Yorba Linda Housing Element Update

NOISE AND VIBRATION IMPACT ANALYSIS

CITY OF YORBA LINDA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
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	Yorba Linda Housing Element Update
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this program-level Noise and Vibration Impact Analysis to evaluate the proposed Yorba Linda Housing Element Update ("Project"). The Project will be used to support the proposed Addendum to the 2024 Housing Element Program Environmental Impact Report (PEIR). The Housing Element proposes a rezoning program of 18 vacant or underutilized sites for multi-family residential use at densities of 10 to 60 units per acre. The Yorba Linda 2021 – 2029 Housing Element will revise the General Plan land use and development intensities for the identified sites to accommodate approximately 1,747 additional dwelling units for a total of 1,929 dwelling units (including the existing zoning), which is an overall reduction of 481 units from the certified 2024 Housing Element PEIR

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

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	8	*Less Than Significant*	-
Stationary Source Noise	9	*Potentially Significant*	*Less than Significant*
Stationary Source Vibration		*Less Than Significant*	-
Construction Noise	10	*Potentially Significant*	*Significant and Unavoidable*
Construction Vibration		*Potentially Significant*	*Less than Significant*

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1 INTRODUCTION

This program-level Noise and Vibration Impact Analysis has been completed to determine the noise impacts due to development associated with the Yorba Linda Housing Element Update ("Project"). This Noise and Vibration Impact Analysis briefly describes typical compliance conditions for the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational and short-term construction noise impacts.

1.1 PROJECT DESCRIPTION

The Noise and Vibration Impact Analysis will be used to support the proposed Addendum to the 2024 Housing Element Program Environmental Impact Report (PEIR). The Housing Element proposes a rezoning program of 18 vacant or underutilized sites for multi-family residential use at densities of 10 to 60 units per acre. The Yorba Linda 2021 – 2029 Housing Element will revise the General Plan land use and development intensities for the identified sites to accommodate approximately 1,747 additional dwelling units for a total of 1,929 dwelling units (including the existing zoning), which is an overall reduction of 481 units from the certified 2024 Housing Element PEIR. This Noise and Vibration Impact Analysis will evaluate the proposed development intensities expected for the 18 vacant or underutilized sites and assess the potential off-site traffic noise level increases that result from the implementation of the rezoning and changes to land use. Exhibit 1-A identifies the locations of each of the Housing Element sites summarized on Table 1-1.

1.2 PROJECT RELATED NOISE SOURCE ACTIVITIES

The Yorba Linda Housing Element Update is not expected to include any specific type of stationary source levels beyond the typical noise sources associated with the planned multifamily residential land use. This includes residents moving around each of the sites, residential air conditioning units, and parking lot activities. Residential land use is generally considered a noise-sensitive receiving land use and is not expected to generate meaningful stationary source noise levels. In addition, Section 21085 of the recently adopted 2023 California Public Resources Code (PRC), established that "noise effects" on humans that are associated with "project occupants and guests" within residential Projects are not considered an impact on the environment.

EXHIBIT 1-A: HOUSING ELEMENT SITE LOCATION MAP

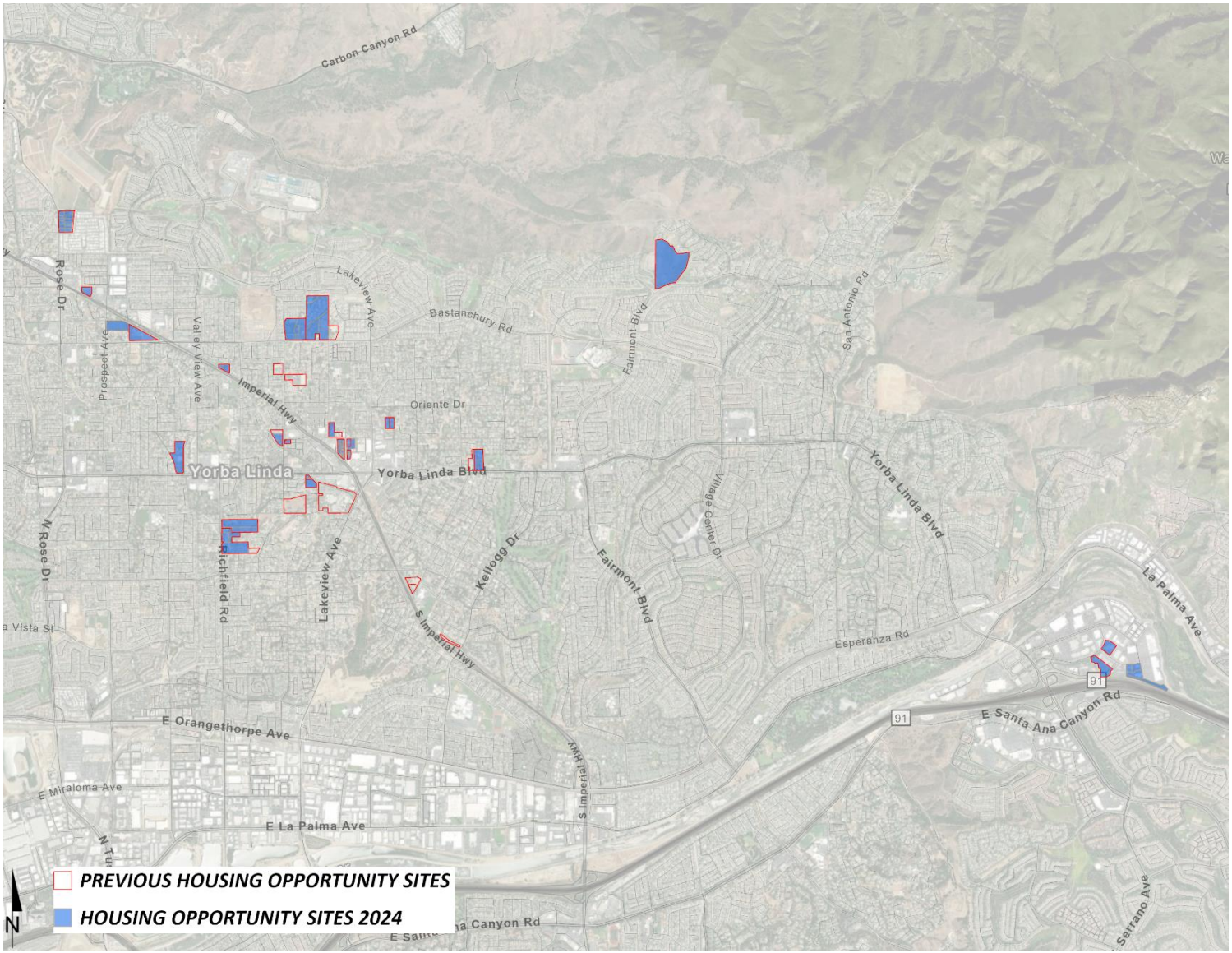

TABLE 1-1: SUMMARY OF HOUSING ELEMENT UNITS PER SITE

#	HE Site ID	Site	Current Zoning	Proposed Zoning	Acres	Total Net Unit Potential
1	S1-021	W. of 16951 Imperial Highway	CG	Commercial Mixed Use Overlay	1.76	62
2	S1-200	SEC Rose Dr. & Blake Rd.	RE	RM-20 w/ Affordable Overlay	5.94	208
3	S2-008	17151 Bastanchury Rd.	RE	Congregational Land Overlay	4.92	60
4	S3-012	5320 Richfield Rd.	RU	Congregational Land Overlay	9.48	55
5	S3-207	5300-5392 Richfield Rd.	RU	RM-20 w/ Affordable Overlay	9.7	340
6	S2-013	4861 Liverpool St.	RU	Congregational Land Overlay	6.2	40
7	S3-074	18132 Yorba Linda Bl.	CG	RM-20 w/ Affordable Overlay	0.42	15
8	S3-024	Friends Church Overflow Parking	RE	Congregational Land Overlay	17.45	48
9	S3-033	4382 Eureka Av.	RS	Congregational Land Overlay	3.88	30
10	S3-210	18111 Bastanchury Rd.	PD-26	Congregational Land Overlay	9.23	105
11	S3-082	4791 & 4811 Eureka Av.	CG	RM-20 w/ Affordable Overlay	1.75	61
12	S4-075	4742 Plumosa Dr.	CG	RM-20 w/ Affordable Overlay	1.62	57
13	S6-015	22722 Old Canal Rd.	PD	Affordable Housing Overlay	2.56	89
14	S6-020	22711 Oak Crest Circle	PD	RM-20 w/ Affordable Housing Overlay	10.35	143
15	S7-001	Bryant Ranch Shopping Center	CG	Commercial Mixed Use Overlay	9.15	320
16	S3-034	4341 Eureka Av.	RS	RM	2.19	22
18	S3-203	18101-18251 Bastanchury Rd.	PD	PD	22.83	228
19	S3-205A	5225 & 5227 Highland Av.	RE	RM	7.08	71
20	S4-200	18597-18602 Altrudy Ln.	RS	RM-20	2	40
21	S4-204A	19045 Yorba Linda Bl.	RE	Congregational Land Overlay	1.85	17
	S4-204B	19081-19111 Yorba Linda Bl.	RE	RM-20	3.9	78
23	S3-211	17651 Imperial Highway	RS	RM	2.32	23
24	S4-053	SWC of Kellogg Dr. & Grandview Av.	RE	RM	0.98	10
25	S4-060	5541 S. Ohio St.	RE	RM	0.96	10
	S4-201	5531 S. Ohio St.	RE	RM	1.82	18
26	S5-008	Fairmont Bl.	PD	RM	23.01	230
27	S7-005	NEC of Camino del Bryant & Meadowland	RU	RM	3.06	30
				TOTAL	**166.41**	**2,410**

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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) 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 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric 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.

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 noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Yorba Linda 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. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

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

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

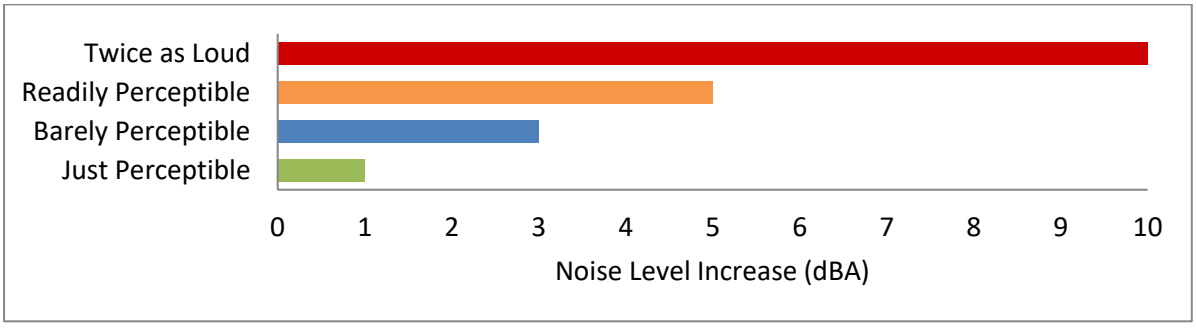
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development,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

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen 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 may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

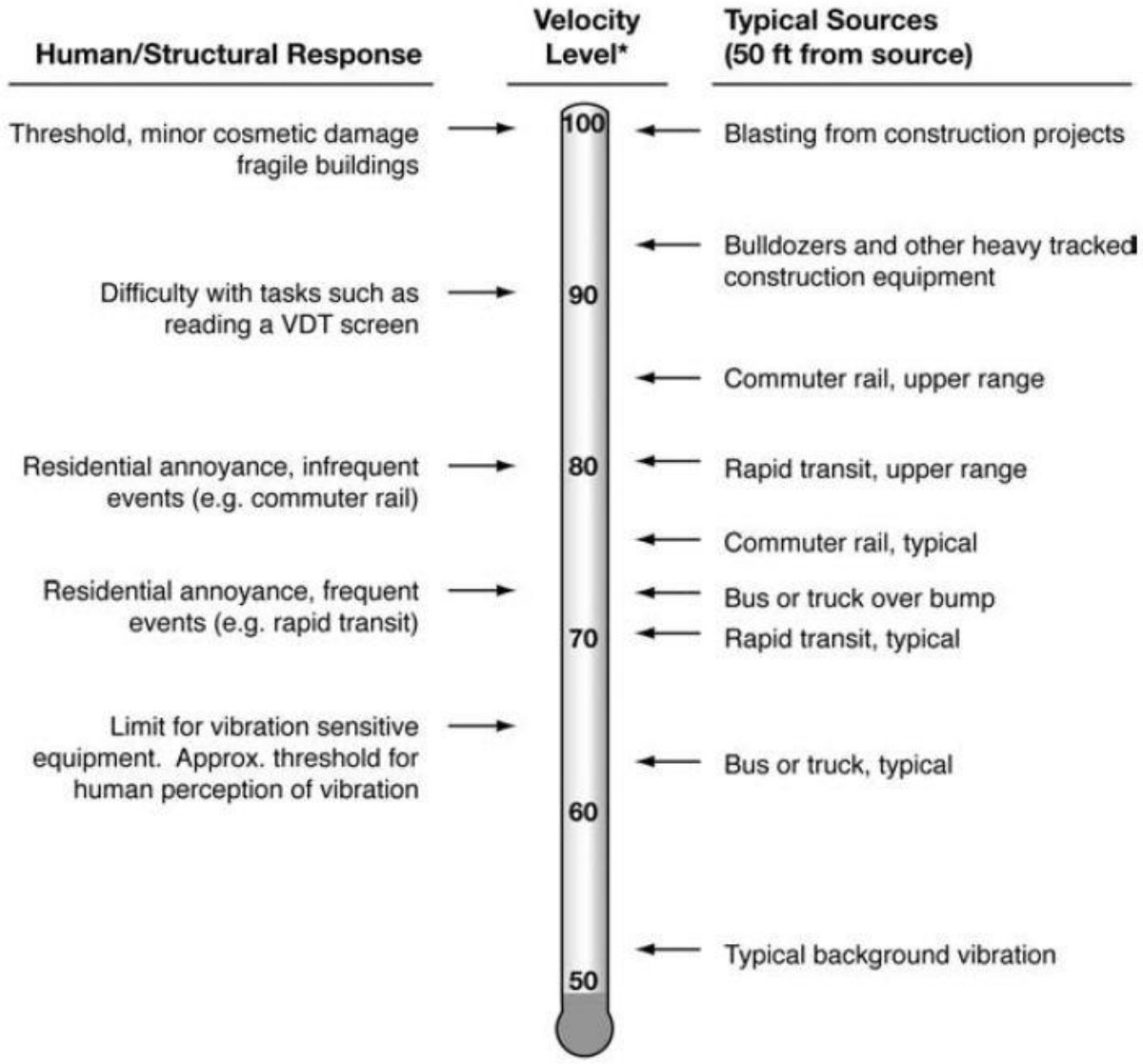
Per the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual, vibration is the periodic oscillation of a medium or object. The rumbling sound caused

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. Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (8). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (8). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil.

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 (8). 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 (8). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (9). Thus, either can be used in the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits. (8) Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels. As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

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



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

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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING STANDARDS

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

3.3 CITY OF YORBA LINDA ADOPTED GENERAL PLAN NOISE ELEMENT

City of Yorba Linda previously adopted a Noise Element of the General Plan (Chapter 12), *to protect citizens from excessive exposure to noise conflicts and problems.* (11) The Noise Element Policy Program identifies the following goals and polices related to noise:

Goal N-1: *Indoor and outdoor living areas that are adequately protected from excessive transportation noise impacts.*

Policies:

N-1.1 Ensure existing transportation noise sources comply with the City's noise ordinance.

N-1.2 Consider appropriate technologies to mitigate excessive noise levels where necessary or where feasible

N-1.3 Ensure noise mitigation measures are clearly articulated and implemented prior to the approval of new roadway projects.

N-1.4 Ensure potentially excessive noise generators provide for the highest feasible level of noise mitigation and compliance with local, state, and federal noise standards.

N-1.5 Promote alternative transportation modes such as walking, bicycling, equestrian transportation, and transit to contribute to reducing or minimizing potential noise impacts

Goal N-2: *Noise and land use compatibility.*

Policies:

N-2.1 Ensure compliance with the City's established noise thresholds for various land uses.

N-2.2 Ensure compliance with the City's established noise thresholds for noise sensitive receptors, land uses, and activities.

N-2.3 Ensure noise producing land uses and activities are designed and located to consider impacts to adjacent uses and activities.

Goal N-3: *Mitigate noise impacts from non-transportation sources*

Policies:

N-3.1 Ensure compliance with standards and procedures for mitigating construction related activities that introduce excessive noise levels.

N-3.2 Promote coordination among City agencies involved in noise abatement.

Goal N-4: *Mitigate noise impacts from non-transportation sources*

Policies:

N-4.1 Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.

N-4.2 Consider alternative architectural layouts as a means of meeting noise requirements.

N-4.3 Consider a combination of noise barriers, landscape berms, and architectural design treatments when needed to mitigate noise impacts.

N-4.4 Consider measures which alter, prohibit or mitigate noise generating uses through site design.

3.3.1 LAND USE COMPATIBILITY

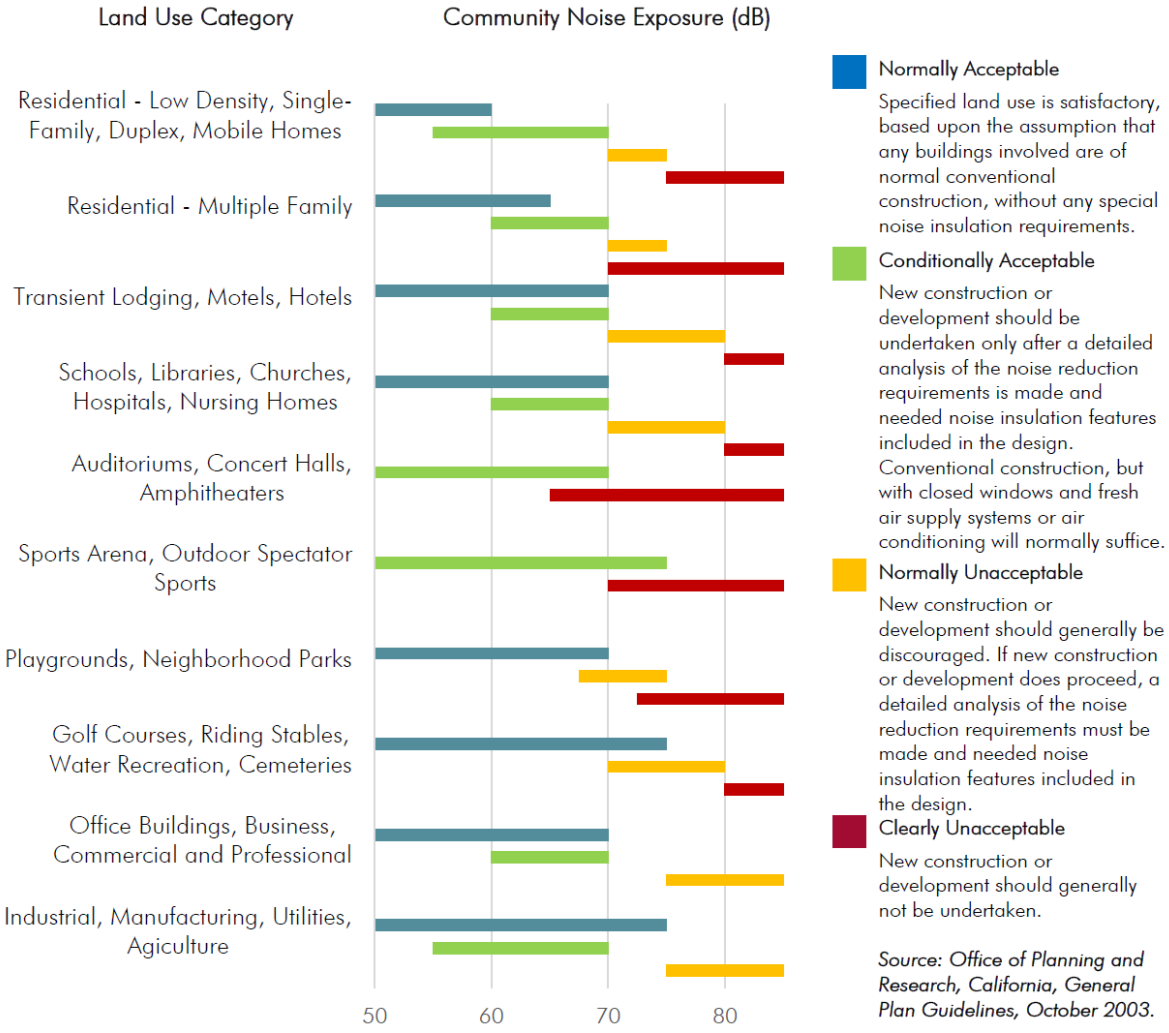
The Noise Element provides several policies to ensure compatibility of land uses with their existing and future noise environments (Goal N-2) that includes establishing acceptable noise levels for various land uses. The City of Yorba Linda has adopted the transportation noise criteria contained in the California Office of Planning and Research (OPR) *General Plan Guidelines*. (12) The OPR land use/noise compatibility standards are used by many California cities and counties and specify the maximum noise levels allowable for new developments impacted by transportation noise sources. The OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix D: Noise Element Guidelines*. (12) The noise criteria identified in the City of Yorba Linda General Plan Noise Element, are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-A, provide City of Yorba Linda with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise environment.

