

Torrance Commerce Center Phase 3

NOISE AND VIBRATION IMPACT ANALYSIS CITY OF TORRANCE

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14092-04 Noise Study



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LIST OF ABBREVIATED TERMS

(1)	Reference
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
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Torrance Commerce Center Phase 3
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Torrance Commerce Center Phase 3 development ("Project"). The Project is planned to consist of up to 730,000 square feet of industrial park use. This noise study has been prepared to satisfy applicable City of Torrance noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

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.

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

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS



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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Torrance Commerce Center Phase 3 ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The Torrance Commerce Center Phase 3 Project is located on the southwest corner of Western Avenue and 190th street in the City of Torrance, as shown on Exhibit 1-A. The nearest sensitive residential land use is located northwest of the project site.

1.2 PROJECT DESCRIPTION

The proposed Project is planned to consist of up to 730,000 square feet of industrial park use (as shown on Exhibit 1-B) that will displace the existing uses, which previously was a part of the Toyota Campus. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site.

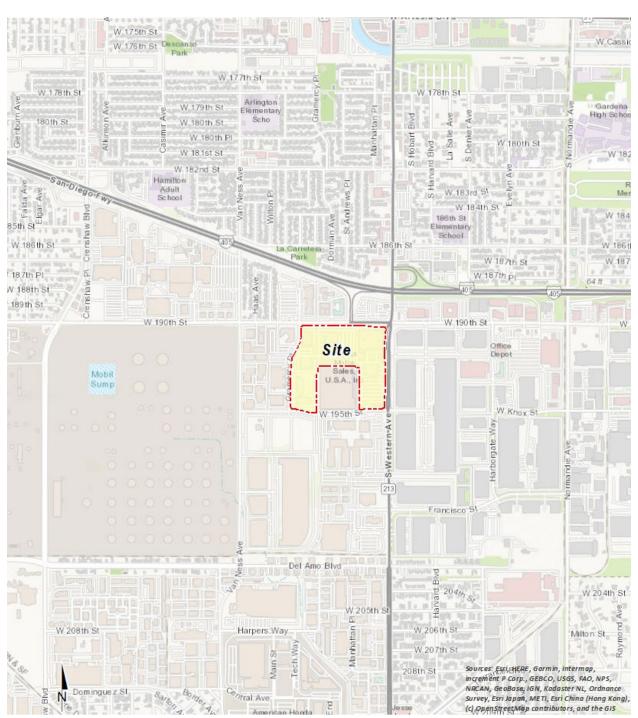
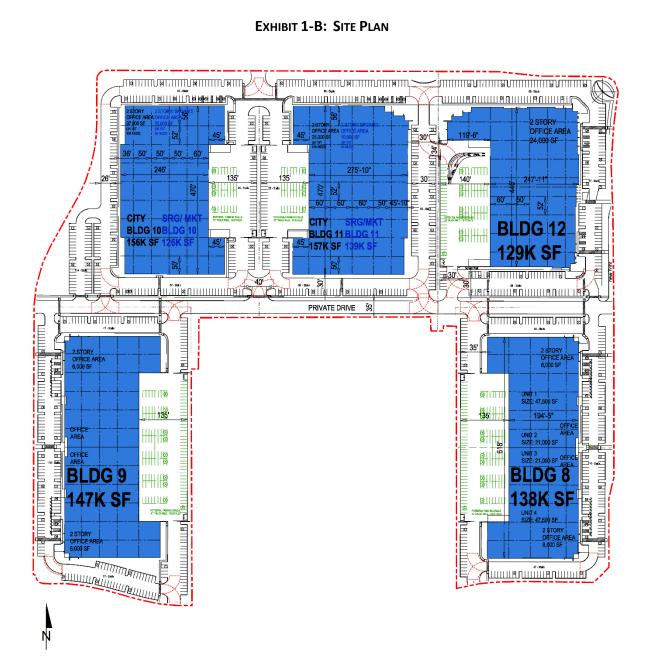


EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

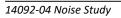
COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	\mathbf{X}	
NEAR JET ENGINE		130	INTOLERABLE OR	
		120	DEAFENING	HEARING LOSS
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100		
GAS LAWN MOWER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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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 Torrance 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.



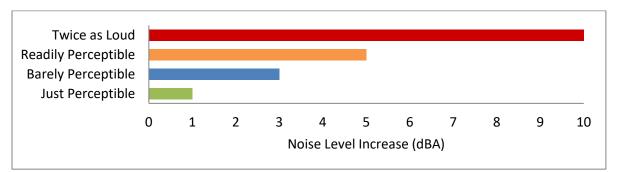
2.6 LAND USE COMPATIBILITY WITH NOISE

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)







2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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



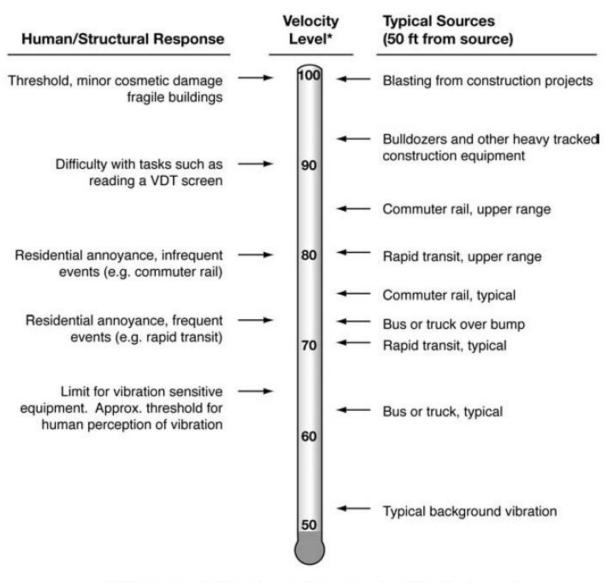


EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION

* RMS Vibration Velocity Level in VdB relative to 10⁻⁶ inches/second

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



3 REGULATORY SETTING

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). (9) 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 CITY OF TORRANCE GENERAL PLAN NOISE ELEMENT

The City of Torrance General Plan Noise Element's goals and policies aim to minimize adverse noise impacts and to preserve high quality of life for city residents. Torrance will maintain a peaceful environment by identifying noise impacts and mitigating noise problems through acoustical treatments and appropriate land use policies. (10) To protect City of Torrance residents from excessive noise levels, the Noise Element contains the following four objectives:

- N. I To identify noise pollution and establish effective noise abatement methods
- N. 2 To minimize transportation-related noise impacts
- N. 3 To minimize noise incompatibilities between land uses
- *N. 4* To research and implement new means of noise abatement

The noise policies specified in the City of Torrance Noise Element provide the guidelines necessary to satisfy these objectives. The noise criteria identified in the City of Torrance Noise Element (Table N-3) are guidelines to evaluate the land use compatibility of transportation-related noise. 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 *Noise/Land Use Compatibility Guidelines* indicate that the maximum exterior noise level standard for industrial land uses, such as the Project, is 75 dBA CNEL.



Propert	Maximum Noise Level Ldn or CNEL, dB(A)			
Type of Use	Land Use Designations	Interior	Exterior	
Residential³	Low Density Residential Low Medium Density Residential Medium Density Residential	45	60/65 ⁺	
	Medium High Density Residential	45 65 / 70 ²		
	High Density Residential	45 70 ¹		
Commercial and Office	General Commercial Commercial Center		70	
	Residential Office 50		70	
	Business Park			
Industrial	Light Industrial	55	75	
	Heavy Industrial			
Public and Medical	Public/Quasi-Public/Open Space	50	65	
Uses	Hospital/Medical	50	70	
Airport	Airport		70	

1. The normally acceptable standard is 60 db(A). The higher standard is acceptable subject to inclusion of noise-reduction features in project design and construction.

2. Maximum exterior noise levels up to 70 dB CNEL are allowed for Multiple-Family Housing.

3. Regarding aircraft-related noise, the maximum acceptable exposure for new residential development is 60 dB(A) CNEL.

Source: City of Torrance General Plan Noise Element, Table N-3.

3.3 CITY OF TORRANCE MUNICIPAL CODE

The City of Torrance Municipal Code (Municipal Code) establishes operational noise standards applicable to the Torrance Commerce Center Phase 3 Project. For the purposes of regulating operational noise, the Municipal Code at Chapter 6 Noise Regulation, Article 7, Section 46.7.2 divides the City into four "Noise Regions." The Project site is in Noise Region 1 as shown on Figure N-5 of City of Torrance General Plan and Article 8 Exhibit A of the Municipal Code.

Municipal Code Section 46.7.2[b] establishes exterior noise level standards for the noise sensitive residential land uses within 500 feet of the City's Noise Region 1 boundaries. In this context, and for the purposes of this analysis, the Municipal Code standards presented at Table 3-1 are employed in evaluation of noise levels that would be received at the nearest noise sensitive residential land uses located within Region 4. The City of Torrance Municipal Code noise standards are included in Appendix 3.1.



Jurisdiction	and lise		Noise Level Standard (dBA L _{eq}) ²
City of	Residential	Daytime (7:00 a.m 10:00 p.m.)	55
Torrance ¹	(Region 4) ¹	Nighttime (10:00 p.m 7:00 a.m.)	50

TABLE 3-1: OPERATIONAL NOISE LEVEL STANDARDS

¹ City of Torrance Municipal Code, Article 7, Section 46.7.2(a) (Appendix A).

² L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

3.4 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with construction, the City has established limits to the hours of construction activities in Section 46.3.1[a] of the City's Municipal Code. Per Section 46.3.1[a] construction activities are permitted within the hours of 7:30 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays; with no activity allowed on Sundays and holidays. (11) In addition, the Municipal Code identifies an exterior construction noise level limit of 50 dBA L_{eq} for all other time periods outside the permitted hours. Section 46.3.1[b] indicates that The Community Development Director may allow expanded hours and days of construction if unusual circumstances and conditions exist. Such requests must be made in writing and must receive approval by the Director prior to any expansion of the hour and day restrictions listed.

While the City establishes limits to the hours during which construction activity may take place, neither the City's General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers during the permitted construction hours. 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. (8 p. 179)

3.5 CONSTRUCTION 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 operation and construction of the Torrance Commerce Center Phase 3, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Torrance does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (12 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 Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).



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. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant*. (13) 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.

4.1.1 NOISE SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (14) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (13) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be

appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline 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 (baseline) 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 (15 p. 2_48).

4.1.1 NON-NOISE SENSITIVE RECEIVERS

The City of Torrance General Plan Noise Element, Table N-3, *Torrance Noise/Land Use Compatibility Guidelines* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *maximum acceptable* exterior noise level for non-noise-sensitive land use, such as commercial and office, is 70 dBA CNEL and 75 dBA CNEL for industrial uses. To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. (4) When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a *significant impact* since the noise level criteria is already exceeded.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration impacts originating from the construction of Torrance Commerce Center Phase 3, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

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 Torrance Airport located roughly 3.6 miles southwest of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant*, and no further noise analysis is conducted in relation to 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.

Analysis	Receiving Land Use	Condition(s)	Significance Criteria		
			Daytime	Nighttime	
		if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase		
	Noise- Sensitive ¹	if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase		
Off-Site	Sensitive	if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL	Project increase	
	Non-Noise- Sensitive ²	if ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase		
	Noise- Sensitive	See Table 3-1	55 dBA L _{eq}	50 dBA L _{eq}	
Onerational		if ambient is < 60 dBA L _{eq} ¹	≥ 5 dBA L _{eq} Project increase		
Operational		if ambient is 60 - 65 dBA L _{eq} 1	≥ 3 dBA L _{eq} Project increase		
		if ambient is > 65 dBA L _{eq} ¹	≥ 1.5 dBA L _{eq} P	roject increase	
	Permitted hours of 7:30 a.m. t 9:00 a.m. to 5:00 p.m. on Saturdays with Noise-		n no activity on Sund		
Construction	Sensitive	Noise Level Threshold	80 dBA L _{eq} ⁴	50 dBA L _{eq} ³	
		Building Damage Vibration Threshold ⁵	0.5 PPV (in/sec)		
		Human Annoyance Vibration Threshold ⁵	0.04 PP\	/ (in/sec)	

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

¹ FICON, 1992.

² City of Torrance General Plan Noise Element Table N-3

³ City of Torrance Municipal Code, Section 46.3.1 (Appendix 3.1).

⁴ Federal Transit Administration, Transit Noise and Vibration Impact Assessment.

⁵ Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19 & 20, p. 38.

"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.



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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Monday, December 6th, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the 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. (16)

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, that 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 equivalent or the hourly energy average 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.

Location ¹	Description	Energy Average Noise Level (dBA L _{eq}) ²	
		Daytime	Nighttime
L1	Located northwest of the Project site near single-family residence at 18931 Haas Avenue.	76.3	71.6
L2	Located northwest of the Project site near single-family residence at 18932 Wilton Place.	74.5	70.6
L3	Located north of the Project site near Sonesta Select Los Angeles Torrance at 1925 West 190th Street.	64.4	60.6
L4	Located east of the Project site near Extended Stay America - Los Angeles Torrance Harbor at 19200 Harborgate Way.	66.0	57.9
L5	Located southwest of the Project site near single-family residence at 2063 Del Amo Boulevard.	66.7	61.5

TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

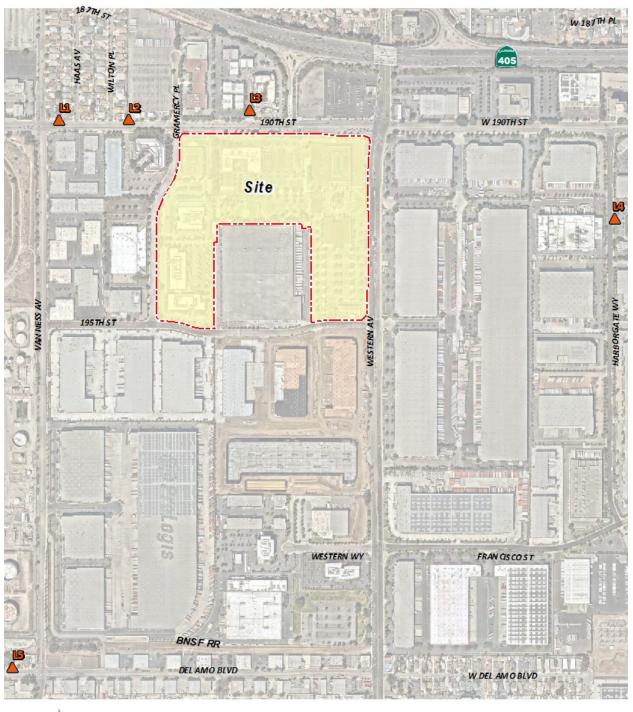
¹ See Exhibit 5-A for the noise level measurement locations.

² Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent 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 of the daytime and nighttime hours.







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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with City of Torrance *Land Use Compatibility for Community Noise Environments* Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (17) This methodology is commonly used to describe the off-site traffic noise levels throughout California and is consistent with the City of Torrance General Plan Noise Element.

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. (18) 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. (19)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the twenty off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Torrance General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on *Torrance Commerce Center Phase 3 Traffic Study by RK Engineering Group, Inc.* for the following traffic scenarios. (20)

- 1. Existing (2021)
- 2. Existing (2021) + Project
- 3. Opening Year (2023) (Existing traffic plus Ambient Growth)
- 4. Opening Year + Project (2023) (Existing traffic plus Ambient Growth plus Proposed Project)



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

ID	Roadway	Segment	Classification ¹	Receiving Land Use ²	Distance from Centerline to Receiving Land Use (Feet) ³	Vehicle Speed (mph)
1	Van Ness Av.	n/o 190th St.	Minor Arterial	Sensitive	50'	35
2	Van Ness Av.	s/o 190th St.	Minor Arterial	Non-Sensitive	50'	35
3	Van Ness Av.	s/o 195th St.	Minor Arterial	Sensitive	50'	35
4	Van Ness Av.	s/o Del Amo Blvd.	Minor Arterial	Non-Sensitive	50'	35
5	Western Av.	n/o I-405 NB Ramp	Major Arterial	Non-Sensitive	67'	40
6	Western Av.	n/o 190th St.	Major Arterial	Non-Sensitive	67'	40
7	Western Av.	s/o 190th St.	Major Arterial	Non-Sensitive	67'	40
8	Western Av.	s/o 195th St.	Major Arterial	Non-Sensitive	67'	40
9	Western Av.	n/o Del Amo Blvd.	Major Arterial	Sensitive	67'	40
10	Western Av.	s/o Del Amo Blvd.	Major Arterial	Sensitive	67'	40
11	190th St.	w/o Van Ness Av.	Major Arterial	Non-Sensitive	67'	45
12	190th St.	e/o Van Ness Av.	Major Arterial	Sensitive	67'	45
13	190th St.	w/o Western Av.	Major Arterial	Non-Sensitive	67'	45
14	195th St.	w/o Gramercy Pl.	Collector	Non-Sensitive	40'	25
15	Del Amo Blvd.	w/o Van Ness Av.	Major Arterial	Sensitive	61'	35

 TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

¹ City of Torrance General Plan Circulation Element.

² Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

³ Distance to receiving land use is based upon the right-of-way distances.

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



			Average Daily Traffic Volumes ¹					
ID	Roadway	Segment	Exis	ting	Opening Year (2023)			
	,		Without Project	With Project	Without Project	With Project		
1	Van Ness Av.	n/o 190th St.	13,250	13,742	13,400	13,892		
2	Van Ness Av.	s/o 190th St.	12,680	13,049	12,820	13,189		
3	Van Ness Av.	s/o 195th St.	12,620	13,112	12,860	13,352		
4	Van Ness Av.	s/o Del Amo Blvd.	10,840	11,086	10,970	11,216		
5	Western Av.	n/o I-405 NB Ramp	22,560	23,052	22,770	23,262		
6	Western Av.	n/o 190th St.	30,180	31,730	30,480	32,030		
7	Western Av.	s/o 190th St.	29,610	30,840	29,890	31,120		
8	Western Av.	s/o 195th St.	29,800	30,292	30,090	30,582		
9	Western Av.	n/o Del Amo Blvd.	31,290	31,782	31,600	32,092		
10	Western Av.	s/o Del Amo Blvd.	25,770	26,262	26,030	26,522		
11	190th St.	w/o Van Ness Av.	26,640	27,378	26,920	27,658		
12	190th St.	e/o Van Ness Av.	25,290	26,151	25,560	26,421		
13	190th St.	w/o Western Av.	25,060	25,700	25,310	25,950		
14	195th St.	w/o Gramercy Pl.	700	1,561	700	1,561		
15	Del Amo Blvd.	w/o Van Ness Av.	14,330	14,576	14,480	14,726		

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

¹ Torrance Commerce Center Phase 3 Traffic Study, RK Engineering Group, Inc.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-6 show the vehicle mixes used for the with Project traffic scenarios. Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

		Total of Time of		
Vehicle Type	Daytime	Evening	Nighttime	Day Splits
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%

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification		Total % Traffic Flow		Total
Classification	Autos	Medium Trucks	Heavy Trucks	Total
All Segments	97.02%	2.36%	0.62%	100.00%

Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2020.

			With Project ¹				
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²	
1	Van Ness Av.	n/o 190th St.	96.66%	2.31%	1.03%	100.00%	
2	Van Ness Av.	s/o 190th St.	96.74%	2.32%	0.94%	100.00%	
3	Van Ness Av.	s/o 195th St.	96.64%	2.31%	1.05%	100.00%	
4	Van Ness Av.	s/o Del Amo Blvd.	96.80%	2.33%	0.87%	100.00%	
5	Western Av.	n/o I-405 NB Ramp	96.81%	2.33%	0.86%	100.00%	
6	Western Av.	n/o 190th St.	96.53%	2.30%	1.17%	100.00%	
7	Western Av.	s/o 190th St.	96.62%	2.31%	1.07%	100.00%	
8	Western Av.	s/o 195th St.	96.86%	2.34%	0.80%	100.00%	
9	Western Av.	n/o Del Amo Blvd.	96.86%	2.34%	0.80%	100.00%	
10	Western Av.	s/o Del Amo Blvd.	96.83%	2.34%	0.83%	100.00%	
11	190th St.	w/o Van Ness Av.	96.75%	2.32%	0.93%	100.00%	
12	190th St.	e/o Van Ness Av.	96.69%	2.32%	0.99%	100.00%	
13	190th St.	w/o Western Av.	96.77%	2.33%	0.90%	100.00%	
14	195th St.	w/o Gramercy Pl.	91.49%	1.63%	6.87%	100.00%	
15	Del Amo Blvd.	w/o Van Ness Av.	96.85%	2.34%	0.81%	100.00%	

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

¹ Total of vehicle mix percentage values rounded to the nearest one-hundredth.



	Roadway	Segment	With Project ¹				
ID			Autos	Medium Trucks	Heavy Trucks	Total ²	
1	Van Ness Av.	n/o 190th St.	96.67%	2.31%	1.02%	100.00%	
2	Van Ness Av.	s/o 190th St.	96.74%	2.32%	0.94%	100.00%	
3	Van Ness Av.	s/o 195th St.	96.65%	2.31%	1.04%	100.00%	
4	Van Ness Av.	s/o Del Amo Blvd.	96.80%	2.33%	0.87%	100.00%	
5	Western Av.	n/o I-405 NB Ramp	96.81%	2.33%	0.86%	100.00%	
6	Western Av.	n/o 190th St.	96.54%	2.30%	1.17%	100.00%	
7	Western Av.	s/o 190th St.	96.62%	2.31%	1.07%	100.00%	
8	Western Av.	s/o 195th St.	96.86%	2.34%	0.80%	100.00%	
9	Western Av.	n/o Del Amo Blvd.	96.87%	2.34%	0.79%	100.00%	
10	Western Av.	s/o Del Amo Blvd.	96.83%	2.34%	0.83%	100.00%	
11	190th St.	w/o Van Ness Av.	96.75%	2.32%	0.92%	100.00%	
12	190th St.	e/o Van Ness Av.	96.69%	2.32%	0.99%	100.00%	
13	190th St.	w/o Western Av.	96.77%	2.33%	0.90%	100.00%	
14	195th St.	w/o Gramercy Pl.	91.49%	1.63%	6.87%	100.00%	
15	Del Amo Blvd.	w/o Van Ness Av.	96.85%	2.34%	0.81%	100.00%	

TABLE 6-6: OPENING YEAR 2023 WITH PROJECT VEHICLE MIX

 $^{\rm 1}$ Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the Torrance Commerce Center Phase 3 *Traffic Analysis*. (20) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 to 7-4 present a summary of the exterior traffic noise levels for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets.

	Road	Segment	Receiving	CNEL at Receiving	Distance to Contour from Centerline (Feet)		
ID	KUAU	Segment	Land Use ¹	Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Van Ness Av.	n/o 190th St.	Sensitive	65.4	RW	RW	115
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.2	RW	RW	112
3	Van Ness Av.	s/o 195th St.	Sensitive	65.2	65.2 RW RW		112
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	64.6	RW	RW	101
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.3	RW	96	206
6	Western Av.	n/o 190th St.	Non-Sensitive	68.6	RW	116	251
7	Western Av.	s/o 190th St.	Non-Sensitive	68.5	RW	115	247
8	Western Av.	s/o 195th St.	Non-Sensitive	68.5	RW	115	248
9	Western Av.	n/o Del Amo Blvd.	Sensitive	68.7	55	119	257
10	Western Av.	s/o Del Amo Blvd.	Sensitive	67.9	RW	105	225
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.3	60	130	281
12	190th St.	e/o Van Ness Av.	Sensitive	69.1	58	126	271
13	190th St.	w/o Western Av.	Non-Sensitive	69.1	58	125	270
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	51.4	RW	RW	RW
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.4	RW	56	121

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS
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¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

 $^{\rm 2}$ The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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



ID	Road	Segment	Receiving	CNEL at Receiving	Distance to Contour from Centerline (Feet)		
			Land Use ¹	Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Van Ness Av.	n/o 190th St.	Sensitive	66.1	RW	59	127
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.8	RW	56	121
3	Van Ness Av.	s/o 195th St.	Sensitive	65.9	RW	58	124
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	65.0	RW	RW	107
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.7	RW	101	218
6	Western Av.	n/o 190th St.	Non-Sensitive	69.4	61	132	283
7	Western Av.	s/o 190th St.	Non-Sensitive	69.2	59	127	274
8	Western Av.	s/o 195th St.	Non-Sensitive	68.8	56	120	259
9	Western Av.	n/o Del Amo Blvd.	Sensitive	69.0	58	124	267
10	Western Av.	s/o Del Amo Blvd.	Sensitive	68.2	RW	110	237
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.7	64	139	299
12	190th St.	e/o Van Ness Av.	Sensitive	69.6	63	136	293
13	190th St.	w/o Western Av.	Non-Sensitive	69.5	62	133	286
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	60.5	RW	RW	43
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.8	RW	59	127

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

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

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



ID	Road	Segment	Receiving	CNEL at Receiving	Distance to Contour from Centerline (Feet)		
			Land Use ¹	Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Van Ness Av.	n/o 190th St.	Sensitive	65.5	RW	RW	116
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.3	RW	RW	113
3	Van Ness Av.	s/o 195th St.	Sensitive	65.3	RW	RW	113
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	64.6	RW	RW	102
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.4	RW	96	208
6	Western Av.	n/o 190th St.	Non-Sensitive	68.6	RW	117	252
7	Western Av.	s/o 190th St.	Non-Sensitive	68.5	RW	116	249
8	Western Av.	s/o 195th St.	Non-Sensitive	68.6	RW	116	250
9	Western Av.	n/o Del Amo Blvd.	Sensitive	68.8	56	120	258
10	Western Av.	s/o Del Amo Blvd.	Sensitive	67.9	RW	105	227
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.4	61	131	283
12	190th St.	e/o Van Ness Av.	Sensitive	69.2	59	127	273
13	190th St.	w/o Western Av.	Non-Sensitive	69.1	58	126	271
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	51.4	RW	RW	RW
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.5	RW	56	122

TABLE 7-3: OPENING YEAR 2023 WITHOUT PROJECT CONTOURS

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

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

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



ID	Road	Segment	Receiving	CNEL at Receiving	Distance to Contour from Centerline (Feet)		
			Land Use ¹	Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Van Ness Av.	n/o 190th St.	Sensitive	66.1	RW	60	128
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.8	RW	57	122
3	Van Ness Av.	s/o 195th St.	Sensitive	66.0	6.0 RW 58		125
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	65.0	RW	RW	108
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.7	RW	102	219
6	Western Av.	n/o 190th St.	Non-Sensitive	69.4	61	132	285
7	Western Av.	s/o 190th St.	Non-Sensitive	69.2	59	128	275
8	Western Av.	s/o 195th St.	Non-Sensitive	68.9	56	121	261
9	Western Av.	n/o Del Amo Blvd.	Sensitive	69.1	58	125	269
10	Western Av.	s/o Del Amo Blvd.	Sensitive	68.3	RW	111	238
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.8	65	140	301
12	190th St.	e/o Van Ness Av.	Sensitive	69.7	64	137	295
13	190th St.	w/o Western Av.	Non-Sensitive	69.5	62	133	288
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	60.5	RW	RW	43
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.8	RW	59	128

TABLE 7-4: OPENING YEAR 2023 WITH PROJECT CONTOURS

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

 $^{\rm 2}$ The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Study. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until 2023 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 51.4 to 69.3 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 60.5 to 69.7 dBA CNEL. Table 7-5 shows that the Project off-site traffic noise level increases range from 0.3 to 9.1 dBA CNEL on the study area roadway segments.

Based on the significance criteria for off-site traffic noise presented in Section 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. For an off-site traffic noise level impact to be considered significant, receivers need to perceive an increase of traffic noise levels over time. Therefore, off-site traffic impacts are generally limited to noise sensitive residential receivers that are likely to perceive this increase over time. While the analysis shows that the

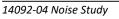


non-sensitive industrial uses will experience an off-site traffic noise level increase of 9.1 dBA CNEL, this is not considered a significant noise level impact since there are no adjacent receivers that will experience this increase over time. In addition, the Project-related off-site traffic noise level increase are largely due to the low traffic volumes that currently exist.

7.3 2023 TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the 2023 without Project conditions CNEL noise levels. The 2023 without Project exterior noise levels range from 51.4 to 69.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the 2023 with Project conditions will range from 60.5 to 69.8 dBA CNEL. Table 7-6 shows that the Project offsite traffic noise level increases range from 0.3 to 9.1 dBA CNEL on the study area roadway segments.

Based on the significance criteria for off-site traffic noise presented in Section 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. For an off-site traffic noise level impact to be considered significant, receivers need to perceive an increase of traffic noise levels over time. Therefore, off-site traffic impacts are generally limited to noise sensitive residential receivers that are likely to perceive this increase over time. While the analysis shows that the non-sensitive industrial uses will experience an off-site traffic noise level increase of 9.1 dBA CNEL, this is not considered a significant noise level impact since there are no adjacent receivers that will experience this increase over time. In addition, the Project-related off-site traffic noise level increase are largely due to the low traffic volumes that currently exist.





ID	Road	Segment	Receiving Land Use ¹		EL at Receind Use (dE	-	Incremental Noise Level Increase Threshold ²	
			Land Use ¹	No Project	With Project	Project Addition	Limit	Exceeded?
1	Van Ness Av.	n/o 190th St.	Sensitive	65.4	66.1	0.7	1.5	No
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.2	65.8	0.6	n/a	No
3	Van Ness Av.	s/o 195th St.	Sensitive	65.2	65.9	0.7	1.5	No
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	64.6	65.0	0.4	n/a	No
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.3	67.7	0.4	n/a	No
6	Western Av.	n/o 190th St.	Non-Sensitive	68.6	69.4	0.8	n/a	No
7	Western Av.	s/o 190th St.	Non-Sensitive	68.5	69.2	0.7	n/a	No
8	Western Av.	s/o 195th St.	Non-Sensitive	68.5	68.8	0.3	n/a	No
9	Western Av.	n/o Del Amo Blvd.	Sensitive	68.7	69.0	0.3	1.5	No
10	Western Av.	s/o Del Amo Blvd.	Sensitive	67.9	68.2	0.3	1.5	No
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.3	69.7	0.4	n/a	No
12	190th St.	e/o Van Ness Av.	Sensitive	69.1	69.6	0.5	1.5	No
13	190th St.	w/o Western Av.	Non-Sensitive	69.1	69.5	0.4	n/a	No
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	51.4	60.5	9.1	n/a	No
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.4	64.8	0.4	3.0	No

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

¹Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?



ID	Road	Segment	Receiving		EL at Receind Use (dE	-	Incremental Noise Level Increase Threshold ²	
			Land Use ¹	No Project	With Project	Project Addition	Limit	Exceeded?
1	Van Ness Av.	n/o 190th St.	Sensitive	65.5	66.1	0.6	1.5	No
2	Van Ness Av.	s/o 190th St.	Non-Sensitive	65.3	65.8	0.5	n/a	No
3	Van Ness Av.	s/o 195th St.	Sensitive	65.3	66.0	0.7	1.5	No
4	Van Ness Av.	s/o Del Amo Blvd.	Non-Sensitive	64.6	65.0	0.4	n/a	No
5	Western Av.	n/o I-405 NB Ramp	Non-Sensitive	67.4	67.7	0.3	n/a	No
6	Western Av.	n/o 190th St.	Non-Sensitive	68.6	69.4	0.8	n/a	No
7	Western Av.	s/o 190th St.	Non-Sensitive	68.5	69.2	0.7	n/a	No
8	Western Av.	s/o 195th St.	Non-Sensitive	68.6	68.9	0.3	n/a	No
9	Western Av.	n/o Del Amo Blvd.	Sensitive	68.8	69.1	0.3	1.5	No
10	Western Av.	s/o Del Amo Blvd.	Sensitive	67.9	68.3	0.4	1.5	No
11	190th St.	w/o Van Ness Av.	Non-Sensitive	69.4	69.8	0.4	n/a	No
12	190th St.	e/o Van Ness Av.	Sensitive	69.2	69.7	0.5	1.5	No
13	190th St.	w/o Western Av.	Non-Sensitive	69.1	69.5	0.4	n/a	No
14	195th St.	w/o Gramercy Pl.	Non-Sensitive	51.4	60.5	9.1	n/a	No
15	Del Amo Blvd.	w/o Van Ness Av.	Sensitive	64.5	64.8	0.3	3.0	No

TABLE 7-6: 2023 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

¹Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?



