium Trucks:	734.000		
Heavy Trucks:	738.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	209.313
Medium Trucks:	209.265
Heavy Trucks:	209.227

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-9.43	-1.20	*-0.17*	0.000	0.000
Medium Trucks:	78.79	-14.08	-9.43	-1.20	*-0.30*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-9.43	-1.20	*-0.67*	0.000	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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

Mitigated Noise Levels (with 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	63.2
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	64.5	62.7	60.3	54.9	63.5	64.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	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:	627.0	feet
Barrier Distance to Observer:	527.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	770.0	feet
Barrier Elevation:	770.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	772.000		
Medium Trucks:	774.000		
Heavy Trucks:	778.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	586.318
Medium Trucks:	586.420
Heavy Trucks:	622.675

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-16.14	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	82.53	-14.37	-16.14	-1.20	*0.00*	-4.900	-7.900
Heavy Trucks:	85.83	-16.86	-16.53	-1.20	*-0.04*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.3	60.9	61.5
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	62.6	60.8	58.5	53.0	61.6	62.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	45.9	44.4	38.1	36.5	45.0	45.2
Heavy Trucks:	51.2	49.8	40.8	42.0	50.4	50.5
Vehicle Noise:	58.0	56.2	53.3	48.4	57.0	57.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Classroom Building	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	120.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	118.642
Medium Trucks:	118.659
Heavy Trucks:	118.794

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-5.73	-1.20	*-0.12*	0.000	0.000
Medium Trucks:	77.62	-13.63	-5.73	-1.20	*-0.16*	0.000	0.000
Heavy Trucks:	82.14	-17.58	-5.74	-1.20	*-0.26*	0.000	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	62.4	56.3	64.9	65.5
Medium Trucks:	57.1	55.6	49.2	47.6	56.1	56.3
Heavy Trucks:	57.6	56.2	47.2	48.4	56.8	56.9
Vehicle Noise:	67.1	65.3	62.7	57.4	66.0	66.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	57.1	55.6	49.2	47.6	56.1	56.3
Heavy Trucks:	57.6	56.2	47.2	48.4	56.8	56.9
Vehicle Noise:	67.1	65.3	62.7	57.4	66.0	66.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	105.0	feet
Centerline Dist. to Observer:	740.0	feet
Barrier Distance to Observer:	635.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	775.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	702.599
Medium Trucks:	702.689
Heavy Trucks:	736.587

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-17.32	-1.20	*0.04*	-5.400	-8.400
Medium Trucks:	82.53	-14.37	-17.32	-1.20	*0.01*	-5.100	-8.100
Heavy Trucks:	85.83	-16.86	-17.63	-1.20	*-0.03*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	58.9	57.2	51.1	59.7	60.3
Medium Trucks:	49.6	48.1	41.8	40.2	48.7	48.9
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	61.5	59.6	57.4	51.8	60.4	61.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.4	53.5	51.8	45.7	54.3	54.9
Medium Trucks:	44.5	43.0	36.7	35.1	43.6	43.8
Heavy Trucks:	50.1	48.7	39.7	40.9	49.3	49.4
Vehicle Noise:	56.8	55.0	52.1	47.2	55.8	56.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	School Outdoor Learning Area	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	78.0	feet
Centerline Dist. to Observer:	130.0	feet
Barrier Distance to Observer:	52.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	730.0	feet
Road Elevation:	742.0	feet
Barrier Elevation:	742.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	744.000		
Medium Trucks:	746.000		
Heavy Trucks:	750.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	128.748
Medium Trucks:	128.763
Heavy Trucks:	128.888

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-6.26	-1.20	*-0.06*	0.000	0.000
Medium Trucks:	77.62	-13.63	-6.27	-1.20	*-0.12*	0.000	0.000
Heavy Trucks:	82.14	-17.58	-6.27	-1.20	*-0.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	56.5	55.0	48.7	47.1	55.6	55.8
Heavy Trucks:	57.1	55.7	46.6	47.9	56.2	56.4
Vehicle Noise:	66.5	64.7	62.2	56.9	65.5	66.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	56.5	55.0	48.7	47.1	55.6	55.8
Heavy Trucks:	57.1	55.7	46.6	47.9	56.2	56.4
Vehicle Noise:	66.5	64.7	62.2	56.9	65.5	66.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	SR-241	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,110	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,411	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	162	feet