Single-family residential uses are considered *normally acceptable* with exterior noise levels of up to 60 CNEL and *conditionally acceptable* up to 70 CNEL. Multi-family residential land use is considered *normally acceptable* in exterior noise environments up to 65 CNEL and *conditionally acceptable* up to 70 CNEL. Schools, libraries, and churches are considered *normally acceptable* up to 70 CNEL, as are office buildings and business, commercial and professional uses. (11) A *conditionally acceptable* designation indicates that *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 incorporated in the design. Conventional construction, but with windows closed and fresh air supply systems or air conditioning will normally suffice.* By comparison, a *normally acceptable* designation indicates that standard construction can occur with no special noise reduction requirements.

3.3.2 TRANSPORTATION NOISE STANDARDS

To control transportation-related noise sources such as arterial roads, freeways, airports, and railroads, City of Yorba Linda has established the land use compatibility guidelines for exterior noise levels as previously described, and shown on Exhibit 3-A. For noise-sensitive uses, the Noise Element identifies the exterior noise level of 65 dBA CNEL for *conditionally acceptable* use. In addition, an interior noise level standard of 45 dBA CNEL for noise-sensitive interior uses is utilized in this Noise and Vibration Impact Analysis consistent with California Code of Regulations, Title 24, Building Standards for residential use.

EXHIBIT 3-A: CRITERIA FOR NOISE-COMPATIBLE LAND USE



Source: City of Yorba Linda General Plan Noise Element Adopted October 2016, Page N-9.

3.4 CITY OF YORBA LINDA MUNICIPAL CODE

To analyze noise impacts originating from a designated fixed location or private property such as the Yorba Linda Housing Element Update, stationary-source (operational) noise such as the expected residents moving around each of the sites, residential air conditioning units, and parking lot activities are typically evaluated against standards established under a jurisdiction's Municipal Code. For all noise-sensitive residential properties, Section 8.32.060 of the Municipal Code identifies stationary source noise level limits for the daytime (7:00 a.m. to 10:00 p.m.) hours of 55 dBA L_{eq} and 50 dBA L_{eq} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. (13) The exterior noise level standards shall apply for a cumulative period of more than 30 minutes in any hour, as well as the standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. Further, Section 8.32.060 indicates that if the

existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be adjusted to reflect the ambient conditions. The City of Yorba Linda Municipal Code noise standards are shown on Table 3-1 and included in Appendix 3.1.

TABLE 3-1: STATIONARY SOURCE NOISE LEVEL STANDARDS

Land Use	Time Period	Exterior Noise Level Standards (dBA)[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. to 10:00 p.m.)	55	60	65	70	75
	Nighttime (10:00 p.m. to 7:00 a.m.)	50	55	60	65	70

[1] Noise Zone 1 includes all residential properties in the City (Municipal Code, Section 8.32.050).
[2] Exterior noise standards (Municipal Code, Section 8.32.060).
The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{50} is the noise level exceeded 50% of the time. .

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project stationary source activities, the L_{50} or average L_{eq} noise level metrics best describe the residents moving around each of the sites, residential air conditioning units, and parking lot activities. In addition, the L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project stationary source noise levels.

3.5 CONSTRUCTION NOISE STANDARDS

According to Section 8.32.090[D] of the Municipal Code, noise sources associated with construction-related activities are typically exempt provided the activities do not take place between the hours of 7:00 a.m. to 8:00 p.m. on weekdays, including Saturday, or at any time on Sunday or federal holidays. While the City establishes limits to the hours during which construction activity may take place, neither the City of Yorba Linda General Plan or Municipal Codes establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact* Assessment Manual is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise

thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use with a nighttime exterior construction noise level of 70 dBA L_{eq} (8 p. 179).

3.6 VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the Yorba Linda Housing Element Update, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code if such standards exist. However, the City of Yorba Linda does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (9 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the 18 vacant or underutilized sites can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration. Fragile buildings represent structures and/or finishes that are possibly weakened due to the method of construction (such as unreinforced masonry) and deterioration with age and/or lack of adequate maintenance. Therefore, a more conservative maximum acceptable continuous vibration threshold for fragile buildings of 0.10 PPV (in/sec) is used.

4 SIGNIFICANCE CRITERIA

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

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

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

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

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline 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 a noise impact significant.* (15) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged.

The Federal Interagency Committee on Noise (FICON) (16) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}). The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (17 p. 2_48).

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.6, the vibration impacts originating from the construction of the Yorba Linda Housing Element Update, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. Most buildings near the 27 vacant or underutilized sites can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec). A more conservative maximum acceptable continuous vibration threshold for fragile buildings of 0.10 PPV (in/sec) is used.

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the John Wayne Airport located roughly 13 miles southwest of the city. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site Traffic[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Stationary-Source	Exterior Noise Level Standards[2]	55 dBA L_{eq}	50 dBA L_{eq}
	If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase	
	If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase	
	If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Exempt provided the activities do not take place between the hours of eight p.m. and seven a.m. on weekdays, including Saturday, or at any time on Sunday or federal holidays.[3]		
	Noise Level Threshold[4]	80 dBA L_{eq}	70 dBA L_{eq}
	Vibration Level Threshold[5]	0.3 PPV (in/sec)[6]	
		0.1 PPV (in/sec)[7]	

[1] FICON, 1992.
[2] City of Yorba Linda Municipal Code, Section 8.32.060 (See Table 3-1)
[3] City of Yorba Linda Municipal Code, Section 8.32.090[D] (See Table 3-1)
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.
[6] Older Residential Structures.
[7] Fragile Buildings.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, noise level measurements were taken at ten sensitive receiver locations near the vacant or underutilized sites for multifamily residential use. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, May 5, 2022. Since the environmental factors such as traffic patterns, and the physical environment have not significantly changed since 2022, it is expected that these existing measurements accurately describe the baseline ambient conditions. Appendix 5.1 includes study area photos and details of the individual noise level measurement locations.

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 equivalent daytime and nighttime hourly noise levels. 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. (18)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community* (8).

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

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the 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.

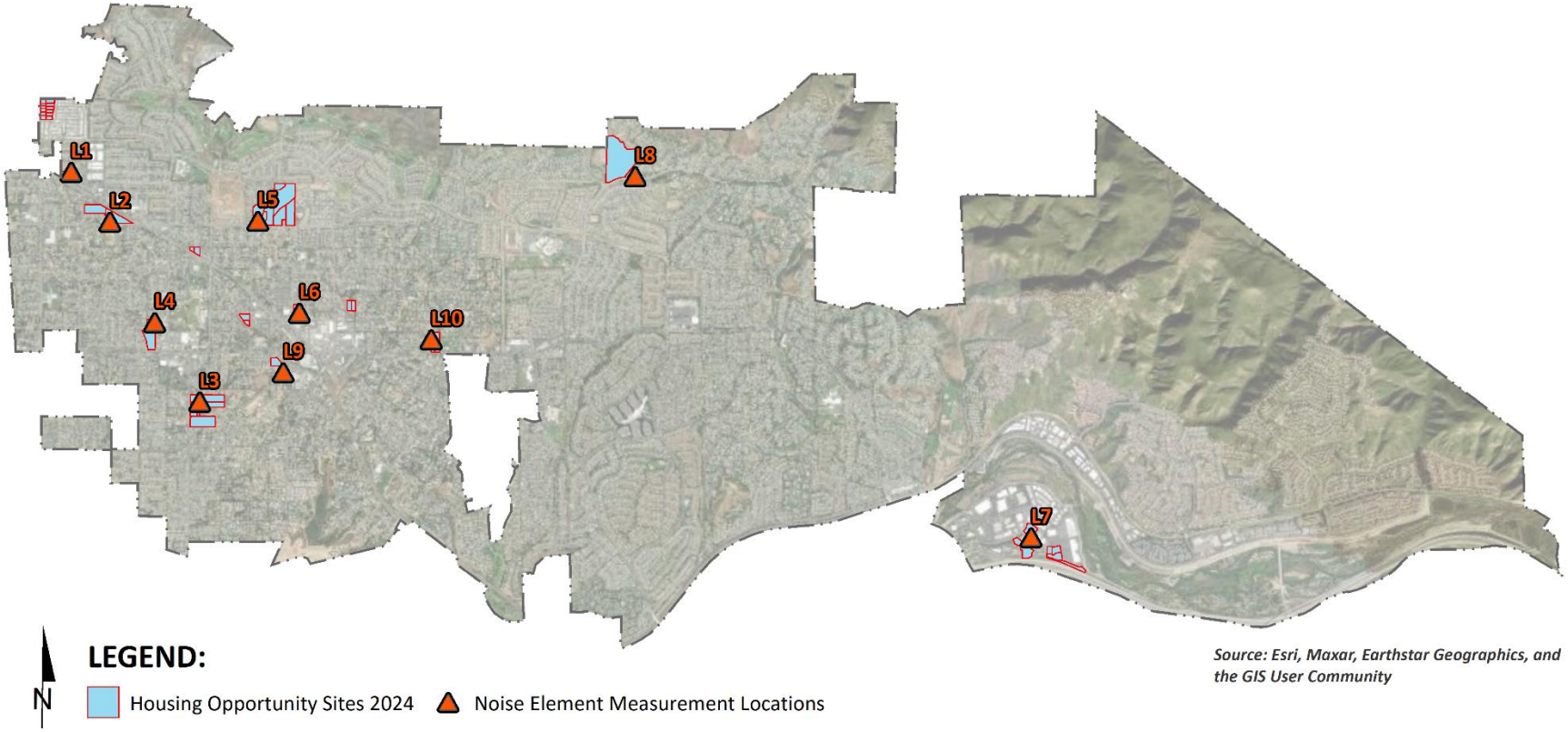
TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Site S1-021 - Vacant Parcel (W of 16951 Imperial Hwy)	55.4	51.9	59.5
L2	Site S2-008 - Friendship Baptist Church (17151 Bastanchury Rd.)	60.3	55.3	63.1
L3	Site S3-012 - Richfield Community Church (5320 Richfield Rd.)	49.0	42.1	50.7
L4	Site S2-013 - Messiah Lutheran Church (4861 Liverpool St.)	61.4	45.8	60.1
L5	Site S3-210 - Shinno-En USA (18111 Bastanchury Rd.)	58.0	52.5	60.6
L6	Site S4-075 - 4742 Plumosa Drive	51.9	47.6	55.4
L7	Site S6-015 - 22722 Old Canal Road	59.1	56.9	64.0
L8	Site S5-008 - Vacant Parcel on Fairmont Boulevard	66.0	60.0	68.3
L9	Site S3-024 - Friend Church Overflow Parking	55.1	47.6	56.7
L10	Site S4-204B - 19081-19111 Yorba Linda Blvd.	57.8	52.0	60.1

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Day" = 7:00 a.m. to 6:00 p.m.; "Evening" = 6:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

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

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 NOISE/LAND USE COMPATIBLITY

The Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. The 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 *Criteria for Noise Compatible Land Use* describes categories of compatibility and not specific noise standards. Table 6-1 summarizes the existing ambient noise level conditions in relation to the compatibility guidelines identified in the City of Yorba Linda Noise Element (Exhibit 3-A).

The General Plan Noise/Land Use Compatibility guidelines are provided to address potential noise impacts to future residents of the Yorba Linda Housing Element Update. While the General Plan considers potential impacts from the environment to future Project developments, land use compatibility and potential impacts from the existing environment on future Project development is not considered under CEQA. Therefore, no determination of significance is provided for General Plan Noise/Land Use Compatibility.

Table 6-1 shows that the majority of the proposed Yorba Linda Housing Element Update multifamily residential land uses are generally considered as *normally acceptable* with the *Criteria for Noise Compatible Land Use*. *Normally acceptable* land use is considered satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements. However, Table 6-1 indicates that General Plan Noise/Land Use Compatibility for Housing Element Site S5-008 (Location L8) representing the vacant parcel on Fairmont Boulevard is considered *conditionally acceptable*. For *conditionally acceptable* land use, new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

TABLE 6-1: GENERAL PLAN NOISE/LAND USE COMPATIBILITY

Location[1]	Description	Proposed Zoning	CNEL[2]	General Plan Noise/Land Use Compatibility[3]
L1	Site S1-021 - Vacant Parcel (W of 16951 Imperial Hwy)	Commercial Mixed-Use Overlay	59.5	Normally Acceptable
L2	Site S2-008 - Friendship Baptist Church (17151 Bastanchury Rd.)	Congregational Land Overlay	63.1	Normally Acceptable
L3	Site S3-012 - Richfield Community Church (5320 Richfield Rd.)	Congregational Land Overlay	50.7	Normally Acceptable
L4	Site S2-013 - Messiah Lutheran Church (4861 Liverpool St.)	Congregational Land Overlay	60.1	Normally Acceptable
L5	Site S3-210 - Shinno-En USA (18111 Bastanchury Rd.)	Congregational Land Overlay	60.6	Normally Acceptable
L6	Site S4-075 - 4742 Plumosa Drive	RM-20 w/Affordable Overlay	55.4	Normally Acceptable
L7	Site S6-015 - 22722 Old Canal Road	Affordable Housing Overlay	64.0	Normally Acceptable
L8	Site S5-008 - Vacant Parcel on Fairmont Boulevard	Residential Medium	68.3	**Conditionally Acceptable**
L9	Site S3-024 - Friend Church Overflow Parking	Congregational Land Overlay	56.7	Normally Acceptable
L10	Site S4-204B - 19081-19111 Yorba Linda Blvd.	Residential Medium	60.1	Normally Acceptable

[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.
[3] General Plan compatibility criteria for the proposed multifamily residential use.

7 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with the City of Yorba Linda *Land Use Compatibility* guidelines, all transportation related noise levels are presented in terms of the 24-hour CNELs.

7.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (19) 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. (20) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (21)

7.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 7-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 7-1 identifies the 18 off-site study area roadway segments, the distance from the centerline to adjacent receiving land use based on the functional roadway classifications per the City of Yorba Linda General Plan Circulation Element, and the vehicle speeds. The ADT volumes used in this study are presented on Table 7-2 are based on the *Yorba Linda Housing Element Update Traffic Analysis* prepared by Urban Crossroads, Inc. (22) for the following traffic conditions:

- Existing (2024) Without Project Conditions
- Existing (2024) With Project Conditions
- Horizon Year (2045) Without Project Conditions
- Horizon Year (2045) With Project Conditions

TABLE 7-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Rose Dr.	s/o Imperial Hwy.	Modified Primary	40'	50
2	Imperial Hwy.	w/o Prospect Av.	Smart Street	50'	55
3	Imperial Hwy.	e/o Prospect Av.	Smart Street	50'	55
4	Bastanchury Rd.	w/o Imperial Hwy.	Modified Primary	40'	50
5	Bastanchury Rd.	e/o Imperial Hwy.	Modified Primary	40'	50
6	Imperial Hwy.	n/o Lemon Dr.	Smart Street	50'	55
7	Imperial Hwy.	s/o Lemon Dr.	Smart Street	50'	55
8	Lakeview Av.	n/o Buena Vista Av.	Primary	50'	45
9	Lakeview Av.	s/o Buena Vista Av.	Primary	50'	45
10	Buena Vista Av.	w/o Lakeview Av.	Secondary	40'	45
11	Bastanchury Rd.	w/o Plumosa Dr.	Modified Primary	40'	50
12	Lakeview Av.	s/o Bastanchury Rd.	Secondary	40'	45
13	Bastanchury Rd.	w/o Lakeview Av.	Modified Primary	40'	50
14	Bastanchury Rd.	e/o Lakeview Av.	Modified Primary	40'	50
15	Lakeview Av.	s/o Yorba Linda Bl.	Primary	50'	45
16	Yorba Linda Bl.	w/o Lakeview Av.	Modified Major	50'	50
17	Gypsum Canyon Rd.	s/o La Palma Av.	Secondary	40'	45
18	La Palma Av.	e/o Gypsum Canyon Rd.	Modified Primary	40'	50

[1] City of Yorba Linda General Plan Circulation Element
[2] Distance to receiving land use is based upon the right-of-way distances.

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. Table 7-3 provides the time of day (daytime, evening, and nighttime) vehicle splits and Table 7-4 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 7-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]			
			Existing		HY (2045)	
			Without Project	With Project	Without Project	With Project
1	Rose Dr.	s/o Imperial Hwy.	14,417	15,183	17,381	18,147
2	Imperial Hwy.	w/o Prospect Av.	42,046	42,679	47,022	47,655
3	Imperial Hwy.	e/o Prospect Av.	39,992	40,595	44,725	45,328
4	Bastanchury Rd.	w/o Imperial Hwy.	15,308	15,780	17,120	17,592
5	Bastanchury Rd.	e/o Imperial Hwy.	18,846	19,231	22,406	22,791
6	Imperial Hwy.	n/o Lemon Dr.	35,798	36,338	40,035	40,574
7	Imperial Hwy.	s/o Lemon Dr.	33,408	33,912	37,362	37,865
8	Lakeview Av.	n/o Buena Vista Av.	14,406	14,926	17,586	18,106
9	Lakeview Av.	s/o Buena Vista Av.	12,516	13,058	14,418	14,960
10	Buena Vista Av.	w/o Lakeview Av.	7,627	8,317	8,390	9,080
11	Bastanchury Rd.	w/o Plumosa Dr.	15,449	15,682	17,278	17,510
12	Lakeview Av.	s/o Bastanchury Rd.	8,941	9,713	9,836	10,607
13	Bastanchury Rd.	w/o Lakeview Av.	15,504	16,867	18,510	19,873
14	Bastanchury Rd.	e/o Lakeview Av.	18,676	18,698	21,229	21,251
15	Lakeview Av.	s/o Yorba Linda Bl.	13,287	13,766	16,137	16,616
16	Yorba Linda Bl.	w/o Lakeview Av.	28,182	28,536	24,502	24,856
17	Gypsum Canyon Rd.	s/o La Palma Av.	12,309	13,238	13,540	13,717
18	La Palma Av.	e/o Gypsum Canyon Rd.	8,746	9,563	9,621	9,751

[1] Yorba Linda Housing Element Update Traffic Analysis, Urban Crossroads, Inc.

TABLE 7-3: TIME OF DAY VEHICLE SPLITS

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

[1] Typical Southern California vehicle mix.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 7-4: TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways[1]	97.42%	1.84%	0.74%	100.00%

[1] Typical Southern California vehicle mix.