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8 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, outpatient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, six sensitive receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

- R1: Location R1 represents the proposed noise sensitive residence at 18931 Haas Avenue, approximately 929 feet northwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2: Location R2 represents the existing noise sensitive residence at 18932 Wilton Place, approximately 451 feet northwest of the Project site. Receiver R2 is placed in the outdoor living area (private backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents the proposed noise sensitive Sonesta Select Los Angeles Torrance at 1925 West 190th Street, approximately 175 feet north of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the proposed noise sensitive Extended Stay America Los Angeles Torrance Harbor at 19200 Harborgate Way, approximately 1,895 feet east of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R4 is placed at the building façade. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

- R5: Location R5 represents the existing noise sensitive residence at 1663 Del Amo Boulevard, approximately 2,577 feet southeast of the Project site. Receiver R5 is placed at the private outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken, L5, to describe the existing ambient noise environment.
- R6: Location R6 represents the proposed noise sensitive residence at 2057 Del Amo Boulevard, approximately 2,756 feet southwest of the Project site. Receiver R6 is placed in the outdoor living area (private backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.



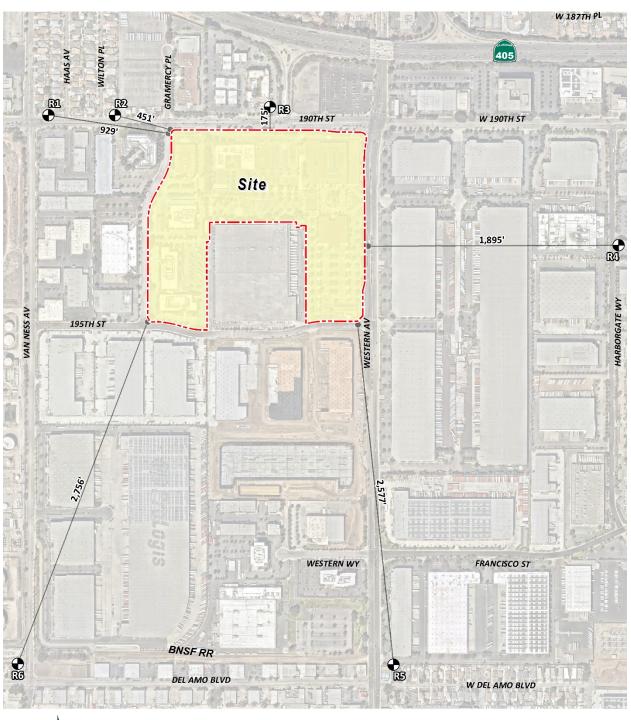


EXHIBIT 8-A: RECEIVER LOCATIONS

LEGEND:

Receiver Locations – Distance from receiver to Project site boundary (in feet)

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9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Torrance Commerce Center Phase 3 Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the typical daytime and nighttime activities at the Project site. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements.

9.2 **REFERENCE NOISE LEVELS**

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements all operating at the same time. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using 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. (16)



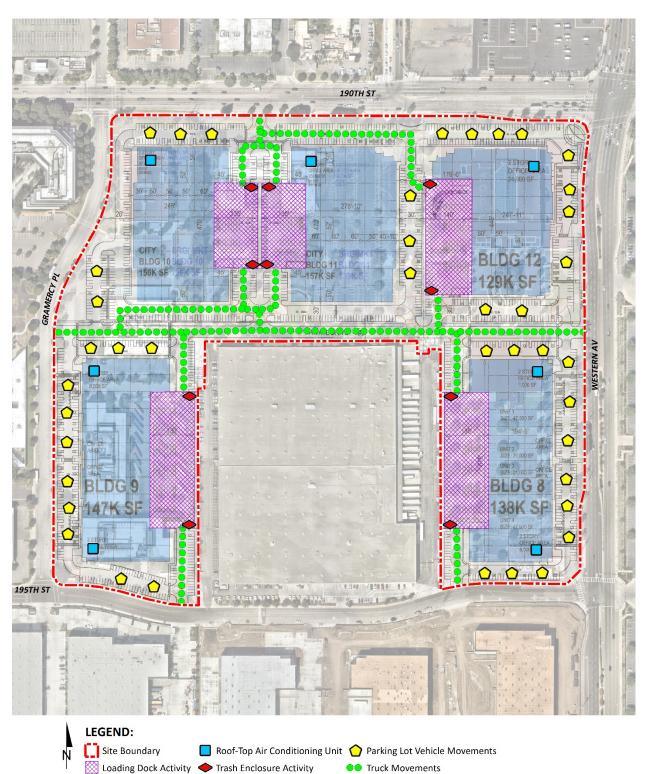


EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS



Noise Source ¹	Noise Source	Mir Hou	•	Reference Noise Level	Sound Power
Noise Source-	Height (Feet)	Day	Night	(dBA L _{eq}) @ 50 Feet	Level (dBA) ³
Loading Dock Activity	8'	60	60	62.8	103.4
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	10	10	57.3	89.0
Parking Lot Vehicle Movements	5'	60	60	56.1	87.8
Truck Movements	8'	60	60	58.0	93.2

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

¹ As measured by Urban Crossroads, Inc.

² Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

³ Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source.

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.



9.2.4 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of a warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 56.1 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represents multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (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 operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

9.4 **PROJECT OPERATIONAL NOISE LEVELS**

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 34.4 to 49.9 dBA L_{eq} .

Niciae Source1	Opera	ational Nois	e Levels by	Receiver L	ocation (dB	A Leq)
Noise Source ¹	R1	R2	R3	R4	R5	R6
Loading Dock Activity	30.8	30.6	47.0	28.2	34.1	32.2
Roof-Top Air Conditioning Units	27.7	29.7	32.8	23.0	20.6	19.8
Trash Enclosure Activity	12.6	11.8	29.6	12.3	15.5	13.6
Parking Lot Vehicle Movements	35.2	38.4	39.9	31.5	26.8	25.8
Truck Movements	35.1	37.7	45.4	31.1	29.8	27.8
Total (All Noise Sources)	39.2	41.7	49.9	35.5	36.2	34.4

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

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

Tables 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 34.0 to 49.4 dBA L_{eq} . The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.



Noise Source ¹	Opera	Operational Noise Levels by Receiver Location (dBA Leq)							
Noise Source-	R1	R2	R3	R4	R5	R6			
Loading Dock Activity	30.8	30.6	47.0	28.2	34.1	32.2			
Roof-Top Air Conditioning Units	25.3	27.3	30.4	20.6	18.2	17.4			
Trash Enclosure Activity	11.6	10.8	28.6	11.3	14.5	12.6			
Parking Lot Vehicle Movements	34.3	37.4	38.9	30.5	25.8	24.8			
Truck Movements	34.1	36.7	44.4	30.2	28.9	26.9			
Total (All Noise Sources)	38.3	40.7	49.4	34.7	35.8	34.0			

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Torrance exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-4 shows the operational noise levels associated with Torrance Commerce Center Phase 3 Project will satisfy the City of Torrance daytime and nighttime exterior noise level standards. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

Receiver Location ¹	Project Operational Noise Levels (dBA Leq) ²		Noise Leve (dBA	l Standards Leq) ³	Noise Level Standards Exceeded? ⁴		
Location	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime	
R1	39.2	38.3	55	50	No	No	
R2	41.7	40.7	55	50	No	No	
R3	49.9	49.4	55	50	No	No	
R4	35.5	34.7	55	50	No	No	
R5	36.2	35.8	55	50	No	No	
R6	34.4	34.0	55	50	No	No	

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

¹ See Exhibit 8-A for the receiver locations.

 $^{\rm 2}$ Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.

³ Exterior noise level standards, as shown on Table 4-1.

⁴ Do the estimated Project operational noise source activities exceed the noise level standards?

"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.



9.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

 $SPL_{Total} = 10log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \dots 10^{SPLn/10}]$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively. As indicated on Tables 9-5, the Project will generate a daytime operational noise level increases ranging from 0.0 to 0.2 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime operational noise level increases ranging from 0.0 to 0.3 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the increases at the sensitive receiver locations will be *less than significant*.

Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded?
R1	39.2	L1	76.3	76.3	0.0	1.5	No
R2	41.7	L2	74.5	74.5	0.0	1.5	No
R3	49.9	L3	64.4	64.6	0.2	5.0	No
R4	35.5	L4	66.0	66.0	0.0	1.5	No
R5	36.2	L5	66.7	66.7	0.0	1.5	No
R6	34.4	L5	66.7	66.7	0.0	1.5	No

TABLE 9-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

¹ See Exhibit 8-A for the receiver locations.

² Total Project daytime operational noise levels as shown on Table 9-2.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed daytime ambient noise levels as shown on Table 5-1.

 $^{\scriptscriptstyle 5}$ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

⁷ Significance increase criteria as shown on Table 4-1.



Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded?
R1	38.3	L1	71.6	71.6	0.0	1.5	No
R2	40.7	L2	70.6	70.6	0.0	1.5	No
R3	49.4	L3	60.6	60.9	0.3	5.0	No
R4	34.7	L4	57.9	57.9	0.0	5.0	No
R5	35.8	L5	61.5	61.5	0.0	5.0	No
R6	34.0	L5	61.5	61.5	0.0	5.0	No

TABLE 9-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

¹ See Exhibit 8-A for the receiver locations.

² Total Project nighttime operational noise levels as shown on Table 9-3.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed nighttime ambient noise levels as shown on Table 5-1.

⁵ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

⁷ Significance increase criteria as shown on Table 4-1.



10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearby sensitive receiver locations previously described in Section 8. Section 46.3.1[a] construction activities are permitted within the hours of 7:30 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays; with no activity allowed on Sundays and holidays. (11)

In addition, since neither the City of Torrance General Plan or County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes, 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. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (8 p. 179)

10.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (21) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.



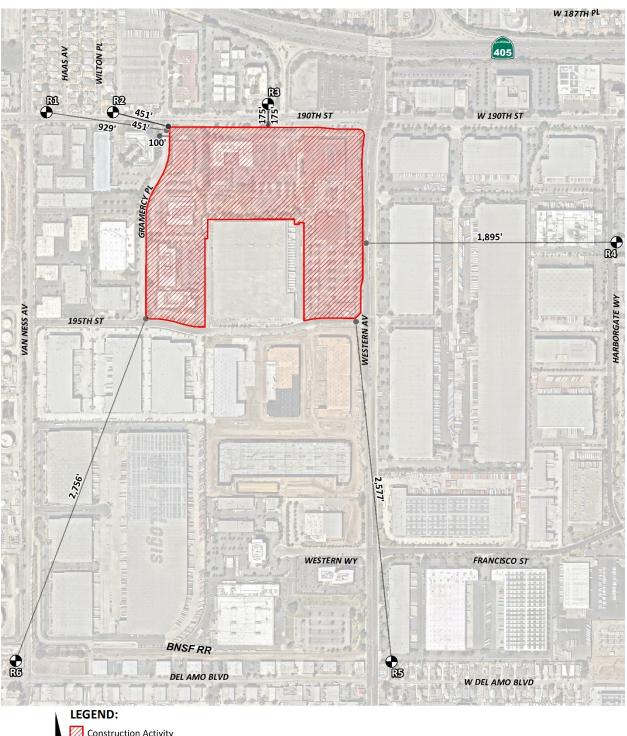


EXHIBIT 10-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

Construction Activity

Receiver Locations

Distance from receiver to construction activity (in feet)

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10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 10-2, the construction noise levels are expected to range from 34.6 to 55.9 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

Construction Stage	Reference Construction Activity	Reference Noise Level @ 50 Feet (dBA L _{eq}) ¹	Combined Noise Level (dBA L _{eq}) ²	Combined Sound Power Level (PWL) ³	
	Demolition Equipment	82			
Demolition	Backhoes	74	83	115	
	Hauling Trucks	72			
<u></u>	Crawler Tractors	78			
Site Preparation	Hauling Trucks	72	80	112	
reparation	Rubber Tired Dozers	75			
	Graders	81			
Grading	Excavators	77	83	115	
	Compactors	76			
	Cranes	73		113	
Building Construction	Tractors	80	81		
construction	Welders	70			
	Pavers	74			
Paving	Paving Equipment	82	83	115	
	Rollers	73			
	Cranes	73		109	
Architectural Coating	Air Compressors	74	77		
_	Generator Sets	70			

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

¹ FHWA Roadway Construction Noise Model (RCNM).

² Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.

³ Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calibrated using the CadnaA noise model at the reference distance to the noise source.



Receiver Location ¹	Construction Noise Levels (dBA Leq)								
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels ²		
R1	48.9	45.9	48.9	46.9	48.9	42.9	48.9		
R2	52.0	49.0	52.0	50.0	52.0	46.0	52.0		
R3	55.9	52.9	55.9	53.9	55.9	49.9	55.9		
R4	44.5	41.5	44.5	42.5	44.5	38.5	44.5		
R5	41.4	38.4	41.4	39.4	41.4	35.4	41.4		
R6	40.6	37.6	40.6	38.6	40.6	34.6	40.6		

¹Noise receiver locations are shown on Exhibit 10-A.

² Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

Dessition	Construction Noise Levels (dBA L _{eq})						
Receiver Location ¹	Highest Construction Noise Levels ² Threshold ³		Threshold Exceeded? ⁴				
R1	48.9	80	No				
R2	52.0	80	No				
R3	55.9	80	No				
R4	44.5	80	No				
R5	41.4	80	No				
R6	40.6	80	No				

¹Noise receiver locations are shown on Exhibit 10-A.

² Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.

³ Construction noise level thresholds as shown on Table 4-1.

⁴ Do the estimated Project construction noise levels exceed the construction noise level threshold?



10.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

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

TABLE 10-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 175 to 2,756 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.000 to 0.005 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site. Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.



Receiver ¹	Distance to	T	ypical Constr Pl	Thresholds	Thresholds			
	Const. Activity (Feet) ²	Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level	PPV (in/sec)⁴	Exceeded? ⁵
R1	929'	0.000	0.000	0.000	0.000	0.000	0.3	No
R2	451'	0.000	0.000	0.001	0.001	0.001	0.3	No
R3	175'	0.000	0.002	0.004	0.005	0.005	0.3	No
R4	1,895'	0.000	0.000	0.000	0.000	0.000	0.3	No
R5	2,577'	0.000	0.000	0.000	0.000	0.000	0.3	No
R6	2,756'	0.000	0.000	0.000	0.000	0.000	0.3	No

TABLE 10-5: PROJECT CONSTRUCTION VIBRATION LEVELS

¹Receiver locations are shown on Exhibit 10-A.

² Distance from receiver location to Project construction boundary (Project site boundary).

³ Based on the Vibration Source Levels of Construction Equipment (Table 10-4).

⁴ Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.

⁵ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity



11 REFERENCES

- 1. State of California. California Environmental Quality Act, Appendix G. 2018.
- 2. California 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.* September 2018.
- 9. Office of Planning and Research. State of California General Plan Guidelines. 2019.
- 10. City of Torrance. General Plan, Noise Element. April 2010.
- 11. —. Municipal Code, Chapter 6 Noise Regulation.
- 12. California Department of Transportation. *Transportation and Construction Vibration Guidance Manual.* April 2020.
- 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. RK Engineering Group, Inc. Torrance Commerce Center Phase 3. October 2021.



21. U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning. FHWA Roadway Construction Noise Model. January, 2006.



12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Torrance Commerce Center Phase 3 Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

Bill Lawson, P.E., INCE Principal URBAN CROSSROADS, INC. 1133 Camelback #8329 Newport Beach, CA 92658 (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 TORRANCE MUNICIPAL CODE



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CHAPTER 6

NOISE REGULATION Revised 10/21

ARTICLE 1 - GENERAL PROVISIONS

(Added by O-2170; Amended by O-2211)

46.1.1 DECLARATION OF POLICY.

It is hereby declared to be the policy of the City to prohibit unnecessary, excessive and annoying noises from all sources subject to its police power. At certain levels noises are detrimental to the health and welfare of the citizenry and in the public interests shall be systematically proscribed.

46.1.2 DEFINITIONS.

(Amended by O-2466)

As used in this Chapter, unless the context otherwise clearly indicates, the words and phrases used in this Chapter are defined as follows:

a) Ambient noise is the all encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far, without inclusion of intruding noises from isolated identifiable sources.

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

c) Emergency work shall mean work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from an imminent exposure to danger.

d) Noise level, in decibels, is the A-weighted sound pressure level as measured using the slow dynamic characteristic for sound level meters specified in ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof. The reference pressure is twenty (20) micronewtons/square meter (2 x 10-4 microbar).

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

f) Sound level meter shall mean an instrument including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of noise and sound levels in a specified manner as specified in ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof.

g) Sound pressure level, in decibels (db) of a sound is twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of this sound to the reference pressure. For the purpose of this Chapter the reference pressure shall be twenty (20) micronewtons/square meter ($2 \times 10-4$ microbar).

h) Impulsive sound means a short duration sound (such as might be produced by the impact of a drophammer or pile driver) with one (1) second or less duration.

i) Motor vehicles shall include, but not be limited to, minibikes and go carts.

j) Sound amplifying equipment shall mean any machine or device for the amplification of the human voice, music, or any other sound. Sound amplifying equipment shall not include standard automobile radios when used and heard only by the occupants of the vehicle in which the automobile radio is installed. Sound amplifying equipment, as used in this Chapter, shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes. k) Sound truck shall mean any motor vehicle, or any other vehicle regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

1) Commercial purpose shall mean and include the use, operation or maintenance of any sound amplifying equipment for the purpose of advertising any business or any goods or any services, or for the purpose of attracting the attention of the public to, or advertising for, or soliciting patronage or customers to or for any performance, show, entertainment, exhibition, or event, or for the purpose of demonstrating any such sound equipment.

m) Noncommercial purpose shall mean the use, operation or maintenance of any sound equipment for other than a commercial purpose. Noncommercial purposes shall mean and include, but shall not be limited to, philanthropic, political, patriotic and charitable purposes.

n) Residential land shall mean that land which is utilized for residential purposes or zoned for residential purposes.

o) Residential purpose means any purpose involving routine and relatively permanent use of a building as a dwelling, as opposed to relatively transient uses such as hotels and motels.

p) Day means the time period from 7:00 A.M. to 10:00 P.M.

q) Night means the time period from 10:00 P.M. to 7:00 A.M.

46.1.3 MEASUREMENTS.

Noise levels shall be measured with a sound level meter satisfying the requirements of ASA S1.4-1961, American Standard Specification for General Purpose Sound Level Meters, or latest revision thereof. Noise level of steady or slowly varying sounds shall be measured using the slow dynamic characteristic of the sound level meter and by reading the central tendency of the needle. Noise level of impulse sounds shall be measured using the fast dynamic characteristic of the sound level meter and by reading the measured using the measured meter and by reading the measured using the measured meter and by reading the maximum indication of the needle.

ARTICLE 2 - SPECIAL NOISE SOURCES Revised 10/21

46.2.1 RADIOS, TELEVISION SETS AND SIMILAR DEVICES.

a) Use Restricted. It shall be unlawful for any person within the City of Torrance to use or operate any radio receiving set, musical instrument, phonograph, television set, or other machine or device for the producing or reproducing of sound at any time in such a manner as to produce noise levels on residential land which would disturb the peace, quiet and comfort of neighboring residents or any reasonable person of normal sensitiveness residing in the area.

b) Prima Facie Violation. Any noise exceeding the ambient noise level at the property line of any residential land (or if a condominium or apartment house, within any adjoining apartment) by more than five (5) decibels shall be deemed to be prima facie evidence of a violation of the provisions of this Section.

46.2.2 HAWKERS AND PEDDLERS.

It shall be unlawful for any person within the City to sell anything by outcry within any area of the City utilized for residential purposes. The provisions of this Section shall not be construed to prohibit the selling by outcry of merchandise, food and beverages at licensed sporting events, parades, fairs, circuses and other similar licensed public entertainment events.

46.2.3 DRUMS.

It shall be unlawful for any person to use any drum or other instrument or device of any kind for the purpose of attracting attention by the creation of noise within the City. This Section shall not apply to any person who is a participant in a school band or duly licensed parade or who has been otherwise duly authorized by the City to engage in such conduct.

46.2.4 SCHOOLS, HOSPITALS AND CHURCHES.

It shall be unlawful for any person to create any noise on any street, sidewalk or public place adjacent to any school, institution of learning or church while the same is in use or adjacent to any hospital, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided

conspicuous signs are displayed in such streets, sidewalks or public place indicating the presence of a school, church or hospital.

46.2.5 ANIMALS AND FOWL.

No person shall keep or maintain, or permit the keeping of upon any premises owned, occupied or controlled by such person, any animal or fowl otherwise permitted to be kept which, by any sound, cry or behavior shall cause annoyance or discomfort to a reasonable person of normal sensitiveness on any residential land.

46.2.6 MACHINERY, EQUIPMENT, FANS AND AIR CONDITIONING.

It shall be unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any residential land to exceed the ambient noise level by more than five (5) decibels.

46.2.7 OIL PRODUCTION EQUIPMENT.

(Added by O-2528)

It shall be unlawful for any person to operate, or cause to be operated any oil production equipment in any manner so as to create any noise which would cause the noise level at the nearest property line of any residential land to exceed the ambient noise level by more than five (5) decibels; provided, however, that the aforesaid provisions of this Section shall not apply to oil production equipment being used in the drilling, redrilling, deepening, repair, maintenance or abandonment of an oil well.

46.2.8 TRAIN HORNS AND WHISTLES. Revised 10/21

(Added by O-3894)

It shall be unlawful for any person to operate or sound or cause to be operated or sounded, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day, a train horn or train whistle which creates noise in excess of ninety-six (96) dB at any place or point three hundred (300) feet or more distant from along a line normal to the direction of travel of the source of such sound.

ARTICLE 3 - CONSTRUCTION

46.3.1 CONSTRUCTION OF BUILDINGS AND PROJECTS.

(Amended by O-3712)

a) It shall be unlawful for any person within the City of Torrance to operate power construction tools, equipment, or engage in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area involving the creation of noise beyond 50 decibels (db) as measured at property lines, except between the hours of 7:30 A.M. to 6:00 P.M. Monday through Friday and 9:00 A.M. to 5:00 P.M. on Saturdays. Construction shall be prohibited on Sundays and Holidays observed by City Hall. An exception exists between the hours of 10:00 A.M. to 4:00 P.M. for homeowners that reside at the property.

b) The Community Development Director may allow expanded hours and days of construction if unusual circumstances and conditions exist. Such requests must be made in writing and must receive approval by the Director prior to any expansion of the hour and day restrictions listed above.

c) Every construction project requiring Planning Commission review or considered to be a significant remodel as defined by Section 231.1.2, shall be required to post an information board along the front property line that displays the property owner's name and contact number, contractor's name and contact number, a copy of TMC Section 46.3.1, a list of any special conditions, and the Code Enforcement phone number where violations can be reported.

d) Properties zoned as commercial, industrial or within an established redevelopment District, are exempted from the above day and hour restrictions if a minimum buffer of 300 feet is maintained from the subject property's property line to the closest residential property. The Community Development Director, may, however, revoke such exemption for a particular project if the noise level exceeds 50 decibels (db) at the property line of a residential property beyond the 300 linear foot buffer.

e) Heavy construction equipment such as pile drivers, mechanical shovels, derricks, hoists, pneumatic hammers, compressors or similar devices shall not be operated at any time, within or adjacent to a residential area, without first obtaining from the Community Development Director permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use, and the applicant shall be required to show that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers. Such permission to operate heavy construction equipment will be revoked if operation of such equipment is not in accordance to approval. No permission shall be required to perform emergency work as defined in Article 1 of this Chapter.

46.3.2 OPERATION OF OIL EQUIPMENT.

(Added by O-2528)

a) It shall be unlawful for any person to operate machinery or power tools for the repair, maintenance or abandonment of oil well equipment on Sundays and legal holidays and, except between the hours of 7:00 A.M. and 8:00 P.M., on any other day; provided, however, that the provisions of this subsection shall not apply to any well, the surface of which is three hundred (300) or more feet from any dwelling.

b) It shall be unlawful for any person to conduct oil drilling or redrilling operations other than circulation of mud, on Sundays and legal holidays and, except between the hours of 7:00 A.M. and 9:00 P.M., on any other day; provided, however, that the provisions of this subsection shall not apply to any well the surface of which is three hundred (300) or more feet from any dwelling.

c) It shall be unlawful for any person to operate machinery or power tools for the repair, maintenance or abandonment of oil well equipment or to conduct oil well drilling or redrilling operations at any time within three hundred (300) feet of any dwelling without first obtaining from the Director of Building and Safety permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use. The Director of Building and Safety shall issue such permit only if the applicant demonstrates to the reasonable satisfaction of the Director that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers or acoustical sound blankets as provided in Section 46.3.3. Such permission to operate oil well equipment shall be revoked if such equipment is not operated and construction is not accomplished in accordance with the conditions of approval. No permission shall be required to perform emergency work as defined in Article 1 of this Chapter. The person performing such emergency work shall first notify the occupants of adjacent residences and the Torrance Police Department as to the nature and extent of the work to be performed.

46.3.3 ACOUSTICAL BLANKETS.

(Added by O-2528)

Acoustical blankets shall be made of fibrous glass insulation 1-1/2 inches thick, 0.50 pounds per cubic foot density, 0.63 pounds per square foot weight, .00010 to .00015 fibre diameter (inches) with phenolic binder having a temperature limit of 450 degrees F. sewed between layers of fire retardant vinyl fibre glass cloth, 15-17 ounces per square yard sewed with dacron thread D-92 with stitches not more than six (6) to the inch. The lacing cord shall be flat vinyl coated tape composed of fibrous glass yard braided, heat set and bonded. The tape shall have a 90 pound tensile strength. Grommets shall be No. 4 brass. Provided, however, that there may be substituted for the aforesaid specifications an acoustical blanket which in the opinion of the Director of Building and Safety is equal to sound-proofing ability and fire resistive qualities to the aforesaid specifications.

ARTICLE 4 - VEHICLES

46.4.1 VEHICLE REPAIRS.

It shall be unlawful for any person within the City of Torrance to repair, rebuild or test any motor vehicle at any time in such a manner that a reasonable person of normal sensitiveness located on residential land is caused discomfort or annoyance by reason of the noise produced therefrom.

46.4.2 MOTOR DRIVEN VEHICLES.

It shall be unlawful for any person to operate any motor driven vehicle within the City in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance; provided, however, that any such vehicle which is operated upon any public highway, street or right-of-way shall be excluded from the provisions of this Section, provided the provisions of the California Motor Vehicle Code, Sections 23130, 27150 and 27151 are complied with.

ARTICLE 5 - AMPLIFIED SOUND

(Amended by O-3360)

46.5.1 **PURPOSE**.

The Council enacts the provisions of this Article for the sole purpose of securing and promoting the public health, comfort, safety, and welfare for its citizenry. While recognizing that the use of sound amplifying equipment is protected by the constitutional rights of freedom of speech and assembly, the Council nevertheless feels obligated to reasonably regulate the use of sound amplifying equipment in order to protect the correlative constitutional rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary noise.

46.5.2 APPLICATION REQUIRED.

It shall be unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate within the City a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place or public property without first filing an application and obtaining a permit therefor as set forth in Division 3 of this Code.

46.5.3 REGULATIONS.

The commercial and noncommercial use of sound amplifying equipment shall be subject to the following regulations:

a) The only sounds permitted shall be either music or human speech, or both.

b) The operation of sound amplifying equipment shall only occur between the hours of 9:00 A.M. and 9:00 P.M. each day except on Sundays and legal holidays. The operation of sound amplifying equipment for noncommercial purposes on Sundays and legal holidays shall only occur between the hours of 10:00 A.M. and 6:00 P.M.

c) No sound emanating from sound amplifying equipment shall exceed fifteen (15) dBA above the ambient as measured at any property line.

d) Notwithstanding the provisions of subsection c) of this Section, sound amplifying equipment shall not be operated within two hundred (200) feet of churches, schools or hospitals.

e) In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing or a nuisance to reasonable persons of normal sensitiveness within the area of audibility.

ARTICLE 6 - POWERED GARDENING EQUIPMENT Revised 10/21

46.6.1 EXCESSIVE NOISE PROHIBITED. Revised 10/21

(Amended by O-3894)

a) It shall be unlawful for any person within the City of Torrance to operate power gardening equipment, including but not limited to leaf blowers, mowers and edgers, or engage in the performance of gardening work with powered equipment in or adjacent to a residential area involving the creation of noise beyond fifty (50) decibels (dB) as measured at property lines, except between the hours of 7:30 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. Operation of powered gardening equipment shall be prohibited on Sundays and holidays observed by City Hall. An exception exists between the hours of 10:00 a.m. to 4:00 p.m. for homeowners that reside at the property.

b) Properties zoned as commercial, industrial or within an established redevelopment district are exempted from the above day and hour restrictions if a minimum buffer of three hundred (300) feet is maintained from the subject

property's property line to the closest residential property. The Community Development Director may, however, revoke such exemption for a particular property if the noise level exceeds fifty (50) decibels (dB) at the property line of a residential property beyond the three hundred (300) linear foot buffer.

ARTICLE 7 - GENERAL NOISE REGULATIONS 46.7.1 GENERAL NOISE REGULATIONS.

Notwithstanding any other provision of this Chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

46.7.2 NOISE LIMITS.

To provide for methodical enforcement and to give reasonable notice of the performance standards to be met, the foregoing intent is expressed in the following numerical standards. For purposes of this Chapter, the City is divided into regions as set forth in Exhibit A.

a) Noise Limits on Residential Land. It shall be unlawful for any person within the City of Torrance (wherever located) to produce noise in excess of the following levels as received on residential land owned or occupied by another person within the designated regions. In addition to the noise limits stated herein, the noise limits set forth in Sec. 46.7.2.b) shall also be complied with.

1) For noise receivers located on residential land, for measurement positions five hundred (500) feet or more distant from the boundaries of Regions 1 and 2, the following limits apply:

REGION (in which noise receiver is	NOISE LE	VEL, db
located)	Day	Night
3	50	45
4	55	50

2) For noise receivers located on residential land, for positions within five hundred (500) feet from the boundary of Region 1 or 2, the following limits apply:

Five (5) dB above the limits set forth in Section 46.7.2.a) 1 above, or 5 dB above the ambient noise level, whichever is the lower number.

b) Noise Limits at Industrial and Commercial Boundaries:

1) Noise Sources in Region 1: It shall be unlawful for any person in Region 1 to produce noise levels at the boundary of Region 1 in excess of 70 dB during the day or 65 dB during the night.

2) Noise Sources in Region 2: It shall be unlawful for any person in Region 2 to produce noise levels at the boundary of Region 2 in excess of 60 dB during the day or 55 dB during the night.

3) Noise Sources in All Remaining Industrial Use Land: It shall be unlawful for any person on industrial use land outside Region 1 and 2 to produce noise levels at his own property boundary in excess of 60 dB during the day or 55 dB during the night.

4) Noise Sources on All Land Use for Commercial Purposes: It shall be unlawful for any person on land used for commercial purposes to produce noise levels at his own property boundary in excess of 60 dB during the day or 55 dB during the night.

In addition to the noise limits set forth herein (Sec. 46.7.2.b), the noise limits set forth in Sec. 46.7.2.(a) shall also be complied with.

c) Corrections to the Noise Limits: The numerical limits given in Sec. 46.7.2.(a) and (b) shall be adjusted by addition of the following corrections where appropriate.

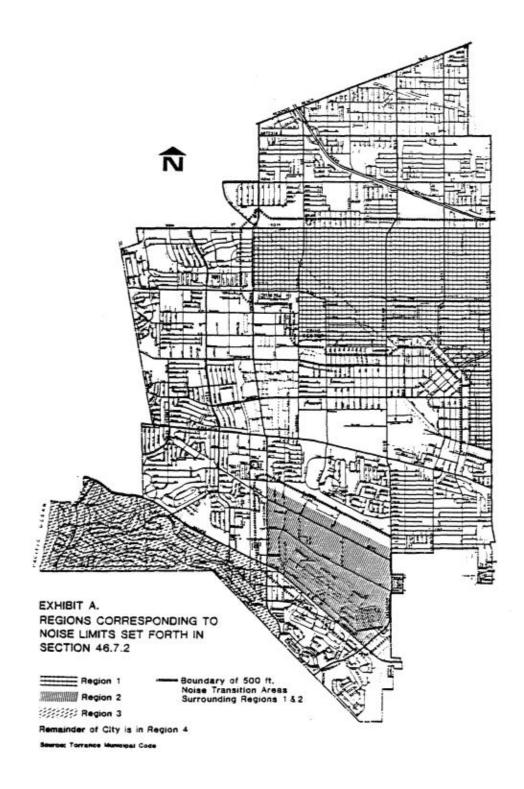
	Noise Condi	tions	Correction to the Limits, decibels
1.	Noise contains a s screech or hum	teady, audible tone, such as a whine,	-5
2.	Noise is a repetitiv or riveting	ve impulsive noise, such as hammering	-5
3.		continuous, one of the following limits shall be applied:	
	a)	Noise occurs less than 5 hours per day or less than 1 hour per night	+5
	b)	Noise occurs less than 90 minutes per day or less than 20 minutes per night	+10
	c)	Noise occurs less than 30 minutes per day or less than 6 minutes per night	+15
4.	Noise occurs on S and 12:01 P.M. Su	unday morning (between 12:01 A.M. unday)	-5

46.7.3 EXCEPTIONS.

The following noise sources are specifically excluded from the provisions of this Chapter:

1) Aircraft in flight.