Site Data

Barrier Height:	**30.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	280.0	feet
Centerline Dist. to Observer:	1,034.0	feet
Barrier Distance to Observer:	754.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	775.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.92%
Medium Trucks:	84.8%	4.9%	10.3%	1.97%
Heavy Trucks:	86.5%	2.7%	10.8%	1.11%

Noise Source Elevations (in feet)

Autos:	777.000		
Medium Trucks:	779.000		
Heavy Trucks:	783.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	########
Medium Trucks:	########
Heavy Trucks:	########

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	2.55	-19.76	-1.20	*0.00*	-4.900	-7.900
Medium Trucks:	82.53	-14.37	-19.76	-1.20	*0.00*	-4.900	-7.900
Heavy Trucks:	85.83	-16.86	-19.76	-1.20	*0.03*	-5.300	-8.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	47.2	45.7	39.3	37.8	46.3	46.5
Heavy Trucks:	48.0	46.6	37.5	38.8	47.2	47.3
Vehicle Noise:	59.1	57.2	54.9	49.4	58.0	58.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	53.5	51.6	49.8	43.8	52.4	53.0
Medium Trucks:	42.3	40.8	34.4	32.9	41.4	41.6
Heavy Trucks:	42.7	41.3	32.2	33.5	41.9	42.0
Vehicle Noise:	54.1	52.3	50.0	44.5	53.1	53.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Rancho Pkwy.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	70.0	feet
Centerline Dist. to Observer:	96.0	feet
Barrier Distance to Observer:	26.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	94.488
Medium Trucks:	94.382
Heavy Trucks:	94.297

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	3.61	-4.25	-1.20	*0.00*	0.000	0.000
Medium Trucks:	77.62	-13.63	-4.24	-1.20	*-0.02*	0.000	0.000
Heavy Trucks:	82.14	-17.58	-4.24	-1.20	*-0.10*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	58.6	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.1	57.7	48.7	49.9	58.3	58.4
Vehicle Noise:	68.6	66.8	64.2	58.9	67.5	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	58.6	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.1	57.7	48.7	49.9	58.3	58.4
Vehicle Noise:	68.6	66.8	64.2	58.9	67.5	68.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 3	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	369.0	feet
Centerline Dist. to Observer:	389.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	734.0	feet
Road Elevation:	740.0	feet
Barrier Elevation:	740.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	742.000		
Medium Trucks:	744.000		
Heavy Trucks:	748.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	388.630
Medium Trucks:	388.604
Heavy Trucks:	388.583

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-13.46	-1.20	*-1.47*	0.000	0.000
Medium Trucks:	78.79	-14.08	-13.46	-1.20	*-1.51*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-13.46	-1.20	*-1.59*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.6	57.7	55.9	49.9	58.5	59.1
Medium Trucks:	50.0	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	50.3	48.9	39.9	41.1	49.5	49.6
Vehicle Noise:	60.5	58.7	56.2	50.9	59.4	60.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.6	57.7	55.9	49.9	58.5	59.1
Medium Trucks:	50.0	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	50.3	48.9	39.9	41.1	49.5	49.6
Vehicle Noise:	60.5	58.7	56.2	50.9	59.4	60.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nakase
Road Name:	Lake Forest Dr.	*Job Number:*	11049
Lot No:	Neighborhood 4	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,600	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	600.0	feet
Centerline Dist. to Observer:	620.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	696.0	feet
Road Elevation:	702.0	feet
Barrier Elevation:	702.0	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	704.000		
Medium Trucks:	706.000		
Heavy Trucks:	710.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	619.768
Medium Trucks:	619.752
Heavy Trucks:	619.739

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.15	-16.50	-1.20	*-1.48*	0.000	0.000
Medium Trucks:	78.79	-14.08	-16.50	-1.20	*-1.51*	0.000	0.000
Heavy Trucks:	83.02	-18.04	-16.50	-1.20	*-1.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	47.0	45.5	39.1	37.6	46.1	46.3
Heavy Trucks:	47.3	45.9	36.8	38.1	46.4	46.6
Vehicle Noise:	57.5	55.7	53.2	47.8	56.4	56.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	47.0	45.5	39.1	37.6	46.1	46.3
Heavy Trucks:	47.3	45.9	36.8	38.1	46.4	46.6
Vehicle Noise:	57.5	55.7	53.2	47.8	56.4	56.9

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APPENDIX 10.1:

OPERATIONAL NOISE LEVEL CALCULATIONS

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STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R1**	*Project Name:*	Nakase
Source:	Playground/Sports Field Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	624.0	feet	***Barrier Height:***	**6.0**	**feet**
Noise Distance to Barrier:	614.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	728.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	700.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	728.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	624.0	-41.9	-41.9	-41.9	-41.9	-41.9	-41.9
Shielding (Barrier Attenuation)	614.0	-6.1	-6.1	-6.1	-6.1	-6.1	-6.1
Raw (Distance + Barrier)		-48.0	13.7	16.1	19.0	21.7	25.9
60 Minute Hourly Adjustment		**-48.0**	**13.7**	**16.1**	**19.0**	**21.7**	**25.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R1**	*Project Name:*	Nakase
Source:	Outdoor Pool/Spa Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,159.0	feet	***Barrier Height:***	**6.0**	**feet**
Noise Distance to Barrier:	2,149.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	728.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	708.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	728.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	2,159.0	-52.7	-52.7	-52.7	-52.7	-52.7	-52.7
Shielding (Barrier Attenuation)	2,149.0	-5.6	-5.6	-5.6	-5.6	-5.6	-5.6
Raw (Distance + Barrier)		-58.3	10.4	13.4	16.7	19.8	25.2
60 Minute Hourly Adjustment		**-58.3**	**10.4**	**13.4**	**16.7**	**19.8**	**25.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R1**	*Project Name:*	Nakase
Source:	Dog Park Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	624.0	feet	***Barrier Height:***	**6.0**	**feet**
Noise Distance to Barrier:	614.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	728.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	695.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	728.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	58.5	61.0	65.2	72.6	78.6
Distance Attenuation	624.0	-41.9	-41.9	-41.9	-41.9	-41.9	-41.9
Shielding (Barrier Attenuation)	614.0	-6.2	-6.2	-6.2	-6.2	-6.2	-6.2
Raw (Distance + Barrier)		-48.1	10.4	12.9	17.1	24.5	30.5
60 Minute Hourly Adjustment		**-48.1**	**10.4**	**12.9**	**17.1**	**24.5**	**30.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R1**	*Project Name:*	Nakase
Source:	School Parking Lot Vehicle Movements	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,113.0	feet	***Barrier Height:***	**6.0**	**feet**
Noise Distance to Barrier:	2,103.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	728.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	720.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	728.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	50.0	55.0	61.0	65.0	83.9
Distance Attenuation	2,113.0	-32.5	-32.5	-32.5	-32.5	-32.5	-32.5
Shielding (Barrier Attenuation)	2,103.0	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5
Raw (Distance + Barrier)		-38.0	12.0	17.0	23.0	27.0	45.9
60 Minute Hourly Adjustment		**-38.0**	**12.0**	**17.0**	**23.0**	**27.0**	**45.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location: **R2**
Source: Playground/Sports Field Activity
Condition: Operational

Project Name: Nakase
Job Number: 11049
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	464.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	464.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	735.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	710.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	710.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	464.0	-39.4	-39.4	-39.4	-39.4	-39.4	-39.4
Shielding (Barrier Attenuation)	464.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-39.4	22.3	24.7	27.6	30.3	34.5
60 Minute Hourly Adjustment		**-39.4**	**22.3**	**24.7**	**27.6**	**30.3**	**34.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location: **R2**
Source: Outdoor Pool/Spa Activity
Condition: Operational