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8 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the on the *Yorba Linda Housing Element Update Traffic Analysis* prepared by Urban Crossroads, Inc. (22). Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

8.1 NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at receiving land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. To be conservative, 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 8-1 through 8-4 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation. Appendix 8.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 8-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Rose Dr.	s/o Imperial Hwy.	72.2	57	122	262
2	Imperial Hwy.	w/o Prospect Av.	77.5	157	339	730
3	Imperial Hwy.	e/o Prospect Av.	77.3	152	328	706
4	Bastanchury Rd.	w/o Imperial Hwy.	72.5	59	127	273
5	Bastanchury Rd.	e/o Imperial Hwy.	73.4	68	146	314
6	Imperial Hwy.	n/o Lemon Dr.	76.8	141	305	656
7	Imperial Hwy.	s/o Lemon Dr.	76.5	135	291	627
8	Lakeview Av.	n/o Buena Vista Av.	69.1	43	93	201
9	Lakeview Av.	s/o Buena Vista Av.	68.5	39	85	183
10	Buena Vista Av.	w/o Lakeview Av.	67.5	27	58	126
11	Bastanchury Rd.	w/o Plumosa Dr.	72.6	59	127	275
12	Lakeview Av.	s/o Bastanchury Rd.	68.2	30	65	140
13	Bastanchury Rd.	w/o Lakeview Av.	72.6	59	128	275
14	Bastanchury Rd.	e/o Lakeview Av.	73.4	67	145	312
15	Lakeview Av.	s/o Yorba Linda Bl.	68.7	41	88	191

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
16	Yorba Linda Bl.	w/o Lakeview Av.	74.7	103	221	476
17	Gypsum Canyon Rd.	s/o La Palma Av.	69.5	37	80	173
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.1	40	87	188

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

TABLE 8-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Rose Dr.	s/o Imperial Hwy.	72.5	58	126	271
2	Imperial Hwy.	w/o Prospect Av.	77.5	159	342	738
3	Imperial Hwy.	e/o Prospect Av.	77.3	154	331	714
4	Bastanchury Rd.	w/o Imperial Hwy.	72.6	60	129	279
5	Bastanchury Rd.	e/o Imperial Hwy.	73.5	68	148	318
6	Imperial Hwy.	n/o Lemon Dr.	76.8	143	308	663
7	Imperial Hwy.	s/o Lemon Dr.	76.5	136	294	633
8	Lakeview Av.	n/o Buena Vista Av.	69.2	44	96	206
9	Lakeview Av.	s/o Buena Vista Av.	68.6	41	87	188
10	Buena Vista Av.	w/o Lakeview Av.	67.8	29	62	133
11	Bastanchury Rd.	w/o Plumosa Dr.	72.6	60	129	277
12	Lakeview Av.	s/o Bastanchury Rd.	68.5	32	69	148
13	Bastanchury Rd.	w/o Lakeview Av.	72.9	63	135	291
14	Bastanchury Rd.	e/o Lakeview Av.	73.4	67	145	312
15	Lakeview Av.	s/o Yorba Linda Bl.	68.9	42	91	195
16	Yorba Linda Bl.	w/o Lakeview Av.	74.7	103	223	480
17	Gypsum Canyon Rd.	s/o La Palma Av.	69.9	39	84	182
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.5	43	93	199

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

TABLE 8-3: HORIZON YEAR (2045) WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Rose Dr.	s/o Imperial Hwy.	73.1	64	138	297
2	Imperial Hwy.	w/o Prospect Av.	78.0	170	365	787
3	Imperial Hwy.	e/o Prospect Av.	77.7	164	353	761
4	Bastanchury Rd.	w/o Imperial Hwy.	73.0	63	137	294
5	Bastanchury Rd.	e/o Imperial Hwy.	74.2	76	163	352
6	Imperial Hwy.	n/o Lemon Dr.	77.3	152	328	707
7	Imperial Hwy.	s/o Lemon Dr.	77.0	145	313	675
8	Lakeview Av.	n/o Buena Vista Av.	69.9	49	107	230
9	Lakeview Av.	s/o Buena Vista Av.	69.1	43	93	201
10	Buena Vista Av.	w/o Lakeview Av.	67.9	29	62	134
11	Bastanchury Rd.	w/o Plumosa Dr.	73.0	64	137	296
12	Lakeview Av.	s/o Bastanchury Rd.	68.6	32	69	149
13	Bastanchury Rd.	w/o Lakeview Av.	73.3	67	144	310
14	Bastanchury Rd.	e/o Lakeview Av.	73.9	73	158	339
15	Lakeview Av.	s/o Yorba Linda Bl.	69.6	47	101	217
16	Yorba Linda Bl.	w/o Lakeview Av.	74.1	93	201	434
17	Gypsum Canyon Rd.	s/o La Palma Av.	70.0	40	86	184
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.5	43	93	200

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

TABLE 8-4: HORIZON YEAR (2045) WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Rose Dr.	s/o Imperial Hwy.	73.2	66	142	306
2	Imperial Hwy.	w/o Prospect Av.	78.0	171	369	794
3	Imperial Hwy.	e/o Prospect Av.	77.8	165	356	768
4	Bastanchury Rd.	w/o Imperial Hwy.	73.1	65	139	299
5	Bastanchury Rd.	e/o Imperial Hwy.	74.2	77	165	356
6	Imperial Hwy.	n/o Lemon Dr.	77.3	154	331	713
7	Imperial Hwy.	s/o Lemon Dr.	77.0	147	316	681
8	Lakeview Av.	n/o Buena Vista Av.	70.1	50	109	234
9	Lakeview Av.	s/o Buena Vista Av.	69.2	44	96	206
10	Buena Vista Av.	w/o Lakeview Av.	68.2	30	66	141
11	Bastanchury Rd.	w/o Plumosa Dr.	73.1	64	139	299
12	Lakeview Av.	s/o Bastanchury Rd.	68.9	34	73	157
13	Bastanchury Rd.	w/o Lakeview Av.	73.6	70	151	325
14	Bastanchury Rd.	e/o Lakeview Av.	73.9	73	158	340
15	Lakeview Av.	s/o Yorba Linda Bl.	69.7	48	103	221
16	Yorba Linda Bl.	w/o Lakeview Av.	74.1	94	203	438
17	Gypsum Canyon Rd.	s/o La Palma Av.	70.0	40	86	186
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.6	44	94	202

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

8.2 EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in the *Yorba Linda Housing Element Update Traffic Analysis*. This condition realistically would not occur since the Project will not be fully developed and occupied under Existing conditions. Table 8-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 67.5 to 77.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 8-2 shows the Existing with Project conditions will range from 67.8 to 77.5 dBA CNEL. Table 8-5 shows that the Project off-site traffic noise level impacts will range from 0.1 to 0.4 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to unmitigated Project-related traffic noise levels.

TABLE 8-5: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Rose Dr.	s/o Imperial Hwy.	72.2	72.5	0.3	1.5	No
2	Imperial Hwy.	w/o Prospect Av.	77.5	77.5	0.0	1.5	No
3	Imperial Hwy.	e/o Prospect Av.	77.3	77.3	0.0	1.5	No
4	Bastanchury Rd.	w/o Imperial Hwy.	72.5	72.6	0.1	1.5	No
5	Bastanchury Rd.	e/o Imperial Hwy.	73.4	73.5	0.1	1.5	No
6	Imperial Hwy.	n/o Lemon Dr.	76.8	76.8	0.0	1.5	No
7	Imperial Hwy.	s/o Lemon Dr.	76.5	76.5	0.0	1.5	No
8	Lakeview Av.	n/o Buena Vista Av.	69.1	69.2	0.1	1.5	No
9	Lakeview Av.	s/o Buena Vista Av.	68.5	68.6	0.1	1.5	No
10	Buena Vista Av.	w/o Lakeview Av.	67.5	67.8	0.3	1.5	No
11	Bastanchury Rd.	w/o Plumosa Dr.	72.6	72.6	0.0	1.5	No
12	Lakeview Av.	s/o Bastanchury Rd.	68.2	68.5	0.3	1.5	No
13	Bastanchury Rd.	w/o Lakeview Av.	72.6	72.9	0.3	1.5	No
14	Bastanchury Rd.	e/o Lakeview Av.	73.4	73.4	0.0	1.5	No
15	Lakeview Av.	s/o Yorba Linda Bl.	68.7	68.9	0.2	1.5	No
16	Yorba Linda Bl.	w/o Lakeview Av.	74.7	74.7	0.0	1.5	No
17	Gypsum Canyon Rd.	s/o La Palma Av.	69.5	69.9	0.4	1.5	No
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.1	70.5	0.4	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

8.3 HORIZON YEAR (2045) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 8-3 presents the Horizon Year (2045) without Project conditions CNEL noise levels. The Horizon Year (2045) without Project exterior noise levels are expected to range from 67.9 to 78.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 8-4 shows the Horizon Year (2045) with Project conditions will range from 68.2 to 78.0 dBA CNEL. Table 8-6 shows that the Project off-site traffic noise level increases will range from 0.0 to 0.3 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to unmitigated Project-related traffic noise levels.

TABLE 8-6: HORIZON YEAR (2045) WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Rose Dr.	s/o Imperial Hwy.	73.1	73.2	0.1	1.5	No
2	Imperial Hwy.	w/o Prospect Av.	78.0	78.0	0.0	1.5	No
3	Imperial Hwy.	e/o Prospect Av.	77.7	77.8	0.1	1.5	No
4	Bastanchury Rd.	w/o Imperial Hwy.	73.0	73.1	0.1	1.5	No
5	Bastanchury Rd.	e/o Imperial Hwy.	74.2	74.2	0.0	1.5	No
6	Imperial Hwy.	n/o Lemon Dr.	77.3	77.3	0.0	1.5	No
7	Imperial Hwy.	s/o Lemon Dr.	77.0	77.0	0.0	1.5	No
8	Lakeview Av.	n/o Buena Vista Av.	69.9	70.1	0.2	1.5	No
9	Lakeview Av.	s/o Buena Vista Av.	69.1	69.2	0.1	1.5	No
10	Buena Vista Av.	w/o Lakeview Av.	67.9	68.2	0.3	1.5	No
11	Bastanchury Rd.	w/o Plumosa Dr.	73.0	73.1	0.1	1.5	No
12	Lakeview Av.	s/o Bastanchury Rd.	68.6	68.9	0.3	1.5	No
13	Bastanchury Rd.	w/o Lakeview Av.	73.3	73.6	0.3	1.5	No
14	Bastanchury Rd.	e/o Lakeview Av.	73.9	73.9	0.0	1.5	No
15	Lakeview Av.	s/o Yorba Linda Bl.	69.6	69.7	0.1	1.5	No
16	Yorba Linda Bl.	w/o Lakeview Av.	74.1	74.1	0.0	1.5	No
17	Gypsum Canyon Rd.	s/o La Palma Av.	70.0	70.0	0.0	1.5	No
18	La Palma Av.	e/o Gypsum Canyon Rd.	70.5	70.6	0.1	1.5	No

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

[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

9 STATIONARY SOURCE NOISE ANALYSIS

The proposed residential development is considered a noise-sensitive receiving land use and is not expected to include any specific type of stationary noise levels beyond those typically associated with residential land use in the Project study area. However, since the individual locations of potential stationary source noise activities for the 18 vacant or underutilized sites are not known currently, this section considers several potential stationary source noise activities. In addition, Section 21085 of the recently adopted 2023 California Public Resources Code (PRC), established that "noise effects" on humans that are associated with "project occupants and guests" within residential Projects are not considered an impact on the environment

9.1 POTENTIAL STATIONARY SOURCE NOISE ACTIVITIES

The stationary source noise activities are expected to include residents moving around each of the sites, residential air conditioning units, and parking lot activities. Since the actual plans for the 18 vacant or underutilized sites are not known at this time, the potential stationary source noise activities may also include trash enclosures, dog parks, pool/spas, or other similar source of outdoor activity. To ensure that stationary source noise activity does not represent a nuisance, the Project shall satisfy the exterior noise level limits outlined in the City of Yorba Linda Municipal Code Section 8.32.060 and satisfy any conditions of approval.

9.2 REFERENCE NOISE LEVELS

To estimate the Project stationary source noise level impact to existing nearby noise sensitive receivers, reference sound power levels (L_w) were collected from similar types of activities to represent the noise levels expected with the development of the 18 vacant or underutilized sites. While sound pressure levels (e.g. L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The reference stationary source sound power noise levels used to estimate the potential stationary source noise activities are summarized below:

- Residential Air Conditioning Units: 75 dBA L_w according to the reference product data sheet for the Carrier model 24ACC4 Air Conditioner Unit.
- Parking Lot Activities: 88 dBA L_w based on reference noise level measurements collected by Urban Crossroads, Inc. The residential parking lot noise levels are mainly due to cars pulling in and out of spaces and residents going to and from their homes. Additional noise sources include key fob horn activities as well as vehicle loading and unloading activities.
- Trash Enclosure Activities: 89 dBA L_w based on reference noise level measurements collected by Urban Crossroads, Inc. at an existing trash enclosure containing two dumpster bins.

- Dog Park Activities: 79 dBA L_w based on reference noise level measurements collected by Urban Crossroads, Inc. at the La Paws Dog Park in the City of Mission Viejo. The reference noise level measurement describes large and small dogs with people talking, dogs running, playing fetch, chasing each other, growling, barking, and owners talking on cell phones.
- Pool/Spa Activities: 86 dBA L_w based on reference noise level measurements collected by Urban Crossroads, Inc. The pool activity noise levels include kids playing, running, screaming, splashing, playing with a ball, and parents talking.
- Outdoor Activity: 75 dBA L_w based on reference outdoor noise level measurements collected by Urban Crossroads, Inc. describing picnic tables, tot lots and areas of outdoor use.

9.3 NOISE PREDICTION CALCULATIONS

To describe the exterior stationary source noise levels from the Project, Urban Crossroads, Inc. calculated the potential Project stationary source noise levels at distances ranging from 25 to 200 feet. The stationary source noise levels were estimated using the ISO 9613-2 protocol in the CadnaA (Computer Aided Noise Abatement) computer program. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on a reference sound power level (L_w) to describe individual noise sources. The stationary source noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed stationary source noise model calculations.

9.4 PROJECT STATIONARY SOURCE NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include residents moving around each of the sites, residential air conditioning units, and parking lot activities as well as trash enclosures, dog parks, pool/spas, or other similar source of outdoor activity, Urban Crossroads, Inc. calculated the stationary source noise levels. Table 9-1 shows that the Project operational noise levels at the off-site receiver locations are expected to range from 47.2 to 61.2 dBA L_{eq} at 25 feet.

TABLE 9-1: PROJECT STATIONARY SOURCE NOISE LEVELS

Distance to Const. Activity (Feet)	Potential Stationary Source Noise Activity dBA (Leq)[1]						
	Air-Conditioning Units	Parking	Trash Enclosure	Dog Park	Pool/Spa	Outdoor	Highest Noise Level
25'	47.2	60.2	61.2	51.2	58.2	61.2	61.2
50'	39.6	52.6	53.6	43.6	50.6	53.6	53.6
100'	30.8	43.8	44.8	34.8	41.8	44.8	44.8
150'	20.5	33.5	34.5	24.5	31.5	34.5	34.5
200'	16.5	29.5	30.5	20.5	27.5	30.5	30.5

[1] Stationary source noise calculations are provided in Appendix 9.1.

9.5 PROJECT STATIONARY SOURCE NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the unmitigated Project stationary source noise levels are evaluated against the exterior noise level limits outlined in City of Yorba Linda Municipal Code Section 8.32.060. Table 9-2 shows the operational noise levels associated with the Yorba Linda Housing Element Update will satisfy the City of Yorba Linda daytime and nighttime exterior noise level limits at distances of greater than 50 feet from the stationary noise source activity. However, the existing noise sensitive receivers located within 50 feet of parking lot activities, trash enclosures, dog parks, pool/spas, or other similar source of outdoor activity may experience unmitigated exterior noise levels exceeding the exterior noise level limits. Therefore, the unmitigated stationary source noise impacts due to Project-related stationary source activities are considered less than *potentially significant*.

TABLE 9-2: PROJECT STATIONARY SOURCE NOISE LEVEL COMPLIANCE

Distance to Const. Activity (Feet)	Project Operational Noise Levels (dBA Leq)[1]	Noise Level Limits (dBA Leq)[2]		Noise Level Limits Exceeded?[3]	
		Daytime	Nighttime	Daytime	Nighttime
25'	61.2	55	50	**Yes**	**Yes**
50'	53.6	55	50	No	**Yes**
100'	44.8	55	50	No	No
150'	34.5	55	50	No	No
200'	30.5	55	50	No	No

[1] Highest potential stationary source noise activity (Table 9-1).
[2] Exterior noise standards (Municipal Code, Section 8.32.060).
[6] Do the estimated Project stationary source noise activities exceed the noise level limits?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.6 PROJECT STATIONARY SOURCE NOISE REGULATIONS

To minimize the noise exposure to the existing noise sensitive residential areas, potential stationary source noise activities should be considered as part of the site planning process. This is consistent with Goal N-4 of the City of Yorba Linda General Plan Noise Element to *mitigate noise impacts from non-transportation sources.* Goal N-4 includes the following policies that are designed to minimize the *potentially significant* stationary source noise activities.

N-4.1 *Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.*

N-4.2 *Consider alternative architectural layouts as a means of meeting noise requirements.*

N-4.3 *Consider a combination of noise barriers, landscape berms, and architectural design treatments when needed to mitigate noise impacts.*

N-4.4 *Consider measures which alter, prohibit or mitigate noise generating uses through site design.*

With the implementation of Goal N-4 of the City of Yorba Linda General Plan Noise Element and compliance with the exterior noise level limits outlined in the City of Yorba Linda Municipal Code Section 8.32.060, the Project stationary source impacts are considered *less than significant*.

9.7 PROJECT STATIONARY SOURCE NOISE MITIGATION

Prior to issuance of any construction permits, applicants for individual projects that are within 50 feet of a sensitive receptor, shall prepare and submit to the City of Yorba Linda Planning Department a study to evaluate potential operational-related stationary source noise impacts. The noise report shall be prepared by an acoustical engineer using the ISO 9613-2 protocol in the CadnaA (Computer Aided Noise Abatement) computer program. If the study determines a potential exceedance of the City's thresholds (55 dBA L_{eq} daytime, or 50 dBA L_{eq} nighttime), measures shall be identified that ensure noise levels are reduced to below the thresholds. Identified measures shall be included on all construction and building documents and submitted for verification to the City of Yorba Linda Planning Department.

9.8 STATIONARY SOURCE VIBRATION LEVELS

The Project's residential development is not expected to include any specific type of stationary vibration sources, and therefore, the potential stationary source vibration impacts for the Yorba Linda Housing Element Update residential land use is considered *less than significant.*

10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the construction activities associated with the development of the Project. To prevent high levels of construction noise from impacting noise-sensitive land uses, Section 8.32.090[D] the City of Yorba Linda Municipal Code, indicates that construction activity is considered exempt provided the activities do not take place between the hours of 7:00 a.m. to 8:00 p.m. on weekdays, including Saturday, or at any time on Sunday or federal holidays.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 feet. Hard site conditions are commonly 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.

10.2 CONSTRUCTION NOISE LEVEL COMPLIANCE

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. The development of the 18 vacant or underutilized sites would likely occur in close proximity to existing noise sensitive receivers and elevate the ambient noise environment. Furthermore, the construction of future development projects could last for prolonged periods and result in a substantial or periodic increase in the ambient noise levels. Therefore, construction noise impacts from the Project are considered *potentially significant*.

10.3 CONSTRUCTION NOISE REGULATIONS

The City of Yorba Linda General Plan Noise Element includes the following policies that are designed to minimize the *potentially significant* construction related noise activities.

N-3.1 Ensure compliance with standards and procedures for mitigating construction related activities that introduce excessive noise levels.

N-4.1 Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.

These measures would contribute to minimizing construction-related noise. However, due to the unknown number of construction activities that could occur at one time, proximity of construction activities to sensitive receivers, and other factors that cannot be quantified at this time, such as the longevity of activities, construction-related noise impacts may not be reduced

to less than significant levels for some projects. Therefore, construction noise impacts would remain *significant and unavoidable*.

10.4 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. Ground-borne vibration levels resulting from typical construction activities occurring within the Project area were estimated by data published by the Federal Transit Administration (FTA). (8) While vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used.

Ground vibration levels associated with various types of construction equipment are summarized on Table 10-1. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-1: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Vibratory Roller	0.210
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Using the vibration source levels of construction equipment provided on Table 10-1 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Based on the reference vibration levels provided by the FTA, a vibratory roller represents the peak source of vibration with a reference velocity of 0.21 in/sec PPV at 25 feet. Table 10-2 presents the expected Project related vibration levels at distances ranging from 25 to 200 feet from construction activity. Table 10-2 shows that construction vibration levels are expected to range from 0.009 to 0.210 in/sec PPV.

Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels for nearby "older residential structures" will fall below the building damage thresholds at 25 feet. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities.

TABLE 10-2: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Distance to Const. Activity (Feet)	Typical Construction Vibration Levels PPV (in/sec)[1]					
	Vibratory Roller	Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level
25'	0.210	0.210	0.035	0.076	0.089	0.210
50'	0.074	0.074	0.012	0.027	0.031	0.074
100'	0.026	0.026	0.004	0.010	0.011	0.026
150'	0.014	0.014	0.002	0.005	0.006	0.014
200'	0.009	0.009	0.002	0.003	0.004	0.009

[1] Based on the Vibration Source Levels of Construction Equipment included on Table 10-1.
"PPV" = Peak Particle Velocity

10.5 CONSTRUCTION NOISE AND VIBRATION MITIGATION MEASURES

The following construction noise mitigation measures would reduce noise and vibration levels produced by construction equipment to nearby noise-sensitive uses.

NOI-1 Construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards, and all stationary construction equipment shall be placed so that emitted noise is directed away from the noise-sensitive use nearest the construction activity.

NOI-2 The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receiver nearest to the construction activity.

NOI-3 The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment by Section 8.32.090[D] of the City of Yorba Linda Municipal Code. The contractor shall design delivery routes to minimize the exposure of sensitive land uses to delivery truck noise.

NOI-4 Prior to issuance of any construction permits, applicants for individual projects that involve vibration-intensive construction activities, such as pile drivers, jack hammers, and vibratory rollers, within 25 feet of sensitive receptors (e.g., residences and fragile structures), shall prepare and submit to the City of Yorba Linda Planning Department a study to evaluate potential construction-related vibration impacts. The vibration assessment shall be prepared by an acoustical engineer and be based on recognized vibration-induced architectural damage criterion. If the study determines a potential exceedance of the thresholds, measures shall be identified that ensure vibration levels are reduced to below the thresholds. Identified measures shall be included on all construction and building documents and submitted for verification to the City of Yorba Linda Planning Department.

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11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2024.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **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.
4. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
5. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **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.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123.* September 2018.
9. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
10. **Office of Planning and Research.** *State of California General Plan Guidlines.* 2017.
11. **City of Yorba Linda.** *General Plan Noise Element.* 2016.
12. —. *Municipal Code, Chapter 8.32 Noise Control.*
13. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
14. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
15. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
16. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
17. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
18. **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.
19. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
20. **Urban Crossroads, Inc.** *Yorba Linda Housing Element Update Traffic Analysis.* April 2024.

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12 CERTIFICATION

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

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
1133 Camelback #8329
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(949) 581-3148
blawson@urbanxroads.com

EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF YORBA LINDA MUNICIPAL CODE

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CHAPTER 8.32
NOISE CONTROL

Article I
Noise Standards

§ 8.32.010. Purpose and intent of provisions.

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

B. It is determined that certain sound levels are detrimental to the public health, welfare and safety, and contrary to public interest.

(Prior code § 19A-1)

§ 8.32.020. Definitions.

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

"Ambient noise level" means 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" means an additive period of time composed of individual time segments which may be continuous or interrupted.

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

"Emergency machinery, vehicle or work" means 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" means 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.

"Impact noise" means and includes the noise produced by the collision of one mass in motion with a second mass which may be either in motion or at rest.