2) Motor vehicles operating in accordance with Sec. 46.4.2. and in accordance with all the sections of the California Motor Vehicles Code.



ARTICLE 8 - AIRPORT NOISE LIMITS (Added by O-2784)

46.8.1 VIOLATIONS UNLAWFUL.

It shall be unlawful for any person to pilot or operate or permit to be piloted or operated an aircraft in violation of the provisions of Sections 46.8.8., 46.8.9. or 46.8.14.

46.8.2 EXTENDED AIRPORT BOUNDARIES DEFINED.

For the purposes of this Article, the term extended airport boundaries shall mean the area enclosed by Lomita Boulevard on the north, Crenshaw Boulevard on the east, Pacific Coast Highway on the south and Hawthorne Boulevard on the west.

46.8.3 TAKE-OFF DEFINED.

(Amended by O-3270)

For the purposes of this Article, take-off shall mean the flight of an aircraft departing Torrance Airport from the time it commences on its departure on the runway.

46.8.4 LANDING DEFINED.

(Amended by O-3270)

For the purposes of this Article, landing shall mean the flight of an aircraft from the time it begins its landing approach until it is taxied from the runway.

46.8.5 SOUND EXPOSURE LEVEL.

For the purposes of this Article, the sound exposure level is the level of sound accumulated during a given event, with reference to a duration of one second. More specifically, sound exposure level, in decibels, is the level of the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on the reference pressure of 20 micronewtons per square meter and reference duration of one second.

46.8.6 SENEL.

For the purposes of this Article, the single event noise exposure level (SENEL), in decibels, is the sound exposure level of a single event, such as an aircraft fly-by, measured over the time interval between the initial and final times for which the sound level of a single event exceeds the threshold sound level. For implementation of the provisions of this Article, the threshold noise level shall be at least 20 decibels below the numerical value of the single event noise exposure level limits specified in Sections 46.8.8. or 46.8.9. as the case may be.

46.8.7 MAXIMUM SOUND LEVEL DEFINED.

For the purposes of this Article, the maximum sound level, in decibels, is the highest sound level reached at any instant of time during the time interval used in measuring the sound exposure level of a single event.

46.8.8 AIRCRAFT NOISE LIMIT.

Except as provided in Section 46.8.10., no aircraft taking off from or landing on the Torrance Municipal Airport may exceed a single event noise exposure level (SENEL) of 88 dBA or a maximum sound level of 82 dBA measured at ground level outside the extended Airport boundaries.

46.8.9 AIRCRAFT NOISE LIMIT AT NIGHT.

(Amended by O-3284)

Notwithstanding the provisions of Section 46.8.8., except as provided in Section 46.8.10., no aircraft taking off from or landing on the Torrance Municipal Airport between the hours of 10:00 P.M. of any day and 7:00 A.M. of the following morning on any Monday through Friday inclusive, nor between the hours of 10:00 P.M. each night and 8:00 A.M. of the following morning on any Saturday or Sunday inclusive, nor on any of the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day; provided, however, that if any such holiday falls on a Saturday or Sunday, the observance of which is then moved to the preceding Friday, or the following Monday, then such Friday or Monday shall be considered to be a holiday for purposes of this section, may exceed a single event noise exposure level (SENEL) of 82 dBA or a maximum sound level of 76 dBA measured at ground level outside the extended Airport boundaries.

46.8.10 AIRCRAFT NOISE EXEMPTION.

(Amended by O-3382)

The following categories of aircraft shall be exempt from the provisions of Sections 46.8.8. and 46.8.9.:

- 1) Aircraft operated by the United States of America or the State of California;
- 2) Law enforcement, emergency, fire or rescue aircraft operated by any county or city of said state;

3) Aircraft used for emergency purposes during an emergency that has been officially proclaimed by competent authority pursuant to the laws of the United States, said State or the City;

4) Civil Air Patrol aircraft when engaged in actual search and rescue missions;

5) Aircraft engaged in landings or takeoffs while conducting tests under the direction of the Airport Manager in an attempt to rebut the presumption of aircraft noise violation pursuant to the provisions of Section 46.8.13

6) Aircraft while participating in a City-sponsored event approved by City Council.

46.8.11 CULPABILITY OF INSTRUCTOR PILOT.

In the case of any training flight in which both an instructor pilot and a student pilot are in the aircraft which is flown in violation of any of the provisions of this Article, the instructor pilot shall be rebuttably presumed to have caused such violation.

46.8.12 CULPABILITY OF AIRCRAFT OWNER OR LESSEE.

For purposes of this Article, the beneficial owner of an aircraft shall be presumed to be the pilot of the aircraft with authority to control the aircraft's operations, except that where the aircraft is leased, the lessee shall be presumed to be the pilot. Such presumption may be rebutted only if the owner or lessee identifies the person who in fact was the pilot at the time of the asserted violation.

46.8.13 DENIAL OF USE OF AIRPORT.

(See Section 51.7.2. et seq. concerning denial of the use of the Airport for repeated violations of this Article.)

46.8.14 PRESUMPTION OF AIRCRAFT NOISE VIOLATION.

In the event that the Airport Manager determines to his reasonable satisfaction that available published noise measurements for a particular type or class of aircraft indicate that it cannot meet the noise levels set forth in Sections 46.8.8. and 46.8.9., it shall be presumed that operation of such aircraft will result in violation of the provisions of Sections 46.8.8. and 46.8.9. and such aircraft will not be permitted to land on, tie down on, be based at or take off from the Torrance Municipal Airport, except in emergencies as set forth in Section 51.4.2.; provided, however, that the owner or operator of such aircraft shall be entitled to rebut such presumption to the reasonable satisfaction of the Airport Manager by furnishing evidence to the contrary.

46.8.15 DESIGNATED ENFORCEMENT OFFICIAL.

The Director of Building and Safety, the Administrator of Environmental Quality, the Environmental Quality Officers and such other City employees as are designated by the Director of Building and Safety with the approval of the City Manager, all acting under the direction and control of the City Manager, shall have the duty and authority to enforce the provisions of this Article, pursuant to the provisions of Section 836.5 of the State Penal Code.

APPENDIX 5.1:

STUDY AREA PHOTOS



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JN: 14092 Study Area Photos



L1_E 33, 51' 30.540000"118, 19' 2.470000"



L1_N 33, 51' 30.560000"118, 19' 2.470000"



L1_S 33, 51' 30.540000"118, 19' 2.470000"



L1_W 33, 51' 30.550000"118, 19' 2.500000"



L2_E 33, 51' 30.520000"118, 18' 56.180000"



L2_N 33, 51' 30.580000"118, 18' 56.180000"



L2_S 33, 51' 30.520000"118, 18' 56.210000"



L2_W 33, 51' 30.510000"118, 18' 56.230000"



L3_E 33, 51' 31.280000"118, 18' 45.220000"



L3_N 33, 51' 31.350000"118, 18' 45.220000"



L3_S 33, 51' 31.310000"118, 18' 45.220000"



L3_W 33, 51' 31.310000"118, 18' 45.220000"

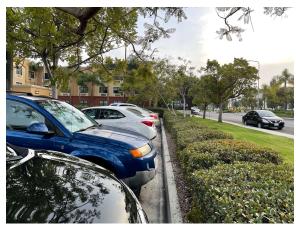
JN: 14092 Study Area Photos



L4_E 33, 51' 23.220000"118, 18' 12.070000"



L4_N 33, 51' 23.220000"118, 18' 12.070000"



L4_S 33, 51' 23.220000"118, 18' 12.070000"



L4_W 33, 51' 23.190000"118, 18' 12.070000"



L5_E 33, 50' 49.080000"118, 19' 6.620000"



L5_N 33, 50' 49.090000"118, 19' 6.560000"

JN: 14092 Study Area Photos



L5_S 33, 50' 49.100000"118, 19' 6.590000"



L5_W 33, 50' 49.080000"118, 19' 6.560000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS



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						24-Ho	ur Noise Le	evel Meas	urement S	ummary						
Date:	Monday, De	ecember 6, 2	021		Location	: L1 - Located	northwest of	f the Project	site near sin	gle-family	Meter:	Piccolo II			JN:	14092
Project:	Torrance Te	ech Center			Source	: residence at	18931 Haas /	Avenue.							Analyst:	A. Khan
							Hourly L _{eq} d	dBA Readings	(unadjusted)							
85.0	n															
000	0 ++											_				
Y B 75.0 Y B 70.0		9				78.6	77.2	0.00		0 0	78.3		0 N	- <u>v</u>	<mark>oj 4</mark>	
e 60.0	68.5	+		74			⊢ ^ 	76. 76.		<mark>с — К</mark> —	_ ` `	74.	74.	74	<mark>71.2</mark>	69.6
<u>ז</u> 55.0 ג 50.0	┇╧╹┓						± ±									
1 55.0 1 55.0																
35.0	0 + 0	1 2	3	4 5	6	7 8	9 1	.0 11	12 1	3 14	15 16	5 17	18 19	20 2	21 22	23
	0	1 2	5	4 J	0	/ 0	9 1		iz i ginning	5 14	15 10) 1/	16 19	20 .	21 22	25
Timeframe	Hour	L _{eq}	L max	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0	68.5	79.0	54.0	78.6	77.9	75.6	73.8	67.9	62.9	56.0	55.3	54.3	68.5	10.0	78.5
	1	71.6	85.3	51.2	84.7	83.6	79.7	75.9	65.8	59.8	52.7	51.9	51.3	71.6	10.0	81.6
	2	66.1	77.2	51.6	76.8	76.1	73.3	71.4	64.4	59.0	53.3	52.3	51.8	66.1	10.0	76.1
Night	3	67.2 70.1	78.0 80.3	52.5 56.8	77.7 79.8	77.1 79.1	74.8 76.8	72.9 75.3	65.5 69.9	59.5 65.1	53.6 58.3	53.1 57.5	52.6 57.0	67.2 70.1	10.0 10.0	77.2 80.1
	4 5	74.5	83.1	63.9	82.7	82.2	80.5	75.5	75.1	71.2	65.2	57.5 64.6	64.0	74.5	10.0	84.5
	6	75.6	83.1	64.6	82.8	82.3	81.1	80.2	76.9	73.2	66.4	65.5	64.8	75.6	10.0	85.6
	7	78.6	88.6	66.1	88.2	87.3	85.8	83.1	78.6	74.9	67.8	67.0	66.2	78.6	0.0	78.6
	8	77.5	85.2	65.9	84.8	84.3	83.0	82.0	79.0	74.4	67.9	66.9	66.1	77.5	0.0	77.5
	9	77.2	85.8	66.7	85.4	84.7	83.1	81.9	78.0	74.3	68.5	67.7	66.9	77.2	0.0	77.2
	10 11	76.0 76.0	85.2 84.3	65.3 65.5	84.6 83.9	83.9 83.2	81.9 81.7	80.3 80.7	76.6 76.8	73.1 73.4	67.0 68.0	66.1 66.9	65.5 65.7	76.0 76.0	0.0 0.0	76.0 76.0
	11	77.9	88.1	66.9	87.7	87.1	85.3	83.0	76.9	73.4	68.6	67.8	67.1	70.0	0.0	70.0
	13	75.9	84.2	65.4	83.7	83.2	81.7	80.5	76.5	73.5	67.3	66.3	65.6	75.9	0.0	75.9
Day	14	75.8	83.9	65.8	83.4	82.7	81.1	80.0	77.0	73.3	67.9	66.7	65.9	75.8	0.0	75.8
	15	78.3	89.7	66.6	89.3	88.2	84.9	82.5	77.4	73.6	68.3	67.5	66.8	78.3	0.0	78.3
	16	76.6	86.9	64.1	86.0	84.8	82.0	80.6	77.0	73.6	66.9	65.4	64.3	76.6	0.0	76.6
	17 18	74.9 74.0	82.6 82.0	63.9 62.1	82.1 81.6	81.7 81.0	80.2 79.4	79.1 78.3	76.2 75.2	72.9 71.7	65.9 64.3	64.9 63.2	64.1 62.2	74.9 74.0	0.0 0.0	74.9 74.0
	18	74.0	82.0	61.9	81.0	81.5	79.4	78.2	74.3	70.9	63.8	62.8	62.2	74.0	5.0	74.0
	20	74.2	84.5	60.7	83.9	83.1	80.4	78.4	74.4	70.5	63.0	61.7	60.8	74.2	5.0	79.2
	21	71.9	81.3	59.3	80.8	80.2	78.1	76.7	72.3	68.4	61.2	60.1	59.4	71.9	5.0	76.9
Night	22	71.4	81.3	57.9	80.8	80.1	77.7	75.8	71.7	67.8	60.3	59.0	58.1	71.4	10.0	81.4
0	23	69.6	79.8	56.0	79.4	78.8	76.2	74.5	69.6	65.1	57.7	56.9 L95%	56.1	69.6	10.0	79.6
Timeframe	Hour Min	L _{eq} 71.9	L _{max} 81.3	L _{min} 59.3	L1% 80.8	L2% 80.2	L5% 78.1	L8%	L25%	L50% 68.4	<i>L90%</i> 61.2	60.1	<i>L99%</i> 59.4		L _{eq} (dBA) Daytime	Nighttime
Day	Max	78.6	89.7	66.9	89.3	88.2	85.8	83.1	79.0	74.9	68.6	67.8	67.1	24-Hour	(7am-10pm)	(10pm-7am)
Energy	Average	76.3		rage:	84.5	83.8	81.9	80.4	76.4	72.8	66.4	65.4	64.6			
Night	Min	66.1	77.2	51.2	76.8	76.1	73.3	71.4	64.4	59.0	52.7	51.9	51.3	75.0	76.3	71.6
Ŭ	Max	75.6	85.3	64.6	84.7	83.6	81.1	80.2	76.9	73.2	66.4	65.5	64.8			
Energy	Average	71.6	Ave	rage:	80.4	79.7	77.3	75.5	69.6	64.8	58.2	57.3	56.7			

						24-Ho	ur Noise Le	evel Meas	urement S	ummary						
Date:	Monday, De	ecember 6, 2	021		Location	: L2 - Located	northwest of	the Project	site near sin	gle-family	Meter:	Piccolo II			JN:	14092
Project:	Torrance Te	ch Center			Source.	: residence at	18932 Wilto	n Place.							Analyst:	A. Khan
							Hourly L _{eq} (BA Readings	(unadjusted)							
0.5	•															
85.0																
(Ygp) 75.0				o	~ ~ ~		, u		— <u>∞</u> — ,	v ∞						
(V 89) 70.0 65.0 1 60.0	0 4	8. 4		- <u> </u>	75.2	76.1	<mark>א איז א</mark>	1.c/ 74.9		- <mark>74</mark>	75. 74.	<u> </u>	72.9	.2.4	70.6 70.0	- œ -
→ 55.0	0 – 6 –	67		69			+ $+$							\square		
A 55.0 J 50.0 A 50.0 A 45.0 A 40.0	0 = =						+ +									
- 40.0 35.0																
	0	1 2	3	4 5	6	7 8	9 1	.0 11	12 1	3 14	15 16	17	18 19	20 2	21 22	23
								Hour Be	ginning							
Timeframe	Hour	L _{eq}	L max	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0	67.4	77.7	52.8	77.5	76.9	74.7	72.6	66.8	61.6	54.2	53.6	53.0	67.4	10.0	77.4
	1	67.8	80.6	51.5	80.2	79.4	75.4	72.2	64.1	58.5	52.4	52.0	51.6	67.8	10.0	77.8
Nicht	2	65.4	76.5	50.6	76.1	75.6	73.1	70.9	63.7	57.5	51.6	51.1	50.7	65.4	10.0	75.4
Night	3	66.8 69.7	78.0 79.4	50.9 54.3	77.7 79.1	77.1 78.4	74.7 76.5	72.7 75.2	64.5 69.8	57.9 63.9	51.8 55.4	51.3 54.8	51.0 54.4	66.8 69.7	10.0 10.0	76.8 79.7
	5	73.6	81.9	58.2	81.6	81.1	79.7	78.7	74.9	69.5	60.2	59.0	58.3	73.6	10.0	83.6
	6	75.2	82.5	61.6	82.2	81.7	80.4	79.6	76.8	72.6	64.4	63.3	61.8	75.2	10.0	85.2
	7	76.1	82.8	64.4	82.5	82.0	80.7	80.0	77.7	74.8	66.6	65.4	64.6	76.1	0.0	76.1
	8	76.2	82.5	63.9	82.2	81.8	80.8	80.1	77.9	75.0	66.2	65.0	64.2	76.2	0.0	76.2
	9 10	75.6 75.1	83.3 83.6	62.9 62.5	83.0 83.1	82.4 82.4	80.9 81.1	79.9 79.9	77.0 76.0	73.4 72.0	65.7 64.8	64.4 63.7	63.3 62.6	75.6 75.1	0.0 0.0	75.6 75.1
	10	74.9	83.0	61.8	82.2	82.4	80.3	79.5	76.2	72.0	64.8	63.2	62.0	74.9	0.0	74.9
	12	74.8	83.4	60.7	83.1	82.4	80.3	79.2	75.8	72.1	64.0	62.2	61.1	74.8	0.0	74.8
	13	74.2	81.6	61.2	81.2	80.8	79.5	78.8	75.7	71.9	64.0	62.7	61.3	74.2	0.0	74.2
Day	14	74.8	82.3	61.4	82.0	81.5	79.9	79.0	76.2	72.5	64.5	62.9	61.6	74.8	0.0	74.8
	15	75.1	82.4	62.3	82.1	81.6	80.2	79.3	76.4	73.1	65.3	63.7	62.5	75.1	0.0	75.1
	16 17	74.7 73.9	82.2 80.6	62.4 61.6	81.8 80.2	81.2 79.7	79.6 78.5	78.6 77.7	75.9 75.5	73.1 72.4	65.5 64.7	64.0 63.0	62.7 61.9	74.7 73.9	0.0 0.0	74.7 73.9
	17	72.9	80.0	60.2	80.2	79.5	78.2	77.3	74.2	72.4	63.0	61.7	60.5	72.9	0.0	72.9
	19	72.4	80.5	56.4	80.1	79.6	78.2	77.2	73.5	69.3	59.7	58.3	56.8	72.4	5.0	77.4
	20	72.4	82.1	58.2	81.6	80.8	78.5	77.0	72.9	68.7	60.7	59.4	58.3	72.4	5.0	77.4
	21	70.6	79.8	55.6	79.4	78.7	76.6	75.2	71.4	67.3	57.9	56.7	55.8	70.6	5.0	75.6
Night	22	70.0	79.6	55.5 E4.2	79.2	78.4	76.2	74.5	70.5	66.5	57.8	56.5	55.6	70.0	10.0	80.0
Timeframe	23 Hour	68.8 L _{eq}	78.8 L _{max}	54.3 L _{min}	78.5 L1%	77.8	75.4 L5%	73.9 L8%	68.8 L25%	64.2 L50%	56.0 L90%	55.2 L95%	54.5 L99%	68.8	10.0 L _{eg} (dBA)	78.8
	Min	- eq 70.6	- max 79.8	55.6	79.4	78.7	76.6	75.2	71.4	67.3	57.9	56.7	55.8	24.11-1	Daytime	Nighttime
Day	Max	76.2	83.6	64.4	83.1	82.4	81.1	80.1	77.9	75.0	66.6	65.4	64.6	24-Hour	, (7am-10pm)	(10pm-7am)
Energy	Average	74.5		rage:	81.6	81.1	79.6	78.6	75.5	71.9	63.8	62.4	61.3			70.0
Night	Min	65.4	76.5	50.6	76.1	75.6	73.1	70.9	63.7	57.5	51.6	51.1	50.7	73.4	74.5	70.6
Energy	Max Average	75.2 70.6	82.5 Ave	61.6 rage:	82.2 79.1	81.7 78.5	80.4 76.2	79.6 74.5	76.8 68.9	72.6 63.6	64.4 56.0	63.3 55.2	61.8 54.5			
Lincigy		70.0	AVE		75.1	70.5	70.2	74.5	00.5	05.0	50.0	55.2	54.5			



						24-Ho	ur Noise L	evel Meas	urement S	ummary						
Date:	Monday, De	ecember 6, 2	021		Location:	L3 - Located	north of the	Project site i	near Sonesta	Select Los	Meter:	Piccolo II			JN:	14092
Project:	Torrance Te	ech Center			Source:	Angeles Torr	ance at 1925	West 190th	Street.						Analyst:	A. Khan
							Hourly L _{eq}	dBA Readings	(unadjusted)							
85.0	0															
(Y gp) 75.0 70.0 65.0 6 5.0 6 0.0	0															
60.0			_	- m	- 4	8. – vi –	- <u>.</u>	<u>ω</u> — – – – –	ـــــــــــــــــــــــــــــــــــــ	<mark>ر المعالم المعالم</mark>			1			
<u>></u> 55.0 <u>−</u> 50.0	28.6	58.8		60.0 63.3	64.	65.	<mark></mark>	<mark> </mark>	<mark>. 64</mark>	64.	64 64	<mark></mark>	62.	61.	60.2 60.0	59.6
1 55.0 1 55.0	0 - 	%	57									+ +				
35.0	0 ++	1 2	2	4 5					12 1	2 14	45 44	47	10 10	20 7	24 22	
	0	1 2	3	4 5	6	7 8	9 1	LO 11 Hour Br	12 1 eginning	.3 14	15 16	5 17	18 19	20 2	21 22	23
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Timejrume	0	58.6	67.0	52.6	66.7	66.3	64.1	62.9	58.8	55.6	53.2	52.9	52.7	58.6	10.0	68.6
	1	58.8	68.1	53.8	67.7	67.0	64.5	62.7	58.4	56.0	54.1	54.0	53.8	58.8	10.0	68.8
	2	56.9	65.8	51.4	65.5	64.9	62.9	61.3	56.8	53.7	51.9	51.7	51.5	56.9	10.0	66.9
Night	3 4	57.7 60.0	66.8 68.2	52.0 53.7	66.5 67.9	65.8 67.3	63.5 65.6	61.9 64.4	57.5 60.6	54.5 57.0	52.5 54.2	52.3 54.0	52.1 53.8	57.7 60.0	10.0 10.0	67.7 70.0
	5	63.3	70.2	56.3	70.0	69.5	68.3	67.4	64.4	61.1	57.0	56.6	56.4	63.3	10.0	73.3
	6	64.4	70.9	57.1	70.6	70.2	69.0	68.3	65.6	62.8	58.1	57.5	57.2	64.4	10.0	74.4
	7	65.8	72.7	58.2	72.4	71.9	70.6	69.7	66.8	64.0	59.4	58.7	58.3	65.8	0.0	65.8
	8 9	65.5 65.5	72.1 73.9	57.9 57.8	71.8 73.5	71.4 72.8	70.2 70.7	69.4 69.2	66.6 66.2	64.0 63.6	59.2 59.0	58.5 58.4	58.1 57.9	65.5 65.5	0.0 0.0	65.5 65.5
	10	65.3	72.0	58.3	71.7	71.2	70.2	69.2	66.2	63.8	59.7	59.1	58.5	65.3	0.0	65.3
	11	65.1	72.0	57.4	71.8	71.4	70.2	69.1	66.0	63.3	59.0	58.2	57.6	65.1	0.0	65.1
	12	64.9	73.5	56.6	72.9	72.3	70.4	68.5	65.6	62.9	58.2	57.5	56.8	64.9	0.0	64.9
Day	13 14	64.7 64.9	72.5 72.1	56.8 56.8	72.0 71.7	71.4 71.1	69.7 69.6	68.7 68.5	65.7 66.1	62.6 63.2	58.3 58.2	57.6 57.5	57.0 56.9	64.7 64.9	0.0 0.0	64.7 64.9
Duy	15	64.9	71.7	56.9	71.4	71.1	69.8	69.0	65.9	63.1	58.6	57.5	57.0	64.9	0.0	64.9
	16	64.9	72.0	56.9	71.7	71.3	69.8	68.7	65.9	63.5	58.7	57.9	57.0	64.9	0.0	64.9
	17	63.2	69.4	56.4	69.0	68.5	67.2	66.6	64.5	62.2	57.8	57.1	56.5	63.2	0.0	63.2
	18 19	62.8 62.1	70.0 68.2	55.1 55.1	69.6 67.9	69.1 67.6	67.4 66.7	66.5 66.0	63.7 63.2	61.2 60.4	56.6 56.3	55.9 55.7	55.2 55.2	62.8 62.1	0.0 5.0	62.8 67.1
	20	61.7	69.4	54.9	69.1	68.5	66.8	65.7	62.3	59.9	55.9	55.3	55.0	61.7	5.0	66.7
	21	60.2	66.7	53.9	66.4	66.0	64.8	63.9	61.2	58.5	54.9	54.3	54.0	60.2	5.0	65.2
Night	22 23	60.0 59.6	67.7 66.3	53.6 54.8	67.4	66.8	65.0 64.5	63.9	60.7 60.2	58.0	54.2 55.2	53.9	53.6 54.8	60.0	10.0 10.0	70.0 69.6
Timeframe	23 Hour	59.6 L _{eq}	66.3 L _{max}	54.8 L _{min}	66.0 L1%	65.6 L2%	64.5 L5%	63.6 L8%	60.2 L25%	57.9 L50%	55.2 L90%	55.0 L95%	54.8 L99%	59.6	L _{eq} (dBA)	09.0
Day	Min	60.2	66.7	53.9	66.4	66.0	64.8	63.9	61.2	58.5	54.9	54.3	54.0	24-Hour	Daytime	Nighttime
	Max	65.8	73.9	58.3	73.5	72.8	70.7	69.7	66.8	64.0	59.7	59.1	58.5	24-11001	(7am-10pm)	(10pm-7am)
Energy	Average Min	64.4 56.9	65.8	rage: 51.4	70.9 65.5	70.4 64.9	<u>68.9</u> 62.9	67.9 61.3	65.1 56.8	62.4 53.7	58.0 51.9	57.3 51.7	56.7 51.5	63.3	64.4	60.6
Night	Max	64.4	70.9	51.4	70.6	70.2	69.0	68.3	65.6	62.8	51.9	57.5	51.5	05.5	04.4	00.0
Energy	Average	60.6	Ave	rage:	67.6	67.0	65.3	64.0	60.3	57.4	54.5	54.2	54.0			

	Monday, De Torrance Te	ecember 6, 2 ech Center	021		Location. Source.	L4 - Located	ur Noise Le east of the Pl s Angeles Tor	roject site ne rrance Harbo	ear Extended or at 19200 H	Stay	Meter:	Piccolo II			JN: Analyst:	14092 A. Khan
							Hourly L _{eq} d	IBA Readings	(unadjusted)							
85.0 80.0 750.0 700.0 960.0 960.0 155.0 150.0 450.0 35.0 35.0	57.1 57.1	57.8	23.6	58.8	28.3	60.6		666.9	70.3	73.1	64.6		26.6 58.0 58.0	9.09 9.09 9.09 9.09	57.8	26.6
	0	1 2	3	4 5	6	7 8	91	0 11	12 1 eginning	3 14	15 16	5 17	18 19	20	21 22	23
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%		L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Thinejrunie	0	57.1	- max 66.3	52.5	65.9	65.3	63.3	61.3	56.2	53.9	52.9	52.7	52.6	57.1	10.0	67.1
	1	57.8	67.5	53.0	66.9	66.2	64.0	62.3	56.4	54.4	53.4	53.2	53.1	57.8	10.0	67.8
	2	58.8	69.3	52.5	68.8	67.9	65.4	63.6	57.3	54.3	53.0	52.8	52.7	58.8	10.0	68.8
Night	3	57.6	66.6	53.9	66.1	65.2	62.7	60.8	56.8	55.2	54.4	54.2	54.0	57.6	10.0	67.6
	4	58.8	70.5	53.9	69.4	68.0	64.1	61.3	57.7	56.0	54.4	54.2	54.0	58.8	10.0	68.8
	5 6	58.1 58.3	65.7 66.6	54.7 54.3	65.2 66.0	64.6	62.6	61.4 61.9	58.1 58.3	56.2	55.1 54.7	55.0 54.6	54.8 54.4	58.1 58.3	10.0	68.1
	7	58.3	66.1	54.3	65.7	65.1 65.0	63.2 63.2	62.1	58.3	56.1 56.9	55.3	54.6	54.4	58.3	10.0 0.0	68.3 58.7
	8	60.6	70.2	54.5	69.8	69.1	66.7	64.4	60.3	57.8	55.1	54.8	54.6	60.6	0.0	60.6
	9	59.8	68.5	54.8	68.1	67.5	65.3	63.5	59.8	57.4	55.6	55.2	54.9	59.8	0.0	59.8
	10	65.2	77.0	54.4	77.0	76.8	75.9	70.3	61.3	57.2	54.9	54.7	54.5	65.2	0.0	65.2
	11	66.9	74.6	63.0	73.4	72.5	70.8	69.8	67.1	65.8	64.0	63.6	63.2	66.9	0.0	66.9
	12	70.3	75.8	66.9	74.9	74.2	73.1	72.6	70.9	69.7	67.9	67.6	67.1	70.3	0.0	70.3
	13	65.8	76.7	59.4	75.1	73.5	70.6	69.2	65.7	63.6	60.7	60.1	59.6	65.8	0.0	65.8
Day	14	73.1	77.4	70.0	76.7	76.2	75.5	75.1	73.9	72.7	71.0	70.7	70.3	73.1	0.0	73.1
	15 16	69.0 64.6	74.1 75.2	64.6	73.3 74.1	72.6 73.0	71.8 70.8	71.4 69.2	69.9	68.5 61.1	65.8 57.0	65.2 56.0	64.8 54.9	69.0 64.6	0.0 0.0	69.0
	16	64.6 58.5	75.2 65.7	54.6 53.3	74.1 65.2	73.0 64.7	70.8 63.3	69.2 62.4	64.2 59.2	56.4	57.0 54.1	56.0	54.9 53.5	64.6 58.5	0.0	64.6 58.5
	17	56.6	63.8	52.9	63.3	62.8	61.3	60.1	56.7	55.0	53.4	53.8	53.0	56.6	0.0	56.6
	19	58.0	65.4	53.9	65.0	64.5	63.2	62.0	58.0	55.9	54.4	54.2	54.0	58.0	5.0	63.0
	20	60.6	73.0	52.6	72.3	71.3	67.2	64.6	58.0	54.9	53.1	52.9	52.7	60.6	5.0	65.6
	21	56.9	64.6	53.3	64.3	63.7	62.0	60.8	56.7	55.0	53.7	53.6	53.4	56.9	5.0	61.9
Night	22	57.8	67.3	53.7	66.6	65.5	63.1	61.8	57.0	55.2	54.2	54.0	53.8	57.8	10.0	67.8
Ū	23	56.6	65.8	52.7	65.3	64.6	62.4	60.2	55.8	54.0	53.1	52.9	52.8	56.6	10.0	66.6
Timeframe	Hour Min	L _{eq} 56.6	L _{max} 63.8	L _{min} 52.6	63.3	L2% 62.8	L5% 61.3	<i>L8%</i> 60.1	L25% 56.7	L50% 54.9	<i>L90%</i> 53.1	L95% 52.9	<i>L99%</i> 52.7		L _{eq} (dBA) Daytime	Nighttime
Day	Max	73.1	77.4	70.0	77.0	76.8	75.9	75.1	73.9	54.9 72.7	53.1 71.0	52.9 70.7	70.3	24-Hour	(7am-10pm)	(10pm-7am)
Energy	Average	66.0		rage:	70.5	69.8	68.1	66.5	62.7	60.5	58.4	58.0	57.7			
	Min	56.6	65.7	52.5	65.2	64.6	62.4	60.2	55.8	53.9	52.9	52.7	52.6	64.4	66.0	57.9
Night	Max	58.8	70.5	54.7	69.4	68.0	65.4	63.6	58.3	56.2	55.1	55.0	54.8			
Energy	Average	57.9	Ave	erage:	66.7	65.8	63.4	61.6	57.1	55.0	53.9	53.7	53.6			