Project Name: Nakase
Job Number: 11049
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,665.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,665.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	735.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	708.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	708.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	1,665.0	-50.4	-50.4	-50.4	-50.4	-50.4	-50.4
Shielding (Barrier Attenuation)	1,665.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-50.4	18.3	21.3	24.6	27.7	33.1
60 Minute Hourly Adjustment		**-50.4**	**18.3**	**21.3**	**24.6**	**27.7**	**33.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R2**	*Project Name:*	Nakase
Source:	Dog Park Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,163.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,163.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	735.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	695.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	695.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	58.5	61.0	65.2	72.6	78.6
Distance Attenuation	1,163.0	-47.3	-47.3	-47.3	-47.3	-47.3	-47.3
Shielding (Barrier Attenuation)	1,163.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-47.3	11.2	13.7	17.9	25.3	31.3
60 Minute Hourly Adjustment		**-47.3**	**11.2**	**13.7**	**17.9**	**25.3**	**31.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R2**	*Project Name:*	Nakase
Source:	School Parking Lot Vehicle Movements	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	984.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	984.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	735.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	720.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	720.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	50.0	55.0	61.0	65.0	83.9
Distance Attenuation	984.0	-25.9	-25.9	-25.9	-25.9	-25.9	-25.9
Shielding (Barrier Attenuation)	984.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-25.9	24.1	29.1	35.1	39.1	58.0
60 Minute Hourly Adjustment		**-25.9**	**24.1**	**29.1**	**35.1**	**39.1**	**58.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R3**	*Project Name:*	Nakase
Source:	Playground/Sports Field Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	870.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	870.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	736.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	715.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	715.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	870.0	-44.8	-44.8	-44.8	-44.8	-44.8	-44.8
Shielding (Barrier Attenuation)	870.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-44.8	16.9	19.3	22.2	24.9	29.1
60 Minute Hourly Adjustment		**-44.8**	**16.9**	**19.3**	**22.2**	**24.9**	**29.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R3**	*Project Name:*	Nakase
Source:	Outdoor Pool/Spa Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	743.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	743.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	736.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	708.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	708.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	743.0	-43.4	-43.4	-43.4	-43.4	-43.4	-43.4
Shielding (Barrier Attenuation)	743.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-43.4	25.3	28.3	31.6	34.7	40.1
60 Minute Hourly Adjustment		**-43.4**	**25.3**	**28.3**	**31.6**	**34.7**	**40.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R3**	*Project Name:*	Nakase
Source:	Dog Park Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,410.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,410.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	736.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	695.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	695.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	58.5	61.0	65.2	72.6	78.6
Distance Attenuation	2,410.0	-53.7	-53.7	-53.7	-53.7	-53.7	-53.7
Shielding (Barrier Attenuation)	2,410.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-53.7	4.8	7.3	11.5	18.9	24.9
60 Minute Hourly Adjustment		**-53.7**	**4.8**	**7.3**	**11.5**	**18.9**	**24.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R3**	*Project Name:*	Nakase
Source:	School Parking Lot Vehicle Movements	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,287.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,287.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	736.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	720.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	720.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	50.0	55.0	61.0	65.0	83.9
Distance Attenuation	1,287.0	-28.2	-28.2	-28.2	-28.2	-28.2	-28.2
Shielding (Barrier Attenuation)	1,287.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-28.2	21.8	26.8	32.8	36.8	55.7
60 Minute Hourly Adjustment		**-28.2**	**21.8**	**26.8**	**32.8**	**36.8**	**55.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R4**	*Project Name:*	Nakase
Source:	Playground/Sports Field Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	802.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	802.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	718.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	715.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	715.0	feet	20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance		

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	802.0	-44.1	-44.1	-44.1	-44.1	-44.1	-44.1
Shielding (Barrier Attenuation)	802.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-44.1	17.6	20.0	22.9	25.6	29.8
60 Minute Hourly Adjustment		**-44.1**	**17.6**	**20.0**	**22.9**	**25.6**	**29.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R4**	*Project Name:*	Nakase
Source:	Outdoor Pool/Spa Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	341.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	341.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	718.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	708.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	708.0	feet	20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance		

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	341.0	-36.7	-36.7	-36.7	-36.7	-36.7	-36.7
Shielding (Barrier Attenuation)	341.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-36.7	32.0	35.0	38.3	41.4	46.8
60 Minute Hourly Adjustment		**-36.7**	**32.0**	**35.0**	**38.3**	**41.4**	**46.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R4**	*Project Name:*	Nakase
Source:	Dog Park Activity	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,935.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,935.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	718.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	695.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	695.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	58.5	61.0	65.2	72.6	78.6
Distance Attenuation	1,935.0	-51.8	-51.8	-51.8	-51.8	-51.8	-51.8
Shielding (Barrier Attenuation)	1,935.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-51.8	6.7	9.2	13.4	20.8	26.8
60 Minute Hourly Adjustment		**-51.8**	**6.7**	**9.2**	**13.4**	**20.8**	**26.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

9/26/2018

Observer Location:	**R4**	*Project Name:*	Nakase
Source:	School Parking Lot Vehicle Movements	*Job Number:*	11049
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,405.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,405.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	718.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	720.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	720.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	50.0	55.0	61.0	65.0	83.9
Distance Attenuation	1,405.0	-29.0	-29.0	-29.0	-29.0	-29.0	-29.0
Shielding (Barrier Attenuation)	1,405.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-29.0	21.0	26.0	32.0	36.0	54.9
60 Minute Hourly Adjustment		**-29.0**	**21.0**	**26.0**	**32.0**	**36.0**	**54.9**