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

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

"Person" means a person, firm, association, copartnership, joint venture, corporation or

any entity, public or private in nature.

"Residential property" means a parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

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

"Sound amplifying equipment" means and includes any machine or device for the amplification of the human voice, music or any other sound or by which the human voice, music or any other sound is amplified. Sound amplifying equipment shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

"Sound level meter" means 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, means twenty times the logarithm to the base ten of the ratio of the pressure of the sound to a reference pressure, which reference pressure is explicitly stated.
(Prior code § 19A-2)

§ 8.32.030. Enforcement authority.

A. The Council Health Officer and his or her duly authorized representatives are directed to enforce the provisions of this chapter. The County Health Officer and his or her 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.

B. No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter which such person is engaged in the performance of his or her duty.

(Prior code § 19A-11)

§ 8.32.040. Measurement criteria.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in Section 8.32.020 of this chapter.
(Prior code § 19A-3)

§ 8.32.050. Noise zones designated.

The residential properties hereinafter described are assigned to the following noise zones: Noise Zone 1: All residential properties in the City.
(Prior code § 19A-4)

§ 8.32.060. Noise standards—Exterior.

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*
I	55 dB(A)	7 a.m.—10 p.m.
	50 dB(A)	10 p.m.—7 a.m.

B. It is unlawful for any person, at any location within the City, to create any noise which causes the noise level when measured on any residential property to exceed:

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

2. The noise standard plus five dB(A) for a cumulative period of more than fifteen minutes in any hour;

3. The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour;

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

5. The noise standard plus twenty dB(A) for any period of time.

C. In the event the ambient noise level exceeds any of the five noise limit categories stated in subsection B of this section, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. Furthermore, the maximum permissible noise level shall never exceed the maximum ambient noise level.

D. Each of the noise limits specified in this section shall be reduced by five dB(A) for impact or simple tone noises or for noises consisting of speech or music.

(Prior code § 19A-5)

§ 8.32.070. Noise standards—Interior.

A. It is unlawful for any person at any location within the City to create any noise which causes the noise level when measured within a dwelling unit on any residential property during the period ten p.m. to seven a.m. to exceed:

1. Forty-five dB(A) for a cumulative period of more than five minutes in any hour;

2. Fifty dB(A) for a cumulative period of more than one minute in any hour; or

3. Fifty-five dB(A) for any period of time.

B. In the event that the ambient noise level exceeds any of the above three noise limit

categories, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. Furthermore, the maximum permissible noise level shall never exceed the maximum ambient noise level.

(Prior code § 19A-6)

§ 8.32.080. Exterior and interior noise level measurement.

The location selected for measuring exterior noise levels shall be at any point on the affected residential property. In the case of interior noise measurement, the windows shall be closed and the measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source.

(Prior code § 19A-10)

§ 8.32.090. Exemptions.

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

A. School bands, school athletic and school entertainment events;

B. Activities otherwise lawfully conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity;

C. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicles 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 eight p.m. and seven 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 eight p.m. and seven 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 used for residential purposes, provided said activities take place between the hours of seven a.m. and eight p.m. on any day except Sunday, or between the hours of nine a.m. and eight p.m. on Sunday;

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

law.

J. Noise sources associated with the maintenance of real property owned or operated by a public entity, such as but not limited to golf courses, libraries, municipal buildings, parks, playgrounds, recreation facilities, and school grounds.

(Prior code § 19A-7; Ord. 2008-922, § 1, 2008)

§ 8.32.100. Noise standards—Schools, hospitals and churches.

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 8.32.060 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 institution or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three separate locations within one-tenth of a mile of the institution indicating the presence of a school, church, or hospital.

(Prior code § 19A-8)

§ 8.32.110. Special provisions for air-conditioning and refrigeration.

During the five year period following the effective date of the ordinance codified in this chapter, the noise standards enumerated in Sections 8.32.060 and 8.32.070 shall be increased eight dB(A) where the alleged offensive noise source is an air-conditioning or refrigeration system or associated equipment which was installed prior to the effective date of the ordinance codified in this chapter.

(Prior code § 19A-9)

§ 8.32.120. Variance procedure.

A. 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 the 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.

B. The application shall be accompanied by a fee set by resolution of the City Council, which may be updated from time to time.

C. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources of a single property, may be combined into one application.

D. Upon receipt of said application and fee, the Health Officer shall refer it with his or her recommendation thereon within thirty days to the noise variance board for action thereon in accordance with the provisions of this chapter.

E. An applicant for a variance shall remain subject to prosecution under the terms of this chapter until the variance is granted.

(Prior code § 19A-12; Ord. 2019-1061 § 2)

§ 8.32.130. Noise Variance Board—Composition and duties of.

A. There is hereby created a Noise Variance Board consisting of five members. Two of the members shall be professional engineers, registered in this State, one of whom shall have demonstrated knowledge and experience in the field of acoustics; the other shall be a registered mechanical engineer. One member shall be a physician, licensed in this state and qualified in the field of physiological effects of noise; one, a representative of business and industry, and one, a representative of the general public.

B. The Noise Variance Board shall evaluate all applications for variance from the requirements of this chapter and may grant 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.

C. 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 the Board shall consider:

1. The magnitude of nuisance caused by the offensive noise;

2. The uses of property within the area of impingement by the noise;

3. The time factors related to study, design, financing and construction of remedial work;

4. The economic factors related to age and useful life of equipment; and

5. The general public interest and welfare.

D. Any variance granted by the Board shall be by enforcement. Any violation of the terms of said variance shall be unlawful.

E. Members of the Variance Board shall be appointed by, and shall serve at the pleasure of, the Orange County Board of Supervisors. The Variance Board shall adopt reasonable rules and regulations for its own procedures in carrying out its functions under the provisions of this chapter.

F. Three members shall constitute a quorum and at least three affirmative votes shall be required in support of any action.

G. The Health Officer, or his or her appointed representative, shall be a nonvoting ex-officio member of the Variance Board, and shall act as secretary of the Board.

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

(Prior code § 19A-13)

§ 8.32.140. Appeals procedure.

A. Within fifteen days following the decision of the Variance Board on an application, the applicant, the Health Officer, or any member of the City Council, may appeal the decision to the City Council by filing a notice of appeal with the secretary of the Variance Board. In the case of an appeal by the applicant for a variance, the notice of appeal shall be accompanied by a fee to be computed by the secretary on the basis of the estimated cost of preparing the materials required to be forwarded to the city council as discussed hereafter. If the actual cost of such preparation differs from the estimated cost, the applicant shall pay the amount of any deficiency to the secretary and the secretary shall pay the amount of any excess to the applicant.

B. Within fifteen days following receipt of a notice of appeal and the appeal fee, the secretary of the Variance Board shall forward to the City Council:

1. Copies of the application for variance;

2. The recommendation of the Health Officer;

3. The notice of appeal;

4. All evidence concerning the application received by the variance board and its decision thereon.

C. In addition, any person may file with the City Council written arguments supporting or attacking the decision and the City Council may in its discretion hear oral arguments thereon.

D. The City Clerk shall mail the applicant a notice of the date set for hearing of the appeal. The notice shall be mailed at least ten days prior to the hearing date.

E. Within sixty days following its receipt of the notice of appeal, the City Council shall either affirm, modify or reverse the decision of the Variance Board. Such decision shall be based upon the Council's evaluation of the matters submitted to the Council in light of the powers conferred on the Variance Board and the factors to be considered, both as enumerated in Sections 8.32.120 and 8.32.130.

F. As part of its decision, the Council may direct the Variance Board to conduct further proceedings on the application. Failure of the City Council to affirm, modify or reverse the decision of the Variance Board within the sixty-day period shall constitute an affirmance of the decision.

(Prior code § 19A-14)

Article II
Sound Amplifying Equipment

§ 8.32.150. Permit required.

A. No person shall operate a loudspeaker, public address system or sound amplification system or play any musical instrument anywhere in the City if such loudspeaker, public address system or sound amplification system or musical instrument can be heard outside any building, save and excepting as follows:

1. If the loudspeaker, public address system or sound amplification system is to be operated or musical instrument is to be played from a motor vehicle, it must be done in accordance with Section 10.04.140 and any other applicable ordinances of the City.

2. If the loudspeaker, public address system or sound amplification system is to be operated, or musical instrument is to be played, other than from an automobile at any time of the day or night, such operation must first be approved by the City Manager by the issuance of a permit.

3. If the loudspeaker, public address system, sound amplification system or musical instrument is used in connection with a parade for which a permit has been obtained, this section shall not be applicable.

4. No person shall use or operate any sound amplifying equipment so that the sound being emitted therefrom is raucous, jarring, or disturbing to those within the area of audibility.

(Prior code § 19A-15)

§ 8.32.160. Application for permit—Procedure—Term.

The application for any such permit shall be in writing signed by an applicant at least eighteen years of age and filed with the City Clerk at least three business days prior to the event unless excused for cause by the City Manager. It shall state the following:

A. Name and home address of the applicant;

B. Address and place of business of applicant;

C. Name and address of person having direct charge of the sound amplifying equipment desired to be used;

D. The purpose for which the sound amplifying equipment will be used;

E. The address and type of place where the sound amplifying equipment will be used;

F. The hours during which such sound amplifying equipment will be used;

G. Proposed days and number of days of operation;

H. A general description of the sound amplifying equipment which is to be used;

I. The maximum sound producing power of the sound amplifying equipment to be used; and

1. The wattage to be used,

2. The approximate maximum distance for which sound will be thrown from the room, stadium, structure, public place or lot in or on which such sound amplifying equipment will be located;

J. The form of application for permit shall be provided by the City and shall provide for the above information together with a reference to Civil Code Section 1714.1 for the information of the applicant.

K. All permits shall be issued for one day at a time.

(Prior code § 19A-16)

§ 8.32.170. Permit—Terms and conditions.

All such permits issued for the use of such sound amplifying equipment shall be issued subject to the following conditions:

A. The sound amplifying equipment shall not be used between the hours of eleven p.m. and eight a.m., except that for Easter sunrise services such equipment may be permitted starting at six a.m.

B. Sound from the sound amplifying equipment shall not be cast such a distance that it will interfere with or disturb the occupants of any hospital, sanitarium, school, church, courtroom, place of residence or public assemblage.

C. The sound amplifying equipment shall be used only for the producing of human speech or song or music and the speech or song shall not be profane, lewd, indecent, slanderous or of such character as to tend to incite riot or other public disorder nor shall such speech or song advocate disloyalty to or the overthrow of the government of the United States by arms or other unlawful means nor shall such speech or song urge any unlawful conduct or encourage or reasonably tend to encourage a breach of the public peace of the community.

D. The sound from the sound amplifying equipment shall not interfere unreasonably with the rest, repose, peace or normal activities of those persons within the vicinity of the location of such sound amplifying equipment.

E. The sound amplifying equipment shall be used only in accordance with and in compliance with the statements set forth in the application for the permit.

(Prior code § 19A-17)

§ 8.32.180. Permit—Display of required.

It shall be the duty of the applicant to display any permit received pursuant to this chapter at any event in which said permit is utilized.

(Prior code § 19A-19)

§ 8.32.190. Permit—Revocation when.

After the issuance of the permit, the City Manager shall revoke such permit if the sound amplifying equipment permitted to be used thereby is used or operated contrary to any of the provisions of this chapter.
(Prior code § 19A-18)

§ 8.32.200. Violation—Penalty.

Any person violating any of the provisions of this chapter is guilty of a misdemeanor. Each day such violation is committed or permitted to continue constitutes a separate offense and is punishable as such. The provisions of this chapter shall not be construed as permitting conduct not prescribed herein and shall not affect the enforceability of any other applicable provisions of law.
(Prior code § 19A-20)

APPENDIX 5.1:

NOISE MEASUREMENT STUDY AREA PHOTOS

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L1_E
33, 54' 13.850000", 117, 50' 20.330000"

L1_N
33, 54' 13.830000", 117, 50' 20.280000"

L1_S
33, 54' 13.860000", 117, 50' 20.280000"

L1_W
33, 54' 13.890000", 117, 50' 20.390000"

L2_E
33, 53' 58.520000", 117, 50' 5.420000"

L2_N
33, 53' 58.580000", 117, 50' 5.450000"

L2_S
33, 53' 58.550000", 117, 50' 5.450000"

L2_W
33, 53' 58.520000", 117, 50' 5.470000"

L3_E
33, 53' 2.840000", 117, 49' 30.950000"

L3_N
33, 53' 2.840000", 117, 49' 31.030000"

L3_S
33, 53' 2.810000", 117, 49' 31.010000"

L3_W
33, 53' 2.810000", 117, 49' 30.950000"

L4_E
33, 53' 27.270000", 117, 49' 48.120000"

L4_N
33, 53' 27.400000", 117, 49' 48.170000"

L4_S
33, 53' 27.320000", 117, 49' 48.140000"

L4_W
33, 53' 27.250000", 117, 49' 48.140000"

L5_E
33, 53' 59.520000", 117, 49' 10.130000"

L5_N
33, 53' 59.550000", 117, 49' 10.190000"

L5_S
33, 53' 59.540000", 117, 49' 10.190000"

L5_W
33, 53' 59.500000", 117, 49' 10.160000"

L6_E
33, 53' 30.990000", 117, 48' 54.040000"

L6_N
33, 53' 30.950000", 117, 48' 54.120000"

L6_S
33, 53' 30.950000", 117, 48' 54.120000"

L6_W
33, 53' 30.990000", 117, 48' 54.060000"

L7_E
33, 52' 24.420000", 117, 44' 19.410000"

L7_N
33, 52' 24.400000", 117, 44' 19.520000"

L7_S
33, 52' 24.410000", 117, 44' 19.490000"

L7_W
33, 52' 24.440000", 117, 44' 19.380000"

L8_E
33, 54' 15.100000", 117, 46' 49.450000"

L8_N
33, 54' 15.170000", 117, 46' 49.480000"

L8_S
33, 54' 15.070000", 117, 46' 49.450000"

L8_W
33, 54' 15.070000", 117, 46' 49.420000"

L9_E
33, 53' 12.860000", 117, 48' 59.720000"

L9_N
33, 53' 12.930000", 117, 48' 59.500000"

L9_S
33, 53' 12.870000", 117, 48' 59.670000"

L9_W
33, 53' 12.860000", 117, 48' 59.780000"

JN:15459

L10_E
33, 53' 23.270000", 117, 48' 4.710000"

L10_N
33, 53' 23.310000", 117, 48' 4.740000"

L10_S
33, 53' 23.280000", 117, 48' 4.710000"

L10_W
33, 53' 23.240000", 117, 48' 4.740000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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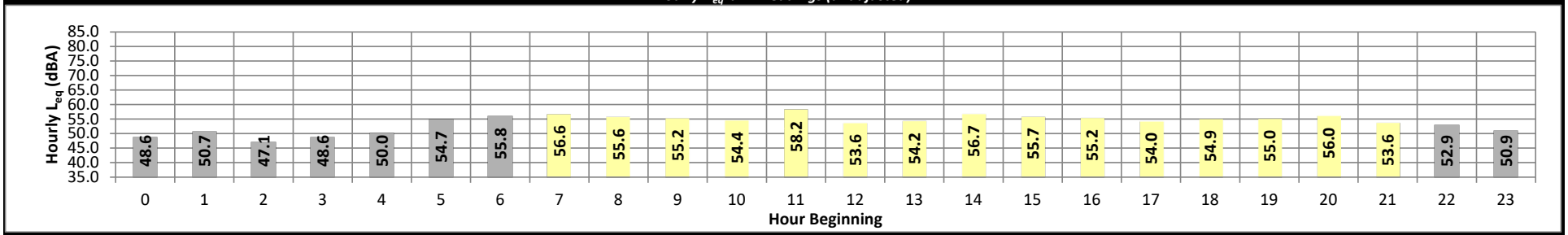
24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L1 - Site S1-021 - West of 16951 Imperial Highway *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	48.6	53.8	45.7	53.6	53.3	52.5	51.8	49.2	47.4	46.1	45.9	45.8	48.6	10.0	58.6
	1	50.7	59.7	45.2	59.3	58.9	57.8	56.4	48.9	46.9	45.6	45.4	45.2	50.7	10.0	60.7
	2	47.1	52.5	44.5	52.3	51.9	50.9	50.1	47.4	45.7	44.9	44.8	44.6	47.1	10.0	57.1
	3	48.6	54.2	45.4	54.0	53.6	52.9	52.4	49.2	47.0	45.8	45.7	45.5	48.6	10.0	58.6
	4	50.0	55.4	46.5	55.1	54.7	53.9	53.3	50.7	48.9	47.0	46.8	46.6	50.0	10.0	60.0
	5	54.7	60.8	50.3	60.3	59.9	58.9	58.2	55.2	53.5	51.3	50.9	50.5	54.7	10.0	64.7
	6	55.8	62.0	50.5	61.6	61.3	60.1	59.3	56.7	54.5	51.3	50.9	50.6	55.8	10.0	65.8
Day	7	56.6	62.1	51.5	61.7	61.4	60.4	59.7	57.5	55.6	52.6	52.0	51.7	56.6	0.0	56.6
	8	55.6	61.2	50.6	60.8	60.4	59.5	58.8	56.3	54.6	51.7	51.2	50.7	55.6	0.0	55.6
	9	55.2	62.6	48.2	61.8	61.3	60.2	59.7	55.7	53.3	49.5	48.9	48.4	55.2	0.0	55.2
	10	54.4	61.5	49.2	60.9	60.3	59.0	57.9	54.9	53.1	50.3	49.8	49.3	54.4	0.0	54.4
	11	58.2	63.3	55.2	63.0	62.8	61.9	61.0	58.4	57.3	55.9	55.6	55.3	58.2	0.0	58.2
	12	53.6	68.2	48.3	67.0	65.9	63.2	61.1	57.2	54.1	49.6	49.0	48.5	53.6	0.0	53.6
	13	54.2	60.3	48.3	59.8	59.3	58.4	57.6	55.1	53.1	49.5	48.9	48.4	54.2	0.0	54.2
	14	56.7	67.4	49.6	66.5	65.0	61.7	60.0	56.6	54.2	50.8	50.3	49.8	56.7	0.0	56.7
	15	55.7	62.3	50.8	61.7	61.1	59.9	58.9	56.3	54.6	51.9	51.4	50.9	55.7	0.0	55.7
	16	55.2	60.8	50.7	60.4	59.9	59.0	58.4	55.8	54.2	51.9	51.3	50.8	55.2	0.0	55.2
	17	54.0	62.2	49.0	61.0	59.8	58.3	57.0	54.5	52.8	50.1	49.6	49.1	54.0	0.0	54.0
	18	54.9	61.5	49.0	61.0	60.4	59.2	58.4	55.7	53.8	50.2	49.6	49.1	54.9	0.0	54.9
	19	55.0	62.8	47.9	62.5	62.1	61.0	59.4	55.1	52.9	49.3	48.6	48.1	55.0	5.0	60.0
	20	56.0	62.1	48.3	61.9	61.6	60.8	60.1	57.1	54.3	49.7	49.0	48.5	56.0	5.0	61.0
	21	53.6	59.5	47.6	59.2	58.9	58.1	57.4	54.6	52.2	48.6	48.2	47.7	53.6	5.0	58.6
Night	22	52.9	58.5	48.2	58.3	57.9	57.1	56.5	53.7	51.6	49.0	48.6	48.3	52.9	10.0	62.9
	23	50.9	56.2	47.2	55.9	55.5	54.7	54.1	51.6	49.7	47.8	47.6	47.3	50.9	10.0	60.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	53.6	59.5	47.6	59.2	58.9	58.1	57.0	54.5	52.2	48.6	48.2	47.7
	Max	58.2	68.2	55.2	67.0	65.9	63.2	61.1	58.4	57.3	55.9	55.6	55.3
Energy Average		55.4	Average:		62.0	61.4	60.0	59.0	56.1	54.0	50.8	50.2	49.8
Night	Min	47.1	52.5	44.5	52.3	51.9	50.9	50.1	47.4	45.7	44.9	44.8	44.6
	Max	55.8	62.0	50.5	61.6	61.3	60.1	59.3	56.7	54.5	51.3	50.9	50.6
Energy Average		51.9	Average:		56.7	56.3	55.4	54.7	51.4	49.5	47.6	47.4	47.2