						24-Ho	our Noise Le	evel Meas	urement S	ummary						
Date:	Monday, De	ecember 6, 2	021		Location	: L5 - Located	southwest of	f the Project	site near sin	gle-family	Meter:	Piccolo II			JN:	14092
Project:	Torrance Te	ech Center			Source	: residence at	2063 Del Am	o Boulevard							Analyst:	A. Khan
							Hourly L _{eq} d	dBA Readings	(unadjusted)							
85.0	n															
80.0	0 ++															
(Y gp) 75.0 9 75.0 9 70.0 9 65.0																
e 60.0	n ++				66.2	69.4	— <mark>∞</mark> — ,		- <u>-</u>	- <mark></mark>	57.2	8.89	68.7 5.5		∞	
≥ 55.0 50.0		m		62.6		0	<mark>65.</mark>	<u>6</u>	63.7	<mark> </mark>	- <mark>67</mark>	°	<u>6</u>		62.8	59.4
^ 55.0 ^ 155.0 50.0 0 45.0 40.0	24.1	50.4	23.0												v	û
35.0	0 ++															
	0	1 2	3	4 5	6	7 8	91	.0 11	12 1	3 14	15 16	5 17	18 19	20	21 22	23
									eginning							
Timeframe	Hour 0	L _{eq} 54.7	L _{max} 65.7	L _{min} 46.2	L1% 65.4	L2%	L5%	L8%	L25%	L50%	L90%	L95% 46.6	L99%	L _{eq} 54.7	Adj. 10.0	Adj. L _{eq} 64.7
	1	50.4	60.3	46.2	60.0	59.5	57.1	59.9	48.6	46.9	46.8	46.0	46.0	50.4	10.0	60.4
	2	54.3	65.8	45.7	65.5	64.9	62.6	59.6	49.9	47.0	46.1	46.0	45.8	54.3	10.0	64.3
Night	3	53.0	63.7	46.6	63.5	63.0	60.3	57.6	50.7	47.9	47.0	46.9	46.7	53.0	10.0	63.0
	4	62.6	74.8	48.1	74.3	73.7	71.3	68.3	57.9	51.6	48.6	48.4	48.2	62.6	10.0	72.6
	5 6	66.0 66.2	76.0 75.8	51.9 53.5	75.7 75.3	74.9 74.7	73.1 72.9	71.8 71.7	65.9 66.4	59.5 61.0	53.1 55.0	52.4 54.2	52.0 53.6	66.0 66.2	10.0 10.0	76.0 76.2
	7	69.4	73.8	56.0	73.3	74.7	72.9	74.4	70.5	65.8	58.3	57.1	56.2	69.4	0.0	69.4
	8	68.8	77.6	56.1	77.2	76.5	74.7	73.5	70.1	65.2	58.0	57.1	56.2	68.8	0.0	68.8
	9	65.8	74.3	54.4	73.9	73.4	71.8	70.7	66.9	62.1	56.0	55.2	54.6	65.8	0.0	65.8
	10	64.1	73.3	52.3	73.0	72.4	70.6	68.9	64.5	59.8	53.9	53.0	52.5	64.1	0.0	64.1
	11 12	63.8 63.7	72.9 72.5	52.4 53.2	72.5 72.1	72.0 71.6	70.1 70.1	68.7 68.6	64.4 64.2	59.8 59.9	54.2 54.9	53.3 54.1	52.6 53.5	63.8 63.7	0.0 0.0	63.8 63.7
	12	65.0	74.3	53.4	72.1	73.5	70.1	69.8	65.2	60.9	55.2	54.2	53.6	65.0	0.0	65.0
Day	14	65.2	74.4	53.4	74.1	73.5	71.5	70.1	65.7	61.1	55.4	54.4	53.6	65.2	0.0	65.2
	15	67.2	77.7	55.0	77.1	76.1	73.6	71.7	67.3	63.1	57.3	56.4	55.2	67.2	0.0	67.2
	16	69.3	77.0	56.7	76.7	76.3	74.8	73.9	70.6	66.6	59.1	58.0	56.9	69.3	0.0	69.3
	17 18	68.8 68.7	76.2 80.0	56.6 52.9	75.9 79.5	75.6 78.8	74.4 76.0	73.7 72.8	70.1 68.0	66.0 63.0	58.9 55.0	57.8 53.8	56.8 53.1	68.8 68.7	0.0 0.0	68.8 68.7
	19	65.5	76.1	52.8	75.8	75.1	72.5	70.5	64.8	60.0	54.5	53.7	53.0	65.5	5.0	70.5
	20	63.0	73.0	51.7	72.6	71.9	69.9	68.4	62.5	58.3	53.4	52.7	51.9	63.0	5.0	68.0
	21	62.8	74.2	48.6	73.7	73.0	70.4	68.1	61.0	55.6	49.8	49.2	48.8	62.8	5.0	67.8
Night	22 23	59.7 59.4	71.5 71.5	47.1 46.2	71.1 71.1	70.2 70.5	67.3 67.5	65.0 64.4	57.2 55.4	51.8 49.9	47.8 46.7	47.4 46.5	47.2 46.3	59.7 59.4	10.0 10.0	69.7 69.4
Timeframe	23 Hour	59.4 L _{eq}	L_{max}	46.2 L _{min}	L1%	/0.5	L5%	64.4 L8%	55.4 L25%	49.9 L50%	46.7 L90%	46.5 L95%	46.3 L99%	39.4	L _{eq} (dBA)	09.4
Day	Min	62.8	72.5	48.6	72.1	71.6	69.9	68.1	61.0	55.6	49.8	49.2	48.8	24-Hour	Daytime	Nighttime
,	Max	69.4	80.0	56.7	79.5	78.8	76.0	74.4	70.6	66.6	59.1	58.0	56.9	24-H0Ur	(7am-10pm)	(10pm-7am)
Energy	Average	66.7		rage:	75.1	74.5	72.5	70.9	66.4	61.8	55.6	54.7	53.9		667	С1 Г
Night	Min Max	50.4 66.2	60.3 76.0	45.7 53.5	60.0 75.7	59.5 74.9	57.1 73.1	54.4 71.8	48.6 66.4	46.9 61.0	46.1 55.0	46.0 54.2	45.8 53.6	65.4	66.7	61.5
Energy	Average	61.5	-	rage:	69.1	68.5	66.0	63.6	56.0	51.6	48.6	48.3	48.0			



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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS



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	FHWA-RD)-77-108 HIGH	WAY NC	ISE PREDI		IODEL (9	/12/20	021)		
Scenario: Road Name: Road Segment:	Van Ness A					Name: 1 lumber: 1		ce Comme	rce	
SITE SP	ECIFIC IN	PUT DATA			1	IOISE N	IODE	L INPUTS	6	
Highway Data				Site Cor	nditions	(Hard =	10, So	ft = 15)		
Average Daily Tra	affic (Adt):	13,250 vehicle	s				Autos:	15		
Peak Hour Pe	rcentage:	10.00%		Me	edium Tr	ucks (2 A	xles):	15		
Peak Hou	r Volume:	1,325 vehicles	5	He	eavy Tru	cks (3+ A	xles):	15		
Vehic	le Speed:	35 mph		Vehicle	Mix					
Near/Far Lane	Distance:	36 feet			nicleType		Day	Evening	Night	Daily
Site Data							77.5%	•	9.6%	
Barrie	er Heiaht:	0.0 feet		N	ledium T	rucks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-Wall,		0.0			Heavy T	rucks:	86.5%	2.7%	10.8%	0.62%
Centerline Dist.	· · ·	50.0 feet		Noise O			(i	- 41		
Centerline Dist. to	Observer:	50.0 feet		Noise S	Auto	levations		et)		
Barrier Distance to	Observer:	0.0 feet		Marth	Auto Im Truck					
Observer Height (Ab	ove Pad):	5.0 feet			vv Truck		.97 104	Grade Adj	ustmont	0.0
Pad	Elevation:	0.0 feet		nea	vy muck	s. o.u	104	Graue Auj	usuneni.	0.0
Road	Elevation:	0.0 feet		Lane Eq	uivalen	t Distanc	e (in f	eet)		
Roa	ad Grade:	0.0%			Auto	s: 46.9	915			
	Left View:	-90.0 degree	'S	Mediu	ım Truck	s: 46.7	26			
R	ight View:	90.0 degree	IS .	Hea	vy Truck	s: 46.7	'44			
FHWA Noise Model (Calculations	5								
VehicleType	REMEL	Traffic Flow	Distan	ce Finite	Road	Fresn	e/	Barrier Atte	en Ber	m Atten
Autos:	64.30	0.34		0.31	-1.20		4.65	0.0		0.000
Medium Trucks:	75.75	-15.79		0.34	-1.20		4.87	0.0		0.000
Heavy Trucks:	81.57	-21.60		0.34	-1.20		-5.43	0.0	00	0.000
Unmitigated Noise L	evels (witho	out Topo and	barrier a	ttenuation)						
	eq Peak Hou	1.7		q Evening		Night		Ldn		VEL
Autos:	63		61.9	60.1		54.0		62.7		63.3
Medium Trucks:	59		57.6	51.2	-	49.7		58.1		58.4
Heavy Trucks:	59		57.7	48.6		49.9		58.2		58.4
Vehicle Noise:	66	.0	64.3	60.9)	56.5		65.0		65.4
Centerline Distance	to Noise Co	ontour (in feet)			1					
				70 dBA		dBA	6	0 dBA	55	dBA
			Ldn:	23		50		108		232
			IEL:	25		53		115		248

	FHWA-RD	0-77-108 HIGH	WAY NO	DISE F	REDICT	ION M	IODEL (9/12/20	021)		
Scenan Road Nam	io: E+P e: Van Ness A	۸v.			1		Name: umber:		ce Comme	erce	
Road Segmer	<i>nt:</i> n/o 190th S	it.									
SITE	SPECIFIC IN	IPUT DATA								s	
Highway Data				Si	te Cond	itions	(Hard =	10, Sc	oft = 15)		
Average Daily	Traffic (Adt):	13,742 vehicle	s					Autos:	15		
Peak Hour	Percentage:	10.00%			Med	ium Tru	ucks (2 A	Axles):	15		
Peak H	our Volume:	1,374 vehicles			Hea	vy Truc	cks (3+ A	Axles):	15		
	hicle Speed:	35 mph		V	ehicle M	ix					
Near/Far La	ne Distance:	36 feet		-		leType		Day	Evening	Night	Daily
Site Data								77.5%	•	9.6%	
Bai	rier Heiaht:	0.0 feet			Mee	dium Ti	rucks:	84.8%	4.9%	10.3%	2.319
Barrier Type (0-W		0.0			H	eavy Ti	rucks:	86.5%	2.7%	10.8%	1.039
Centerline Dis	. ,	50.0 feet						- <i>(in f</i>	41		
Centerline Dist.	to Observer:	50.0 feet		N	oise Sou	Auto:		5 (<i>IN 1</i> 6 200	eet)		
Barrier Distance	to Observer:	0.0 feet			Medium			297			
Observer Height (Above Pad):	5.0 feet				Truck		297 D04	Grade Ad	iustment	0.0
Pa	ad Elevation:	0.0 feet			neavy	TTUCK	3. 0.	004	Orade Auj	usunen	0.0
Roa	ad Elevation:	0.0 feet		Lá	ane Equ				feet)		
I	Road Grade:	0.0%				Autos					
	Left View:	-90.0 degree			Medium						
	Right View:	90.0 degree	S		Heavy	Truck	s: 46.	744			
FHWA Noise Mode											
VehicleType	REMEL	Traffic Flow	Distar		Finite F		Fresh	-	Barrier Att		m Atten
Autos:	64.30	0.49		0.31		-1.20		-4.65		000	0.00
Medium Trucks:	75.75 81.57	-15.72 -19.25		0.34		-1.20 -1.20		-4.87 -5.43		000 000	0.00
Heavy Trucks:						-1.20		-5.43	0.0	000	0.00
Unmitigated Noise								1			
VehicleType Autos:	Leq Peak Hou 63		52.0	eq Eve	ening 60.2	Leq	Night 54.2		Ldn 62.8		VEL 63.
Medium Trucks:	63 59		52.0 57.7		51.3		54.2 49.7		58.2		63. 58.
Heavy Trucks:	61		50.0		51.0		52.2		60.6		60.
Vehicle Noise:	66		35.0		61.2		57.2		65.7		66.
Centerline Distanc	e to Noise Co	ntour (in feet)									
Contentine Distant		(in reel)		70 dE	BA	65	dBA	6	60 dBA	55	dBA
			Ldn:		26		56	1	120	1	25
			IEL:		27		59		127		275

	FHWA-R	D-77-108 HIGH	WAY NO	DISE P	REDIC	TION M	ODEL	(9/12/2	021)		
Scenari	o: OY 2023					Project	Name:	Torran	ice Comme	rce	
Road Nam	e: Van Ness	Av.				Job Ni	ımber:	14092			
Road Segmer	nt: n/o 190th S	St.									
	SPECIFIC IN	NPUT DATA								5	
Highway Data				Si	te Con	ditions (Hard =	= 10, So	oft = 15)		
Average Daily	Traffic (Adt):	13,400 vehicle	es					Autos:			
Peak Hour	Percentage:	10.00%				dium Tru					
Peak H	our Volume:	1,340 vehicle	s		He	avy Truc	ks (3+	Axles):	15		
	hicle Speed:	35 mph		Ve	hicle I	<i>lix</i>					
Near/Far La	ne Distance:	36 feet			Vehi	cleType		Day	Evening	Night	Daily
Site Data						A	utos:	77.5%	12.9%	9.6%	6 97.02%
Bai	rier Height:	0.0 feet			Me	edium Tr	ucks:	84.8%	4.9%	10.3%	6 2.36%
Barrier Type (0-W		0.0			F	leavy Tr	ucks:	86.5%	2.7%	10.8%	6 0.62%
Centerline Dis	. ,	50.0 feet				urce Ele			41		
Centerline Dist.	to Observer:	50.0 feet		740	Jise 30	Autos			eel)		
Barrier Distance	to Observer:	0.0 feet			1 4 m - 11			.000			
Observer Height (Above Pad):	5.0 feet				n Trucks v Trucks		.297	Grade Ad	uctmon	+ 0.0
Pa	d Elevation:	0.0 feet			neav	y mucks	. 0	.004	Orade Auj	asanch	2. 0.0
Roa	d Elevation:	0.0 feet		La	ne Equ	ıivalent	Distan	ce (in	feet)		
1	Road Grade:	0.0%				Autos	: 46	.915			
	Left View:	-90.0 degree	es		Mediur	n Trucks	: 46	.726			
	Right View:	90.0 degree	es		Heav	y Trucks	: 46	.744			
FHWA Noise Mode											
VehicleType	REMEL	Traffic Flow	Distar		Finite		Fres	-	Barrier Atte		erm Atten
Autos:	64.30			0.31		-1.20		-4.65		000	0.00
Medium Trucks:	75.75			0.34		-1.20		-4.87		000	0.00
Heavy Trucks:	81.57			0.34		-1.20		-5.43	0.0	000	0.00
Unmitigated Noise VehicleType	Levels (with Leg Peak Ho			attenua eq Eve		Leg I	light		Ldn		NEL
Autos	1		61.9	JY LVE	60.1	Leyi	54.	1	62.7		1VEL 63.3
Medium Trucks:			57.6		51.3		49	-	58.2		58.4
Heavy Trucks:			57.7		48.7		49.		58.3	-	58.4
Vehicle Noise:	66	3.1	64.4		60.9		56.	5	65.1		65.5
Centerline Distanc	e to Noise C	ontour (in feet,)								
				70 dE		65 a	IBA	(60 dBA	5	5 dBA
			Ldn:		23		50)	109		234
			NEL:		25			·	116		

FHWA-	RD-77-108 HIGI	HWAY NO			DEL (9/12/	2021)		
Scenario: OYP 202 Road Name: Van Nes Road Segment: n/o 190tt	s Av.				ame: Torra nber: 1409	nce Commer 2	ce	
SITE SPECIFIC	INPUT DATA					EL INPUTS	;	
Highway Data			Site Con	ditions (H	ard = 10, S	Soft = 15)		
Average Daily Traffic (Adt)	13,892 vehic	les			Autos	s: 15		
Peak Hour Percentage	10.00%		Me	dium Truck	s (2 Axles): 15		
Peak Hour Volume	1,389 vehicle	es	He	avy Trucks	(3+ Axles): 15		
Vehicle Speed	35 mph		Vehicle I	Nix				
Near/Far Lane Distance	36 feet			cleType	Day	Evening	Night	Daily
Site Data				Aut		•	9.6%	96.67%
Barrier Height	: 0.0 feet		Me	edium Truc	ks: 84.8	% 4.9%	10.3%	2.31%
Barrier Type (0-Wall, 1-Berm)			ŀ	leavy Truc	ks: 86.5	% 2.7%	10.8%	1.02%
Centerline Dist. to Barrier	50.0 feet		Noiso Sa	urco Elov	ations (in	foot		
Centerline Dist. to Observer	50.0 feet		NOISE SU	Autos:	0.000	ieeij		
Barrier Distance to Observer	: 0.0 feet		Madiu	n Trucks:	2.297			
Observer Height (Above Pad)	5.0 feet			y Trucks:	8.004	Grade Adju	istment [.]	0.0
Pad Elevation	0.0 feet						iounioni.	0.0
Road Elevation	0.0 feet		Lane Equ		istance (in	i feet)		
Road Grade	0.0%			Autos:	46.915			
Left View	· · · · · · · · · · · · · · · · · · ·			n Trucks:	46.726			
Right View	90.0 degre	es	Heav	y Trucks:	46.744			
FHWA Noise Model Calculation	ons		-					
VehicleType REMEL	Traffic Flow	Distant	e Finite		Fresnel	Barrier Atte	n Berr	n Atten
Autos: 64.			0.31	-1.20	-4.65			0.000
Medium Trucks: 75.			0.34	-1.20	-4.87			0.000
Heavy Trucks: 81.	57 -19.23	3	0.34	-1.20	-5.43	3 0.0	00	0.000
Unmitigated Noise Levels (wi	thout Topo and	l barrier at	tenuation)					
VehicleType Leq Peak H			q Evening	Leq Nig		Ldn		IEL
	63.9	62.0	60.3		54.2	62.9		63.5
	59.2	57.7	51.3		49.8	58.3		58.5
	61.5	60.1	51.0		52.3	60.6		60.8
Vehicle Noise:	66.7	65.1	61.2		57.2	65.7		66.1
Centerline Distance to Noise	Contour (in fee	t)						
			70 dBA	65 dB		60 dBA	55 0	
		Ldn:	26		56	121		260
		NEL	28		60	128		276

Monday, December 20, 2021

Scenario: E Project Name: Torrance Commerce Road Name: Van Ness Av. Job Number: 14092 Road Segment: s/o 190th St. Site SPECIFIC INPUT DATA NOISE MODEL INPUTS Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 12,680 vehicles Autos: 15	
Highway Data Site Conditions (Hard = 10, Soft = 15)	
Average Daily Traffic (Adl): 40 000 valiates	
Average Daily Trainic (Aut). 12,680 Vehicles Autos. 15	
Peak Hour Percentage: 10.00% Medium Trucks (2 Axles): 15	
Peak Hour Volume: 1,268 vehicles Heavy Trucks (3+ Axles): 15	
Vehicle Speed: 35 mph Vehicle Mix	
Near/Ear Lane Distance: 36 feet	aily
	.02%
Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.	36%
	62%
Centerline Dist. to Barrier: 50.0 feet Noise Source Elevations (in feet)	
Centerline Dist. to Observer: 50.0 feet Autos: 0.000	
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297	
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0	
Pad Elevation: 0.0 feet	
Road Elevation: 0.0 feet Lane Equivalent Distance (in feet)	
Road Grade: 0.0% Autos: 46.915	
Left View: -90.0 degrees Medium Trucks: 46.726	
Right View: 90.0 degrees Heavy Trucks: 46.744	
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm At	tten
	0.000
	0.000
Heavy Trucks: 81.57 -21.79 0.34 -1.20 -5.43 0.000 0	0.000
Unmitigated Noise Levels (without Topo and barrier attenuation)	
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL	
	63.1
	58.2
	58.2
Vehicle Noise: 65.8 64.1 60.7 56.3 64.8	65.2
Centerline Distance to Noise Contour (in feet)	
70 dBA 65 dBA 60 dBA 55 dBA	
	226
CNEL: 24 52 112	241

	FHWA-RD	D-77-108 HIGH	IWAY	NOISE	PREDIC		IODEL (9/12/20	021)			
Scenario	· - ·								ce Comme	erce		
Road Name Road Segment	: Van Ness A : s/o 190th S					Job N	lumber:	14092				
SITE S	PECIFIC IN	IPUT DATA			NOISE MODEL INPUTS							
Highway Data				S	ite Cond	litions	(Hard =	10, Sc	oft = 15)			
Average Daily T	raffic (Adt):	13,049 vehicl	es					Autos:	15			
Peak Hour P	ercentage:	10.00%			Med	lium Tr	ucks (2)	Axles):	15			
Peak Ho	ur Volume:	1,305 vehicle	s		Hea	avy Tru	cks (3+)	Axles):	15			
Vehi	icle Speed:	35 mph		L.	ehicle N	liv						
Near/Far Lane	e Distance:	36 feet		-		cleType		Dav	Evening	Night	Daily	
Site Data					10/11		Autos:	77.5%		9.6%		
		0.0 feet			Me	, dium T		84.8%		10.3%		
Barrier Type (0-Wa	ier Height:	0.0 teet 0.0						86.5%		10.8%		
Centerline Dist	. ,	0.0 50.0 feet								10.070	0.01	
Centerline Dist.		50.0 feet		۸	loise So	urce El	evation	s (in fe	eet)			
Barrier Distance to		0.0 feet				Auto	s: 0.	000				
		5.0 feet			Mediun	n Truck	s: 2.	297				
Observer Height (A	bove Pad): I Elevation:	0.0 feet			Heavy	/ Truck	s: 8.	004	Grade Ad	justment.	0.0	
	l Elevation:	0.0 feet		1	ane Equ	ivalon	Distan	co (in i	foot)			
	a Elevation: bad Grade:	0.0 reet		-	ane Lyu	Auto		915	eeŋ			
, A	Left View:	-90.0 degre	~~		Mediun			726				
	Right View:	90.0 degre				/ Truck		744				
FHWA Noise Model	Calculation	s										
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite I	Road	Fresr	nel	Barrier Att	en Ber	m Atten	
Autos:	64.30	0.27		0.31		-1.20		-4.65	0.0	000	0.00	
Medium Trucks:	75.75	-15.93		0.34	ļ.	-1.20		-4.87	0.0	000	0.00	
Heavy Trucks:	81.57	-19.86		0.34		-1.20		-5.43	0.0	000	0.00	
Unmitigated Noise					<u> </u>					1		
	eq Peak Hou.			Leq Ev		Leq	Night		Ldn		VEL	
Autos:	63		61.8		60.0		54.0		62.		63.	
Medium Trucks:	59		57.4		51.1		49.5		58.		58	
Heavy Trucks:	60	-	59.4		50.4		51.6		60.		60.	
Vehicle Noise:	66		64.7		60.9		56.9	9	65.4	1	65	
Centerline Distance	to Noise Co	ontour (in feet)	70		~~	-10.4		0 -0 4		-04	
			Lata	70 d		65	dBA		60 dBA		dBA	
		0	Ldn:		25		53		114		24	
		C	NEL:		26		56		121		261	

	FHWA-RL	-77-108 HIGH	WAY	NOISE	PREDIC		DDEL	(9/12/20	021)		
Scenario	o: OY 2023					Project I	Vame:	Torran	ce Comme	erce	
	e: Van Ness A					Job Nu	mber:	14092			
Road Segmen	<i>it:</i> s/o 190th S	t.									
	SPECIFIC IN	PUT DATA							L INPUT	s	
Highway Data					Site Con	ditions (Hard :		,		
Average Daily	Traffic (Adt):	12,820 vehicle	es					Autos:	15		
	Percentage:	10.00%				dium Tru			15		
	our Volume:	1,282 vehicle	s		Hea	avy Truci	ks (3+	Axles):	15		
	nicle Speed:	35 mph			Vehicle N	lix					
Near/Far Lar	ne Distance:	36 feet			Vehi	cleType		Day	Evening	Night	Daily
Site Data						A	utos:	77.5%	12.9%	9.6%	97.02%
Bar	rier Heiaht:	0.0 feet			Me	dium Tru	icks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-Wa		0.0			H	leavy Tru	icks:	86.5%	2.7%	10.8%	0.62%
Centerline Dis	t. to Barrier:	50.0 feet			Noise So	urce Ele	vatio	ns (in fe	et)		
Centerline Dist. t	o Observer:	50.0 feet				Autos		.000	.,		
Barrier Distance t	o Observer:	0.0 feet			Mediur	n Trucks	-	.297			
Observer Height (/	Above Pad):	5.0 feet				v Trucks		.004	Grade Ad	iustment	: 0.0
	d Elevation:	0.0 feet		_							
	d Elevation:	0.0 feet		4	Lane Equ				'eet)		
F	Road Grade:	0.0%				Autos		.915			
	Left View:	-90.0 degree				n Trucks		.726			
	Right View:	90.0 degree	es		Heav	y Trucks	46	.744			
FHWA Noise Mode											
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite		Fres		Barrier Att		m Atten
Autos:	64.30	0.20		0.3		-1.20		-4.65		000	0.000
Medium Trucks:	75.75	-15.94		0.3		-1.20		-4.87		000	0.000
Heavy Trucks:	81.57	-21.74		0.3	4	-1.20		-5.43	0.	000	0.000
Unmitigated Noise											
	Leq Peak Hou			Leq E	vening	Leq N			Ldn		NEL
Autos:	63		61.7		59.9		53	-	62.	-	63.
Medium Trucks:	58	-	57.4		51.1		49		58.		58.2
Heavy Trucks:	59	-	57.5		48.5		49	-	58.		58.2
Vehicle Noise:	65		64.2		60.7		56	.3	64.	9	65.3
Centerline Distanc	e to Noise Co	ntour (in feet,)	=-	10.4						
			Ldn:	70 0	23 23	65 d	BA 4	-	0 dBA 105		dBA 227
							4	9	105	•	227
		0	NEL:		24		5	.	113		243

	FHWA-RI	D-77-108 HIGH	WAY NO	DISE	PREDIC		ODEL (9/12/2	021)			
Road Nan	nio: OYP 2023 ne: Van Ness / nt: s/o 190th S						Name: umber:		nce Comm	erce		
*												
SITE Highway Data	SPECIFIC IN	IPUT DATA			Site Con					5		
• •				-	Sile Con	unions						
Average Daily	, ,	13,189 vehicle	s					Autos.				
	Percentage:	10.00%				dium Tru		,				
	lour Volume:	1,319 vehicles			He	avy Truc	CKS (3+)	Axies).	15			
	hicle Speed:	35 mph		1	/ehicle l	Nix						
Near/Far La	ne Distance:	36 feet			Veh	icleType		Day	Evening	Nigh	nt D	aily
Site Data						A	Autos:	77.5%	6 12.9%	9.	6% 96	6.74%
Ba	rrier Heiaht:	0.0 feet			Me	edium Ti	ucks:	84.8%	6 4.9%	10.3	3% 2	.32%
Barrier Type (0-V	Vall, 1-Berm):	0.0			ŀ	leavy Ti	ucks:	86.5%	6 2.7%	10.	8% 0	.94%
Centerline Di	st. to Barrier:	50.0 feet			Voise Sc	urco El	ovation	e (in f	oof)			
Centerline Dist.	to Observer:	50.0 feet		-	10/36 30	Auto:		000	eelj			
Barrier Distance	to Observer:	0.0 feet			Madiu	m Truck:	. 0.	297				
Observer Height	(Above Pad):	5.0 feet				y Truck		257	Grade Ad	liustm	ent: 0 (h
P	ad Elevation:	0.0 feet			neav	y muck	s. o.	004	Orade Ad	justin	ont. 0.0	<i>'</i>
Ro	ad Elevation:	0.0 feet		L	ane Eq	uivalent	Distan	ce (in	feet)			
	Road Grade:	0.0%				Autos	s: 46	915				
	Left View:	-90.0 degree	s		Mediui	m Trucks	s: 46	726				
	Right View:	90.0 degree	s		Heav	y Truck	s: 46	744				
FHWA Noise Mod	el Calculation	s										
VehicleType	REMEL	Traffic Flow	Distar	псе	Finite	Road	Fresi	nel	Barrier At	ten I	Berm A	tten
Autos:	64.30	0.31		0.31	1	-1.20		-4.65	0.	000		0.000
Medium Trucks:	75.75	-15.88		0.34	4	-1.20		-4.87	0.	000		0.000
Heavy Trucks:	81.57	-19.83		0.34	4	-1.20		-5.43	0.	000		0.000
Unmitigated Nois	e Levels (with	out Topo and	barrier a	atteni	uation)					-		
VehicleType	Leq Peak Hou			eq Ev	/ening	Leq	Night		Ldn		CNEL	
Autos:	63		51.8		60.1		54.		62.			63.2
Medium Trucks:			57.5		51.1		49.	-	58.			58.3
Heavy Trucks:		-	59.5		50.4		51.		60.	-		60.2
Vehicle Noise:	66	i.4	64.7		61.0		56.	9	65.	4		65.8
Centerline Distan	ce to Noise Co	ontour (in feet)									_	
				70 d		65	dBA		60 dBA		55 dBA	
			Ldn:		25		53		115			247
		CI	IEL:		26		57		122	2		263