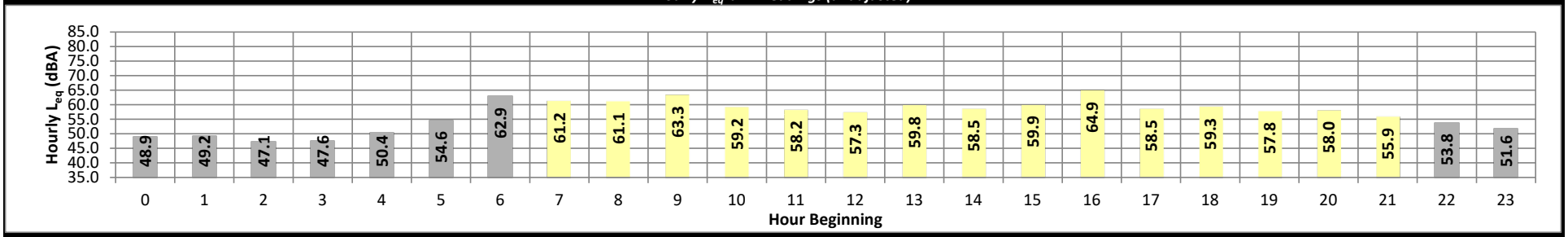
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
59.5	**55.4**	**51.9**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L2 - Site S2-008 - 17151 Bastanchury Road *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	48.9	57.7	43.4	57.5	57.1	55.3	53.8	48.1	45.6	43.9	43.7	43.5	48.9	10.0	58.9
	1	49.2	58.0	43.2	57.6	57.0	55.6	54.3	48.7	45.3	43.8	43.6	43.4	49.2	10.0	59.2
	2	47.1	56.3	41.8	56.1	55.8	54.2	52.2	45.2	43.6	42.3	42.2	42.0	47.1	10.0	57.1
	3	47.6	56.1	43.3	55.8	55.4	53.7	51.9	46.5	45.0	43.7	43.6	43.4	47.6	10.0	57.6
	4	50.4	58.6	45.2	58.4	58.1	56.4	54.7	49.9	47.7	45.8	45.6	45.3	50.4	10.0	60.4
	5	54.6	63.4	48.2	63.1	62.7	61.1	59.4	53.8	51.0	48.9	48.6	48.3	54.6	10.0	64.6
	6	62.9	74.5	50.5	74.0	73.5	71.2	68.4	59.0	55.8	51.5	51.0	50.6	62.9	10.0	72.9
Day	7	61.2	67.6	52.7	67.3	66.9	65.9	65.2	62.6	59.8	54.0	53.3	52.8	61.2	0.0	61.2
	8	61.1	68.8	51.6	68.5	68.1	66.6	65.7	62.0	58.8	53.2	52.4	51.7	61.1	0.0	61.1
	9	63.3	75.1	50.4	74.9	74.3	70.7	67.6	60.5	56.9	51.8	51.1	50.6	63.3	0.0	63.3
	10	59.2	67.8	50.8	67.5	67.0	64.7	63.2	59.6	56.7	52.3	51.7	51.0	59.2	0.0	59.2
	11	58.2	66.7	49.1	66.4	65.9	64.0	62.6	58.8	55.4	50.2	49.8	49.3	58.2	0.0	58.2
	12	57.3	64.9	48.7	64.6	64.2	62.9	62.0	58.4	54.6	49.9	49.3	48.8	57.3	0.0	57.3
	13	59.8	70.4	48.4	70.0	69.0	66.5	64.0	59.3	55.2	50.1	49.2	48.6	59.8	0.0	59.8
	14	58.5	65.8	48.3	65.5	65.1	63.9	62.9	59.9	56.1	50.1	49.2	48.5	58.5	0.0	58.5
	15	59.9	68.5	49.6	68.0	67.3	65.4	64.1	60.7	57.7	51.6	50.6	49.8	59.9	0.0	59.9
	16	64.9	79.5	50.5	77.8	75.8	71.0	67.6	61.9	58.7	53.8	52.4	51.0	64.9	0.0	64.9
	17	58.5	65.7	49.1	65.5	65.0	63.5	62.6	59.7	56.7	50.8	50.0	49.3	58.5	0.0	58.5
	18	59.3	66.4	48.8	66.1	65.8	64.5	63.5	60.4	57.6	50.8	49.8	49.0	59.3	0.0	59.3
	19	57.8	67.3	47.1	66.8	65.9	63.7	62.1	58.7	54.7	48.3	47.7	47.2	57.8	5.0	62.8
	20	58.0	67.6	47.4	67.2	66.4	64.1	62.4	58.5	54.7	49.2	48.2	47.5	58.0	5.0	63.0
	21	55.9	64.2	46.8	63.9	63.6	62.2	60.7	56.4	52.5	47.7	47.2	46.9	55.9	5.0	60.9
Night	22	53.8	61.9	46.8	61.7	61.4	59.9	58.7	54.0	50.3	47.6	47.2	46.9	53.8	10.0	63.8
	23	51.6	60.7	45.2	60.4	60.0	58.0	56.4	51.3	47.8	45.8	45.6	45.3	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	55.9	64.2	46.8	63.9	63.6	62.2	60.7	56.4	52.5	47.7	47.2	46.9
	Max	64.9	79.5	52.7	77.8	75.8	71.0	67.6	62.6	59.8	54.0	53.3	52.8
Energy Average		60.2	Average:		68.0	67.4	65.3	63.8	59.8	56.4	50.9	50.1	49.5
Night	Min	47.1	56.1	41.8	55.8	55.4	53.7	51.9	45.2	43.6	42.3	42.2	42.0
	Max	62.9	74.5	50.5	74.0	73.5	71.2	68.4	59.0	55.8	51.5	51.0	50.6
Energy Average		55.3	Average:		60.5	60.1	58.4	56.6	50.7	48.0	45.9	45.7	45.4

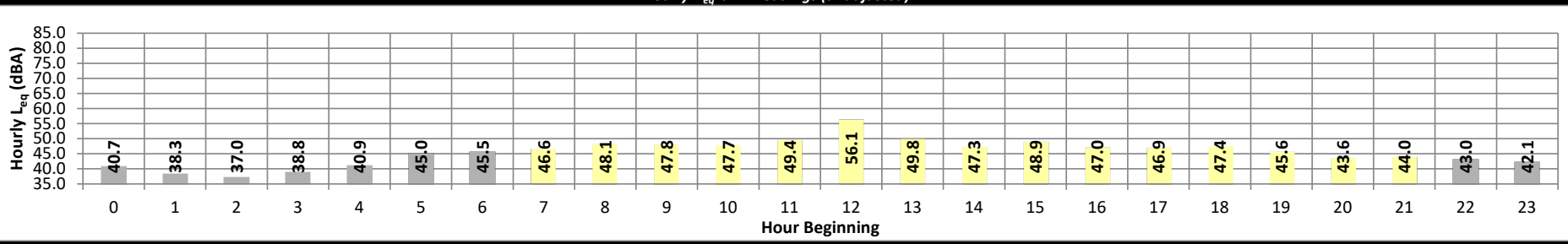
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
63.1	**60.2**	**55.3**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L3 - Site S2-012 - 5320 Richfield Road *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	40.7	45.8	37.2	45.5	45.1	44.5	44.1	41.3	39.1	37.9	37.7	37.4	40.7	10.0	50.7
	1	38.3	42.2	36.4	41.7	41.3	40.6	40.2	38.8	37.7	36.8	36.7	36.5	38.3	10.0	48.3
	2	37.0	39.5	35.9	39.3	39.1	38.6	38.3	37.2	36.7	36.2	36.1	36.0	37.0	10.0	47.0
	3	38.8	41.3	37.4	41.1	40.9	40.4	40.1	39.1	38.5	37.9	37.7	37.5	38.8	10.0	48.8
	4	40.9	44.0	39.0	43.7	43.5	42.9	42.6	41.4	40.6	39.5	39.3	39.1	40.9	10.0	50.9
	5	45.0	50.2	42.2	49.7	49.1	47.8	47.2	45.5	44.3	42.9	42.7	42.4	45.0	10.0	55.0
	6	45.5	49.7	42.7	49.2	48.8	48.1	47.6	46.1	44.9	43.4	43.1	42.9	45.5	10.0	55.5
Day	7	46.6	52.2	42.8	51.8	51.4	50.1	49.4	47.2	45.5	43.6	43.3	42.9	46.6	0.0	46.6
	8	48.1	54.9	42.3	54.6	54.3	53.4	52.7	48.5	45.5	43.1	42.8	42.5	48.1	0.0	48.1
	9	47.8	54.3	41.3	53.9	53.4	52.5	51.9	49.2	45.7	42.5	41.9	41.5	47.8	0.0	47.8
	10	47.7	54.5	42.0	54.1	53.7	52.9	52.1	47.9	45.7	43.4	42.7	42.2	47.7	0.0	47.7
	11	49.4	54.5	44.3	54.1	53.7	53.0	52.5	50.5	48.3	45.5	45.0	44.4	49.4	0.0	49.4
	12	56.1	69.9	57.5	69.0	68.0	66.2	65.2	62.9	59.5	58.2	58.0	57.6	56.1	0.0	56.1
	13	49.8	71.6	51.5	70.1	68.6	65.9	64.4	60.5	57.9	54.2	52.9	51.8	49.8	0.0	49.8
	14	47.3	52.8	42.4	52.5	52.1	51.3	50.5	48.2	46.1	43.5	43.0	42.5	47.3	0.0	47.3
	15	48.9	56.8	43.0	56.3	55.6	54.0	52.9	49.4	46.8	44.0	43.6	43.1	48.9	0.0	48.9
	16	47.0	54.0	42.3	53.5	53.0	51.8	50.7	47.5	45.4	43.2	42.8	42.4	47.0	0.0	47.0
	17	46.9	54.8	42.0	54.2	53.6	51.5	50.6	47.1	45.2	43.0	42.6	42.1	46.9	0.0	46.9
	18	47.4	55.5	41.0	55.2	54.7	53.2	52.1	47.2	44.8	42.2	41.7	41.2	47.4	0.0	47.4
	19	45.6	52.7	40.3	52.2	51.6	50.4	49.6	45.8	43.9	41.3	40.9	40.4	45.6	5.0	50.6
	20	43.6	49.2	39.3	48.9	48.5	47.5	46.7	44.5	42.4	40.0	39.7	39.4	43.6	5.0	48.6
	21	44.0	49.1	39.8	48.9	48.6	48.0	47.3	44.8	42.8	40.5	40.2	40.0	44.0	5.0	49.0
Night	22	43.0	48.0	39.6	47.8	47.5	46.8	46.3	43.5	41.8	40.1	39.9	39.8	43.0	10.0	53.0
	23	42.1	48.9	38.5	48.5	47.9	47.0	46.4	42.2	40.2	39.1	38.8	38.6	42.1	10.0	52.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.6	49.1	39.3	48.9	48.5	47.5	46.7	44.5	42.4	40.0	39.7	39.4
	Max	56.1	71.6	57.5	70.1	68.6	66.2	65.2	62.9	59.5	58.2	58.0	57.6
Energy Average		49.0	Average:		55.3	54.7	53.4	52.6	49.4	47.0	44.6	44.1	43.6
Night	Min	37.0	39.5	35.9	39.3	39.1	38.6	38.3	37.2	36.7	36.2	36.1	36.0
	Max	45.5	50.2	42.7	49.7	49.1	48.1	47.6	46.1	44.9	43.4	43.1	42.9
Energy Average		42.1	Average:		45.2	44.8	44.1	43.6	41.7	40.4	39.3	39.1	38.9

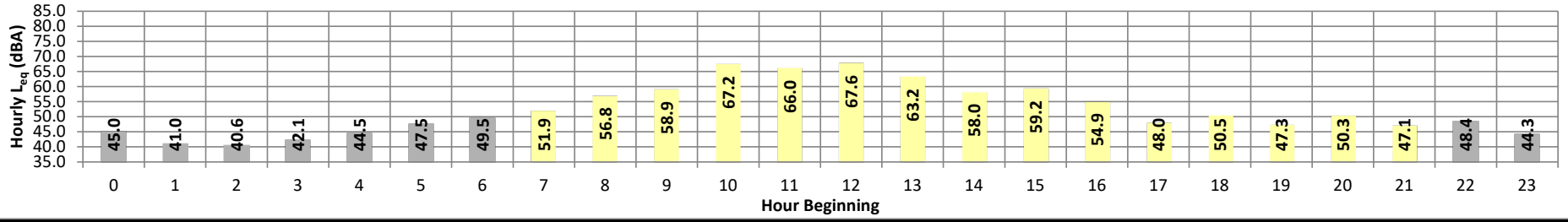
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
50.7	**49.0**	**42.1**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L4 - Site S2-013 - 4861 Liverpool Street *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

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	45.0	54.3	40.7	53.5	52.9	51.6	50.1	43.4	42.1	41.1	41.0	40.8	45.0	10.0	55.0
	1	41.0	43.3	39.9	43.0	42.8	42.3	42.0	41.3	40.8	40.2	40.1	40.0	41.0	10.0	51.0
	2	40.6	43.7	39.6	43.4	43.0	42.3	41.7	40.7	40.3	39.9	39.8	39.7	40.6	10.0	50.6
	3	42.1	44.4	40.9	44.2	44.0	43.7	43.4	42.5	41.9	41.2	41.1	41.0	42.1	10.0	52.1
	4	44.5	49.7	42.8	49.4	49.0	47.7	46.5	44.4	43.7	43.1	43.0	42.9	44.5	10.0	54.5
	5	47.5	51.2	45.8	50.8	50.4	49.6	49.0	47.8	47.1	46.3	46.2	45.9	47.5	10.0	57.5
	6	49.5	56.7	47.4	56.4	56.0	51.8	50.5	49.1	48.5	47.8	47.7	47.5	49.5	10.0	59.5
Day	7	51.9	60.5	47.6	60.0	59.3	57.2	55.7	52.1	49.7	48.3	48.0	47.8	51.9	0.0	51.9
	8	56.8	62.7	49.3	62.4	62.1	61.4	60.9	58.1	55.2	50.9	50.3	49.5	56.8	0.0	56.8
	9	58.9	63.5	51.5	63.2	63.0	62.4	62.0	60.0	58.6	54.0	53.1	51.8	58.9	0.0	58.9
	10	67.2	71.5	61.4	71.3	71.0	70.5	70.1	68.2	66.4	63.5	62.8	61.6	67.2	0.0	67.2
	11	66.0	73.7	61.5	72.2	71.0	68.8	67.9	66.5	65.3	63.1	62.5	61.8	66.0	0.0	66.0
	12	67.6	76.3	58.4	75.0	74.2	72.2	71.2	68.6	66.3	60.4	59.7	58.8	67.6	0.0	67.6
	13	63.2	75.4	51.4	73.8	72.3	68.5	66.7	62.9	59.9	54.2	53.2	51.9	63.2	0.0	63.2
	14	58.0	65.5	53.6	64.9	64.4	63.1	62.0	57.9	56.1	54.3	54.0	53.8	58.0	0.0	58.0
	15	59.2	64.8	53.7	64.5	64.1	63.3	62.5	59.9	58.2	55.4	54.8	53.9	59.2	0.0	59.2
	16	54.9	61.0	49.8	60.7	60.4	59.2	58.3	55.8	53.6	50.7	50.3	49.9	54.9	0.0	54.9
	17	48.0	56.0	43.6	55.6	55.0	53.1	51.8	47.8	45.8	44.2	44.0	43.7	48.0	0.0	48.0
	18	50.5	58.3	44.1	57.9	57.5	56.2	55.2	50.7	47.6	44.9	44.5	44.2	50.5	0.0	50.5
	19	47.3	55.8	42.5	55.2	54.5	52.6	51.3	47.3	44.9	43.1	42.9	42.6	47.3	5.0	52.3
	20	50.3	57.4	43.9	57.0	56.7	55.8	54.9	51.1	47.5	44.9	44.5	44.1	50.3	5.0	55.3
	21	47.1	53.1	43.9	52.5	52.0	50.9	50.0	47.5	46.0	44.5	44.3	44.0	47.1	5.0	52.1
Night	22	48.4	56.0	44.8	55.7	55.3	53.9	52.9	47.6	46.1	45.2	45.1	44.9	48.4	10.0	58.4
	23	44.3	48.7	42.6	48.5	48.1	47.1	46.1	44.3	43.7	43.0	42.9	42.7	44.3	10.0	54.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.1	53.1	42.5	52.5	52.0	50.9	50.0	47.3	44.9	43.1	42.9	42.6
	Max	67.6	76.3	61.5	75.0	74.2	72.2	71.2	68.6	66.4	63.5	62.8	61.8
Energy Average		61.4	Average:		63.1	62.5	61.0	60.0	57.0	54.7	51.8	51.3	50.6
Night	Min	40.6	43.3	39.6	43.0	42.8	42.3	41.7	40.7	40.3	39.9	39.8	39.7
	Max	49.5	56.7	47.4	56.4	56.0	53.9	52.9	49.1	48.5	47.8	47.7	47.5
Energy Average		45.8	Average:		49.4	49.1	47.8	46.9	44.6	43.8	43.1	43.0	42.8

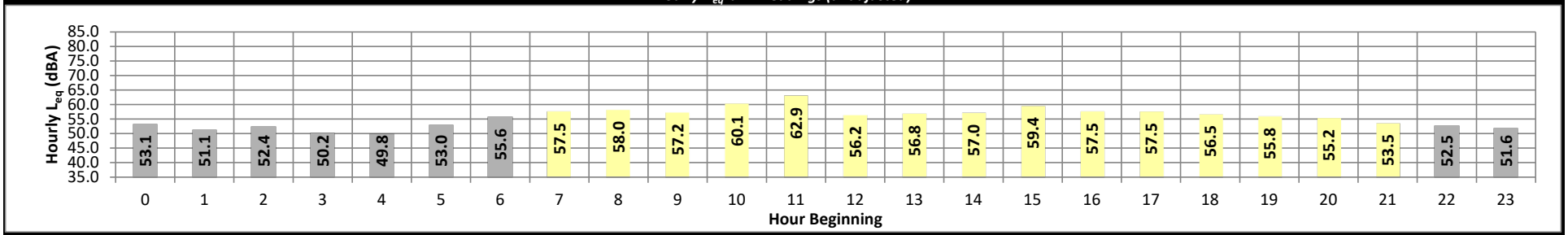
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
60.1	**61.4**	**45.8**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L5 - Site S3-210 - 18111 Bastanchury Road *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	53.1	58.2	45.5	57.7	57.3	56.5	56.0	54.3	52.6	48.5	47.5	46.1	53.1	10.0	63.1
	1	51.1	56.8	44.5	56.4	56.1	55.3	54.5	52.1	50.1	46.5	45.8	44.9	51.1	10.0	61.1
	2	52.4	60.5	43.7	59.8	59.3	58.0	56.8	52.8	50.4	46.1	45.2	44.1	52.4	10.0	62.4
	3	50.2	56.1	44.5	55.5	55.2	54.3	53.5	51.2	49.0	45.9	45.4	44.8	50.2	10.0	60.2
	4	49.8	56.2	45.7	55.9	55.5	54.6	53.6	50.3	48.0	46.3	46.1	45.8	49.8	10.0	59.8
	5	53.0	59.7	48.2	59.3	59.0	57.8	56.7	53.5	51.1	48.9	48.7	48.4	53.0	10.0	63.0
	6	55.6	61.1	50.2	60.9	60.6	59.6	58.9	56.6	54.3	51.1	50.7	50.3	55.6	10.0	65.6
Day	7	57.5	62.3	52.3	62.0	61.8	61.1	60.5	58.6	56.8	53.4	52.9	52.4	57.5	0.0	57.5
	8	58.0	65.7	51.0	65.4	64.8	62.9	61.7	58.4	56.5	52.4	51.7	51.2	58.0	0.0	58.0
	9	57.2	62.8	50.4	62.2	61.8	61.0	60.2	58.3	56.5	52.3	51.5	50.6	57.2	0.0	57.2
	10	60.1	71.0	58.3	70.6	70.1	69.3	68.6	65.4	62.1	59.4	58.9	58.5	60.1	0.0	60.1
	11	62.9	75.4	58.1	75.1	74.6	73.8	73.0	70.1	64.8	60.1	59.3	58.3	62.9	0.0	62.9
	12	56.2	64.0	48.7	63.6	63.2	61.4	59.9	56.7	54.6	50.3	49.5	48.8	56.2	0.0	56.2
	13	56.8	63.8	49.1	63.3	63.0	62.1	61.1	57.3	55.1	50.8	50.0	49.3	56.8	0.0	56.8
	14	57.0	63.4	50.3	62.9	62.5	61.3	60.5	57.7	55.9	52.3	51.3	50.5	57.0	0.0	57.0
	15	59.4	66.9	52.6	66.6	66.1	65.1	63.6	59.4	57.4	54.3	53.4	52.8	59.4	0.0	59.4
	16	57.5	63.9	50.8	63.4	62.8	61.8	60.8	58.2	56.6	52.5	51.8	51.0	57.5	0.0	57.5
	17	57.5	64.4	49.6	64.2	63.8	62.2	61.0	58.2	56.3	51.5	50.6	49.8	57.5	0.0	57.5
	18	56.5	62.2	48.1	62.0	61.7	61.0	60.3	57.6	55.5	50.1	49.0	48.3	56.5	0.0	56.5
	19	55.8	63.5	46.7	63.2	62.8	61.0	59.7	56.6	54.1	48.4	47.5	46.8	55.8	5.0	60.8
	20	55.2	62.2	46.0	61.8	61.5	60.4	59.3	56.3	53.6	47.9	46.9	46.2	55.2	5.0	60.2
	21	53.5	61.1	44.9	60.7	60.1	58.7	57.8	54.5	51.0	46.2	45.5	45.0	53.5	5.0	58.5
Night	22	52.5	59.5	47.3	59.2	58.8	57.8	56.7	53.0	50.2	47.9	47.7	47.4	52.5	10.0	62.5
	23	51.6	56.9	46.6	56.5	56.3	55.6	55.0	52.4	50.4	47.7	47.3	46.8	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	53.5	61.1	44.9	60.7	60.1	58.7	57.8	54.5	51.0	46.2	45.5	45.0
	Max	62.9	75.4	58.3	75.1	74.6	73.8	73.0	70.1	64.8	60.1	59.3	58.5
Energy Average		58.0	Average:		64.5	64.0	62.9	61.9	58.9	56.5	52.1	51.3	50.6
Night	Min	49.8	56.1	43.7	55.5	55.2	54.3	53.5	50.3	48.0	45.9	45.2	44.1
	Max	55.6	61.1	50.2	60.9	60.6	59.6	58.9	56.6	54.3	51.1	50.7	50.3
Energy Average		52.5	Average:		57.9	57.6	56.6	55.8	52.9	50.7	47.7	47.1	46.5