Monday, December 20, 2021

Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.87 0.000 0.000 Heavy Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4 49.7 58.0 58.2		FHWA-RD	-77-108 HIGHW	AY NOIS	E PREDIC		IODEL (9)/12/20)21)		
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 12,620 vehicles Autos: 15 Peak Hour Percentage: 10,00% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1,262 vehicles Medium Trucks (2 Axles): 15 Vehicle Speed: 35 mph Medium Trucks (2 Axles): 15 Near/Far Lane Distance: 36 feet Vehicle Type Day Evening Night Daily Barrier Height: 0.0 feet Heavy Trucks: 84.8% 4.9% 10.3% 2.36% Barrier Jistance to Observer: 50.0 feet Medium Trucks: 2.27% 10.8% 0.62% Centerline Dist. to Deserver: 0.0 feet Autos: 0.000 Medium Trucks: 2.297 Pad Elevation: 0.0 feet Road Grade: 0.0% Heavy Trucks: 8.04 Grade Adjustment: 0.0 Left View: -90.0 degrees Right View: 90.0 degrees Heavy Trucks: 46.726 Heavy Trucks: 46.726 Notos 0.0000 0.000 <t< th=""><th>Road Nam</th><th>e: Van Ness A</th><th></th><th></th><th></th><th></th><th></th><th></th><th>ce Comme</th><th>rce</th><th></th></t<>	Road Nam	e: Van Ness A							ce Comme	rce	
Average Daily Traffic (Ad1): 12,620 vehicles Average Daily Traffic (Ad1): 12,620 vehicles Peak Hour Percentage: 10,00% Peak Hour Volume: 1,262 vehicles Vehicle Speed: 35 mph Near/Far Lane Distance: 36 feet Site Data Autos: 77.5% Barrier Height: 0.0 feet Centerline Dist. to Doserver: 50.0 feet Autos: 88.9% 4.9% 0.3% 2.36% Barrier Type (0-Wall, 1-Berrn): 0.0 feet Medium Trucks: 84.9% 4.9% 0.3% 2.36% Barrier Type (0-Wall, 1-Berrn): 0.0 feet Autos: 0.0% Medium Trucks: 84.9% 4.9% 0.3% 2.36% Doserver Height (Above Pad): 5.0 feet Autos: 80.04 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Autos: 46.915 Heavy Trucks: 46.915 Medium Trucks: 46.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks:	SITE	SPECIFIC IN	PUT DATA			ł	IOISE N	IODE	L INPUTS	3	
Peak Hour Percentage: 10.00% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1.262 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 35 mph Vehicle Type Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Autos: Trucks: 84.9% 4.9% 10.3% 2.36% Barrier Height: 0.0 feet Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Autos: 67.02% Medium Trucks: 84.8% 4.9% 10.3% 2.36% Barrier Distance to Observer: 50.0 feet Medium Trucks: 80.04 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Intel Weit: 0.0 Road Grade: 0.90 degrees Medium Trucks: 46.726 Heavy Trucks: 46.726 WehicleType REMEL Traffic Flow Distance Finte Road <th>Highway Data</th> <th></th> <th></th> <th></th> <th>Site Con</th> <th>ditions</th> <th>(Hard =</th> <th>10, So</th> <th>ft = 15)</th> <th></th> <th></th>	Highway Data				Site Con	ditions	(Hard =	10, So	ft = 15)		
Peak Hour Volume: 1,262 vehicles Vehicle Speed: 35 mph Near/Far Lane Distance: 36 feet Vehicle Speed: 35 mph Near/Far Lane Distance: 36 feet Vehicle Type Day Evening Night Daily Site Data Vehicle Type Day Evening Night Daily Barrier Height: 0.0 feet Heavy Trucks: 8.8,% 4.9% 10.3% 2.36% Barrier Type (0-Wail, 1-Berm): 0.0 feet Medium Trucks: 8.4,8% 4.9% 10.3% 2.36% Centerline Dist. to Dserver: 50.0 feet Moise Source Elevations (in feet) Noise Source Source Elevations (in feet) Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Heavy Trucks: 46.726 Heavy Trucks: 46.726 Right View: 90.0 degrees Finite Road Fresnet Barrier Atten Be	Average Daily	Traffic (Adt):	12,620 vehicles					Autos:	15		
Vehicle Speed: Near/Far Lane Distance: 35 mph 36 feet Vehicle Type Day Evening Night Dail Site Data Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.36% Barrier Type (0-Wall, 1-Berm): 0.0 Medium Trucks: 84.8% 4.9% 10.3% 2.36% Barrier Dist. to Desrver: 50.0 feet Medium Trucks: 2.297 10.8% 0.62% Deserver Height: 0.0 feet Medium Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Autos: 64.915 Medium Trucks: 46.915 Heavy Trucks: 86.101 0.01 degrees Medium Trucks: 46.916 Medium Trucks: 46.916 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Tr	Peak Hour	Percentage:	10.00%		Me	dium Tr	ucks (2 A	xles):	15		
Near/Far Lane Distance: 36 fext Vehicle Type Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Autos: 77.5% 12.9% 9.6% 97.02% Centerine Dist: Darrier: 50.0 feet Medium Trucks: 86.5% 2.7% 10.8% 0.62% Doserver Height (Above Pad): 50.0 feet Noise Source Elevations (in feet) 0.0 Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.04 Grade Adjustment: 0.0 Road Grade: 0.0% Left View: 90.0 degrees Heavy Trucks: 46.726 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000	Peak H	lour Volume:	1,262 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Near/Far Lane Distance: 36 feet VehicleType Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 9.7% 2.3% Barrier Type (0-Wall, 1-Berrn): 0.0 Medium Trucks: 8.48% 4.9% 10.3% 2.36% Barrier Type (0-Wall, 1-Berrn): 0.0 Noise Source Elevations (in feet) Noise Source Elevations (in feet) Centerline Dist. to Doserver: 0.0 feet Medium Trucks: 8.804 Grade Adjustment: 0.0 Barrier Distance to Observer: 0.0 feet Medium Trucks: 8.004 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Autos: 46.915 Medium Trucks: 46.915 Heavy Trucks: Road Grade: 0.0% Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000	Ve	hicle Speed:	35 mph		Vehicle	Mix					
Site Data Autos: 77.5% 12.9% 9.6% 97.02% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.36% Barrier Height: 0.0 Centerine Dist. to Barrier: 50.0 feet Noise Source Elevations (in feet) 0.6% Centerine Dist. to Diserver: 0.0 feet Noise Source Elevations (in feet) Autos: 0.000 Diserver Height (Above Pad): 5.0 feet Noise Source Elevations (in feet) Autos: 0.000 Road Elevation: 0.0 feet Medium Trucks: 2.297 Heavy Trucks: 8.04 Grade Adjustment: 0.0 Read Elevation: 0.0 feet Left View: -90.0 degrees Medium Trucks: 46.726 Heavy Trucks: 8.04 Grade Adjustment: 0.0 0.00 Medium Trucks: 46.726 Wehicle Type REMEL Traffic Flow Distance Finite Road Fresnet Barrier Atten Berm Atten Autos: 75.75 -16.01 0.34 -1.20 -5.43 0.000 0.000	Near/Far La	ne Distance:	36 feet					Dav	Evening	Night	Daily
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 Hight: 0.0 feet Barrier Jistance to Observer: 50.0 feet Barrier Distance to Observer: 0.0 feet Barrier Distance to Observer: 0.0 feet Road Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees Heavy Trucks: 46.726 Heavy Trucks: 46.726 Heavy Trucks: 46.744 FHMA Noise Model Calculations Finite Road Fresnel Barrier Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 17.75 -61.6 59.9 53.8 62.4 63.1 Medium Trucks:	Site Data				VCII				•	•	
Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 86.5% 2.7% 10.8% 0.62% Centerline Dist. to Desriver: 50.0 feet Noise Source Elevations (in feet) Noise Source Elevations (in feet) Barrier Distance to Observer: 0.0 feet Molise Source Elevations (in feet) Noise Source Elevations (in feet) Deserver Height (Above Pad): 5.0 feet Medium Trucks: 2.297 Pad Elevation: 0.0 feet Medium Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Laft New: 90.0 degrees Medium Trucks: 46.915 WeinleTrype RetMeL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5	Ba	rrior Hoight:	0.0 foot		м	edium T	rucks:	84.8%	4.9%	10.3%	2.36%
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 Grade: 0.0 feet Road Grade: 0.0 feet Road Grade: 0.0 feet Left View: -90.0 degrees PHWA Noise Model Calculations Verkicle Type Verkicle Type REMEL Traffic Flow Values: 75.75 -16.01 0.34 -1.20 -4.65 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 Medium Trucks: 81.57 -21.81 Verkicle Type Red Hour Leg Nay Verkicle Type Leg Nay -4.65 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000						Heavy T	rucks:	86.5%	2.7%	10.8%	0.62%
Noise Source Interventions Interventions		. ,									
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.237 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Lane Equivalent Distance (in feet) Road Grade: 0.0 feet Autos: 46.726 Heavy Trucks: 46.726 Right View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -4.65 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) Vehicle/Type Leq Pay Leq Evening Leq Neght Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4					Noise So				et)		
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Lane Equivalent Distance (in feet) Road Elevation: 0.0 feet Autos: 46.915 Left View: -90.0 degrees Medium Trucks: 46.744 FHWA Noise Model Calculations Finite Road Freste Barrier Atten VehicleType REMEL Traffic Flow Distance Finite Road Freste Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -5.43 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -5.43 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleNoise E6.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 51.0 49.5 57.9 </td <td>Barrier Distance</td> <td>to Observer:</td> <td>0.0 feet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Barrier Distance	to Observer:	0.0 feet								
Pad Elevation: 0.0 feet Heavy Trucks: 8.004 Grade Order Adjustment. 0.0 Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Lane Equivalent Distance (in feet) Road Grade: 0.0% Lane Equivalent Distance (in feet) Autos: 46.726 HWA Noise Model Calculations Presnel Barrier Atten Bern Atten Bern Atten VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -5.43 0.000 0.000 Unnittigated Noise Levels (without Topo and barrier attenuation) UvehicleType Leq Day Leq Evening Leq Neght Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 65.	Observer Height (Above Pad):	5.0 feet						Oursela Adi		
Road Grade: 0.0% Autos: 46.915 Left View: -90.0 degrees Medium Trucks: 46.726 Heavy Trucks: 46.744 Heavy Trucks: 46.744 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -4.65 0.000 0.000 Umitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leg Peak Hour Leg Naght Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8			0.0 feet		Heav	/y Truck	s: 8.0	104	Grade Adj	ustment	0.0
Left View: -90.0 degrees Medium Trucks: 46.726 Right View: 90.0 degrees Heavy Trucks: 46.726 FHWA Noise Model Calculations Heavy Trucks: 46.726 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -120 -4.67 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Revening Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise C	Roa	ad Elevation:	0.0 feet		Lane Eq	uivalen	t Distanc	e (in f	eet)		
Right View: 90.0 degrees Heavy Trucks: 46.744 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.67 0.000 0.000 Inedium Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) VehiceType Leq Deak Hour Leq Dey Leq Reing Led Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Vehice Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Vehice Noise: 65.8 64.1 60.7 56.3 64.8 65.2		Road Grade:	0.0%			Auto	s: 46.9	915			
FHWA Noise Model Calculations Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Heavy Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation)		Left View:	-90.0 degrees		Mediu	m Truck	s: 46.7	726			
VehicleType REMEL Traffic Flow Distance Finite Road Fresnet Barrier Atten Berm Atten Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Medium Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Qay Leq Evening Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet)		Right View:	90.0 degrees		Heav	/y Truck	s: 46.7	744			
Autos: 64.30 0.13 0.31 -1.20 -4.65 0.000 0.000 Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.65 0.000 0.000 Heavy Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Umitigated Moise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet)	FHWA Noise Mode	el Calculations	;		1						
Medium Trucks: 75.75 -16.01 0.34 -1.20 -4.87 0.000 0.000 Heavy Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) -5.43 0.000 0.000 VehiceType Leq Deak Hour Leq Day Leq Reining Leg Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Vehicel Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225	VehicleType	REMEL	Traffic Flow	Distance	Finite	Road	Fresn	el i	Barrier Atte	en Ber	m Atten
Heavy Trucks: 81.57 -21.81 0.34 -1.20 -5.43 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Night Ldn CNEL VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Matus: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225 48 104 225		64.30	0.13	0	.31	-1.20		-4.65	0.0	00	0.000
Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Vehicle Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Conterline Distance to Noise Contour (in feet) Ldn: 22 48 104 225	Medium Trucks:	75.75	-16.01	0	.34	-1.20		-4.87	0.0	00	0.000
VehicleType Leq Peak Hour Leq Day Leq Vehicle Leq Night Ldn CNEL Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225	Heavy Trucks:	81.57	-21.81	0	.34	-1.20		-5.43	0.0	00	0.000
Autos: 63.5 61.6 59.9 53.8 62.4 63.1 Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225	Unmitigated Noise	e Levels (witho	out Topo and b	arrier atte	enuation)						
Medium Trucks: 58.9 57.4 51.0 49.5 57.9 58.2 Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) Image: Contour (in feet)<		1					•				
Heavy Trucks: 58.9 57.5 48.4 49.7 58.0 58.2 Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225											
Vehicle Noise: 65.8 64.1 60.7 56.3 64.8 65.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225											
Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225											
T0 dBA 65 dBA 60 dBA 55 dBA Ldn: 22 48 104 225	Vehicle Noise:	65.	8 6	4.1	60.7		56.3		64.8	1	65.2
Ldn: 22 48 104 225	Centerline Distance	ce to Noise Co	ntour (in feet)	-							
· ··· ·						65		6		55	
CNEL: 24 52 112 240											
			CNI	EL:	24		52		112		240

	FHWA-RD	-77-108 HIGH	WAY	NOISE	PREDIC	TION N	IODEL (9/12/2	021)			
Scenario Road Name Road Segmen	e: Van Ness A						t Name: lumber:		ce Comme	erce		
SITE S	PECIFIC IN	PUT DATA			NOISE MODEL INPUTS							
Highway Data				S	Site Cond	litions	(Hard =	10, So	oft = 15)			
Average Daily 1	Traffic (Adt):	13,112 vehicle	s					Autos:	15			
Peak Hour I	Percentage:	10.00%			Med	lium Tr	ucks (2)	Axles):	15			
Peak Ho	our Volume:	1,311 vehicles	5		Hea	avy Tru	cks (3+)	Axles):	15			
Veh	icle Speed:	35 mph		1	/ehicle N	lix						
Near/Far Lan	e Distance:	36 feet		-		cleType	•	Dav	Evening	Night	Daily	
Site Data							Autos:	77.5%		9.6%		
	rier Height:	0.0 feet			Me		rucks:	84.8%		10.3%		
Barrier Type (0-Wa		0.0 1001			н	leavy T	rucks:	86.5%		10.8%		
Centerline Dis	. ,	50.0 feet		-		_						
Centerline Dist. t		50.0 feet		^	loise So				eet)			
Barrier Distance t	o Observer:	0.0 feet				Auto		000				
Observer Height (A	Above Pad):	5.0 feet			Mediun			297	Grade Ad	iuotmont		
Pa	d Elevation:	0.0 feet			Heavy	/ Truck	S. 8.	004	Grade Auj	usuneni	0.0	
Roa	d Elevation:	0.0 feet		L	ane Equ	ivalen	t Distan	ce (in i	feet)			
F	oad Grade:	0.0%				Auto	s: 46.	915				
	Left View:	-90.0 degree	s		Mediun			726				
	Right View:	90.0 degree	s		Heavy	/ Truck	(s: 46.	744				
FHWA Noise Mode					г							
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite I		Fresr	-	Barrier Att		m Atten	
Autos:	64.30	0.28		0.31		-1.20		-4.65		000	0.00	
Medium Trucks:	75.75	-15.93		0.34		-1.20		-4.87		000	0.00	
Heavy Trucks:	81.57	-19.38		0.34	•	-1.20		-5.43	0.0	000	0.00	
Unmitigated Noise					<u> </u>			1		Т		
	Leq Peak Hou		_	Leq Ev		Leq	Night		Ldn		VEL	
Autos:	63.		61.8		60.0		54.0		62.6		63	
Medium Trucks:	59.		57.4		51.1		49.		58.0		58	
Heavy Trucks: Vehicle Noise:	61.		59.9		50.9		52.		60.5		60.	
	66.		64.8		61.0		57.0	J	65.5	0	65	
Centerline Distanc	e to Noise Co	ntour (in feet)	1	70 -	DA	67	dDA		C dBA	57	dD A	
			Ldn:	70 d	BA 25	65	dBA 54		50 dBA 117		dBA 25	
			Lan: VEL:		25 27		54 58		117			
											267	

	FHWA-RD	-77-108 HIGH	IWAY	NOISE	PREDIC	TION MC	DEL	(9/12/20	021)		
Scenari	o: OY 2023					Project N	Vame:	Torran	ce Comme	erce	
	e: Van Ness A					Job Nu	mber:	14092			
Road Segmer	nt: s/o 195th S	t.									
	SPECIFIC IN	PUT DATA							L INPUT	s	
Highway Data				1	Site Con	ditions (l	Hard =		,		
Average Daily	Traffic (Adt):	12,860 vehicl	es					Autos:	15		
Peak Hour	Percentage:	10.00%				dium True			15		
	our Volume:	1,286 vehicle	s		Hea	avy Truck	ks (3+	Axles):	15		
	nicle Speed:	35 mph			Vehicle N	lix					
Near/Far Lar	ne Distance:	36 feet		F	Vehi	cleType		Day	Evening	Night	Daily
Site Data						A	utos:	77.5%	12.9%	9.6%	97.02%
Bar	rier Heiaht:	0.0 feet			Me	dium Tru	icks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-W		0.0			H	leavy Tru	icks:	86.5%	2.7%	10.8%	0.62%
Centerline Dis	t. to Barrier:	50.0 feet		1	Noise So	urce Ele	vatior	ns (in fe	et)		
Centerline Dist. t	to Observer:	50.0 feet		-		Autos		.000			
Barrier Distance t	o Observer:	0.0 feet			Mediur	n Trucks		.297			
Observer Height (Above Pad):	5.0 feet				v Trucks		.004	Grade Ad	iustment	: 0.0
Pa	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		1	Lane Equ				eet)		
F	Road Grade:	0.0%				Autos:		.915			
	Left View:	-90.0 degre	es			n Trucks:		.726			
	Right View:	90.0 degre	es		Heav	y Trucks:	46	.744			
FHWA Noise Mode	l Calculation:	5									
VehicleType	REMEL	Traffic Flow		stance	Finite		Fres		Barrier Att		m Atten
Autos:	64.30	0.21		0.3		-1.20		-4.65		000	0.000
Medium Trucks:	75.75	-15.92		0.3		-1.20		-4.87		000	0.000
Heavy Trucks:	81.57	-21.73		0.3	4	-1.20		-5.43	0.	000	0.00
Unmitigated Noise											
	Leq Peak Hou			Leg Ei	vening	Leq N			Ldn		NEL
Autos:	63		61.7		60.0		53.	-	62.	-	63.
Medium Trucks:	59		57.5		51.1		49.		58.		58.2
Heavy Trucks:	59	-	57.6		48.5		49.	-	58.		58.2
Vehicle Noise:	65		64.2		60.8		56.	.3	64.	9	65.3
Centerline Distanc	e to Noise Co	ntour (in feet)	=0	10.4						
			Ldn:	70 0	23 23	65 d	BA 49	-	0 dBA 106		dBA 228
							49	9	106		228
		0	NEL:		24		5	.	113		243

	FHWA-RI	D-77-108 HIGH	WAY NO	ISE P	PREDIC	TION MO	DDEL (S	9/12/2	021)		
Road Nam		e: Van Ness Av. ht: s/o 195th St.					Name: 1 mber: 1		ce Comme	erce	
SITE	SPECIFIC IN	NPUT DATA				N	DISE N	IODE	L INPUT	s	
Highway Data				Si	ite Con	ditions (l	Hard =	10, So	oft = 15)	-	
Average Daily	Traffic (Adt):	13.352 vehicle	es					Autos:	15		
• •	Percentage:	10.00%			Me	dium Tru	cks (2 A	xles):	15		
Peak H	lour Volume:	1,335 vehicles	s		Hei	avy Truck	ks (3+ A	xles):	15		
Ve	hicle Speed:	35 mph		16	ehicle N		-				
Near/Far La	ne Distance:	36 feet		Ve		leType		Day	Evening	Night	Dailv
Site Data					veni			77.5%		9.6%	
				_	M	edium Tru		84.8%		9.0%	
	rrier Height:	0.0 feet				leavy Tru		04.0% 86.5%		10.3%	
Barrier Type (0-W	. ,	0.0			r	icavy III	1013.	50.5%	2.170	10.0%	1.04
Centerline Dis		50.0 feet		No	oise So	urce Ele	vations	in fe	eet)		
Centerline Dist.		50.0 feet				Autos.	0.0	000			
Barrier Distance		0.0 feet			Mediur	n Trucks.	2.2	297			
Observer Height (,	5.0 feet			Heav	y Trucks.	8.0	004	Grade Ad	justment	: 0.0
	ad Elevation:	0.0 feet			ano Err	inclose	Diotone	o (in	fe e ti		
	ad Elevation:	0.0 feet		Lä	ane Equ	ivalent l			reet)		
ŀ	Road Grade:	0.0%				Autos.					
	Left View: Right View:	-90.0 degree 90.0 degree				n Trucks. y Trucks.					
		Ŭ	#5		neav	y mucho.	40.1	44			
FHWA Noise Mode											
			Distan	1	Ein ite	D(F	-1	Damian Att		
VehicleType	REMEL	Traffic Flow	Distan		Finite		Fresn	-	Barrier Att		
Autos:	REMEL 64.30	Traffic Flow 0.36	Distan	0.31	Finite	-1.20		-4.65	0.0	000	0.00
Autos: Medium Trucks:	REMEL 64.30 75.75	Traffic Flow 0.36 -15.85	Distan	0.31 0.34		-1.20 -1.20		-4.65 -4.87	0.0 0.0	000	0.00
Autos: Medium Trucks: Heavy Trucks:	REMEL 64.30 75.75 81.57	Traffic Flow 0.36 -15.85 -19.33		0.31 0.34 0.34		-1.20		-4.65	0.0 0.0	000	0.00
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise	REMEL 64.30 75.75 81.57	Traffic Flow 0.36 -15.85 -19.33 out Topo and	barrier a	0.31 0.34 0.34	ation)	-1.20 -1.20		-4.65 -4.87	0.0 0.0	000 000 000	0.00
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise	REMEL 64.30 75.75 81.57 e Levels (with Leq Peak Hou	Traffic Flow 0.36 -15.85 -19.33 Topo and ur Leq Day	barrier a	0.31 0.34 0.34 ttenu	ation)	-1.20 -1.20 -1.20		-4.65 -4.87 -5.43	0.0 0.0 0.0	000 000 000	0.00 0.00 0.00
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType	REMEL 64.30 75.75 81.57 e Levels (with Leq Peak Hot 63	Traffic Flow 0.36 -15.85 -19.33 out Topo and ur Leq Day 3.8	barrier a	0.31 0.34 0.34 ttenu	ation) ening	-1.20 -1.20 -1.20	light	-4.65 -4.87 -5.43	0.0 0.0 0.0	000 000 000 000 7	0.00 0.00 0.00 NEL 63
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos:	REMEL 64.30 75.75 81.57 2 Levels (with Leq Peak Hou 63 55	Traffic Flow 0.36 -15.85 -19.33 out Topo and ur Leq Day 3.8 9.0	barrier a / Le 61.9	0.31 0.34 0.34 ttenu	ation) ening 60.1	-1.20 -1.20 -1.20	<i>light</i> 54.1	-4.65 -4.87 -5.43	0.0 0.0 0.0 <i>Ldn</i> 62.7	000 000 000 000 7 1	0.00 0.00 0.00 NEL 63 58
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks:	REMEL 64.30 75.75 81.57 a Levels (with Leq Peak Hou 63 59 61	Traffic Flow 0.36 - - -	barrier a / Le 61.9 57.5	0.31 0.34 0.34 ttenu	ation) ening 60.1 51.2	-1.20 -1.20 -1.20	<i>light</i> 54.1 49.6	-4.65 -4.87 -5.43	0.0 0.0 <i>Ldn</i> 62. 58.	000 000 000 7 1 5	0.00 0.00 0.00 NEL 63 58 60
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	REMEL 64.30 75.75 81.57 e Levels (with Leq Peak Hot 63 55 61 66	Traffic Flow 0.36 -15.85 -19.33 out Topo and ur Leq Day 3.8	barrier a / Le 61.9 57.5 60.0 64.9	0.31 0.34 0.34 ttenu	ation) ening 60.1 51.2 50.9	-1.20 -1.20 -1.20	<i>light</i> 54.1 49.6 52.2	-4.65 -4.87 -5.43	0.0 0.0 <i>Ldn</i> 62. 58. 60.3	000 000 000 7 1 5	0.00 0.00 0.00 NEL 63 58 60
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks: Heavy Trucks:	REMEL 64.30 75.75 81.57 e Levels (with Leq Peak Hot 63 55 61 66	Traffic Flow 0.36 -15.85 -19.33 out Topo and ur Leq Day 3.8	barrier a / Le 61.9 57.5 60.0 64.9	0.31 0.34 0.34 ttenu	ation) ening 60.1 51.2 50.9 61.1	-1.20 -1.20 -1.20	<i>light</i> 54.1 49.6 52.2 57.1	-4.65 -4.87 -5.43	0.0 0.0 <i>Ldn</i> 62. 58. 60.3	000 000 000 7 1 5 6	0.00 0.00 0.00 NEL 63 58 60
Autos: Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	REMEL 64.30 75.75 81.57 e Levels (with Leq Peak Hot 63 55 61 66	Traffic Flow 0.36 -15.85 -19.33 Out Topo and ur Leq Day 3.8 3.0 1.4 5.6 ontour (in feet)	barrier a / Le 61.9 57.5 60.0 64.9	0.31 0.34 0.34 ttenu	ation) ening 60.1 51.2 50.9 61.1	-1.20 -1.20 -1.20 <i>Leq N</i>	<i>light</i> 54.1 49.6 52.2 57.1	-4.65 -4.87 -5.43	0.0 0.0 <i>Ldn</i> 62. 58. 60.3 65.0	000 000 000 7 1 5 6 5 5 5 5 5 5 5	63. 58. 60. 66.

Monday, December 20, 2021

FHWA-RD-77-1	08 HIGHWAY NC	ISE PREDICTI	ION MODEL (9	/12/2021)	
Scenario: E Road Name: Van Ness Av. Road Segment: s/o Del Amo Blvo			Project Name: T Job Number: 1	orrance Comme 4092	rce
SITE SPECIFIC INPUT	DATA			IODEL INPUTS	6
Highway Data		Site Condi	tions (Hard = ⁻	10, Soft = 15)	
Average Daily Traffic (Adt): 10,84	10 vehicles		A	Autos: 15	
Peak Hour Percentage: 10.0	0%	Media	um Trucks (2 A	<i>xles):</i> 15	
Peak Hour Volume: 1,08	4 vehicles	Heav	y Trucks (3+ A	<i>xles):</i> 15	
Vehicle Speed: 3	5 mph	Vehicle Mi	Y		
Near/Far Lane Distance: 3	6 feet	Vehicle		Day Evening	Night Daily
Site Data		, control		77.5% 12.9%	9.6% 97.02%
	.0 feet	Med	ium Trucks:	84.8% 4.9%	10.3% 2.36%
	.0	He	avy Trucks:	86.5% 2.7%	10.8% 0.62%
	.0 feet		•		
	0 feet	Noise Sou	rce Elevations	, ,	
	0 feet		Autos: 0.0		
Observer Height (Above Pad): 5	0 feet	Medium			
• • •	0 feet	Heavy	Trucks: 8.0	04 Grade Adj	ustment: 0.0
Road Elevation: 0	.0 feet	Lane Equiv	valent Distanc	e (in feet)	
Road Grade: 0.0	%		Autos: 46.9	015	
Left View: -90	.0 degrees	Medium	Trucks: 46.7	26	
Right View: 90	.0 degrees	Heavy	Trucks: 46.7	44	
FHWA Noise Model Calculations					
VehicleType REMEL Traf	fic Flow Distan			el Barrier Atte	en Berm Atten
Autos: 64.30	-0.53			-4.65 0.0	
Medium Trucks: 75.75	-16.67			-4.87 0.0	
Heavy Trucks: 81.57	-22.47	0.34	-1.20	-5.43 0.0	00 0.000
Unmitigated Noise Levels (without T	opo and barrier a	ttenuation)			
VehicleType Leq Peak Hour		q Evening	Leq Night	Ldn	CNEL
Autos: 62.9	61.0	59.2	53.2	• · · •	•=-
Medium Trucks: 58.2	56.7	50.4	48.8		
Heavy Trucks: 58.2	56.8	47.8	49.0		
				64.1	64.6
Vehicle Noise: 65.1	63.4	60.0	55.6	04.1	01.0
Vehicle Noise: 65.1	r (in feet)	70 dBA	65 dBA	60 dBA	55 dBA
Vehicle Noise: 65.1					

	FHWA-RD	-77-108 HIGHW	AY NO	ISE PRED	CTION M	ODEL (9/12/20	021)				
Scenari Road Nam Road Segmer	e: Van Ness A					Name: umber:		ce Comme	erce			
SITE S	SPECIFIC IN	PUT DATA		NOISE MODEL INPUTS								
Highway Data				Site Co	nditions	(Hard =	10, So	ft = 15)				
Average Daily	Traffic (Adt):	11.086 vehicles					Autos:	15				
Peak Hour	Percentage:	10.00%		N	edium Tru	icks (2 A	Axles):	15				
Peak H	our Volume:	1,109 vehicles		E	eavy Truc	:ks (3+ A	Axles):	15				
Vel	hicle Speed:	35 mph		Vehicle	Mise							
Near/Far Lar	ne Distance:	36 feet			hicleType		Day	Evening	Night	Daily		
Site Data				VC			77.5%	•	9.6%			
					ر Medium Ti		84.8%		10.3%			
	rier Height:	0.0 feet			Heavy Tr		86.5%		10.3%			
Barrier Type (0-W	. ,	0.0			neavy n	ucho.	00.370	2.170	10.070	0.07		
Centerline Dis		50.0 feet		Noise S	ource El	evation	s (in fe	et)				
Centerline Dist.		50.0 feet			Autos	s: 0.0	000					
Barrier Distance t Observer Height (J		0.0 feet 5.0 feet		Medi	um Truck	s: 2.1	297					
	Above Pad): d Elevation:	0.0 feet		Hea	vy Truck	s: 8.0	004	Grade Ad	justment.	0.0		
	d Elevation:	0.0 feet		Lane F	quivalent	Distan	e (in f	feet)				
	Road Grade:	0.0%		Lano L	Auto		915	000				
r	Left View:	-90.0 degrees		Medi	um Truck							
	Right View:	90.0 degrees		Hea	vy Truck	s: 46.	744					
FHWA Noise Mode												
VehicleType	REMEL	Traffic Flow	Distant		e Road	Fresh		Barrier Att		m Atten		
Autos:	64.30	-0.44		0.31	-1.20		-4.65		000	0.00		
Medium Trucks:	75.75	-16.62		0.34	-1.20		-4.87		000	0.00		
Heavy Trucks:	81.57	-20.89		0.34	-1.20		-5.43	0.0	000	0.00		
Unmitigated Noise			arrier at	tenuation								
	Leq Peak Hou		-	q Evening	-	Night		Ldn		VEL		
Autos:	63		1.1	59.	-	53.3		61.9		62		
Medium Trucks:	58		5.8	50.		48.8		57.3		57		
Heavy Trucks:	59		3.4	49.		50.6		59.0		59		
Vehicle Noise:	65		3.9	60.	2	56.1		64.6	j .	65		
Centerline Distanc	e to Noise Co	ntour (in feet)		70 dBA	65	dBA	6	0 dBA	55	dBA		
			dn:	22 22		зва 47	-	<i>и ава</i> 101		ава 21		
		CNE		22		47 50		101		21		
		CIVE	<u> </u>	2.	•	50		107		23		

Monday, December 20, 2021

FHWA-F	D-77-108 HIGHWAY	NOISE PREI	DICTION MO	DEL (9/12/2	2021)		
Scenario: OY 2023 Road Name: Van Ness Road Segment: s/o Del Ar				ame: Torra nber: 14092	nce Comme	rce	
SITE SPECIFIC I	NPUT DATA				EL INPUT	5	
Highway Data		Site C	onditions (H	ard = 10, S	oft = 15)		
Average Daily Traffic (Adt):	10,970 vehicles			Autos			
Peak Hour Percentage:	10.00%		Medium Truc	. (
Peak Hour Volume:	1,097 vehicles		Heavy Truck	s (3+ Axles)	: 15		
Vehicle Speed:	35 mph	Vehic	e Mix				
Near/Far Lane Distance:	36 feet		ehicleType	Dav	Evening	Night	Daily
Site Data				tos: 77.5%	-	9.6%	
Barrier Height:	0.0 feet		Medium True	cks: 84.8%	6 4.9%	10.3%	2.36
Barrier Type (0-Wall, 1-Berm):	0.0		Heavy True	cks: 86.5%	6 2.7%	10.8%	0.62
Centerline Dist. to Barrier:	50.0 feet	A	· ·				
Centerline Dist. to Observer:	50.0 feet	Noise	Source Elev		eet)		
Barrier Distance to Observer:	0.0 feet		Autos:	0.000			
Observer Height (Above Pad):	5.0 feet		lium Trucks:	2.297	Our de Ad		
Pad Elevation:	0.0 feet	H	eavy Trucks:	8.004	Grade Adj	ustment:	0.0
Road Elevation:	0.0 feet	Lane	Equivalent D	istance (in	feet)		
Road Grade:	0.0%		Autos:	46.915			
Left View:	-90.0 degrees	Mee	lium Trucks:	46.726			
Right View:	90.0 degrees	H	eavy Trucks:	46.744			
FHWA Noise Model Calculatio							-
VehicleType REMEL			ite Road	Fresnel	Barrier Atte		m Attei
Autos: 64.3		0.31	-1.20	-4.65		000	0.0
Medium Trucks: 75.7		0.34	-1.20	-4.87		000	0.0
Heavy Trucks: 81.5		0.34	-1.20	-5.43	0.0	000	0.0
Unmitigated Noise Levels (with				- 64	Ldn		VEL
VehicleType Leq Peak Ho Autos: 6	2.9 Leq Day 2.9 61.0	Leq Evening	Leq Ni	53.2	61.8		VEL 62
	8.3 56.8).4	48.9	57.3		57
	8.3 56.9		7.4 7.8	40.9	57.4		57
	5.2 63.5		.0	55.7	64.2		64
Centerline Distance to Noise C	Contour (in feet)						
	, ,	70 dBA	65 dE	BA	60 dBA	55	dBA
	Ldn:		20	44	95		20