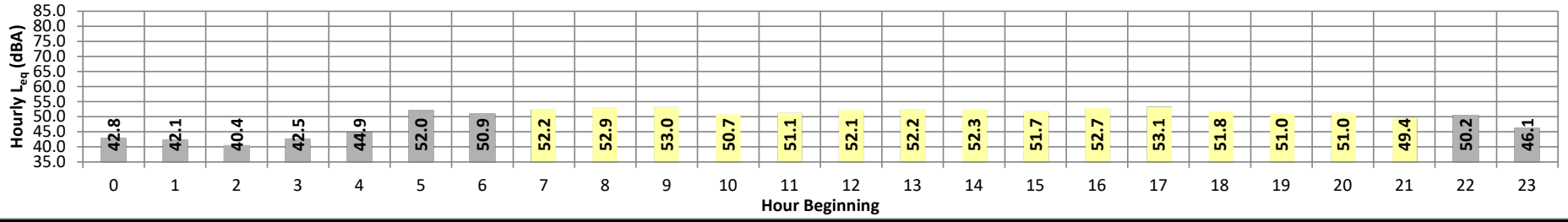
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
60.6	**58.0**	**52.5**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L6 - Site S4-075 - 4742 Plumosa Drive *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

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	42.8	48.7	39.4	48.4	47.9	46.6	46.0	43.3	41.5	40.0	39.8	39.5	42.8	10.0	52.8
	1	42.1	47.8	38.8	47.3	46.8	45.7	45.1	42.8	41.0	39.4	39.2	39.0	42.1	10.0	52.1
	2	40.4	46.6	37.7	46.2	45.7	44.1	43.4	40.6	39.1	38.1	38.0	37.8	40.4	10.0	50.4
	3	42.5	48.0	39.4	47.7	47.2	46.1	45.5	43.0	41.2	39.9	39.7	39.5	42.5	10.0	52.5
	4	44.9	49.8	41.7	49.5	49.2	48.3	47.7	45.6	43.8	42.2	42.0	41.8	44.9	10.0	54.9
	5	52.0	57.9	46.7	57.3	56.9	55.8	55.0	52.7	51.2	48.6	47.9	47.1	52.0	10.0	62.0
	6	50.9	57.2	46.4	56.8	56.2	54.9	54.1	51.6	49.7	47.4	47.0	46.5	50.9	10.0	60.9
Day	7	52.2	57.6	47.9	57.2	56.8	55.7	55.0	53.0	51.5	49.1	48.6	48.1	52.2	0.0	52.2
	8	52.9	59.7	47.8	59.3	58.7	57.2	56.2	53.3	51.6	48.9	48.4	47.9	52.9	0.0	52.9
	9	53.0	61.2	47.8	60.2	59.1	57.2	56.3	53.3	51.6	49.2	48.6	48.0	53.0	0.0	53.0
	10	50.7	57.4	45.9	56.9	56.3	55.0	54.2	51.1	49.2	46.9	46.5	46.0	50.7	0.0	50.7
	11	51.1	56.8	47.2	56.3	55.8	54.6	53.9	51.8	50.2	48.1	47.8	47.4	51.1	0.0	51.1
	12	52.1	59.8	47.2	59.2	58.5	57.1	56.0	52.1	50.2	48.1	47.8	47.3	52.1	0.0	52.1
	13	52.2	59.4	47.9	58.8	58.0	56.7	55.7	52.3	50.8	48.8	48.5	48.1	52.2	0.0	52.2
	14	52.3	57.4	48.8	56.9	56.4	55.5	54.8	52.9	51.6	49.8	49.4	49.0	52.3	0.0	52.3
	15	51.7	57.6	47.5	57.2	56.7	55.2	54.5	52.4	50.8	48.4	48.0	47.6	51.7	0.0	51.7
	16	52.7	61.3	47.2	60.9	60.3	57.4	56.6	52.9	50.5	48.2	47.7	47.3	52.7	0.0	52.7
	17	53.1	63.5	47.6	63.0	61.7	57.7	55.5	52.6	51.0	48.7	48.2	47.8	53.1	0.0	53.1
	18	51.8	58.0	47.4	57.4	57.0	55.9	54.9	52.2	50.8	48.5	48.1	47.6	51.8	0.0	51.8
	19	51.0	58.8	45.4	58.2	57.7	56.1	54.8	51.0	49.4	46.5	46.1	45.5	51.0	5.0	56.0
	20	51.0	58.4	44.8	57.8	57.3	55.8	54.9	51.5	49.3	46.3	45.6	45.0	51.0	5.0	56.0
	21	49.4	56.6	43.9	56.2	55.7	54.6	53.5	49.8	47.5	44.8	44.4	44.1	49.4	5.0	54.4
Night	22	50.2	61.0	44.5	59.8	58.7	55.8	53.0	49.8	47.5	45.3	45.0	44.6	50.2	10.0	60.2
	23	46.1	52.0	42.4	51.5	50.8	49.4	48.9	46.9	45.0	43.2	42.9	42.6	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	49.4	56.6	43.9	56.2	55.7	54.6	53.5	49.8	47.5	44.8	44.4	44.1
	Max	53.1	63.5	48.8	63.0	61.7	57.7	56.6	53.3	51.6	49.8	49.4	49.0
Energy Average		51.9	Average:		58.4	57.7	56.1	55.1	52.2	50.4	48.0	47.6	47.1
Night	Min	40.4	46.6	37.7	46.2	45.7	44.1	43.4	40.6	39.1	38.1	38.0	37.8
	Max	52.0	61.0	46.7	59.8	58.7	55.8	55.0	52.7	51.2	48.6	47.9	47.1
Energy Average		47.6	Average:		51.6	51.0	49.6	48.7	46.3	44.5	42.7	42.4	42.1

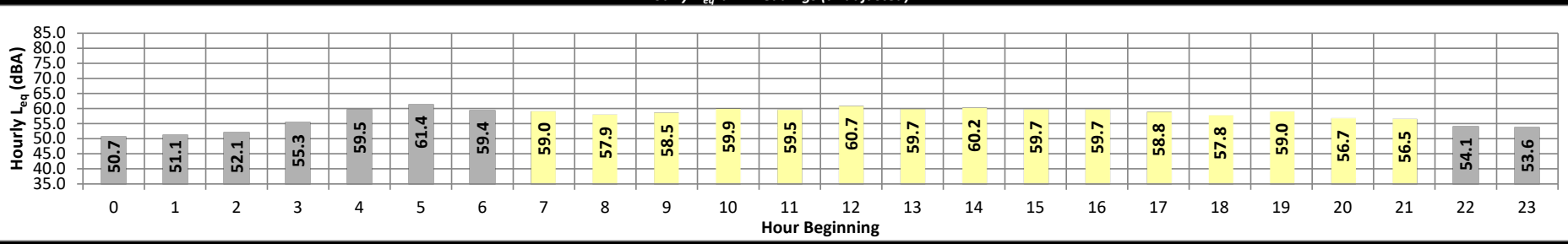
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
55.4	**51.9**	**47.6**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L7 - Site S6-015 - 22722 Old Canal Road *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

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	50.7	56.6	47.3	56.3	56.1	54.9	53.8	51.0	49.7	47.9	47.6	47.4	50.7	10.0	60.7
	1	51.1	56.9	48.0	56.7	56.4	55.2	53.9	51.4	50.1	48.6	48.3	48.1	51.1	10.0	61.1
	2	52.1	55.9	49.5	55.6	55.4	54.9	54.5	52.7	51.6	50.0	49.8	49.6	52.1	10.0	62.1
	3	55.3	58.9	51.9	58.7	58.5	57.9	57.3	56.0	54.9	52.7	52.4	52.0	55.3	10.0	65.3
	4	59.5	62.3	57.3	62.2	62.0	61.6	61.1	60.1	59.3	57.9	57.6	57.3	59.5	10.0	69.5
	5	61.4	68.0	58.3	67.7	67.2	65.6	64.3	61.5	60.1	58.8	58.6	58.4	61.4	10.0	71.4
	6	59.4	66.6	56.3	66.1	65.5	63.7	62.4	59.3	58.0	56.9	56.7	56.4	59.4	10.0	69.4
Day	7	59.0	69.9	52.5	69.2	68.4	65.6	63.4	57.6	55.0	53.1	52.8	52.6	59.0	0.0	59.0
	8	57.9	66.4	52.0	66.1	65.7	63.9	62.3	57.7	54.8	52.7	52.4	52.1	57.9	0.0	57.9
	9	58.5	68.0	51.6	67.2	66.6	64.7	63.2	58.3	55.1	52.5	52.1	51.7	58.5	0.0	58.5
	10	59.9	69.0	51.5	68.6	68.1	66.6	65.1	59.7	55.2	52.2	51.9	51.6	59.9	0.0	59.9
	11	59.5	81.7	52.2	81.1	80.0	78.8	77.5	65.9	56.8	53.0	52.6	52.3	59.5	0.0	59.5
	12	60.7	70.0	52.4	69.6	68.9	67.1	65.6	60.8	56.6	53.2	52.8	52.5	60.7	0.0	60.7
	13	59.7	68.2	52.7	67.9	67.4	65.8	64.4	60.0	56.5	53.5	53.2	52.9	59.7	0.0	59.7
	14	60.2	69.5	52.6	69.2	68.7	66.8	64.9	59.9	56.2	53.2	52.9	52.6	60.2	0.0	60.2
	15	59.7	69.1	52.2	68.6	68.0	66.0	64.2	59.6	55.9	53.1	52.7	52.3	59.7	0.0	59.7
	16	59.7	69.7	51.9	69.3	68.6	66.6	64.8	58.7	54.9	52.5	52.2	52.0	59.7	0.0	59.7
	17	58.8	67.6	53.0	67.2	66.6	64.6	63.3	58.8	55.5	53.6	53.3	53.1	58.8	0.0	58.8
	18	57.8	66.0	52.5	65.8	65.4	63.7	62.1	57.5	54.8	53.1	52.9	52.6	57.8	0.0	57.8
	19	59.0	67.2	53.7	66.9	66.4	64.5	63.2	59.1	56.4	54.3	54.0	53.8	59.0	5.0	64.0
	20	56.7	64.7	52.3	64.4	64.0	62.2	60.6	56.7	54.5	52.8	52.6	52.4	56.7	5.0	61.7
	21	56.5	63.8	51.0	63.6	63.3	62.1	60.9	56.9	53.7	51.5	51.3	51.1	56.5	5.0	61.5
Night	22	54.1	62.3	50.4	61.9	61.2	59.1	57.4	53.7	52.4	50.9	50.7	50.5	54.1	10.0	64.1
	23	53.6	61.7	49.3	61.6	61.3	59.1	56.9	53.2	51.7	49.9	49.6	49.4	53.6	10.0	63.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	56.5	63.8	51.0	63.6	63.3	62.1	60.6	56.7	53.7	51.5	51.3	51.1
	Max	60.7	81.7	53.7	81.1	80.0	78.8	77.5	65.9	56.8	54.3	54.0	53.8
Energy Average		59.1	Average:		68.3	67.7	65.9	64.4	59.1	55.5	52.9	52.6	52.4
Night	Min	50.7	55.9	47.3	55.6	55.4	54.9	53.8	51.0	49.7	47.9	47.6	47.4
	Max	61.4	68.0	58.3	67.7	67.2	65.6	64.3	61.5	60.1	58.8	58.6	58.4
Energy Average		56.9	Average:		60.8	60.4	59.1	57.9	55.4	54.2	52.6	52.4	52.1

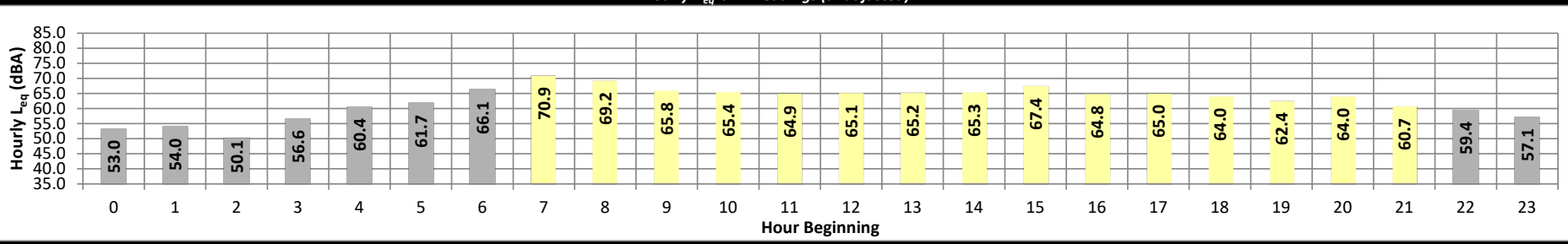
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
64.0	**59.1**	**56.9**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L8 - Site S5-008 - Vacant Parcel on Fairmont Boulevard *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	53.0	65.3	44.1	64.9	64.1	60.9	58.0	47.7	45.5	44.5	44.4	44.2	53.0	10.0	63.0
	1	54.0	67.1	46.1	66.6	65.6	60.9	56.7	49.7	47.3	46.4	46.3	46.2	54.0	10.0	64.0
	2	50.1	55.9	48.4	55.6	55.1	53.2	51.9	50.0	49.3	48.7	48.6	48.5	50.1	10.0	60.1
	3	56.6	69.5	50.0	69.0	67.8	63.6	59.7	51.8	50.8	50.3	50.2	50.1	56.6	10.0	66.6
	4	60.4	73.7	48.1	73.2	71.9	67.5	64.7	56.3	50.0	48.4	48.3	48.1	60.4	10.0	70.4
	5	61.7	75.1	50.0	74.3	72.9	69.5	66.7	55.9	52.3	50.8	50.5	50.1	61.7	10.0	71.7
	6	66.1	78.8	51.5	78.2	77.2	74.0	71.6	61.7	54.9	52.1	51.9	51.6	66.1	10.0	76.1
Day	7	70.9	81.9	53.3	81.3	80.3	78.1	76.4	70.2	63.2	54.8	54.0	53.4	70.9	0.0	70.9
	8	69.2	80.9	49.1	80.3	79.3	76.4	74.6	68.1	59.9	50.5	49.8	49.3	69.2	0.0	69.2
	9	65.8	77.9	44.8	77.2	76.0	73.3	71.4	64.2	56.4	46.2	45.5	45.0	65.8	0.0	65.8
	10	65.4	77.1	43.2	76.6	75.6	73.0	71.2	63.4	55.1	45.8	44.5	43.5	65.4	0.0	65.4
	11	64.9	77.0	44.9	76.5	75.4	72.6	70.4	62.4	55.0	47.2	46.2	45.3	64.9	0.0	64.9
	12	65.1	77.3	44.3	76.7	75.6	72.7	70.7	62.9	55.2	46.7	45.6	44.6	65.1	0.0	65.1
	13	65.2	77.4	44.0	76.8	75.6	72.5	70.3	63.9	54.9	46.5	45.5	44.4	65.2	0.0	65.2
	14	65.3	77.3	42.4	76.7	75.5	72.6	70.6	64.4	55.7	44.4	43.5	42.6	65.3	0.0	65.3
	15	67.4	81.0	43.9	79.9	78.3	74.6	72.1	64.7	57.0	46.3	45.0	44.1	67.4	0.0	67.4
	16	64.8	76.3	40.3	75.8	74.7	72.3	70.6	63.4	54.4	42.4	41.2	40.4	64.8	0.0	64.8
	17	65.0	75.9	41.6	75.4	74.5	72.3	70.6	64.6	56.3	44.0	42.9	41.8	65.0	0.0	65.0
	18	64.0	75.4	39.6	74.9	74.0	71.5	69.6	62.8	54.8	42.5	40.9	39.9	64.0	0.0	64.0
	19	62.4	73.9	39.8	73.4	72.5	70.0	68.3	60.9	51.8	41.6	40.9	40.1	62.4	5.0	67.4
	20	64.0	77.1	41.0	76.5	75.3	71.4	68.7	60.3	51.0	41.8	41.4	41.2	64.0	5.0	69.0
	21	60.7	73.1	42.1	72.7	71.9	68.7	65.9	57.4	47.9	42.7	42.5	42.2	60.7	5.0	65.7
Night	22	59.4	71.3	47.7	70.9	70.2	67.2	64.3	56.7	50.6	48.3	48.1	47.8	59.4	10.0	69.4
	23	57.1	69.8	48.3	69.3	68.3	64.7	61.5	52.3	49.8	48.8	48.6	48.4	57.1	10.0	67.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.7	73.1	39.6	72.7	71.9	68.7	65.9	57.4	47.9	41.6	40.9	39.9
	Max	70.9	81.9	53.3	81.3	80.3	78.1	76.4	70.2	63.2	54.8	54.0	53.4
Energy Average		66.0	Average:		76.7	75.6	72.8	70.8	63.6	55.2	45.6	44.6	43.8
Night	Min	50.1	55.9	44.1	55.6	55.1	53.2	51.9	47.7	45.5	44.5	44.4	44.2
	Max	66.1	78.8	51.5	78.2	77.2	74.0	71.6	61.7	54.9	52.1	51.9	51.6
Energy Average		60.0	Average:		69.1	68.1	64.6	61.7	53.6	50.1	48.7	48.5	48.3

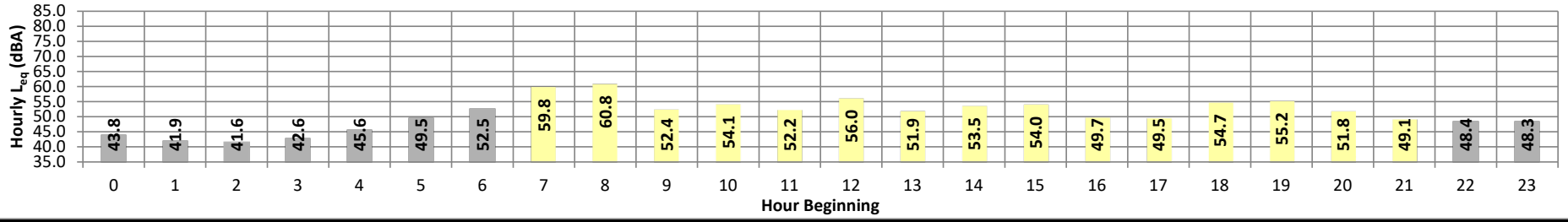
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
68.3	**66.0**	**60.0**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L9 - Site S3-103 - Friend Church Overflow Parking *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	43.8	50.3	41.0	49.8	49.2	47.5	46.4	44.2	42.6	41.5	41.3	41.1	43.8	10.0	53.8
	1	41.9	45.9	40.4	45.6	45.3	44.2	43.6	42.1	41.4	40.8	40.6	40.5	41.9	10.0	51.9
	2	41.6	46.2	40.0	45.8	45.4	44.3	43.6	41.8	40.9	40.3	40.2	40.1	41.6	10.0	51.6
	3	42.6	46.3	41.1	46.0	45.6	44.6	44.0	43.0	42.2	41.5	41.3	41.2	42.6	10.0	52.6
	4	45.6	49.7	44.0	49.5	49.1	48.0	47.4	45.7	45.1	44.4	44.2	44.1	45.6	10.0	55.6
	5	49.5	55.8	46.8	55.4	54.8	53.0	52.0	49.7	48.5	47.4	47.2	46.9	49.5	10.0	59.5
	6	52.5	58.2	49.2	57.9	57.4	56.3	55.3	53.1	51.4	49.8	49.6	49.3	52.5	10.0	62.5
Day	7	59.8	63.6	54.7	63.4	63.1	62.4	62.0	60.9	59.5	56.6	55.7	54.9	59.8	0.0	59.8
	8	60.8	84.8	65.4	84.4	83.8	82.9	82.2	77.5	75.1	68.4	66.8	65.7	60.8	0.0	60.8
	9	52.4	59.0	47.7	58.5	57.9	56.6	55.8	53.0	50.9	48.6	48.2	47.8	52.4	0.0	52.4
	10	54.1	63.8	45.9	63.4	63.0	61.4	58.2	53.7	50.1	47.1	46.6	46.1	54.1	0.0	54.1
	11	52.2	58.4	47.1	58.0	57.6	56.5	55.8	52.9	50.7	48.3	47.8	47.3	52.2	0.0	52.2
	12	56.0	63.2	47.6	62.7	62.2	61.1	60.4	57.2	53.3	48.9	48.3	47.7	56.0	0.0	56.0
	13	51.9	60.4	46.2	59.4	58.4	56.6	55.5	52.4	50.3	47.4	47.0	46.4	51.9	0.0	51.9
	14	53.5	59.4	50.0	58.8	58.2	57.1	56.5	54.3	52.4	50.7	50.4	50.1	53.5	0.0	53.5
	15	54.0	61.6	48.4	61.2	60.8	59.6	58.6	54.0	51.6	49.5	49.0	48.5	54.0	0.0	54.0
	16	49.7	55.8	45.5	55.2	54.8	53.6	52.7	50.6	48.6	46.4	46.0	45.7	49.7	0.0	49.7
	17	49.5	56.5	45.0	56.1	55.5	53.8	52.8	50.0	48.1	45.9	45.6	45.2	49.5	0.0	49.5
	18	54.7	64.0	46.9	63.7	63.2	61.4	59.6	52.2	50.5	48.1	47.7	47.1	54.7	0.0	54.7
	19	55.2	66.0	47.3	65.5	64.2	59.7	59.2	54.1	51.6	48.9	48.2	47.6	55.2	5.0	60.2
	20	51.8	59.7	46.5	59.0	58.2	56.1	54.7	52.2	50.6	47.9	47.4	46.8	51.8	5.0	56.8
	21	49.1	56.1	44.1	55.6	55.0	53.6	52.7	50.4	47.0	44.9	44.6	44.2	49.1	5.0	54.1
Night	22	48.4	56.4	43.4	55.9	55.3	53.2	51.9	48.8	46.1	44.1	43.8	43.5	48.4	10.0	58.4
	23	48.3	54.6	44.1	54.2	53.6	52.4	51.8	49.1	46.5	44.5	44.4	44.2	48.3	10.0	58.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.1	55.8	44.1	55.2	54.8	53.6	52.7	50.0	47.0	44.9	44.6	44.2
	Max	60.8	84.8	65.4	84.4	83.8	82.9	82.2	77.5	75.1	68.4	66.8	65.7
Energy Average		55.1	Average:		61.7	61.0	59.5	58.4	55.0	52.7	49.8	49.3	48.7
Night	Min	41.6	45.9	40.0	45.6	45.3	44.2	43.6	41.8	40.9	40.3	40.2	40.1
	Max	52.5	58.2	49.2	57.9	57.4	56.3	55.3	53.1	51.4	49.8	49.6	49.3
Energy Average		47.6	Average:		51.1	50.6	49.3	48.4	46.4	45.0	43.8	43.6	43.4

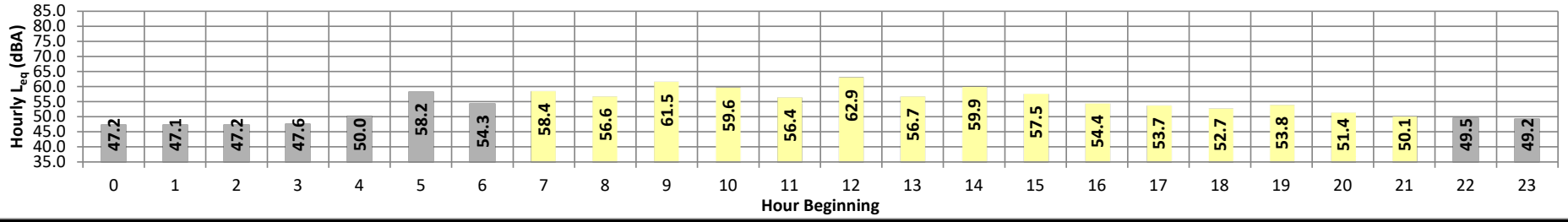
24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
56.7	**55.1**	**47.6**

24-Hour Noise Level Measurement Summary

Date: Thursday, May 5, 2022 *Location:* L10 - Site S4-204A - 19045 Yorba Linda Boulevard *Meter:* Piccolo II *JN:* 15459

Project: Yorba Linda Housing and General Plan *Source:* *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	47.2	49.3	46.4	49.1	48.9	48.6	48.3	47.5	47.0	46.6	46.5	46.5	47.2	10.0	57.2
	1	47.1	48.5	46.4	48.4	48.2	48.0	47.8	47.3	46.9	46.6	46.6	46.5	47.1	10.0	57.1
	2	47.2	49.1	46.5	48.9	48.8	48.3	48.0	47.4	47.0	46.6	46.6	46.5	47.2	10.0	57.2
	3	47.6	48.8	46.9	48.7	48.7	48.4	48.3	47.8	47.4	47.1	47.0	46.9	47.6	10.0	57.6
	4	50.0	56.8	48.2	56.3	55.3	53.6	51.7	49.6	49.1	48.5	48.4	48.3	50.0	10.0	60.0
	5	58.2	63.4	54.0	63.0	62.7	61.8	61.0	58.8	57.6	55.3	55.0	54.5	58.2	10.0	68.2
	6	54.3	60.8	52.0	60.3	59.8	58.1	56.4	54.1	53.4	52.5	52.3	52.1	54.3	10.0	64.3
Day	7	58.4	65.3	54.3	64.5	64.0	62.3	61.3	58.8	57.3	55.3	54.9	54.5	58.4	0.0	58.4
	8	56.6	65.8	50.5	65.5	65.0	63.0	61.2	56.0	52.9	51.1	50.8	50.6	56.6	0.0	56.6
	9	61.5	70.1	53.9	69.1	68.4	66.2	65.0	62.1	59.7	56.1	55.3	54.3	61.5	0.0	61.5
	10	59.6	69.4	51.9	68.4	67.5	65.0	63.6	59.5	56.9	53.7	53.1	52.3	59.6	0.0	59.6
	11	56.4	64.9	50.8	64.0	63.4	62.1	60.8	56.2	54.4	52.0	51.6	51.0	56.4	0.0	56.4
	12	62.9	71.0	55.0	70.2	69.4	68.2	67.2	63.5	61.0	57.3	56.5	55.4	62.9	0.0	62.9
	13	56.7	66.2	50.2	65.5	64.7	62.7	60.9	57.0	53.1	50.8	50.6	50.3	56.7	0.0	56.7
	14	59.9	73.0	51.9	71.7	69.9	65.2	62.3	58.7	55.5	52.8	52.5	52.1	59.9	0.0	59.9
	15	57.5	67.5	48.7	66.5	66.2	64.6	62.6	56.5	52.6	49.4	49.1	48.8	57.5	0.0	57.5
	16	54.4	60.6	50.0	60.1	59.6	58.3	57.4	54.8	53.4	51.3	50.7	50.1	54.4	0.0	54.4
	17	53.7	59.4	50.2	58.9	58.4	57.1	56.3	54.2	52.8	51.0	50.7	50.3	53.7	0.0	53.7
	18	52.7	58.4	49.4	57.9	57.4	56.1	55.3	53.0	51.8	50.2	49.9	49.6	52.7	0.0	52.7
	19	53.8	62.4	48.3	62.1	61.8	60.4	58.8	53.1	50.7	49.1	48.8	48.5	53.8	5.0	58.8
	20	51.4	58.7	48.8	58.1	57.2	55.0	53.2	51.2	50.4	49.4	49.3	49.0	51.4	5.0	56.4
	21	50.1	55.5	47.7	55.2	54.9	53.4	52.3	50.5	49.3	48.1	47.9	47.8	50.1	5.0	55.1
Night	22	49.5	54.5	47.5	54.3	54.0	53.0	52.2	49.4	48.6	47.8	47.7	47.6	49.5	10.0	59.5
	23	49.2	56.0	47.2	55.4	54.9	53.5	52.5	48.8	47.9	47.4	47.3	47.2	49.2	10.0	59.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	50.1	55.5	47.7	55.2	54.9	53.4	52.3	50.5	49.3	48.1	47.9	47.8
	Max	62.9	73.0	55.0	71.7	69.9	68.2	67.2	63.5	61.0	57.3	56.5	55.4
Energy Average		57.8	Average:		63.8	63.2	61.3	59.9	56.3	54.1	51.8	51.4	51.0
Night	Min	47.1	48.5	46.4	48.4	48.2	48.0	47.8	47.3	46.9	46.6	46.5	46.5
	Max	58.2	63.4	54.0	63.0	62.7	61.8	61.0	58.8	57.6	55.3	55.0	54.5
Energy Average		52.0	Average:		53.8	53.5	52.6	51.8	50.1	49.5	48.7	48.6	48.4

24-Hour CNEL	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
60.1	**57.8**	**52.0**

APPENDIX 8.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Rose Dr.
Road Segment: s/o Imperial Hwy.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,417 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,325 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.19	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-18.42	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-22.38	2.93	-1.20	*-5.56*	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:	70.8	69.2	67.5	61.4	70.0	70.6
Medium Trucks:	64.3	63.2	56.8	55.3	63.7	64.0
Heavy Trucks:	64.7	63.7	54.6	55.9	64.2	64.4
Vehicle Noise:	72.4	71.1	68.0	63.2	71.8	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	53	113	244	526
CNEL:	57	122	262	565

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Imperial Hwy.
Road Segment: w/o Prospect Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,046 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,864 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	3.05	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.19	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.15	2.45	-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:	76.1	74.6	72.8	66.7	75.4	76.0
Medium Trucks:	69.5	68.3	62.0	60.4	68.9	69.1
Heavy Trucks:	69.5	68.4	59.4	60.7	69.0	69.1
Vehicle Noise:	77.7	76.3	73.3	68.4	77.0	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	146	315	679	1,463
CNEL:	157	339	730	1,574

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Imperial Hwy.
Road Segment: e/o Prospect Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,992 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,675 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.83	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.41	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.36	2.45	-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:	75.9	74.3	72.6	66.5	75.1	75.7
Medium Trucks:	69.3	68.1	61.8	60.2	68.7	68.9
Heavy Trucks:	69.3	68.2	59.2	60.4	68.8	68.9
Vehicle Noise:	77.4	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:	141	305	657	1,415
CNEL:	152	328	706	1,522

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bastanchury Rd.
Road Segment: w/o Imperial Hwy.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,308 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,407 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.93	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-18.16	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-22.12	2.93	-1.20	*-5.56*	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:	71.0	69.5	67.7	61.7	70.3	70.9
Medium Trucks:	64.6	63.5	57.1	55.5	64.0	64.2
Heavy Trucks:	65.0	63.9	54.9	56.2	64.5	64.6
Vehicle Noise:	72.7	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:	55	118	254	547
CNEL:	59	127	273	588

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bastanchury Rd.
Road Segment: e/o Imperial Hwy.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,846 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,732 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.02	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.26	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-21.22	2.93	-1.20	*-5.56*	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:	71.9	70.4	68.6	62.6	71.2	71.8
Medium Trucks:	65.5	64.4	58.0	56.5	64.9	65.1
Heavy Trucks:	65.9	64.8	55.8	57.1	65.4	65.5
Vehicle Noise:	73.6	72.2	69.2	64.4	72.9	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	63	135	292	629
CNEL:	68	146	314	675

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Imperial Hwy.
Road Segment: n/o Lemon Dr.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,798 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,290 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.35	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.89	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.84	2.45	-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:	75.4	73.9	72.1	66.0	74.7	75.3
Medium Trucks:	68.8	67.7	61.3	59.7	68.2	68.4
Heavy Trucks:	68.8	67.8	58.7	60.0	68.3	68.4
Vehicle Noise:	77.0	75.6	72.6	67.7	76.3	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	131	283	610	1,314
CNEL:	141	305	656	1,414

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Imperial Hwy.
Road Segment: s/o Lemon Dr.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,408 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,070 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.05	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-15.19	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-19.14	2.45	-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:	75.1	73.6	71.8	65.7	74.4	75.0
Medium Trucks:	68.5	67.4	61.0	59.4	67.9	68.1
Heavy Trucks:	68.5	67.5	58.4	59.7	68.0	68.1
Vehicle Noise:	76.7	75.3	72.3	67.4	76.0	76.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	125	270	582	1,255
CNEL:	135	291	627	1,350

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lakeview Av.
Road Segment: n/o Buena Vista Av.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,406 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,324 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-0.73	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-17.97	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-21.93	0.91	-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:	67.4	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.2	60.1	53.7	52.2	60.6	60.8
Heavy Trucks:	62.0	61.0	51.9	53.2	61.5	61.7
Vehicle Noise:	69.3	67.9	64.7	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	40	87	188	404
CNEL:	43	93	201	433

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lakeview Av.
Road Segment: s/o Buena Vista Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,516 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,150 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.34	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-18.58	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-22.54	0.91	-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:	66.8	65.3	63.5	57.5	66.1	66.7
Medium Trucks:	60.6	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	61.4	60.4	51.3	52.6	60.9	61.1
Vehicle Noise:	68.7	67.3	64.1	59.5	68.0	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	171	368
CNEL:	39	85	183	395

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Buena Vista Av.
Road Segment: w/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,627 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	701 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.49	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-20.73	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-24.69	2.06	-1.20	*-5.56*	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:	65.8	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	59.6	58.5	52.1	50.6	59.0	59.2
Heavy Trucks:	60.4	59.4	50.3	51.6	59.9	60.1
Vehicle Noise:	67.7	66.3	63.1	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	117	253
CNEL:	27	58	126	271

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bastanchury Rd.
Road Segment: w/o Plumosa Dr.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,449 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,420 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.89	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-18.12	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-22.08	2.93	-1.20	*-5.56*	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:	71.1	69.5	67.8	61.7	70.3	70.9
Medium Trucks:	64.6	63.5	57.1	55.6	64.0	64.3
Heavy Trucks:	65.0	64.0	54.9	56.2	64.5	64.7
Vehicle Noise:	72.7	71.4	68.3	63.5	72.1	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	256	551
CNEL:	59	127	275	592

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lakeview Av.
Road Segment: s/o Bastanchury Rd.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,941 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	822 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.80	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-20.04	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-24.00	2.06	-1.20	*-5.56*	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:	66.5	65.0	63.2	57.2	65.8	66.4
Medium Trucks:	60.3	59.2	52.8	51.2	59.7	59.9
Heavy Trucks:	61.1	60.1	51.0	52.3	60.6	60.8
Vehicle Noise:	68.4	67.0	63.8	59.2	67.7	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	61	130	281
CNEL:	30	65	140	301

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bastanchury Rd.
Road Segment: w/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,504 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,425 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.87	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-18.11	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-22.07	2.93	-1.20	*-5.56*	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:	71.1	69.5	67.8	61.7	70.3	70.9
Medium Trucks:	64.7	63.5	57.1	55.6	64.1	64.3
Heavy Trucks:	65.0	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	72.8	71.4	68.3	63.5	72.1	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	256	552
CNEL:	59	128	275	593

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bastanchury Rd.
Road Segment: e/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,676 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,716 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.06	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.30	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-21.26	2.93	-1.20	*-5.56*	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:	71.9	70.3	68.6	62.5	71.1	71.7
Medium Trucks:	65.5	64.3	58.0	56.4	64.9	65.1
Heavy Trucks:	65.9	64.8	55.8	57.0	65.4	65.5
Vehicle Noise:	73.6	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:	62	135	290	625
CNEL:	67	145	312	671

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Lakeview Av.
Road Segment: s/o Yorba Linda Bl.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,287 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,221 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.08	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-18.32	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-22.28	0.91	-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:	67.1	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	60.8	59.7	53.3	51.8	60.3	60.5
Heavy Trucks:	61.7	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	68.9	67.5	64.4	59.7	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	178	383
CNEL:	41	88	191	411

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Yorba Linda Bl.
Road Segment: w/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,182 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,590 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.72	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	81.00	-15.51	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	85.38	-19.47	2.45	-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	71.7	69.9	63.8	72.5	73.1
Medium Trucks:	66.8	65.6	59.3	57.7	66.2	66.4
Heavy Trucks:	67.2	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	74.9	73.5	70.4	65.7	74.2	74.7

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

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Gypsum Canyon Rd.
Road Segment: s/o La Palma Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,309 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,131 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-1.42	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-18.65	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-22.61	2.06	-1.20	*-5.56*	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:	67.9	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	61.7	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	62.5	61.5	52.4	53.7	62.0	62.1
Vehicle Noise:	69.7	68.4	65.2	60.5	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	35	75	161	348
CNEL:	37	80	173	373

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: La Palma Av.
Road Segment: e/o Gypsum Canyon Rd.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,746 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	804 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.36	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-20.60	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-24.55	2.93	-1.20	*-5.56*	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:	68.6	67.0	65.3	59.2	67.8	68.5
Medium Trucks:	62.2	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	62.6	61.5	52.5	53.7	62.1	62.2
Vehicle Noise:	70.3	68.9	65.8	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	38	81	175	377
CNEL:	40	87	188	405

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Rose Dr.
Road Segment: s/o Imperial Hwy.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,183 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,395 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.96	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-18.20	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-22.16	2.93	-1.20	*-5.56*	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:	71.0	69.4	67.7	61.6	70.2	70.9
Medium Trucks:	64.6	63.4	57.1	55.5	64.0	64.2
Heavy Trucks:	65.0	63.9	54.9	56.1	64.5	64.6
Vehicle Noise:	72.7	71.3	68.2	63.5	72.0	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	54	117	253	544
CNEL:	58	126	271	585

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Imperial Hwy.
Road Segment: w/o Prospect Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,679 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,922 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	3.11	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.13	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.08	2.45	-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:	76.1	74.6	72.8	66.8	75.4	76.0
Medium Trucks:	69.6	68.4	62.1	60.5	69.0	69.2
Heavy Trucks:	69.6	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	77.7	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:	148	318	686	1,478
CNEL:	159	342	738	1,589

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: e/o Prospect Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,595 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,731 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.90	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-14.34	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-18.30	2.45	-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:	75.9	74.4	72.6	66.6	75.2	75.8
Medium Trucks:	69.3	68.2	61.8	60.3	68.8	69.0
Heavy Trucks:	69.4	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.5	76.1	73.2	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	143	308	663	1,429
CNEL:	154	331	714	1,537

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: w/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,780 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,450 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.79	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-18.03	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.99	2.93	-1.20	-5.56	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:	71.1	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	64.7	63.6	57.2	55.7	64.1	64.4
Heavy Trucks:	65.1	64.1	55.0	56.3	64.6	64.8
Vehicle Noise:	72.8	71.5	68.4	63.6	72.2	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	60	129	279	600

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: e/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,231 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,767 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.06	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.17	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.13	2.93	-1.20	-5.56	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:	72.0	70.5	68.7	62.6	71.3	71.9
Medium Trucks:	65.6	64.4	58.1	56.5	65.0	65.2
Heavy Trucks:	66.0	64.9	55.9	57.1	65.5	65.6
Vehicle Noise:	73.7	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:	64	137	296	637
CNEL:	68	148	318	685

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: n/o Lemon Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,338 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,339 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.41	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-14.82	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-18.78	2.45	-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:	75.4	73.9	72.2	66.1	74.7	75.3
Medium Trucks:	68.9	67.7	61.4	59.8	68.3	68.5
Heavy Trucks:	68.9	67.8	58.8	60.0	68.4	68.5
Vehicle Noise:	77.0	75.6	72.7	67.8	76.4	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	286	616	1,327
CNEL:	143	308	663	1,428

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: s/o Lemon Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,912 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,116 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.11	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-15.12	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-19.08	2.45	-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:	75.1	73.6	71.9	65.8	74.4	75.0
Medium Trucks:	68.6	67.4	61.1	59.5	68.0	68.2
Heavy Trucks:	68.6	67.5	58.5	59.7	68.1	68.2
Vehicle Noise:	76.7	75.3	72.4	67.5	76.1	76.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	127	273	588	1,268
CNEL:	136	294	633	1,364

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Lakeview Av. | Job Number: 15459
Road Segment: n/o Buena Vista Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,926 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,372 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.58	0.91	-1.20	-4.84	0.000	0.000
Medium Trucks:	79.45	-17.82	0.92	-1.20	-5.04	0.000	0.000
Heavy Trucks:	84.25	-21.77	0.91	-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:	67.6	66.1	64.3	58.2	66.9	67.5
Medium Trucks:	61.4	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	62.2	61.1	52.1	53.3	61.7	61.8
Vehicle Noise:	69.4	68.1	64.9	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	89	192	414
CNEL:	44	96	206	444

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Lakeview Av. | Job Number: 15459
Road Segment: s/o Buena Vista Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,058 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,200 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.16	0.91	-1.20	-4.84	0.000	0.000
Medium Trucks:	79.45	-18.40	0.92	-1.20	-5.04	0.000	0.000
Heavy Trucks:	84.25	-22.35	0.91	-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:	67.0	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	60.8	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	61.6	60.6	51.5	52.8	61.1	61.2
Vehicle Noise:	68.8	67.5	64.3	59.6	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	176	378
CNEL:	41	87	188	406

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Buena Vista Av. | Job Number: 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,317 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	764 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.12	2.06	-1.20	-4.83	0.000	0.000
Medium Trucks:	79.45	-20.36	2.08	-1.20	-5.08	0.000	0.000
Heavy Trucks:	84.25	-24.31	2.06	-1.20	-5.56	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:	66.2	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	60.0	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	60.8	59.7	50.7	52.0	60.3	60.4
Vehicle Noise:	68.0	66.7	63.5	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	124	268
CNEL:	29	62	133	287

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bastanchury Rd.
Road Segment: w/o Plumosa Dr.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,682 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,441 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.82	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-18.06	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-22.02	2.93	-1.20	-5.56	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:	71.1	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	64.7	63.6	57.2	55.7	64.1	64.3
Heavy Trucks:	65.1	64.0	55.0	56.3	64.6	64.7
Vehicle Noise:	72.8	71.4	68.4	63.6	72.1	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	258	556
CNEL:	60	129	277	598