	FHWA-RI	5-11-100 mon			KEDIC		ODEL (021)		
Road Nan	rio: OYP 2023 ne: Van Ness A ent: s/o Del Am						Name: umber:		ice Comme	erce	
SITE	SPECIFIC IN	IPUT DATA		NOISE MODEL INPUTS							
Highway Data				Si	ite Cond	ditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	11,216 vehicle	es					Autos:	15		
Peak Hour	Percentage:	10.00%			Med	dium Tri	ucks (2 A	xles):	15		
Peak H	Hour Volume:	1,122 vehicle	5		Hea	avy Tru	cks (3+ A	xles):	15		
Ve	ehicle Speed:	35 mph		14	ehicle N	liv					
Near/Far La	ane Distance:	36 feet		ve		cleType		Day	Evening	Night	Daily
Site Data				_	venit			77.5%	•	•	96.80%
				_	Me	dium T		84.8%		10.3%	2.33%
	nrrier Height:	0.0 feet				leavy Ti		86.5%		10.3%	0.87%
Barrier Type (0-V	. ,	0.0				icavy n	ucho.	00.07	2.170	10.070	0.07 /
	ist. to Barrier:	50.0 feet		No	oise So	urce El	evation	s (in f	eet)		
Centerline Dist. Barrier Distance		50.0 feet				Auto	s: 0.0	000			
		0.0 feet			Mediun	n Truck	s: 2.1	297			
Observer Height	(Above Pad): Pad Elevation:	5.0 feet			Heavy	y Truck	s: 8.	004	Grade Ad	justment.	0.0
	ad Elevation:	0.0 feet		1:	ano Fau	uivalont	Distand	o (in	foot)		
	Road Grade:	0.0 feet 0.0%			ine Lqu	Auto		915	1000		
	Left View:	-90.0 degree			Mediun			726			
	Right View:	90.0 degree				y Truck		744			
FHWA Noise Mod	lel Calculation	c									
VehicleType	er ourculation	-	0.1								
	REMEL	Traffic Flow		ce	Finite I	Road	Fresh	el	Barrier Att	en Ber	m Atten
Autos:	REMEL 64.30	Traffic Flow -0.39	Distan	ce 0.31	Finite I	Road -1.20	Fresh	el -4.65	Barrier Att 0.0	en Ber	m Atten 0.000
	64.30	-0.39	Distan		Finite I			-	0.0		0.00
Autos:	64.30 75.75	-0.39 -16.57	Distan	0.31	Finite I	-1.20		-4.65	0.0 0.0	000	0.00
Autos: Medium Trucks: Heavy Trucks:	64.30 75.75 81.57	-0.39 -16.57 -20.86		0.31 0.34 0.34		-1.20 -1.20		-4.65 -4.87	0.0 0.0	000	0.000
Autos: Medium Trucks: Heavy Trucks:	64.30 75.75 81.57	-0.39 -16.57 -20.86 out Topo and	barrier a	0.31 0.34 0.34	ation)	-1.20 -1.20 -1.20		-4.65 -4.87	0.0 0.0	000 000 000	0.000
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois	64.30 75.75 81.57 e Levels (with Leq Peak Hou	-0.39 -16.57 -20.86 out Topo and Ir Leq Day	barrier a	0.31 0.34 0.34 ttenu	ation)	-1.20 -1.20 -1.20		-4.65 -4.87 -5.43	0.0 0.0 0.0	000 000 000 <i>CI</i>	0.00 0.00 0.00
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois VehicleType Autos: Medium Trucks:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58	-0.39 -16.57 -20.86 out Topo and <i>Ir</i> Leq Day 5.0 5.3	barrier a Le 61.1 56.8	0.31 0.34 0.34 ttenu	ation) ening 59.4 50.4	-1.20 -1.20 -1.20	Night 53.3 48.9	-4.65 -4.87 -5.43	0.0 0.0 0.0 <i>Ldn</i> 61.9 57.4	000 000 000 <i>CI</i> 9	0.000 0.000 0.000 <u>VEL</u> 62.8 57.6
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois VehicleType Autos: Medium Trucks: Heavy Trucks:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58 58	-0.39 -16.57 -20.86 out Topo and <i>Ir</i> Leq Day 5.0 5.3	barrier a	0.31 0.34 0.34 ttenu	ation) ening 59.4	-1.20 -1.20 -1.20	Night 53.3	-4.65 -4.87 -5.43	0.0 0.0 0.0 <i>Ldn</i> 61.9	000 000 000 <i>CI</i> 9	0.000 0.000 0.000 VEL 62.3 57.6 59.1
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58 59 65	-0.39 -16.57 -20.86 out Topo and ir Leq Day 0.0 1.3 1.8 1.6	barrier a 61.1 56.8 58.4 63.9	0.31 0.34 0.34 ttenu	ation) ening 59.4 50.4	-1.20 -1.20 -1.20	Night 53.3 48.9	-4.65 -4.87 -5.43	0.0 0.0 0.0 <i>Ldn</i> 61.9 57.4	000 000 000 000 <i>CI</i> 9 4	0.00 0.00 0.00 VEL 62.3 57.0 59.
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois Vehicle Type Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58 59 65	-0.39 -16.57 -20.86 out Topo and ir Leq Day 0.0 1.3 1.8 1.6	barrier a 61.1 56.8 58.4 63.9	0.31 0.34 0.34 ttenu	ation) ening 59.4 50.4 49.4 60.3	-1.20 -1.20 -1.20 <i>Leq</i>	Night 53.3 48.9 50.6 56.1	-4.65 -4.87 -5.43	0.0 0.0 0.0 61.9 57.4 59.0 64.6	000 000 000 200 200 200 200 200 200 200	0.000 0.000 0.000 VEL 62.4 57.6 59. 65.0
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois VehicleType Autos: Medium Trucks: Heavy Trucks:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58 59 65	-0.39 -16.57 -20.86 out Topo and rr Leg Day 0.0 3.3 3.8 5.6 ontour (in feet	barrier a Le 61.1 56.8 58.4 63.9	0.31 0.34 0.34 ttenu	ation) ening 59.4 50.4 49.4 60.3 BA	-1.20 -1.20 -1.20 <i>Leq</i>	Night 53.3 48.9 50.6 56.1	-4.65 -4.87 -5.43	0.0 0.0 0.0 61.9 57.4 59.0 64.0 50 dBA	000 000 000 200 200 200 200 200 200 200	0.000 0.000 VEL 62.3 57.6 59. 65.0 dBA
Autos: Medium Trucks: Heavy Trucks: Unmitigated Nois Vehicle Type Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	64.30 75.75 81.57 e Levels (with Leg Peak Hou 63 58 59 65	-0.39 -16.57 -20.86 out Topo and Ir Leq Day 0.0 3.3 3.8 5.6 ontour (in feet	barrier a 61.1 56.8 58.4 63.9	0.31 0.34 0.34 ttenu	ation) ening 59.4 50.4 49.4 60.3	-1.20 -1.20 -1.20 <i>Leq</i>	Night 53.3 48.9 50.6 56.1	-4.65 -4.87 -5.43	0.0 0.0 0.0 61.9 57.4 59.0 64.6	000 000 000 200 200 200 200 200 200 200	0.000 0.000 0.000 VEL 62.5 57.6 59.7

FHWA-RD-77-108 HIGHWAY N	OISE PREDICTION MODEL (9/12/2021)
Scenario: E Road Name: Western Av. Road Segment: n/o I-405 NB Ramp	Project Name: Torrance Commerce Job Number: 14092
SITE SPECIFIC INPUT DATA	NOISE MODEL INPUTS
Highway Data	Site Conditions (Hard = 10, Soft = 15)
Average Daily Traffic (Adt): 22,560 vehicles	Autos: 15
Peak Hour Percentage: 10.00%	Medium Trucks (2 Axles): 15
Peak Hour Volume: 2,256 vehicles	Heavy Trucks (3+ Axles): 15
Vehicle Speed: 40 mph	Vehicle Mix
Near/Far Lane Distance: 50 feet	VehicleType Day Evening Night Daily
Site Data	Autos: 77.5% 12.9% 9.6% 97.02
Barrier Height: 0.0 feet	Medium Trucks: 84.8% 4.9% 10.3% 2.36
Barrier Type (0-Wall, 1-Berm): 0.0	Heavy Trucks: 86.5% 2.7% 10.8% 0.62
Centerline Dist. to Barrier: 67.0 feet	Noise Source Elevations (in feet)
Centerline Dist. to Observer: 67.0 feet	Autos: 0.000
Barrier Distance to Observer: 0.0 feet	Medium Trucks: 2,297
Observer Height (Above Pad): 5.0 feet	Heavy Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0
Pad Elevation: 0.0 feet	Heavy Hucks. 6.004 Grade Adjustment. 0.0
Road Elevation: 0.0 feet	Lane Equivalent Distance (in feet)
Road Grade: 0.0%	Autos: 62.362
Left View: -90.0 degrees	Medium Trucks: 62.220
Right View: 90.0 degrees	Heavy Trucks: 62.234
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Dist	nce Finite Road Fresnel Barrier Atten Berm Atten
Autos: 66.51 2.08	-1.54 -1.20 -4.71 0.000 0.00
Medium Trucks: 77.72 -14.06	-1.53 -1.20 -4.88 0.000 0.00
Heavy Trucks: 82.99 -19.87	-1.53 -1.20 -5.29 0.000 0.00
Unmitigated Noise Levels (without Topo and barrier	
	eq Evening Leq Night Ldn CNEL
Autos: 65.8 63.9	62.2 56.1 64.7 65
Medium Trucks: 60.9 59.4	53.1 51.5 60.0 60
Heavy Trucks: 60.4 59.0	49.9 51.2 59.5 59
Vehicle Noise: 67.9 66.2	62.9 58.3 66.9 67
Centerline Distance to Noise Contour (in feet)	70 dBA 65 dBA 60 dBA 55 dBA
	70 dBA 65 dBA 60 dBA 55 dBA
L day	10 00 100 11
Ldn: CNEL:	42 89 193 41 44 96 206 44

	FHWA-RD	-77-108 HIGH	WAY	NOISE	PREDIC		IODEL (9/12/2	021)				
Scenario Road Name Road Segmen	e: Western Av				Project Name: Torrance Commerce Job Number: 14092								
SITE S	PECIFIC IN	PUT DATA			NOISE MODEL INPUTS								
Highway Data				5	Site Conditions (Hard = 10, Soft = 15)								
Average Daily 1	raffic (Adt):	23.052 vehicle	s					Autos:	15				
Peak Hour F	Percentage:	10.00%			Me	dium Tr	ucks (2)	Axles):	15				
Peak Ho	our Volume:	2,305 vehicles	6		He	avy Tru	cks (3+)	Axles):	15				
Veh	icle Speed:	40 mph			/ehicle I	Niv							
Near/Far Lan	e Distance:	50 feet		E E		cleType		Dav	Evening	Night	Daily		
Site Data					10/1		Autos:	77.5%		9.6%			
	rier Height:	0.0 feet			Me	, edium T		84.8%		10.3%	2.339		
вал Barrier Type (0-Wa		0.0 teet 0.0			F	leavy T	rucks:	86.5%		10.8%	0.869		
Centerline Dis		67.0 feet											
Centerline Dist. to		67.0 feet		1	Voise So				eet)				
Barrier Distance to		0.0 feet				Auto		000					
Observer Height (A		5.0 feet				n Truck		297	Over et a . A et				
	d Elevation:	0.0 feet			Heav	y Truck	s: 8.	004	Grade Ad	usiment.	0.0		
Roa	d Elevation:	0.0 feet		1	ane Equ	uivalen	t Distan	ce (in i	feet)				
R	oad Grade:	0.0%				Auto	s: 62.	362					
	Left View:	-90.0 degree	es		Mediur	n Truck	s: 62.	220					
	Right View:	90.0 degree	es		Heav	y Truck	s: 62.	234					
FHWA Noise Mode	I Calculations	1											
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite		Fresr		Barrier Att		m Atten		
Autos:	66.51	2.16		-1.54		-1.20		-4.71		000	0.00		
Medium Trucks:	77.72	-14.02		-1.5		-1.20		-4.88		000	0.00		
Heavy Trucks:	82.99	-18.34		-1.5	3	-1.20		-5.29	0.0	000	0.00		
Unmitigated Noise				er atten	uation)								
	Leq Peak Hou			Leg Ev		Leq	Night		Ldn		VEL		
Autos:	65.		64.0		62.3		56.2		64.8		65		
Medium Trucks:	61.		59.5		53.1		51.0		60.0		60		
Heavy Trucks: Vehicle Noise:	61.		60.5		51.5		52.		61.1		61 67		
	68.		66.6		63.1		58.	/	67.3	3	67		
Centerline Distance	e to Noise Co	ntour (in feet)		70 c	IRA	65	dBA	6	60 dBA	55	dBA		
			Ldn:	700	44	00	95		204		44		
			VEL:		44		101		218		44		
		CI	*==		47		101		218		47		

Monday, December 20, 2021

FHWA	RD-77-108 HIG	HWAY NO	DISE PF	REDIC	TION MC	DEL (9	/12/20)21)				
Scenario: OY 2023	3				Project N	lame: T	orran	ce Comme	rce			
Road Name: Western					Job Nu	mber: 1	4092					
Road Segment: n/o I-405	i NB Ramp											
SITE SPECIFIC	INPUT DATA			NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15)								
Highway Data			Sit	e Cond	ditions (I		· ·	,				
Average Daily Traffic (Adt)		cles					Autos:	15				
Peak Hour Percentage					dium Truc			15				
Peak Hour Volume	,	es		Hea	avy Truck	's (3+ A	xles):	15				
Vehicle Speed			Vel	hicle N	lix							
Near/Far Lane Distance	50 feet			Vehi	cleType	I	Day	Evening	Night	Daily		
Site Data					AL	itos:	77.5%	12.9%	9.6%	97.02%		
Barrier Height	: 0.0 feet			Me	dium Tru	cks:	84.8%	4.9%	10.3%	2.36%		
Barrier Type (0-Wall, 1-Berm)				H	leavy Tru	cks:	86.5%	2.7%	10.8%	0.62%		
Centerline Dist. to Barrier	:: 67.0 feet		No	isa Sa	urce Ele	vations	(in fe	of)				
Centerline Dist. to Observer	:: 67.0 feet		110	130 00	Autos			01/				
Barrier Distance to Observe	: 0.0 feet			Madiun	n Trucks:	0.0						
Observer Height (Above Pad)	: 5.0 feet				v Trucks:			Grade Adj	ustment	0.0		
Pad Elevation	0.0 feet								aounom	0.0		
Road Elevation	0.0 feet		Lai	ne Equ	ivalent l			eet)				
Road Grade	0.0%				Autos:							
Left View	-90.0 degr	ees			n Trucks:							
Right View	" 90.0 degr	ees		Heav	y Trucks:	62.2	234					
FHWA Noise Model Calculati	ons											
VehicleType REMEL	Traffic Flow	Distar		Finite I	Road	Fresne		Barrier Atte	en Ber	m Atten		
Autos: 66.	51 2.1	2	-1.54		-1.20		4.71	0.0	00	0.00		
Medium Trucks: 77.		-	-1.53		-1.20		4.88	0.0		0.00		
Heavy Trucks: 82.	99 -19.8	3	-1.53		-1.20		-5.29	0.0	00	0.00		
Unmitigated Noise Levels (w	ithout Topo and	d barrier a	attenua	tion)								
VehicleType Leq Peak H			eq Ever	•	Leq N			Ldn		VEL		
Autos:	65.9	64.0		62.2		56.2		64.8		65.4		
Medium Trucks:	61.0	59.5		53.1		51.6		60.0		60.3		
Heavy Trucks:	60.4	59.0		50.0		51.2		59.6		59.		
Vehicle Noise:	67.9	66.2		62.9		58.4		66.9		67.4		
Centerline Distance to Noise	Contour (in fee	et)										
			70 dB/	A	65 di	BA	6	0 dBA	55	dBA		
										418		
		Ldn: CNEL:		42 45		90 96		194 208		410		

Scenario: OYP 2023 Project Name: Torrance Commerce	
Road Name: Western Av. Job Number: 14092	
Road Segment: n/o I-405 NB Ramp	
SITE SPECIFIC INPUT DATA NOISE MODEL INPUTS	
Highway Data Site Conditions (Hard = 10, Soft = 15)	
Average Daily Traffic (Adt): 23,262 vehicles Autos: 15	
Peak Hour Percentage: 10.00% Medium Trucks (2 Axles): 15	
Peak Hour Volume: 2,326 vehicles Heavy Trucks (3+ Axles): 15	
Vehicle Speed: 40 mph Vehicle Mix	
Near/Earlane Distance: E0 foot	aht Daily
	9.6% 96.81%
Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10	0.3% 2.33%
	0.8% 0.86%
Centerline Dist. to Barrier: 67.0 feet Noise Source Elevations (in feet)	
Centerline Dist. to Observer: 67.0 feet Autos: 0,000	
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297	
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjusti	ment: 0.0
Pad Elevation: 0.0 feet	
Road Elevation: 0.0 feet Lane Equivalent Distance (in feet)	
Road Grade: 0.0% Autos: 62.362	
Left View: -90.0 degrees Medium Trucks: 62.220	
Right View: 90.0 degrees Heavy Trucks: 62.234	
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten	Berm Atten
Autos: 66.51 2.20 -1.54 -1.20 -4.71 0.000	0.000
Medium Trucks: 77.72 -13.98 -1.53 -1.20 -4.88 0.000	0.000
Heavy Trucks: 82.99 -18.32 -1.53 -1.20 -5.29 0.000	0.000
Unmitigated Noise Levels (without Topo and barrier attenuation)	
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn	CNEL
Autos: 66.0 64.1 62.3 56.2 64.9	65.5
Medium Trucks: 61.0 59.5 53.1 51.6 60.1	60.3
Heavy Trucks: 61.9 60.5 51.5 52.7 61.1	61.2
Vehicle Noise: 68.3 66.6 63.1 58.8 67.3	67.7
Centerline Distance to Noise Contour (in feet)	
70 dBA 65 dBA 60 dBA	55 dBA
Ldn: 44 95 205	443
CNEL: 47 102 219	472

FHWA-RD-77-108 HIGHWAY N	ISE PREDICTION MODEL (9/12/2021)							
Scenario: E Road Name: Western Av. Road Segment: n/o 190th St.	Project Name: Torrance Commerce Job Number: 14092							
SITE SPECIFIC INPUT DATA	NOISE MODEL INPUTS							
Highway Data	Site Conditions (Hard = 10, Soft = 15)							
Average Daily Traffic (Adt): 30,180 vehicles	Autos: 15							
Peak Hour Percentage: 10.00%	Medium Trucks (2 Axles): 15							
Peak Hour Volume: 3,018 vehicles	Heavy Trucks (3+ Axles): 15							
Vehicle Speed: 40 mph	Vehicle Mix							
Near/Far Lane Distance: 50 feet	VehicleType Day Evening Night Daily							
Site Data	Autos: 77.5% 12.9% 9.6% 97.02							
Barrier Height: 0.0 feet	Medium Trucks: 84.8% 4.9% 10.3% 2.36							
Barrier Type (0-Wall, 1-Berm): 0.0	Heavy Trucks: 86.5% 2.7% 10.8% 0.62							
Centerline Dist. to Barrier: 67.0 feet								
Centerline Dist. to Observer: 67.0 feet	Noise Source Elevations (in feet)							
Barrier Distance to Observer: 0.0 feet	Autos: 0.000							
Observer Height (Above Pad): 5.0 feet	Medium Trucks: 2.297							
Pad Elevation: 0.0 feet	Heavy Trucks: 8.004 Grade Adjustment: 0.0							
Road Elevation: 0.0 feet	Lane Equivalent Distance (in feet)							
Road Grade: 0.0%	Autos: 62.362							
Left View: -90.0 degrees	Medium Trucks: 62.220							
Right View: 90.0 degrees	Heavy Trucks: 62.234							
FHWA Noise Model Calculations								
VehicleType REMEL Traffic Flow Dista	ce Finite Road Fresnel Barrier Atten Berm Atter							
Autos: 66.51 3.34	-1.54 -1.20 -4.71 0.000 0.00							
Medium Trucks: 77.72 -12.80	-1.53 -1.20 -4.88 0.000 0.00							
Heavy Trucks: 82.99 -18.60	-1.53 -1.20 -5.29 0.000 0.00							
Unmitigated Noise Levels (without Topo and barrier								
	q Evening Leq Night Ldn CNEL							
Autos: 67.1 65.2	63.4 57.4 66.0 66							
Medium Trucks: 62.2 60.7	54.3 52.8 61.2 61							
Heavy Trucks: 61.7 60.2	51.2 52.5 60.8 60							
Vehicle Noise: 69.2 67.4	64.2 59.6 68.1 68							
Centerline Distance to Noise Contour (in feet)								
Later	70 dBA 65 dBA 60 dBA 55 dBA							
Ldn:	50 109 234 50							
CNEL	54 116 251 54							

	FHWA-RD-77	-108 HIGHWAY	Y NOISE	PREDIC	TION M	ODEL (9	/12/20)21)				
Scenario: Road Name: Road Segment:	Western Av.			Project Name: Torrance Commerce Job Number: 14092								
SITE SP	ECIFIC INPU	T DATA		NOISE MODEL INPUTS								
Highway Data				Site Conditions (Hard = 10, Soft = 15)								
Average Daily Tra	affic (Adt): 31,	730 vehicles				A	Autos:	15				
Peak Hour Pe	rcentage: 10.	00%		Med	dium Tru	cks (2 A	xles):	15				
Peak Hou	r Volume: 3,1	73 vehicles		Hea	avy Truc	ks (3+ A	xles):	15				
Vehic	le Speed:	40 mph		Vehicle N	lix							
Near/Far Lane	Distance:	50 feet	F		cleType		Dav	Evening	Night	Daily		
Site Data						utos:	77.5%		9.6%			
Barrie	er Height:	0.0 feet		Me	dium Tr	ucks:	84.8%	4.9%	10.3%	2.309		
Barrier Type (0-Wall,		0.0		H	leavy Tr	ucks:	86.5%	2.7%	10.8%	1.17		
Centerline Dist.	,	7.0 feet	H	Noise So	urco El	vationa	(in fo	of)				
Centerline Dist. to	Observer: 6	7.0 feet	Ľ.	Noise 30	Autos			el)				
Barrier Distance to	Observer:	0.0 feet		Madium	Autos n Trucks							
Observer Height (Ab	ove Pad):	5.0 feet			y Trucks		.97)04	Grade Ad	ustment	0.0		
Pad	Elevation:	0.0 feet		neav.	y mucks	. 0.0	/04	Grade Adj	usunen.	0.0		
Road	Elevation:	0.0 feet	1	Lane Equ	iivalent			ieet)				
Roa	ad Grade: 0	.0%			Autos							
		0.0 degrees			n Trucks							
R	ight View:	0.0 degrees		Heav	y Trucks	: 62.2	234					
FHWA Noise Model C												
			istance	Finite		Fresn		Barrier Atte		m Atten		
Autos:	66.51	3.54	-1.5		-1.20		4.71	0.0		0.00		
Medium Trucks:	77.72	-12.70	-1.5		-1.20		-4.88		000	0.00		
Heavy Trucks:	82.99	-15.62	-1.5		-1.20		-5.29	0.0	000	0.00		
Unmitigated Noise L				<u> </u>								
	q Peak Hour	Leq Day		vening	Leq I			Ldn		VEL		
Autos: Medium Trucks:	67.3 62.3	65.4 60.8		63.6 54.4		57.6 52.9		66.2 61.3		66. 61.		
Heavy Trucks:	64.6	63.2		54.4 54.2		55.4		63.8		63		
Vehicle Noise:	70.0	68.3		64.5		60.5		69.0		69		
				04.0		00.0		00.0	,	00.		
Centerline Distance t	o worse conto	ur (In reet)	70 (dBA	65 c	IBA	6	0 dBA	55	dBA		
		Ldn:		57		124		266		574		

Monday, December 20, 2021

FHWA-R	D-77-108 HIGHW	AY NOISE	E PREDIC	TION MC	DEL (9/12	2/2021)					
Scenario: OY 2023 Road Name: Western A Road Segment: n/o 190th			Project Name: Torrance Commerce Job Number: 14092								
SITE SPECIFIC I	NPUT DATA					DEL INPUT	rs				
Highway Data			Site Con	ditions (H	lard = 10,	Soft = 15)					
Average Daily Traffic (Adt):	30,480 vehicles				Aut	os: 15					
Peak Hour Percentage:	10.00%				ks (2 Axle	,					
Peak Hour Volume:	3,048 vehicles		Hea	avy Truck	s (3+ Axle	s): 15					
Vehicle Speed:	40 mph		Vehicle N	lix							
Near/Far Lane Distance:	50 feet			cleType	Da	v Evening	Night	Daily			
Site Data				AL	itos: 77.	5% 12.9%	9.6%	97.02			
Barrier Height:	0.0 feet		Me	dium Tru	cks: 84.	8% 4.9%	10.3%	2.36			
Barrier Type (0-Wall, 1-Berm):	0.0		H	leavy Tru	cks: 86.	5% 2.7%	10.8%	0.62			
Centerline Dist. to Barrier:	67.0 feet		Noise So	urce Ele	vations (ii	n feet)					
Centerline Dist. to Observer:	67.0 feet			Autos:							
Barrier Distance to Observer:	0.0 feet		Modiur	n Trucks:							
Observer Height (Above Pad):	5.0 feet			v Trucks:			djustmen	t: 0.0			
Pad Elevation:	0.0 feet						-,				
Road Elevation:	0.0 feet		Lane Equ								
Road Grade:	0.0%			Autos:							
Left View:	-90.0 degrees			n Trucks:							
Right View:	90.0 degrees		Heav	y Trucks:	62.234						
FHWA Noise Model Calculation	าร										
VehicleType REMEL	Traffic Flow	Distance	Finite	Road	Fresnel	Barrier A	tten Be	rm Atter			
Autos: 66.5	I 3.38	-1.	54	-1.20	-4.	71 0	.000	0.00			
Medium Trucks: 77.72	-12.76	-1.	53	-1.20	-4.6	88 0	.000	0.00			
Heavy Trucks: 82.99	-18.56	-1.	53	-1.20	-5.2	29 0	.000	0.00			
Unmitigated Noise Levels (with	hout Topo and ba	rrier atte	nuation)								
VehicleType Leq Peak Ho			Evening	Leq N		Ldn		NEL			
	7.2 65		63.5		57.4	66		66			
	2.2 60		54.4		52.8	61		61			
	1.7 60.		51.2		52.5	60		61			
Vehicle Noise: 6	9.2 67	.5	64.2		59.6	68	.2	68			
Centerline Distance to Noise C	contour (in feet)										
			dBA	65 dl		60 dBA		5 dBA			
	Ldi		51		109	23 25	-	50			
	CNE		54		117			543			

	FHWA-RD	0-77-108 HIGH	WAY NO	DISE PR	EDICTION	MODEL (9	/12/20)21)				
Road Nan	rio: OYP 2023 ne: Western Av ent: n/o 190th S				Project Name: Torrance Commerce Job Number: 14092							
	SPECIFIC IN	PUT DATA						LINPUTS	5			
Highway Data				Site	Conditions	s (Hard = 1	10, So	ft = 15)				
Average Daily	Traffic (Adt):	32,030 vehicle	s				utos:	15				
	Percentage:	10.00%				rucks (2 A	,	15				
	lour Volume:	3,203 vehicles	6		Heavy Tri	icks (3+ A	xles):	15				
	ehicle Speed:	40 mph		Veh	icle Mix							
Near/Far La	ane Distance:	50 feet			VehicleTyp	e [Day	Evening	Night	Daily		
Site Data						Autos: 7	7.5%	12.9%	9.6%	96.54%		
Ba	rrier Height:	0.0 feet			Medium	Trucks: 8	34.8%	4.9%	10.3%	2.30%		
Barrier Type (0-V		0.0			Heavy	Trucks: 8	36.5%	2.7%	10.8%	1.17%		
	ist. to Barrier:	67.0 feet		Noir	se Source E	Investione	(in fo	of)				
Centerline Dist.	to Observer:	67.0 feet		NOIS	Aut			el)				
Barrier Distance	to Observer:	0.0 feet			Hui Iedium Truc	0.0						
Observer Height	(Above Pad):	5.0 feet			lealum Truc Heavy Truc			Grade Adju	ustment	0.0		
P	ad Elevation:	0.0 feet							Journerne.	0.0		
Ro	ad Elevation:	0.0 feet		Lan	e Equivaler	nt Distance	e (in f	ieet)				
	Road Grade:	0.0%			Aut		62					
	Left View:	-90.0 degree	es	M	ledium Truc	ks: 62.2	20					
	Right View:	90.0 degree	2S		Heavy Truc	ks: 62.2	34					
FHWA Noise Mod	el Calculations	S										
VehicleType	REMEL	Traffic Flow	Distar	nce F	inite Road	Fresne	e/ .	Barrier Atte	n Ber	m Atten		
Autos:	66.51	3.58		-1.54	-1.20	-	4.71	0.0	00	0.000		
Medium Trucks:	77.72	-12.66		-1.53	-1.20	-	4.88	0.0	00	0.000		
Heavy Trucks:	82.99	-15.59		-1.53	-1.20	-	5.29	0.0	00	0.000		
Unmitigated Nois	e Levels (with	out Topo and	barrier a	attenuati	ion)							
ommingated Nois		r Leg Day	L	eq Eveni	ng Leo	Night		Ldn		VEL		
VehicleType	Leq Peak Hou									66.9		
VehicleType Autos:	67	.3	65.4		63.7	57.6		66.2				
VehicleType Autos: Medium Trucks:	67 62	.3 .3	60.8		54.5	52.9		61.4		61.6		
VehicleType Autos: Medium Trucks: Heavy Trucks:	67 62 64	.3 .3 .7	60.8 63.2		54.5 54.2	52.9 55.5		61.4 63.8		61.6 63.9		
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	67 62 64 70	.3 .3 .7 .0	60.8 63.2 68.3		54.5	52.9		61.4		61.6 63.9		
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	67 62 64 70	.3 .3 .7 .0	60.8 63.2 68.3		54.5 54.2 64.6	52.9 55.5 60.5		61.4 63.8 69.0		61.6 63.9 69.4		
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	67 62 64 70	.3 .3 .7 .0 mtour (in feet,	60.8 63.2 68.3		54.5 54.2 64.6	52.9 55.5 60.5	6	61.4 63.8 69.0 0 dBA		61.6 63.9 69.4 dBA		
VehicleType Autos: Medium Trucks: Heavy Trucks:	67 62 64 70	.3 .3 .7 .0 ntour (in feet,	60.8 63.2 68.3		54.5 54.2 64.6	52.9 55.5 60.5	6	61.4 63.8 69.0		61.6 63.9 69.4		

FHWA-RD-77-108 HIGHWAY N	IOISE PRED	ICTION MO	ODEL (9	/12/202	21)				
Scenario: E Road Name: Western Av. Road Segment: s/o 190th St.		Project Name: Torrance Commerce Job Number: 14092							
SITE SPECIFIC INPUT DATA		N	OISE M	ODEL	INPUT	3			
Highway Data	Site Co	onditions (Hard = 1	10, Sof	it = 15)				
Average Daily Traffic (Adt): 29,610 vehicles			A	Autos:	15				
Peak Hour Percentage: 10.00%	٨	ledium Tru	cks (2 A	xles):	15				
Peak Hour Volume: 2,961 vehicles	F	leavy Truci	ks (3+ A	xles):	15				
Vehicle Speed: 40 mph	Vehicle	Mix							
Near/Far Lane Distance: 50 feet		hicleType	1	Day	Evening	Night	Daily		
Site Data	-			77.5%	12.9%	9.6%			
Barrier Height: 0.0 feet		Medium Tru	ucks: {	84.8%	4.9%	10.3%	2.36%		
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Tru	ucks: 8	86.5%	2.7%	10.8%	0.62%		
Centerline Dist. to Barrier: 67.0 feet									
Centerline Dist. to Observer: 67.0 feet	Noise	Source Ele			et)				
Barrier Distance to Observer: 0.0 feet		Autos							
Observer Height (Above Pad): 5.0 feet		ium Trucks			Grade Adj	votraont			
Pad Elevation: 0.0 feet	не	avy Trucks	: 8.0	104 0	siaue Auj	usuneni	0.0		
Road Elevation: 0.0 feet	Lane E	quivalent	Distanc	e (in fe	et)				
Road Grade: 0.0%		Autos	: 62.3	862					
Left View: -90.0 degrees	Med	ium Trucks	: 62.2	20					
Right View: 90.0 degrees	He	avy Trucks	: 62.2	234					
FHWA Noise Model Calculations									
VehicleType REMEL Traffic Flow Dist	ance Fini	te Road	Fresne	e/ E	arrier Atte	en Ber	m Atten		
Autos: 66.51 3.26	-1.54	-1.20	-	4.71	0.0	00	0.000		
Medium Trucks: 77.72 -12.88	-1.53	-1.20	-	4.88	0.0	00	0.000		
Heavy Trucks: 82.99 -18.69	-1.53	-1.20	-	5.29	0.0	00	0.000		
Unmitigated Noise Levels (without Topo and barrier									
	Leq Evening	Leq N	•		Ldn		VEL		
Autos: 67.0 65.1	63		57.3		65.9		66.5		
Medium Trucks: 62.1 60.6	54		52.7		61.2		61.4		
Heavy Trucks: 61.6 60.2 Vehicle Noise: 69.1 67.4	51		52.4		60.7		60.9		
	64		59.5		68.1		68.5		
Centerline Distance to Noise Contour (in feet)	70 dBA	65 d	DA	~) dBA	57	dBA		
Ldn:	70 dBA 5		BA 107	60	231	55	ава 498		
CNEL:	5	-	107		231 247		498 533		
CNEL:	5	3	115		247		533		