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Lakeview Av.
Road Segment: s/o Bastanchury Rd.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,713 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	893 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.44	2.06	-1.20	-4.83	0.000	0.000
Medium Trucks:	79.45	-19.68	2.08	-1.20	-5.08	0.000	0.000
Heavy Trucks:	84.25	-23.64	2.06	-1.20	-5.56	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:	66.9	65.3	63.6	57.5	66.1	66.8
Medium Trucks:	60.7	59.5	53.1	51.6	60.1	60.3
Heavy Trucks:	61.5	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	68.7	67.3	64.2	59.5	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	297
CNEL:	32	69	148	318

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bastanchury Rd.
Road Segment: w/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,867 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,550 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.51	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.74	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.70	2.93	-1.20	-5.56	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:	71.4	69.9	68.1	62.1	70.7	71.3
Medium Trucks:	65.0	63.9	57.5	56.0	64.4	64.7
Heavy Trucks:	65.4	64.4	55.3	56.6	64.9	65.1
Vehicle Noise:	73.1	71.7	68.7	63.9	72.5	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	584
CNEL:	63	135	291	627

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Bastanchury Rd.
Road Segment: e/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,698 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,718 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.06	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.30	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.25	2.93	-1.20	-5.56	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:	71.9	70.3	68.6	62.5	71.1	71.8
Medium Trucks:	65.5	64.3	58.0	56.4	64.9	65.1
Heavy Trucks:	65.9	64.8	55.8	57.0	65.4	65.5
Vehicle Noise:	73.6	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:	63	135	290	625
CNEL:	67	145	312	672

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Lakeview Av. | Job Number: 15459
Road Segment: s/o Yorba Linda Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,766 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,265 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.93	0.91	-1.20	-0.84	0.000	0.000
Medium Trucks:	79.45	-18.17	0.92	-1.20	-5.04	0.000	0.000
Heavy Trucks:	84.25	-22.12	0.91	-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:	67.2	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	61.0	59.9	53.5	52.0	60.4	60.6
Heavy Trucks:	61.8	60.8	51.7	53.0	61.3	61.5
Vehicle Noise:	69.1	67.7	64.5	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	182	392
CNEL:	42	91	195	420

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Yorba Linda Bl. | Job Number: 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,536 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,623 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.78	2.45	-1.20	-0.84	0.000	0.000
Medium Trucks:	81.00	-15.46	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-19.42	2.45	-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	71.7	69.9	63.9	72.5	73.1
Medium Trucks:	66.8	65.7	59.3	57.8	66.2	66.5
Heavy Trucks:	67.2	66.2	57.1	58.4	66.7	66.9
Vehicle Noise:	74.9	73.5	70.5	65.7	74.3	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	207	447	963
CNEL:	103	223	480	1,034

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: Gypsum Canyon Rd. | Job Number: 15459
Road Segment: s/o La Palma Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,238 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,217 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.10	2.06	-1.20	-0.83	0.000	0.000
Medium Trucks:	79.45	-18.34	2.08	-1.20	-5.08	0.000	0.000
Heavy Trucks:	84.25	-22.29	2.06	-1.20	-5.56	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:	68.2	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	62.0	60.9	54.5	52.9	61.4	61.6
Heavy Trucks:	62.8	61.8	52.7	54.0	62.3	62.5
Vehicle Noise:	70.1	68.7	65.5	60.9	69.4	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	79	169	365
CNEL:	39	84	182	391

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Yorba Linda Housing Elem
Road Name: La Palma Av. | Job Number: 15459
Road Segment: e/o Gypsum Canyon Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,563 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	879 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.97	2.93	-1.20	-0.83	0.000	0.000
Medium Trucks:	81.00	-20.21	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-24.16	2.93	-1.20	-5.56	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:	69.0	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	62.6	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	62.9	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.7	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:	40	86	186	400
CNEL:	43	93	199	430

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Rose Dr. | Job Number: 15459
Road Segment: s/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,381 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,597 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.37	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.61	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.57	2.93	-1.20	-5.56	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:	71.6	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	65.1	64.0	57.6	56.1	64.6	64.8
Heavy Trucks:	65.5	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	73.3	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:	60	128	277	596
CNEL:	64	138	297	640

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: w/o Prospect Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	47,022 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	4,321 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.53	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-13.70	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-17.66	2.45	-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:	76.6	75.0	73.3	67.2	75.8	76.4
Medium Trucks:	70.0	68.8	62.5	60.9	69.4	69.6
Heavy Trucks:	70.0	68.9	59.9	61.1	69.5	69.6
Vehicle Noise:	78.1	76.8	73.8	68.9	77.5	78.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	158	340	732	1,576
CNEL:	170	365	787	1,696

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: e/o Prospect Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,725 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	4,110 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.32	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-13.92	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-17.88	2.45	-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:	76.4	74.8	73.1	67.0	75.6	76.2
Medium Trucks:	69.8	68.6	62.3	60.7	69.2	69.4
Heavy Trucks:	69.8	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	77.9	76.5	73.6	68.7	77.3	77.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	152	328	708	1,524
CNEL:	164	353	761	1,640

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: w/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,120 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,573 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.44	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.68	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.63	2.93	-1.20	-5.56	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:	71.5	70.0	68.2	62.1	70.8	71.4
Medium Trucks:	65.1	63.9	57.6	56.0	64.5	64.7
Heavy Trucks:	65.5	64.4	55.4	56.6	65.0	65.1
Vehicle Noise:	73.2	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:	59	127	274	590
CNEL:	63	137	294	634

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: e/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,406 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,059 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.73	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-16.51	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-20.47	2.93	-1.20	*-5.56*	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:	72.7	71.1	69.4	63.3	71.9	72.5
Medium Trucks:	66.3	65.1	58.7	57.2	65.7	65.9
Heavy Trucks:	66.6	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	74.4	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:	71	152	328	706
CNEL:	76	163	352	758

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: n/o Lemon Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,035 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,679 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.84	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.40	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.36	2.45	-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:	75.9	74.3	72.6	66.5	75.1	75.7
Medium Trucks:	69.3	68.1	61.8	60.2	68.7	68.9
Heavy Trucks:	69.3	68.2	59.2	60.5	68.8	68.9
Vehicle Noise:	77.5	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:	142	305	657	1,416
CNEL:	152	328	707	1,523

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: s/o Lemon Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,362 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,434 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.53	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.70	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.66	2.45	-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:	75.6	74.0	72.3	66.2	74.8	75.4
Medium Trucks:	69.0	67.8	61.5	59.9	68.4	68.6
Heavy Trucks:	69.0	67.9	58.9	60.2	68.5	68.6
Vehicle Noise:	77.2	75.8	72.8	67.9	76.5	77.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	291	628	1,352
CNEL:	145	313	675	1,455

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Lakeview Av. | Job Number: 15459
Road Segment: n/o Buena Vista Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,586 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,616 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.13	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-17.10	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-21.06	0.91	-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:	68.3	66.8	65.0	58.9	67.6	68.2
Medium Trucks:	62.1	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	62.9	61.8	52.8	54.1	62.4	62.5
Vehicle Noise:	70.1	68.8	65.6	60.9	69.5	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	214	461
CNEL:	49	107	230	495

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Lakeview Av. | *Job Number:* 15459
Road Segment: s/o Buena Vista Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,418 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,325 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-0.73	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-17.97	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-21.92	0.91	-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:	67.4	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.2	60.1	53.7	52.2	60.6	60.8
Heavy Trucks:	62.0	61.0	51.9	53.2	61.6	61.7
Vehicle Noise:	69.3	67.9	64.8	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	40	87	188	404
CNEL:	43	93	201	434

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Buena Vista Av. | *Job Number:* 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,390 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	771 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-3.08	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-20.32	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-24.27	2.06	-1.20	*-5.56*	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:	66.2	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	60.0	58.9	52.5	51.0	59.4	59.7
Heavy Trucks:	60.8	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	68.1	66.7	63.6	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	125	269
CNEL:	29	62	134	289

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | *Job Number:* 15459
Road Segment: w/o Plumosa Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,278 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,588 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.40	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.64	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-21.59	2.93	-1.20	*-5.56*	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:	71.5	70.0	68.2	62.2	70.8	71.4
Medium Trucks:	65.1	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	65.5	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	73.2	71.8	68.8	64.0	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	128	275	593
CNEL:	64	137	296	637

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Lakeview Av. | *Job Number:* 15459
Road Segment: s/o Bastanchury Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,836 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	904 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.39	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-19.63	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-23.58	2.06	-1.20	*-5.56*	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:	66.9	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	60.7	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	61.5	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	68.8	67.4	64.2	59.6	68.1	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	64	139	299
CNEL:	32	69	149	321

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,510 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,701 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.10	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.34	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.30	2.93	-1.20	-5.56	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:	71.8	70.3	68.5	62.5	71.1	71.7
Medium Trucks:	65.4	64.3	57.9	56.4	64.8	65.1
Heavy Trucks:	65.8	64.8	55.7	57.0	65.3	65.5
Vehicle Noise:	73.5	72.1	69.1	64.3	72.9	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	288	621
CNEL:	67	144	310	667

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: e/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,229 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,951 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.49	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-16.74	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-20.70	2.93	-1.20	-5.56	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:	72.4	70.9	69.1	63.1	71.7	72.3
Medium Trucks:	66.0	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	66.4	65.4	56.3	57.6	65.9	66.1
Vehicle Noise:	74.1	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:	68	147	316	681
CNEL:	73	158	339	731

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Lakeview Av. | Job Number: 15459
Road Segment: s/o Yorba Linda Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,137 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,483 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.24	0.91	-1.20	-4.84	0.000	0.000
Medium Trucks:	79.45	-17.48	0.92	-1.20	-5.04	0.000	0.000
Heavy Trucks:	84.25	-21.43	0.91	-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:	67.9	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	61.7	60.6	54.2	52.6	61.1	61.3
Heavy Trucks:	62.5	61.5	52.4	53.7	62.0	62.2
Vehicle Noise:	69.8	68.4	65.2	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	94	202	436
CNEL:	47	101	217	467

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Yorba Linda Bl. | Job Number: 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,502 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,252 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.12	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	81.00	-16.12	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	85.38	-20.08	2.45	-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:	72.6	71.0	69.3	63.2	71.8	72.4
Medium Trucks:	66.2	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	66.6	65.5	56.5	57.7	66.1	66.2
Vehicle Noise:	74.3	72.9	69.8	65.1	73.6	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	404	870
CNEL:	93	201	434	934

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Gypsum Canyon Rd. | *Job Number:* 15459
Road Segment: s/o La Palma Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,540 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,244 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-1.00	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-18.24	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-22.20	2.06	-1.20	*-5.56*	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:	68.3	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.1	61.0	54.6	53.0	61.5	61.7
Heavy Trucks:	62.9	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	70.2	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:	37	80	172	370
CNEL:	40	86	184	397

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: La Palma Av. | *Job Number:* 15459
Road Segment: e/o Gypsum Canyon Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,621 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	884 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.94	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-20.18	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-24.14	2.93	-1.20	*-5.56*	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:	69.0	67.5	65.7	59.6	68.3	68.9
Medium Trucks:	62.6	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	63.0	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.7	69.3	66.3	61.5	70.0	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	40	87	186	402
CNEL:	43	93	200	431

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Rose Dr. | *Job Number:* 15459
Road Segment: s/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,147 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,668 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.19	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.43	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-21.38	2.93	-1.20	*-5.56*	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:	71.8	70.2	68.5	62.4	71.0	71.6
Medium Trucks:	65.3	64.2	57.8	56.3	64.7	65.0
Heavy Trucks:	65.7	64.7	55.6	56.9	65.2	65.4
Vehicle Noise:	73.4	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:	61	132	285	613
CNEL:	66	142	306	659

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Imperial Hwy. | *Job Number:* 15459
Road Segment: w/o Prospect Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	47,655 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	4,379 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	3.59	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-13.65	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-17.60	2.45	-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:	76.6	75.1	73.3	67.3	75.9	76.5
Medium Trucks:	70.0	68.9	62.5	61.0	69.4	69.7
Heavy Trucks:	70.0	69.0	60.0	61.2	69.6	69.7
Vehicle Noise:	78.2	76.8	73.9	69.0	77.5	78.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	159	343	738	1,590
CNEL:	171	369	794	1,711

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: e/o Prospect Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,328 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	4,166 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.37	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-13.86	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-17.82	2.45	-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:	76.4	74.9	73.1	67.1	75.7	76.3
Medium Trucks:	69.8	68.7	62.3	60.8	69.2	69.5
Heavy Trucks:	69.8	68.8	59.7	61.0	69.3	69.5
Vehicle Noise:	78.0	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:	154	331	714	1,538
CNEL:	165	356	768	1,655

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: w/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,592 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,617 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.32	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-17.56	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-21.52	2.93	-1.20	-5.56	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:	71.6	70.1	68.3	62.3	70.9	71.5
Medium Trucks:	65.2	64.1	57.7	56.2	64.6	64.8
Heavy Trucks:	65.6	64.5	55.5	56.8	65.1	65.2
Vehicle Noise:	73.3	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:	60	129	279	601
CNEL:	65	139	299	645

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Bastanchury Rd. | Job Number: 15459
Road Segment: e/o Imperial Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,791 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,094 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.80	2.93	-1.20	-4.83	0.000	0.000
Medium Trucks:	81.00	-16.44	2.96	-1.20	-5.08	0.000	0.000
Heavy Trucks:	85.38	-20.39	2.93	-1.20	-5.56	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:	72.7	71.2	69.4	63.4	72.0	72.6
Medium Trucks:	66.3	65.2	58.8	57.3	65.7	66.0
Heavy Trucks:	66.7	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	74.4	73.1	70.0	65.2	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	154	331	714
CNEL:	77	165	356	767

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | Project Name: Yorba Linda Housing Elem
Road Name: Imperial Hwy. | Job Number: 15459
Road Segment: n/o Lemon Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,574 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,729 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.89	2.45	-1.20	-4.84	0.000	0.000
Medium Trucks:	82.40	-14.35	2.48	-1.20	-5.04	0.000	0.000
Heavy Trucks:	86.40	-18.30	2.45	-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:	75.9	74.4	72.6	66.6	75.2	75.8
Medium Trucks:	69.3	68.2	61.8	60.3	68.7	69.0
Heavy Trucks:	69.3	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	77.5	76.1	73.2	68.3	76.8	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	143	308	663	1,429
CNEL:	154	331	713	1,537

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Imperial Hwy.
Road Segment: s/o Lemon Dr.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,865 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	3,480 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.59	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	82.40	-14.65	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	86.40	-18.60	2.45	-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:	75.6	74.1	72.3	66.3	74.9	75.5
Medium Trucks:	69.0	67.9	61.5	60.0	68.4	68.7
Heavy Trucks:	69.0	68.0	59.0	60.2	68.6	68.7
Vehicle Noise:	77.2	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:	136	294	633	1,364
CNEL:	147	316	681	1,468

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Lakeview Av.
Road Segment: n/o Buena Vista Av.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,106 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,664 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.26	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-16.98	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-20.93	0.91	-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:	68.4	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.2	61.1	54.7	53.1	61.6	61.8
Heavy Trucks:	63.0	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	70.3	68.9	65.7	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	218	470
CNEL:	50	109	234	505

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Lakeview Av.
Road Segment: s/o Buena Vista Av.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,960 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,375 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-0.57	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-17.81	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-21.76	0.91	-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:	67.6	66.1	64.3	58.2	66.9	67.5
Medium Trucks:	61.4	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	62.2	61.1	52.1	53.4	61.7	61.8
Vehicle Noise:	69.4	68.1	64.9	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	89	192	414
CNEL:	44	96	206	444

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Buena Vista Av.
Road Segment: w/o Lakeview Av.

Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,080 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	834 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.74	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-19.98	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-23.93	2.06	-1.20	*-5.56*	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:	66.6	65.1	63.3	57.2	65.9	66.5
Medium Trucks:	60.4	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	61.2	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	68.4	67.0	63.9	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	28	61	132	284
CNEL:	30	66	141	304

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Bastanchury Rd.
Road Segment: w/o Plumosa Dr.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,510 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,609 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.34	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.58	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-21.54	2.93	-1.20	*-5.56*	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:	71.6	70.1	68.3	62.2	70.9	71.5
Medium Trucks:	65.2	64.0	57.7	56.1	64.6	64.8
Heavy Trucks:	65.6	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	73.3	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:	60	129	278	599
CNEL:	64	139	299	643

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Lakeview Av.
Road Segment: s/o Bastanchury Rd.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,607 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	975 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.06	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-19.30	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-23.26	2.06	-1.20	*-5.56*	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:	67.3	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.0	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	61.9	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	69.1	67.7	64.6	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	68	146	315
CNEL:	34	73	157	338

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Bastanchury Rd.
Road Segment: w/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,873 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,826 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.21	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-17.03	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-20.99	2.93	-1.20	*-5.56*	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:	72.1	70.6	68.8	62.8	71.4	72.0
Medium Trucks:	65.7	64.6	58.2	56.7	65.1	65.4
Heavy Trucks:	66.1	65.1	56.0	57.3	65.6	65.8
Vehicle Noise:	73.8	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:	65	140	302	651
CNEL:	70	151	325	700

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045)
Road Name: Bastanchury Rd.
Road Segment: e/o Lakeview Av.
Project Name: Yorba Linda Housing Elem
Job Number: 15459

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,251 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,953 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.50	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-16.74	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-20.70	2.93	-1.20	*-5.56*	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:	72.4	70.9	69.1	63.1	71.7	72.3
Medium Trucks:	66.0	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	66.4	65.4	56.3	57.6	65.9	66.1
Vehicle Noise:	74.1	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:	68	147	316	681
CNEL:	73	158	340	732

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Lakeview Av. | *Job Number:* 15459
Road Segment: s/o Yorba Linda Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,616 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,527 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 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:	42.814
Medium Trucks:	42.720
Heavy Trucks:	42.814

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-0.11	0.91	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	79.45	-17.35	0.92	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	84.25	-21.31	0.91	-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:	68.1	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	61.8	60.7	54.3	52.8	61.2	61.5
Heavy Trucks:	62.7	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.9	68.5	65.4	60.7	69.2	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	96	206	444
CNEL:	48	103	221	477

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Yorba Linda Bl. | *Job Number:* 15459
Road Segment: w/o Lakeview Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,856 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	2,284 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:	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:	33.764
Medium Trucks:	33.645
Heavy Trucks:	33.764

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.18	2.45	-1.20	*-4.84*	0.000	0.000
Medium Trucks:	81.00	-16.06	2.48	-1.20	*-5.04*	0.000	0.000
Heavy Trucks:	85.38	-20.02	2.45	-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:	72.6	71.1	69.3	63.3	71.9	72.5
Medium Trucks:	66.2	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	66.6	65.6	56.5	57.8	66.1	66.3
Vehicle Noise:	74.3	72.9	69.9	65.1	73.7	74.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	88	189	408	878
CNEL:	94	203	438	943

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: Gypsum Canyon Rd. | *Job Number:* 15459
Road Segment: s/o La Palma Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,717 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	1,261 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	35.847
Medium Trucks:	35.735
Heavy Trucks:	35.847

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-0.95	2.06	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	79.45	-18.18	2.08	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	84.25	-22.14	2.06	-1.20	*-5.56*	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:	68.4	66.8	65.1	59.0	67.6	68.3
Medium Trucks:	62.2	61.0	54.6	53.1	61.6	61.8
Heavy Trucks:	63.0	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.2	68.8	65.7	61.0	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	80	173	374
CNEL:	40	86	186	401

Thursday, April 11, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY+P (2045) | *Project Name:* Yorba Linda Housing Elem
Road Name: La Palma Av. | *Job Number:* 15459
Road Segment: e/o Gypsum Canyon Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,751 vehicles
Peak Hour Percentage:	9.19%
Peak Hour Volume:	896 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:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.369
Medium Trucks:	31.241
Heavy Trucks:	31.369

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.88	2.93	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	81.00	-20.12	2.96	-1.20	*-5.08*	0.000	0.000
Heavy Trucks:	85.38	-24.08	2.93	-1.20	*-5.56*	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:	69.1	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	62.6	61.5	55.1	53.6	62.1	62.3
Heavy Trucks:	63.0	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	70.8	69.4	66.3	61.5	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	87	188	405
CNEL:	44	94	202	435

Thursday, April 11, 2024

APPENDIX 9.1:

STATIONARY SOURCE NOISE CALCULATIONS

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Calibration

CadnaA Noise Prediction Model: 13763_CalibrateAC.cna
Date: 26.05.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Reference Time Day (min)	**960.00**
Reference Time Night (min)	**480.00**
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
CALIBRATE		R25	61.2	61.2	67.9	0.0	0.0	0.0		x	Total	0.00	a	6085115.21	2271944.57	0.00
CALIBRATE		R50	53.6	53.6	60.2	0.0	0.0	0.0		x	Total	0.00	a	6085129.88	2271914.06	0.00
CALIBRATE		R100	44.8	44.8	51.5	0.0	0.0	0.0		x	Total	0.00	a	6085016.34	2271877.11	0.00
CALIBRATE		R150	34.5	34.5	41.2	0.0	0.0	0.0		x	Total	0.00	a	6084945.52	2271904.96	0.00
CALIBRATE		R200	30.5	30.5	37.2	0.0	0.0	0.0		x	Total	0.00	a	6084891.97	2271970.98	0.00

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