FHWA-RD-77-108 HIGHWA										
Scenario: E+P		Project Name: Torrance Commerce Job Number: 14092								
Road Name: Western Av.			Job Nu	mber: 140	92					
Road Segment: s/o 190th St.										
SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15)								
Highway Data		Site Con	ditions (H	lard = 10	, Soft = 15)					
Average Daily Traffic (Adt): 30,840 vehicles				Aut	os: 15					
Peak Hour Percentage: 10.00%		Mee	dium Truc	ks (2 Axle	es): 15					
Peak Hour Volume: 3,084 vehicles		Hea	avy Truck	s (3+ Axle	es): 15					
Vehicle Speed: 40 mph	ŀ	Vehicle N	Nix							
Near/Far Lane Distance: 50 feet	-		cleType	Da	y Evening	Night	Daily			
Site Data					.5% 12.9%	9.6%	,			
		Me	edium Tru		.8% 4.9%					
		F	leavy Tru		.5% 2.7%					
Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet					-	10.070				
Centerline Dist. to Observer: 67.0 feet		Noise So	urce Ele	vations (i	n feet)					
Barrier Distance to Observer: 0.0 feet			Autos:	0.000)					
Observer Height (Above Pad): 5.0 feet		Mediur	n Trucks:							
Pad Elevation: 0.0 feet		Heav	y Trucks:	8.004	Grade Ad	ljustment	: 0.0			
Road Elevation: 0.0 feet	ŀ	Lane Equ	ivalent l	Distance	(in feet)					
Road Grade: 0.0%	-	Luno Lqu	Autos:		, ,					
Left View: -90.0 degrees		Mediur	n Trucks:							
Right View: 90.0 degrees			y Trucks:							
right field. 50.0 dogrooo			,		-					
FHWA Noise Model Calculations										
	istance	Finite		Fresnel	Barrier Att		m Atten			
Autos: 66.51 3.42	-1.5		-1.20	-4.		000	0.00			
Medium Trucks: 77.72 -12.80	-1.5	-	-1.20	-4.		000	0.00			
Heavy Trucks: 82.99 -16.13	-1.5	i3	-1.20	-5.	29 0.	000	0.00			
Unmitigated Noise Levels (without Topo and barr	ier atter	nuation)								
VehicleType Leq Peak Hour Leq Day		vening	Leq N		Ldn		NEL			
Autos: 67.2 65.3		63.5		57.5	66.		66.			
Medium Trucks: 62.2 60.7		54.3		52.8	61.		61.			
Heavy Trucks: 64.1 62.7		53.7		54.9	63.		63.			
Vehicle Noise: 69.8 68.1		64.4		60.2	68.	8	69.			
Centerline Distance to Noise Contour (in feet)										
· · ·	70	dBA	65 dl	BA	60 dBA	55	dBA			
Ldn:		55		119	257	7	554			
CNEL		59		127	274		590			

Monday, December 20, 2021

FHWA-	RD-77-108 HIGH	WAY NO	SE PREDIC		DEL (9/1:	2/2021)						
Scenario: OY 2023 Road Name: Western Road Segment: s/o 190th			Project Name: Torrance Commerce Job Number: 14092									
SITE SPECIFIC	INPUT DATA		NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15)									
Highway Data			Site Con	ditions (l	Hard = 10,	Soft = 15)						
Average Daily Traffic (Adt):	29,890 vehicle	es			Aut	os: 15						
Peak Hour Percentage:	10.00%		Me	dium Truo	cks (2 Axle	es): 15						
Peak Hour Volume:	2,989 vehicle	s	He	avy Truck	ks (3+ Axle	es): 15						
Vehicle Speed:	40 mph		Vehicle I	Niv								
Near/Far Lane Distance:	50 feet			icleType	Da	y Evening	Night Dail					
Site Data						.5% 12.9%	9.6% 97.0					
Barrier Height:	0.0 feet		Me	edium Tru	icks: 84.	.8% 4.9%	10.3% 2.3					
Barrier Type (0-Wall, 1-Berm).			ŀ	leavy Tru	icks: 86.	.5% 2.7%	10.8% 0.62					
Centerline Dist. to Barrier.				-								
Centerline Dist. to Observer.	67.0 feet		Noise Sc		vations (i	,						
Barrier Distance to Observer.	0.0 feet			Autos:								
Observer Height (Above Pad)			n Trucks:									
Pad Elevation		Heav	y Trucks:	8.004	Grade Adj	ustment: 0.0						
Road Elevation:		Lane Equ	uivalent l	Distance ((in feet)							
Road Grade:	0.0%			Autos:	62.362	2						
Left View:	-90.0 degree	es	Mediur	n Trucks:	62.220)						
Right View:	90.0 degree	es	Heav	y Trucks	62.234	1						
FHWA Noise Model Calculatio	ons		1									
VehicleType REMEL	Traffic Flow	Distand	e Finite	Road	Fresnel	Barrier Atte	en Berm Atte					
Autos: 66.5	i1 3.30	-	1.54	-1.20	-4.	71 0.0	00 0.0					
Medium Trucks: 77.7			1.53	-1.20	-4.							
Heavy Trucks: 82.9	9 -18.65	-	1.53	-1.20	-5.	29 0.0	00 0.0					
Unmitigated Noise Levels (wi	thout Topo and	barrier at	tenuation)									
VehicleType Leq Peak H			q Evening	Leq N	•	Ldn	CNEL					
		65.2	63.4		57.3	66.0						
		60.6	54.3		52.7	61.2						
		60.2	51.2		52.4	60.8						
Vehicle Noise:	69.1	67.4	64.1		59.6	68.1	6					
Centerline Distance to Noise	Contour (in feet											
			70 dBA	65 d	BA	60 dBA	55 dBA					
		Ldn: NEL:	50 54		108 116	232 249	5					

	FHWA-RL	0-77-108 HIGH	WATING		REDICI			1212				
Road Nam	io: OYP 2023 ne: Western Av nt: s/o 190th S			Project Name: Torrance Commerce Job Number: 14092								
SITE	SPECIFIC IN	IPUT DATA				N	OISE N	IODE		S		
Highway Data				Site Conditions (Hard = 10, Soft = 15)								
Average Daily	Traffic (Adt):	31,120 vehicle	es				A	Autos:	15			
Peak Hour	Percentage:	10.00%			Med	lium Tru	icks (2 A	xles):	15			
Peak H	lour Volume:	3,112 vehicle	s		Hea	vy Truc	ks (3+ A	xles):	15			
Ve	hicle Speed:	40 mph		1/0	ehicle M	liv						
Near/Far La	ne Distance:	50 feet		ve		leType		Day	Evening	Night	Daily	
Site Data					venic			77.5%	•	•	96.62%	
				-	Ma	~ dium Tr		84.8%		9.0%	2.31%	
	rrier Height:	0.0 feet				eavy Tr		86.5%		10.3%	1.07%	
Barrier Type (0-W		0.0				cuvy n	uono.	00.07	2.170	10.070	1.07 /	
Centerline Di		67.0 feet		No	oise Sou	urce El	evations	in fe	eet)			
Centerline Dist. Barrier Distance		67.0 feet				Autos	: 0.C	000				
		0.0 feet			Medium	Trucks	: 2.2	97				
Observer Height (ad Elevation:	5.0 feet			Heavy	Trucks	: 8.0	04	Grade Adj	iustment.	0.0	
	ad Elevation: ad Elevation:	0.0 feet		12	ane Equ	ivəlont	Distanc	o (in	foot)			
	Road Grade:	0.0 feet 0.0%			nie Equ	Autos			1001			
	Left View:	-90.0 degree			Medium							
	Right View:	90.0 degree				Trucks						
FHWA Noise Mod	el Calculation	s										
VehicleType	REMEL	Traffic Flow	Distan	00								
					Finite F	Road	Fresn	e/	Barrier Atte	en Ber	m Atten	
Autos:	66.51	3.46		-1.54	Finite F	Road -1.20		e/ -4.71		en Ber		
Autos: Medium Trucks:	66.51 77.72	3.46 -12.76			Finite F				0.0		0.000	
				-1.54	Finite F	-1.20		4.71	0.0	000	0.000	
Medium Trucks: Heavy Trucks: Unmitigated Noise	77.72 82.99 e Levels (with	-12.76 -16.11 out Topo and	barrier a	-1.54 -1.53 -1.53	ation)	-1.20 -1.20 -1.20		-4.71 -4.88	0.0 0.0 0.0	000	0.000 0.000 0.000	
Medium Trucks: Heavy Trucks:	77.72 82.99 e Levels (with Leg Peak Hou	-12.76 -16.11 out Topo and r Leq Day	barrier a	-1.54 -1.53 -1.53	ation) ening	-1.20 -1.20	Night	-4.71 -4.88 -5.29	0.0 0.0 0.0	000 000 000 <i>CI</i>	0.000 0.000 0.000	
Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos:	77.72 82.99 E Levels (with Leg Peak Hou 67	-12.76 -16.11 out Topo and r Leq Day .2	barrier a / Le 65.3	-1.54 -1.53 -1.53	ation) ening 63.6	-1.20 -1.20 -1.20	Night 57.5	-4.71 -4.88 -5.29	0.0 0.0 0.0 <i>Ldn</i> 66.1	000 000 000 <i>CI</i>	0.000 0.000 0.000 VEL 66.7	
Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks:	77.72 82.99 e Levels (with Leq Peak Hou 67 62	-12.76 -16.11 out Topo and ir Leq Day .2 .2	<i>barrier a</i> / <i>Le</i> 65.3 60.7	-1.54 -1.53 -1.53	ation) ening 63.6 54.4	-1.20 -1.20 -1.20	Night 57.5 52.8	-4.71 -4.88 -5.29	0.0 0.0 0.0 <u>Ldn</u> 66.1 61.3	000 000 000 <i>C1</i>	0.000 0.000 0.000 <u>VEL</u> 66.7 61.4	
Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks: Heavy Trucks:	77.72 82.99 E Levels (with Leg Peak Hou 67	-12.76 -16.11 out Topo and rr Leq Day .2 .2 .2	barrier a / Le 65.3 60.7 62.7	-1.54 -1.53 -1.53	ation) ening 63.6 54.4 53.7	-1.20 -1.20 -1.20	Vight 57.5 52.8 54.9	-4.71 -4.88 -5.29	0.0 0.0 0.0 <i>Ldn</i> 66.1 61.3 63.3	000 000 000 <i>C/</i>	0.000 0.000 0.000 VEL 66.7 61.4 63.4	
Medium Trucks: Heavy Trucks: Unmitigated Noiss VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	77.72 82.99 e Levels (with Leq Peak Hou 67 62 64 69	-12.76 -16.11 out Topo and r Leq Day 2.2 .2 .2 .2 .2	barrier a 7 Le 65.3 60.7 62.7 68.1	-1.54 -1.53 -1.53	ation) ening 63.6 54.4	-1.20 -1.20 -1.20	Night 57.5 52.8	-4.71 -4.88 -5.29	0.0 0.0 0.0 <u>Ldn</u> 66.1 61.3	000 000 000 <i>C/</i>	0.000 0.000 0.000 VEL 66.7 61.4 63.4	
Medium Trucks: Heavy Trucks: Unmitigated Noise VehicleType Autos: Medium Trucks: Heavy Trucks:	77.72 82.99 e Levels (with Leq Peak Hou 67 62 64 69	-12.76 -16.11 out Topo and r Leq Day 2.2 .2 .2 .2 .2	barrier a 7 Le 65.3 60.7 62.7 68.1	-1.54 -1.53 -1.53 <i>ttenua</i> <i>eq Eve</i>	ation) ening 63.6 54.4 53.7 64.4	-1.20 -1.20 -1.20 Leg	Vight 57.5 52.8 54.9 60.3	-4.71 -4.88 -5.29	0.0 0.0 0.0 66.1 61.3 63.3 68.8	000 000 000 1 3 3 3	0.000 0.000 VEL 66.1 61.3 63.4 69.2	
Medium Trucks: Heavy Trucks: Unmitigated Noiss VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	77.72 82.99 e Levels (with Leq Peak Hou 67 62 64 69	-12.76 -16.11 out Topo and r Leq Day .2 .2 .8 entour (in feet	barrier a 65.3 60.7 62.7 68.1)	-1.54 -1.53 -1.53	ation) ening 63.6 54.4 53.7 64.4 3A	-1.20 -1.20 -1.20	Night 57.5 52.8 54.9 60.3	-4.71 -4.88 -5.29	0.0 0.0 0.0 66.1 61.3 68.8 60 dBA	000 000 000 1 3 3 3 55	0.000 0.000 NEL 66.7 61.5 69.2 dBA	
Medium Trucks: Heavy Trucks: Unmitigated Noiss VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	77.72 82.99 e Levels (with Leq Peak Hou 67 62 64 69	-12.76 -16.11 out Topo and ir Leg Day .2 .2 .2 .2 .8 ontour (in feet	barrier a 7 Le 65.3 60.7 62.7 68.1	-1.54 -1.53 -1.53 <i>ttenua</i> <i>eq Eve</i>	ation) ening 63.6 54.4 53.7 64.4	-1.20 -1.20 -1.20 Leg	Vight 57.5 52.8 54.9 60.3	-4.71 -4.88 -5.29	0.0 0.0 0.0 66.1 61.3 63.3 68.8	000 000 C/ 3 3 55	0.000 0.000 0.000 VEL 66.7 61.5 63.4 69.2	

FHWA-RD-	77-108 HIGHWAY	' NOISE	E PREDIC	TION M	ODEL (9	/12/20	21)			
Scenario: E Road Name: Western Av. Road Segment: s/o 195th St.			Project Name: Torrance Commerce Job Number: 14092							
SITE SPECIFIC INF	UT DATA			N	OISE N	IODE		6		
Highway Data			Site Con	ditions ((Hard =	10, So	ft = 15)			
Average Daily Traffic (Adt): 2	9,800 vehicles				A	Autos:	15			
Peak Hour Percentage: 1	0.00%		Me	dium Tru	icks (2 A	xles):	15			
Peak Hour Volume: 2	980 vehicles,		He	avy Truc	:ks (3+ A	xles):	15			
Vehicle Speed:	40 mph	ŀ	Vehicle I	Mix						
Near/Far Lane Distance:	50 feet	ŀ		icleType		Dav	Evening	Night	Daily	
Site Data			1011			77.5%	12.9%	9.6%		
Barrier Height:	0.0 feet		M	edium Tr	ucks:	84.8%	4.9%	10.3%	2.36%	
Barrier Type (0-Wall, 1-Berm):	0.0		1	leavy Tr	ucks:	86.5%	2.7%	10.8%	0.62%	
Centerline Dist. to Barrier:	67.0 feet									
Centerline Dist. to Observer:	67.0 feet	-	Noise So				et)			
Barrier Distance to Observer:	0.0 feet		Martin	Autos						
Observer Height (Above Pad):	5.0 feet			m Trucks			Grade Adj	untmont		
Pad Elevation:	0.0 feet		Heav	y Trucks	8: 8.0	104	Graue Auj	usuneni.	0.0	
Road Elevation:	0.0 feet	ſ	Lane Eq	uivalent	Distanc	e (in f	eet)			
Road Grade:	0.0%			Autos	s: 62.3	362				
Left View:	-90.0 degrees		Mediu	n Trucks	s: 62.2	20				
Right View:	90.0 degrees		Heav	y Trucks	62.2	234				
FHWA Noise Model Calculations		l								
VehicleType REMEL	Traffic Flow Dis	stance	Finite	Road	Fresne	e/ I	Barrier Atte	en Ber	m Atten	
Autos: 66.51	3.28	-1.5	54	-1.20		4.71	0.0	00	0.000	
Medium Trucks: 77.72	-12.85	-1.5	53	-1.20		4.88	0.0	00	0.000	
Heavy Trucks: 82.99	-18.66	-1.5	53	-1.20		-5.29	0.0	00	0.000	
Unmitigated Noise Levels (without										
VehicleType Leq Peak Hour		Leq E	vening	Leq I	•		Ldn		VEL	
Autos: 67.1			63.4		57.3		66.0		66.6	
Medium Trucks: 62.1			54.3		52.7		61.2		61.4	
Heavy Trucks: 61.6			51.1		52.4		60.8		60.9	
Vehicle Noise: 69.1			64.1		59.6		68.1		68.5	
Centerline Distance to Noise Con	tour (in feet)	70	dBA	05	10.4		0 -10 4		-04	
	Ldn:	70		65 c		6	0 dBA	55	dBA	
	Lan: CNEL:		50 54		108 115		232 248		500	
	UNEL:		54		115		248		535	

	FHWA-RD)-77-108 HIGH	WAY NC	DISE P	REDICTION	IODEL	(9/12/2	021)					
Scenari	o: E+P			Projec	t Name:	Torran	ce Comme	erce					
Road Nam	e: Western Av	r.			Job I	lumber:	14092						
Road Segmer	nt: s/o 195th S	t.											
	SPECIFIC IN	PUT DATA		NOISE MODEL INPUTS									
Highway Data				Si	e Conditions	(Hard =	= 10, So	oft = 15)					
Average Daily	Traffic (Adt):	30,292 vehicle	s				Autos:	15					
Peak Hour	Percentage:	10.00%			Medium Ti	rucks (2	Axles):	15					
Peak H	our Volume:	3,029 vehicles			Heavy Tru	icks (3+	Axles):	15					
Ve	hicle Speed:	40 mph		Ve	hicle Mix								
Near/Far La	ne Distance:	50 feet			VehicleType	e	Dav	Evening	Night	Daily			
Site Data						Autos:	77.5%		9.6%				
Bai	rier Height:	0.0 feet			Medium 1	rucks:	84.8%	4.9%	10.3%	2.34			
Barrier Type (0-W		0.0			Heavy 1	rucks:	86.5%	2.7%	10.8%	0.80			
Centerline Dis	. ,	67.0 feet											
Centerline Dist.		67.0 feet		No	ise Source E			eet)					
Barrier Distance	to Observer:	0.0 feet			Auto		.000						
Observer Height (Above Pad):	5.0 feet			Medium Truck		.297	Over et a d et					
÷ (d Elevation:	0.0 feet			Heavy Truck	(S.' 8	.004	Grade Ad	justment.	0.0			
Roa	d Elevation:	0.0 feet		La	ne Equivalen	t Distar	ice (in i	feet)					
F	Road Grade:	0.0%			Auto	os: 62	.362						
	Left View:	-90.0 degree	s		Medium Truck	(s: 62	.220						
	Right View:	90.0 degree	s		Heavy Truck	(s: 62	.234						
FHWA Noise Mode	al Calculations	s											
VehicleType	REMEL	Traffic Flow	Distan		Finite Road	Fres		Barrier Att	en Ber	m Atten			
Autos:	66.51	3.35		-1.54	-1.20		-4.71		000	0.00			
Medium Trucks:	77.72	-12.82		-1.53	-1.20		-4.88		000	0.00			
Heavy Trucks:	82.99	-17.46		-1.53	-1.20		-5.29	0.0	000	0.00			
Unmitigated Noise	Levels (with	out Topo and I	barrier a	ttenua	tion)								
	Leq Peak Hou			eq Eve		Night		Ldn		VEL			
Autos:	67		5.2		63.5	57.		66.		66			
Medium Trucks:	62		50.7		54.3	52		61.		61			
Heavy Trucks:	62		31.4		52.3	53		62.		62			
Vehicle Noise:	69		67.7		64.2	59	.9	68.4	4	68			
Centerline Distanc	e to Noise Co	ontour (in feet)		70 dB	A 65	dBA		50 dBA	55	dBA			
			dn:	/U dB						-			
			Lan: IEL:		52 56	11: 12		243 259		52 55			

Monday, December 20, 2021

FHWA-F	RD-77-108 HIGH	WAY NOI	SE PREDIO	CTION M	ODEL (9/'	12/2021)				
Scenario: OY 2023 Road Name: Western J Road Segment: s/o 195th			Project Name: Torrance Commerce Job Number: 14092							
SITE SPECIFIC	NPUT DATA					DDEL INPU	TS			
Highway Data			Site Cor	ditions (Hard = 10	0, Soft = 15)				
Average Daily Traffic (Adt):	30,090 vehicle	es			AL	itos: 15				
Peak Hour Percentage:	10.00%		Me	edium Tru	cks (2 Ax	<i>les):</i> 15				
Peak Hour Volume:	3,009 vehicles	5	He	avy Truc	ks (3+ Ax	<i>les):</i> 15				
Vehicle Speed:	40 mph		Vehicle	Mix						
Near/Far Lane Distance:	50 feet			icleType	D	ay Evening	Night	Daily		
Site Data						7.5% 12.9%	•			
Barrier Height:	0.0 feet		M	edium Tr	ucks: 84	4.8% 4.9%	5 10.39	6 2.369		
Barrier Type (0-Wall, 1-Berm):				Heavy Tr	ucks: 86	6.5% 2.7%	10.89	6 0.629		
Centerline Dist. to Barrier:	67.0 feet		Noise O			(in f = = 4)				
Centerline Dist. to Observer:	67.0 feet		Noise S		evations (
Barrier Distance to Observer:	0.0 feet			Autos	. 0.00					
Observer Height (Above Pad):	5.0 feet			m Trucks			-E	4.0.0		
Pad Elevation:	0.0 feet		Hea	vy Trucks	8.00	4 Grade A	djustmer	10:010		
Road Elevation:	0.0 feet		Lane Eq	uivalent	Distance	(in feet)				
Road Grade:	0.0%			Autos	: 62.36	62				
Left View:	-90.0 degree	es	Mediu	m Trucks	62.22	20				
Right View:	90.0 degree	es	Hea	vy Trucks	62.23	34				
FHWA Noise Model Calculatio	ns									
VehicleType REMEL	Traffic Flow	Distanc	e Finite	Road	Fresnel	Barrier A	tten Be	erm Atten		
Autos: 66.5	1 3.33	-	1.54	-1.20	-4	1.71 (0.000	0.00		
Medium Trucks: 77.7			1.53	-1.20			0.000	0.00		
Heavy Trucks: 82.9	9 -18.62	-	1.53	-1.20	-5	5.29 (0.000	0.00		
Unmitigated Noise Levels (wit			,							
VehicleType Leq Peak H			q Evening	Leq I	•	Ldn		CNEL		
		65.2	63.4		57.4		6.0	66.		
		60.7	54.3		52.8	-	.2	61.		
		60.2	51.2		52.4).8	60.		
Vehicle Noise:	39.2	67.4	64.2		59.6	68	8.1	68.		
Centerline Distance to Noise	Contour (in feet)									
			70 dBA	65 d		60 dBA	-	5 dBA		
								50/		
		Ldn: VEL:	50 54		108 116	23		503 539		

	FHWA-RD	-77-108 HIGHV	AY NOI	SE PREDIC		IODEL (S	9/12/20	021)		
Road Nam	Scenario: OYP 2023 Road Name: Western Av. Road Segment: s/o 195th St.					Name: 1 umber: 1		ce Comme	rce	
	SPECIFIC IN	PUT DATA						L INPUTS	3	
Highway Data				Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	30,582 vehicles					Autos:	15		
Peak Hour	Percentage:	10.00%		Me	dium Tr	ucks (2 A	xles):	15		
Peak H	our Volume:	3,058 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Ve	hicle Speed:	40 mph		Vehicle	Mix					
Near/Far La	ne Distance:	50 feet			icleType		Dav	Evening	Night	Daily
Site Data							77.5%		9.6%	
Bai	rier Heiaht:	0.0 feet		M	edium T	rucks:	84.8%	4.9%	10.3%	2.34%
Barrier Type (0-W		0.0		1	Heavy T	rucks:	86.5%	2.7%	10.8%	0.80%
Centerline Dis	. ,	67.0 feet		Noise So	urco E	ovation	(in fo	of)		
Centerline Dist.	to Observer:	67.0 feet		140/36 30	Auto		000	el)		
Barrier Distance	to Observer:	0.0 feet		Modiu	m Truck	. 0.0	297			
Observer Height (Above Pad):	5.0 feet			v Truck		004	Grade Adj	ustment	0.0
Pa	ad Elevation:	0.0 feet								
Roa	ad Elevation:	0.0 feet		Lane Eq	uivalen	Distanc	e (in f	feet)		
I	Road Grade:	0.0%			Auto		362			
	Left View:	-90.0 degrees			m Truck					
	Right View:	90.0 degrees		Heav	ry Truck	s: 62.2	234			
FHWA Noise Mode	el Calculations	5								
VehicleType	REMEL	Traffic Flow	Distance		Road	Fresn	-	Barrier Atte	en Ber	m Atten
Autos:	66.51	3.39		1.54	-1.20		-4.71	0.0		0.000
Medium Trucks:	77.72	-12.78		1.53	-1.20		-4.88	0.0		0.000
Heavy Trucks:	82.99	-17.43	-1	1.53	-1.20		-5.29	0.0	00	0.00
			arriar att	enustion)						
				,						
VehicleType	Leq Peak Hou	r Leq Day	Leg	Evening		Night		Ldn	CI	
VehicleType Autos:	Leq Peak Hou 67	r Leq Day .2 6	Leq 5.3	Evening 63.5		57.4		66.1		66.7
VehicleType Autos: Medium Trucks:	Leq Peak Hou 67 62	r Leq Day .2 6: .2 6:	Leq 5.3 0.7	Evening 63.5 54.3		57.4 52.8		66.1 61.3		66.7 61.5
VehicleType Autos: Medium Trucks: Heavy Trucks:	Leq Peak Hou 67 62 62	r Leq Day .2 6: .2 6: .8 6	Leg 5.3 0.7 1.4	Evening 63.5 54.3 52.4		57.4 52.8 53.6		66.1 61.3 62.0		66.7 61.5 62.1
VehicleType Autos: Medium Trucks:	Leq Peak Hou 67 62	r Leq Day .2 6: .2 6: .8 6	Leq 5.3 0.7	Evening 63.5 54.3		57.4 52.8		66.1 61.3		66.7 61.5 62.1
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	Leq Peak Hou 67 62 62 69	r Leq Day 2 6: 2 6: 2 6: 8 6: 4 6:	Leq 5.3 0.7 1.4 7.7	Evening 63.5 54.3 52.4 64.3		57.4 52.8 53.6 59.9	1	66.1 61.3 62.0 68.4		66.7 61.5 62.7 68.9
Autos: Medium Trucks: Heavy Trucks:	Leq Peak Hou 67 62 62 69	r Leq Day 2 6 2 6 8 6 4 6 ntour (in feet)	Leq 5.3 0.7 1.4 7.7	Evening 63.5 54.3 52.4 64.3 70 dBA		57.4 52.8 53.6 59.9 dBA	1	66.1 61.3 62.0 68.4		66.7 61.5 62.1 68.9 dBA
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	Leq Peak Hou 67 62 62 69	r Leq Day 2 6 2 6 8 6 4 6 ntour (in feet)	Leq 5.3 0.7 1.4 7.7 7 dn:	Evening 63.5 54.3 52.4 64.3		57.4 52.8 53.6 59.9	1	66.1 61.3 62.0 68.4		66.7 61.5 62.1 68.9

FHWA-RD-77-108 HIGHWAY	NOISE PRED		DEL (9/1	2/2021)	
Scenario: E Road Name: Western Av. Road Segment: n/o Del Amo Blvd.			lame: Toi mber: 14(rance Comme 192	rce
SITE SPECIFIC INPUT DATA				DEL INPUTS	6
Highway Data	Site Co	onditions (H	lard = 10	, Soft = 15)	
Average Daily Traffic (Adt): 31,290 vehicles			Au	tos: 15	
Peak Hour Percentage: 10.00%	/	Aedium Truc	ks (2 Axle	es): 15	
Peak Hour Volume: 3,129 vehicles	1	leavy Truck	s (3+ Axle	es): 15	
Vehicle Speed: 40 mph	Vehicl	e Mix			
Near/Far Lane Distance: 50 feet	Ve	ehicleType	Da	y Evening	Night Daily
Site Data		AL	itos: 77	.5% 12.9%	9.6% 97.02%
Barrier Height: 0.0 feet		Medium Tru	cks: 84	.8% 4.9%	10.3% 2.36%
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Tru	cks: 86	.5% 2.7%	10.8% 0.62%
Centerline Dist. to Barrier: 67.0 feet	Noiso	Source Ele	untions (i	n foot)	
Centerline Dist. to Observer: 67.0 feet	NUISE	Autos:		,	
Barrier Distance to Observer: 0.0 feet	Mod	ium Trucks:			
Observer Height (Above Pad): 5.0 feet		avv Trucks:			ustment: 0.0
Pad Elevation: 0.0 feet					
Road Elevation: 0.0 feet	Lane E	quivalent L		, ,	
Road Grade: 0.0%		Autos:		-	
Left View: -90.0 degrees		ium Trucks:			
Right View: 90.0 degrees	He	avy Trucks:	62.234	1	
FHWA Noise Model Calculations					
		te Road	Fresnel	Barrier Atte	
Autos: 66.51 3.50	-1.54	-1.20	-4.		
Medium Trucks: 77.72 -12.64	-1.53	-1.20	-4.		
Heavy Trucks: 82.99 -18.45	-1.53	-1.20	-5.	29 0.0	00 0.00
Unmitigated Noise Levels (without Topo and barrie	r attenuation)			
VehicleType Leq Peak Hour Leq Day	Leq Evening	Leq N	•	Ldn	CNEL
Autos: 67.3 65.4	63		57.5	66.2	
Medium Trucks: 62.3 60.8	54		52.9	61.4	÷
Heavy Trucks: 61.8 60.4	51		52.6	61.0	
Vehicle Noise: 69.3 67.6	64	.3	59.8	68.3	68.
Centerline Distance to Noise Contour (in feet)	70 /0 /				55 /DA
	70 dBA	65 dl	3A	60 dBA	55 dBA
		_			
Ldn: CNEL:	5		111 119	240 257	516 553

	FHWA-RD	-77-108 HIGH	WAY N	IOISE P	REDICTI	он мс	DDEL (S	9/12/20)21)				
	io: E+P e: Western Av nt: n/o Del Amo			Project Name: Torrance Commerce Job Number: 14092									
SITE	SPECIFIC IN	PUT DATA		NOISE MODEL INPUTS									
Highway Data				Si	te Condi	ions (I	Hard =	10, So	ft = 15)				
Average Daily	Traffic (Adt):	31,782 vehicle	s					Autos:	15				
Peak Hour	Percentage:	10.00%			Mediu	ım Truc	cks (2 A	xles):	15				
Peak H	our Volume:	3,178 vehicles	6		Heav	y Truck	(3+ A	xles):	15				
Ve	hicle Speed:	40 mph		1/2	hicle Mix	,							
Near/Far La	ne Distance:	50 feet		ve	Vehicle			Dav	Evening	Night	Daily		
Site Data					1011101			77.5%		9.6%			
	rier Height:	0.0 feet			Med	um Tru		84.8%		10.3%	2.34		
вал Barrier Type (0-W		0.0 reet			He	avy Tru		86.5%		10.8%	0.809		
Centerline Dis		67.0 feet											
Centerline Dist.		67.0 feet		No	oise Sour				et)				
Barrier Distance		0.0 feet				Autos:		000					
Observer Height (5.0 feet			Medium			297					
	ad Elevation:	0.0 feet			Heavy	Trucks:	8.0	004	Grade Ad	ustment.	0.0		
Roa	ad Elevation:	0.0 feet		La	ne Equiv	alent l	Distanc	e (in f	ieet)				
1	Road Grade:	0.0%				Autos:	62.3	362					
	Left View:	-90.0 degree	es		Medium	Trucks:	62.2	220					
	Right View:	90.0 degree	es		Heavy	Trucks:	62.2	234					
FHWA Noise Mode	el Calculation	5											
VehicleType	REMEL	Traffic Flow	Dista		Finite Ro		Fresn	-	Barrier Att		m Atten		
Autos:	66.51	3.56		-1.54		1.20		-4.71		000	0.00		
Medium Trucks:	77.72	-12.61		-1.53		1.20		-4.88		000	0.00		
Heavy Trucks:	82.99	-17.30		-1.53	-	1.20		-5.29	0.0	000	0.00		
Unmitigated Noise				attenua	ation)								
VehicleType	Leq Peak Hou			Leq Eve		Leq N	•		Ldn		VEL		
Autos:	67		65.4		63.7		57.6		66.2		66		
Medium Trucks:	62		60.9		54.5		53.0		61.4		61		
Heavy Trucks:	63	-	61.5		52.5		53.8		62.1		62		
Vehicle Noise:	69		67.9		64.4		60.1		68.6	j.	69		
Centerline Distanc	e to Noise Co	ntour (in feet,		70 dE	A	65 d	RA	F	0 dBA	55	dBA		
			Ldn:	, 5 UL	54	00 U	116		250		53		
			VEL:		54 58		124		250		57		
		0			50		124		207		5/1		

Monday, December 20, 2021

FHWA	RD-77-108 H	IIGHWAY	NOISE	PREDIC		DEL (9/1	2/2021)	_		
Scenario: OY 2023 Road Name: Western Road Segment: n/o Del A	Av.					lame: To mber: 140	rrance Com)92	imerce		
SITE SPECIFIC	INPUT DA	ТА					DEL INPU			-
Highway Data				Site Con	ditions (F	Hard = 10	, Soft = 15)			
Average Daily Traffic (Adt)		ehicles					tos: 15			
Peak Hour Percentage						cks (2 Axl	, .			
Peak Hour Volume		hicles		He	avy Truck	is (3+ Axl	es): 15			
Vehicle Speed			Ē	Vehicle I	Nix					
Near/Far Lane Distance	: 50 fee	et		Veh	icleType	Da	y Evenir	ng Ni	ght	Daily
Site Data					AL	itos: 77	.5% 12.9	%	9.6%	97.02%
Barrier Height	: 0.0 fe	et		Me	edium Tru	cks: 84	.8% 4.9	% 10	0.3%	2.36%
Barrier Type (0-Wall, 1-Berm)				ŀ	leavy Tru	icks: 86	.5% 2.7	% 10	0.8%	0.62%
Centerline Dist. to Barrier	: 67.0 fe	et	-	Noise So	urce Ele	vations (in feet)			
Centerline Dist. to Observer	: 67.0 fe	et	-		Autos					
Barrier Distance to Observer	: 0.0 fe	et		Mediu	n Trucks:		-			
Observer Height (Above Pad)	: 5.0 fe	et			v Trucks:			Adiusti	ment:	0.0
Pad Elevation	. 0.0 10		L							
Road Elevation		et	-	Lane Equ			,			
Road Grade					Autos:		-			
Left View		9			m Trucks:	02.22				
Right View	: 90.0 de	egrees		Heav	y Trucks:	62.23	4			
FHWA Noise Model Calculati	ons									-
VehicleType REMEL	Traffic FI		tance	Finite		Fresnel	Barrier		Berm	n Atten
Autos: 66.		3.54	-1.5		-1.20		.71	0.000		0.00
Medium Trucks: 77.		2.60	-1.5		-1.20		88	0.000		0.00
Heavy Trucks: 82.	99 -1	8.41	-1.5	53	-1.20	-5.	29	0.000		0.00
Unmitigated Noise Levels (w										
VehicleType Leq Peak H		Day	Leq E	vening	Leq N	•	Ldn		CN	
Autos:	67.3	65.4		63.6		57.6		6.2		66.
Medium Trucks:	62.4	60.9		54.5		53.0		61.4		61.
Heavy Trucks:	61.9	60.4		51.4		52.7		61.0		61.1
Vehicle Noise:	69.4	67.6		64.4		59.8		58.3		68.
Centerline Distance to Noise	Contour (in	feet)	_							
							60 dBA		55 d	iBA
			70	dBA	65 di					
		Ldn: CNEL:	70	ава 52 56	65 di	112 120	2	241		520 557

	FHWA-RD	0-77-108 HIGHV	VAY NO	ISE PREDI		IODEL (9	/12/20	21)		
Road Nam	o: OYP 2023 e: Western Av at: n/o Del Am					Name: T lumber: 1		e Comme	rce	
SITE	SPECIFIC IN	PUT DATA						INPUT	5	
Highway Data				Site Col	nditions	(Hard = 1	0, Sof	ft = 15)		
Average Daily	Traffic (Adt):	32,092 vehicles	6			A	utos:	15		
Peak Hour	Percentage:	10.00%		M	edium Tr	ucks (2 A	kles):	15		
Peak H	our Volume:	3,209 vehicles		H	eavy Tru	cks (3+ A	kles):	15		
Ve	hicle Speed:	40 mph		Vehicle	Mix					
Near/Far La	ne Distance:	50 feet			nicleType		Day	Evening	Night	Daily
Site Data				-			7.5%	12.9%	9.6%	
Bar	rier Height:	0.0 feet		N	1edium T	rucks: 8	84.8%	4.9%	10.3%	2.34%
Barrier Type (0-W		0.0			Heavy T	rucks: 8	86.5%	2.7%	10.8%	0.79%
Centerline Dis	t. to Barrier:	67.0 feet		Noise S	ource El	evations	(in fee	et)		
Centerline Dist.	to Observer:	67.0 feet			Auto		1 .			
Barrier Distance	to Observer:	0.0 feet		Medii	ım Truck					
Observer Height (,	5.0 feet			vv Truck			Grade Adj	ustment.	0.0
	d Elevation:	0.0 feet								
	d Elevation:	0.0 feet		Lane Eq		t Distance		eet)		
F	Road Grade:	0.0%			Auto					
	Left View:	-90.0 degrees			Im Truck					
	Right View:	90.0 degrees	6	Hea	vy Truck	s: 62.2	34			
FHWA Noise Mode	Calculation:									
VehicleType	REMEL	Traffic Flow	Distanc		e Road	Fresne		Barrier Atte		m Atten
Autos:	66.51	3.60		1.54	-1.20		4.71	0.0		0.000
Medium Trucks:	77.72	-12.57		1.53	-1.20		4.88	0.0		0.000
Heavy Trucks:	82.99	-17.26	-	1.53	-1.20	-	5.29	0.0	00	0.000
Unmitigated Noise										
	Leq Peak Hou			q Evening		Night		Ldn		VEL
Autos:	67		5.5	63.7		57.6		66.3		66.9
Medium Trucks:	62		0.9	54.5		53.0		61.5		61.7
Heavy Trucks:	63		1.6	52.5		53.8		62.1		62.3
Vehicle Noise:	69		7.9	64.5)	60.1		68.6	1	69.1
Centerline Distance	e to Noise Co	ontour (in feet)								
				70 dBA		dBA	60) dBA	55	dBA
			dn:	54		117		252		542
		CN	EL:	58		125		269		579

FHWA-RD-77-10	8 HIGHWAY NOIS		TION MODEL (9/12/2021)	
Scenario: E Road Name: Western Av. Road Segment: s/o Del Amo Blvd.			Project Name: Job Number:	Torrance Comme 14092	erce
SITE SPECIFIC INPUT I	АТА			MODEL INPUT	S
Highway Data		Site Cond	litions (Hard =	10, Soft = 15)	
Average Daily Traffic (Adt): 25,770	vehicles			Autos: 15	
Peak Hour Percentage: 10.009	6	Mea	lium Trucks (2 /	4 <i>xles):</i> 15	
Peak Hour Volume: 2,577	vehicles	Hea	vy Trucks (3+)	A <i>xles):</i> 15	
	mph	Vehicle M	lix		
Near/Far Lane Distance: 50	feet	Vehic	leType	Day Evening	Night Daily
Site Data			Autos:	77.5% 12.9%	9.6% 97.02%
Barrier Height: 0.0	feet	Me	dium Trucks:	84.8% 4.9%	10.3% 2.36%
Barrier Type (0-Wall, 1-Berm): 0.0		Н	eavy Trucks:	86.5% 2.7%	10.8% 0.62%
	feet	Noine Co.	urce Elevation	a (in fact)	
Centerline Dist. to Observer: 67.0	feet	Noise Sol		000	
Barrier Distance to Observer: 0.0	feet	Modium		297	
Observer Height (Above Pad): 5.0	feet				iustment: 0.0
Pad Elevation: 0.0	feet				
	feet	Lane Equ	ivalent Distan	, ,	
Road Grade: 0.0%				362	
	degrees			220	
Right View: 90.0	degrees	Heavy	/ Trucks: 62.	234	
FHWA Noise Model Calculations					
VehicleType REMEL Traffic					
Autos: 66.51		.54	-1.20		0.00
Medium Trucks: 77.72		.53	-1.20		0.00
Heavy Trucks: 82.99	-19.29 -1	.53	-1.20	-5.29 0.0	0.00
Unmitigated Noise Levels (without Top				1	-
		Evening	Leq Night	Ldn	CNEL
Autos: 66.4	64.5	62.8	56.		
Medium Trucks: 61.5	60.0	53.6	52.1		
Heavy Trucks: 61.0 Vehicle Noise: 68.5	59.6 66.8	50.5 63.5	51.8		
		03.5	58.5	9 67.5	5 67.9
Centerline Distance to Noise Contour		0 dBA	65 dBA	60 dBA	55 dBA
	Ldn:	<i>0 ава</i> 45	00 <i>0BA</i> 98		
	CNEL:	45 49	98		
	UNLL.	49	105	223	400

	FHWA-RD	-77-108 HIGH	WAY	NOISE P	REDICT	ION MO	ODEL (9/12/20	021)					
Scenario Road Name	o: E+P e: Western Av				F		Name: T		ce Comme	erce				
Road Segmen						000 140	imber.	14032						
	SPECIFIC IN	PUT DATA			NOISE MODEL INPUTS									
Highway Data				Si	te Condi	itions (Hard =	10, Sc	oft = 15)					
Average Daily	Traffic (Adt):	26,262 vehicle	es				,	Autos:	15					
Peak Hour	Percentage:	10.00%			Medi	ium Tru	cks (2 A	(xles)	15					
Peak He	our Volume:	2,626 vehicles	5		Heav	vy Truci	ks (3+ A	(xles)	15					
Vel	nicle Speed:	40 mph		Ve	ehicle Mi	ix								
Near/Far Lar	ne Distance:	50 feet		-		leType		Day	Evening	Night	Daily			
Site Data								77.5%	•	9.6%				
Bar	rier Height:	0.0 feet			Mec	dium Tru	ucks:	84.8%	4.9%	10.3%	2.34			
Barrier Type (0-Wa	•	0.0			He	eavy Tru	ucks:	86.5%	2.7%	10.8%	0.83			
Centerline Dis	. ,	67.0 feet						. (i.e. *	-41					
Centerline Dist. t		67.0 feet		N	oise Sou				et)					
Barrier Distance t	o Observer:	0.0 feet				Autos		000						
Observer Height ()		5.0 feet			Medium			297	Out de Ad					
	d Elevation:	0.0 feet			Heavy	Trucks	: 8.0	004	Grade Ad	justment.	0.0			
Roa	d Elevation:	0.0 feet		Lá	ne Equi	valent	Distand	e (in i	feet)					
F	Road Grade:	0.0%				Autos	: 62.3	362						
	Left View:	-90.0 degree	es		Medium	Trucks	: 62.3	220						
	Right View:	90.0 degree	es		Heavy	Trucks	: 62.3	234						
FHWA Noise Mode														
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite R		Fresn	-	Barrier Att		m Atten			
Autos:	66.51	2.73		-1.54		-1.20		-4.71		000	0.00			
Medium Trucks:	77.72	-13.45		-1.53		-1.20		-4.88		000	0.00			
Heavy Trucks:	82.99	-17.93		-1.53		-1.20		-5.29	0.0	000	0.00			
Unmitigated Noise			-											
	Leq Peak Hou			Leq Eve		Leq N			Ldn		VEL			
Autos:	66		64.6		62.8		56.8		65.4		66			
Medium Trucks:	61		60.0		53.7		52.1		60.		60			
Heavy Trucks: Vehicle Noise:	62	-	60.9 67.1		51.9 63.6		53.1 59.3		61. 67.		61 68			
					63.6		59.3		67.8	8	68			
Centerline Distanc	e to Noise Co	ntour (in feet,)	70 dE	24	65 d	IRΔ	6	0 dBA	55	dBA			
			Ldn:	70 UE	48	00 0	103		222		ива 47			
			NEL:		40 51		110		222		51			
		0/			01		110		201		510			

Monday, December 20, 2021

	FHWA-RI	D-77-108 HIGH	WAY NO	DISE	PREDIC		ODEL (9	/12/2	021)		
Road Nan	io: OY 2023 ne: Western A nt: s/o Del Am						Name: T umber: 1		ce Commer	се	
	SPECIFIC IN	IPUT DATA							L INPUTS	;	
Highway Data				S	ite Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	26,030 vehicle	s				A	Autos:	15		
Peak Hour	Percentage:	10.00%					ucks (2 A				
Peak F	lour Volume:	2,603 vehicles	6		Hea	avy Truc	cks (3+ A	xles):	15		
	hicle Speed:	40 mph		v	ehicle N	lix					
Near/Far La	ne Distance:	50 feet			Vehi	cleType	1	Day	Evening	Night	Daily
Site Data							Autos:	77.5%	12.9%	9.6%	97.02%
Ba	rrier Heiaht:	0.0 feet			Me	dium Ti	rucks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-W		0.0			H	leavy Ti	rucks:	86.5%	2.7%	10.8%	0.62%
Centerline Di	. ,	67.0 feet			laiaa Ca	uree El	evations	link	a a fi		
Centerline Dist.	to Observer:	67.0 feet		~	10136 30	Auto:			eeij		
Barrier Distance	to Observer:	0.0 feet			Madium	n Truck	0.0				
Observer Height	(Above Pad):	5.0 feet				y Truck			Grade Adju	istment [.]	0.0
P	ad Elevation:	0.0 feet				·		-		iotanionit.	0.0
Ro	ad Elevation:	0.0 feet		L	ane Equ		Distanc		feet)		
	Road Grade:	0.0%				Auto		362			
	Left View:	-90.0 degree				n Truck					
	Right View:	90.0 degree	es		Heav	y Truck	s: 62.2	234			
FHWA Noise Mod	el Calculation	s									
VehicleType	REMEL	Traffic Flow	Distar	псе	Finite	Road	Fresne	e/	Barrier Atte	n Ben	m Atten
Autos:	66.51	2.70		-1.54	Ļ	-1.20		4.71	0.00	00	0.00
Medium Trucks:	77.72	-13.44		-1.53	3	-1.20		4.88	0.00	00	0.00
Heavy Trucks:	82.99	-19.25		-1.53	3	-1.20		-5.29	0.00	00	0.00
Unmitigated Nois											
VehicleType	Leq Peak Hou			eq Ev	ening	Leq	Night		Ldn	CI	VEL
Autos:			64.6		62.8		56.7		65.4		66.
Medium Trucks:	-		60.0		53.7		52.1		60.6		60.
Heavy Trucks:		-	59.6		50.6		51.8		60.2		60.
Vehicle Noise:	68	3.5	66.8		63.5		59.0		67.5		67.9
Centerline Distan	ce to Noise C	ontour (in feet)									
			L	70 d		65	dBA		60 dBA	55	dBA
			Ldn:		46		98		212		457 489
			VEL		49		105		227		

	FHWA-RD-7	77-108 HIGH\	NAY NO	DISE F	PREDIC		ODEL (9	/12/2	021)					
Road Name: W	Scenario: OYP 2023 Road Name: Western Av. Road Segment: s/o Del Amo Blvd.					Project Name: Torrance Commerce Job Number: 14092								
SITE SPE	CIFIC INP	UT DATA				N	OISE M	ODE		5				
Highway Data				S	ite Con	ditions	(Hard = 1	10, Sc	ft = 15)					
Average Daily Traffi	ic (Adt): 26	6,522 vehicle	s				A	utos:	15					
Peak Hour Perc	entage: 1	0.00%			Me	dium Tru	ucks (2 A	xles):	15					
Peak Hour V	/olume: 2	,652 vehicles			Hei	avy Truc	cks (3+ A	xles):	15					
Vehicle	Speed:	40 mph		14	ehicle N	<i>liv</i>								
Near/Far Lane Di	stance:	50 feet				cleType		Day	Evening	Night	Daily			
Site Data					veni			77.5%		9.6%				
				_	14	م dium Tı		77.5% 34.8%		9.6%				
Barrier		0.0 feet				leavy Ti		34.8% 36.5%		10.3%				
Barrier Type (0-Wall, 1	,	0.0			, r	leavy II	UCKS. C	50.5%	2.170	10.6%	0.03%			
Centerline Dist. to		67.0 feet		N	loise So	urce El	evations	(in fe	et)					
Centerline Dist. to Ot		67.0 feet				Auto:	s: 0.0	00						
Barrier Distance to Ob		0.0 feet			Mediur	n Truck	s: 2.2	97						
Observer Height (Abov	,	5.0 feet			Heav	y Truck	s: 8.0	04	Grade Adj	ustmen	: 0.0			
	evation:	0.0 feet					Distance	- //	41					
Road Ele		0.0 feet		Li	ane Equ		Distanc		eet)					
		0.0%				Auto								
		-90.0 degree				n Truck								
Rigi	ht View:	90.0 degree	S		Heav	y Truck:	s: 62.2	34						
FHWA Noise Model Ca	lculations													
VehicleType RI	EMEL 7	Traffic Flow	Distar	псе	Finite	Road	Fresne	e/	Barrier Atte	en Be	rm Atten			
Autos:	66.51	2.77		-1.54		-1.20	-	4.71	0.0	00	0.000			
Medium Trucks:	77.72	-13.41		-1.53		-1.20	-	4.88	0.0	00	0.000			
Heavy Trucks:	82.99	-17.90		-1.53		-1.20	-	5.29	0.0	00	0.00			
Unmitigated Noise Lev														
	Peak Hour	Leq Day		eq Eve		Leq	Night		Ldn		NEL			
Autos:	66.5	-	64.6		62.9		56.8		65.4		66.0			
Medium Trucks:	61.6		50.1		53.7		52.2		60.6		60.9			
Heavy Trucks:	62.4		60.9		51.9		53.2		61.5		61.6			
Vehicle Noise:	68.8		67.1		63.7		59.3		67.8	1	68.3			
Centerline Distance to	Noise Con	tour (in feet)		70.0										
				70 dl	BA 48	65	dBA 104	6	i0 dBA	55	dBA			
			.dn:						223		481			
			EL:		51		104		238		513			

FHWA-R	D-77-108 HIGHW	VAY NOIS	E PREDIO		IODEL (S	9/12/20	21)		
Scenario: E Road Name: 190th St. Road Segment: w/o Van N	ess Av.				Name: 1 lumber: 1		e Comme	rce	
SITE SPECIFIC I	NPUT DATA						L INPUTS	3	
Highway Data			Site Con	ditions	(Hard =	10, So	ft = 15)		
Average Daily Traffic (Adt):	26,640 vehicles	5				Autos:	15		
Peak Hour Percentage:	10.00%		Me	edium Tr	ucks (2 A	xles):	15		
Peak Hour Volume:	2,664 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Vehicle Speed:	45 mph		Vehicle	Mix					
Near/Far Lane Distance:	50 feet			icleType		Dav	Evening	Night	Daily
Site Data						77.5%	12.9%	9.6%	
Barrier Height:	0.0 feet		м	edium T	rucks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-Wall, 1-Berm):	0.0			Heavy T	rucks:	86.5%	2.7%	10.8%	0.62%
Centerline Dist. to Barrier:	67.0 feet			_					
Centerline Dist. to Observer:	67.0 feet		Noise Se				et)		
Barrier Distance to Observer:	0.0 feet			Auto		000			
Observer Height (Above Pad):	5.0 feet			m Truck		297 004	Grade Adj	unternent	
Pad Elevation:	0.0 feet		неа	vy Truck	S: 8.0	104	Graue Auj	usuneni	. 0.0
Road Elevation:	0.0 feet		Lane Eq	uivalen	t Distanc	e (in f	eet)		
Road Grade:	0.0%			Auto	s: 62.3	362			
Left View:	-90.0 degrees	5	Mediu	m Truck	s: 62.2	220			
Right View:	90.0 degrees	5	Hea	vy Truck	s: 62.2	234			
FHWA Noise Model Calculation	ıs		1						
VehicleType REMEL	Traffic Flow	Distance	Finite	Road	Fresn	-	Barrier Atte	en Ber	m Atten
Autos: 68.46			.54	-1.20		-4.71	0.0		0.000
Medium Trucks: 79.4			.53	-1.20		-4.88	0.0		0.000
Heavy Trucks: 84.2	-19.66	-1	.53	-1.20		-5.29	0.0	00	0.000
Unmitigated Noise Levels (with									
VehicleType Leq Peak Ho			Evening		Night		Ldn		VEL
		6.1	64.3		58.3		66.9		67.5
		1.4	55.0		53.5		61.9		62.1
		0.4	51.4		52.7		61.0		61.1
Vehicle Noise: 6	9.9 6	8.2	65.0		60.3		68.9	1	69.3
Centerline Distance to Noise C	contour (in feet)			07	-10.4		0 -10 4		-10.4
	,) dBA	65	dBA	6	0 dBA	55	dBA
	CN	.dn:	56		121		262		564
	CN	LL.	60		130		281		605

	FHWA-RD	-77-108 HIGHWA	Y NOIS	E PREDIC	TION MC	DEL (9/1:	2/2021)					
Scenario: Road Name: Road Segment:	190th St.	ss Av.				<i>lame:</i> Tor mber: 140	rance Comm 192	erce				
SITE SP	PECIFIC IN	PUT DATA		NOISE MODEL INPUTS								
Highway Data				Site Con	ditions (H	lard = 10,	Soft = 15)					
Average Daily Tr	affic (Adt):	27.378 vehicles				Aut	os: 15					
Peak Hour Pe	ercentage:	10.00%		Me	dium Truc	ks (2 Axle	es): 15					
Peak Hou	ır Volume:	2,738 vehicles		He	avy Truck	s (3+ Axle	es): 15					
Vehio	cle Speed:	45 mph		Vehicle I	Mix							
Near/Far Lane	Distance:	50 feet			icleType	Da	y Evening	Night	Daily			
Site Data							.5% 12.9%					
	er Heiaht:	0.0 feet		M	edium Tru		.8% 4.9%					
Barrier Type (0-Wal		0.0 reet 0.0			leavy Tru		.5% 2.7%					
Centerline Dist.	. ,	67.0 feet										
Centerline Dist. to		67.0 feet		Noise Sc		vations (i	,					
Barrier Distance to		0.0 feet			Autos:							
Observer Height (Al		5.0 feet			m Trucks:							
	Elevation:	0.0 feet		Heav	y Trucks:	8.004	Grade Ad	ijustment	0.0			
Road	Elevation:	0.0 feet		Lane Eq	uivalent L	Distance ('in feet)					
Ro	ad Grade:	0.0%			Autos:	62.362	2					
	Left View:	-90.0 degrees		Mediu	m Trucks:	62.220)					
F	Right View:	90.0 degrees		Heav	y Trucks:	62.234	Ļ					
FHWA Noise Model				1								
VehicleType			Distance		Road	Fresnel	Barrier At		m Atten			
Autos:	68.46	2.39		.54	-1.20	-4.		000	0.00			
Medium Trucks:	79.45	-13.80		.53	-1.20 -1.20	-4. -5.		000	0.00			
Heavy Trucks:	84.25	-17.80		.53	-1.20	-0.	29 0.	000	0.00			
Unmitigated Noise L			1					-				
	eq Peak Hour			Evening	Leq N		Ldn		VEL			
Autos:	68.		-	64.4		58.4	67.		67			
Medium Trucks:	62.			55.1		53.5	62.		62			
Heavy Trucks: Vehicle Noise:	63.		-	53.3		54.5	62.		63			
	70.		b	65.2		60.8	69.	3	69			
Centerline Distance	to Noise Col	ntour (in feet)	7/	0 dBA	65 dl	ВА	60 dBA	55	dBA			
		Ldr		60	00 01	130	28		60			
							201	-	000			

Monday, December 20, 2021

FHWA-	RD-77-108 I	HIGHWAY	NOISE			ODEL (9/12/2	021)			
Scenario: OY 2023 Road Name: 190th St. Road Segment: w/o Van	Ness Av.					Name: T umber: 1		ice Comm	nerce		
SITE SPECIFIC	INPUT DA	TA						L INPU	TS		
Highway Data				Site Con	ditions	(Hard =	10, So	oft = 15)			
Average Daily Traffic (Adt)	26,920 v	ehicles					Autos:	15			
Peak Hour Percentage	10.00%			Me	dium Tru	icks (2 A	(xles):	15			
Peak Hour Volume	2,692 ve	hicles		He	avy Truc	:ks (3+ A	(xles):	15			
Vehicle Speed		ph	ŀ	Vehicle I	Mix						
Near/Far Lane Distance	50 fee	et		Veh	icleType		Day	Evening	Nic	tht	Daily
Site Data			-				77.5%	•			97.02%
Barrier Height	0.0 fe	oot		M	edium Tr	ucks:	84.8%	4.9%	10	.3%	2.36%
Barrier Type (0-Wall, 1-Berm)				1	leavy Tr	ucks:	86.5%	5 2.7%	10	.8%	0.62%
Centerline Dist. to Barrier		eet	ŀ	Noise So	uree El	ovetien	in f	not)			
Centerline Dist. to Observer	67.0 fe	eet	-	NUISe St	Autos		000	eel)			
Barrier Distance to Observer	0.0 fe	eet		Madiu	n Trucks		297				
Observer Height (Above Pad)	5.0 fe	eet			y Trucks		004	Grade A	diustr	nent [.]	0.0
Pad Elevation	0.0 fe	eet		Ticas	y mucka	5. 0.0	04	0.00071	ajaoa	ioni.	0.0
Road Elevation	0.0 fe	eet		Lane Eq	uivalent	Distanc	e (in	feet)			
Road Grade	0.0%				Autos						
Left View		egrees			n Trucks						
Right View	90.0 d	egrees		Heav	y Trucks	62.2	234				
FHWA Noise Model Calculation											
VehicleType REMEL	Traffic F	-	stance		Road	Fresn	-	Barrier A		Bern	n Atten
Autos: 68.4		2.33	-1.5		-1.20		-4.71	-	.000		0.000
Medium Trucks: 79.4		3.81	-1.5		-1.20		-4.88	-	.000		0.000
Heavy Trucks: 84.3	25 -1	9.61	-1.5	53	-1.20		-5.29	0	.000		0.00
Unmitigated Noise Levels (wi											-
VehicleType Leq Peak H		g Day	Leq E	vening	Leq			Ldn		CN	
	68.0	66.2		64.4		58.3		67			67.
	62.9	61.4		55.0		53.5		62			62.2
	61.9	60.5		51.5		52.7		61			61.
	70.0	68.2		65.1		60.4		68	1.9		69.4
Centerline Distance to Noise	Contour (in	feet)		(0.1			_		_		
			70	dBA	65 0			50 dBA		55 c	
		Ldn: CNEL:		57 61		122 131		26 28			568 609

	FHWA-RI	D-77-108 HIGH	WAY NC	ISE PR	EDICT	ION MO	ODEL (9	12/20	21)		
Scenario: Road Name: Road Segment:	190th St.	ess Av.			F		Name: T umber: 14		e Comme	erce	
	ECIFIC IN	IPUT DATA		NOISE MODEL INPUTS							
Highway Data				Site	Cond	itions (Hard = 1	0, So	ft = 15)		
Average Daily Tra	ffic (Adt):	27,658 vehicle	s				A	utos:	15		
Peak Hour Pe	rcentage:	10.00%			Medi	ium Tru	cks (2 A)	des):	15		
Peak Hou	· Volume:	2,766 vehicles	5		Hear	vy Truc	ks (3+ A)	(les):	15		
Vehici	le Speed:	45 mph		Vet	icle Mi	ix					
Near/Far Lane	Distance:	50 feet		Ven		leType	E	Dav	Evening	Night	Daily
Site Data							utos: 7	7.5%	12.9%	9.6%	
Barria	r Heiaht:	0.0 feet			Med	dium Tri	ucks: 8	4.8%	4.9%	10.3%	2.32%
Barrier Type (0-Wall,		0.0			He	eavy Tri	ucks: 8	6.5%	2.7%	10.8%	0.92%
Centerline Dist. t	,	67.0 feet		Nei	50 Sc.	rco El	evations	(in fo	of)		
Centerline Dist. to (Observer:	67.0 feet		NOI	se 300	Autos			el)		
Barrier Distance to	Observer:	0.0 feet					. 0.0				
Observer Height (Ab	ove Pad):	5.0 feet		^		Trucks Trucks			Grade Ad	iustmont	0.0
Pad I	Elevation:	0.0 feet			Heavy	Trucks	: 8.0	J4	Graue Auj	usument	0.0
Road I	Elevation:	0.0 feet		Lan	e Equi	valent	Distance	e (in f	eet)		
Roa	ad Grade:	0.0%				Autos	: 62.3	62			
1	eft View:	-90.0 degree	s	٨	ledium	Trucks	62.2	20			
Ri	ght View:	90.0 degree	:S		Heavy	Trucks	62.2	34			
FHWA Noise Model C	alculation	s									
VehicleType	REMEL	Traffic Flow	Distan		Finite R		Fresne		Barrier Atte	en Ber	m Atten
Autos:	68.46	2.44		-1.54		-1.20		4.71		000	0.00
Medium Trucks:	79.45	-13.76		-1.53		-1.20		4.88		000	0.000
Heavy Trucks:	84.25	-17.77		-1.53		-1.20	-	5.29	0.0	000	0.00
Unmitigated Noise Le											
	q Peak Hou			eq Even		Leq N			Ldn		VEL
Autos:	68		66.3		64.5		58.4		67.1		67.
Medium Trucks:	63		61.5		55.1		53.6		62.0		62.
Heavy Trucks:	63	-	62.3		53.3		54.5		62.9		63.
Vehicle Noise:	70		68.7		65.2		60.8		69.4	ł	69.8
Centerline Distance t	o Noise Co	ontour (in feet)									
			L	70 dBA		65 a		6	0 dBA		dBA
			Ldn:		61		131		282		607
			VEL:		65		140		301		649

FHWA-RD-77-108 HIGH	WAY NOI	SE PREDIC		DEL (9/1	2/2021)			
Scenario: E Road Name: 190th St. Road Segment: e/o Van Ness Av.			Project N Job Nur	ame: To nber: 14		ommer	ce	
SITE SPECIFIC INPUT DATA					DEL IN			
Highway Data		Site Con	ditions (H	lard = 10), Soft =	15)		
Average Daily Traffic (Adt): 25,290 vehicle	es			Au	tos: 1	5		
Peak Hour Percentage: 10.00%		Me	dium Truc	ks (2 Axl	<i>les):</i> 1	5		
Peak Hour Volume: 2,529 vehicles	5	He	avy Truck	s (3+ Axl	les): 1	5		
Vehicle Speed: 45 mph		Vehicle	Mix					
Near/Far Lane Distance: 50 feet			icleType	Da		ning	Night	Daily
Site Data		VCII				2.9%	9.6%	
Barrier Height: 0.0 feet		М	edium Tru	cks: 84	1.8%	4.9%	10.3%	2.36%
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Tru	cks: 86	6.5%	2.7%	10.8%	0.62%
Centerline Dist. to Barrier: 67.0 feet								
Centerline Dist. to Observer: 67.0 feet		Noise So	ource Elev					
Barrier Distance to Observer: 0.0 feet			Autos:	0.00	-			
Observer Height (Above Pad): 5.0 feet			m Trucks:	2.29				
Pad Elevation: 0.0 feet		Heav	/y Trucks:	8.00	4 Gra	ae Aaju	stment:	0.0
Road Elevation: 0.0 feet		Lane Eq	uivalent D	istance	(in feet)			
Road Grade: 0.0%			Autos:	62.36	2			
Left View: -90.0 degree	es	Mediu	m Trucks:	62.22	0			
Right View: 90.0 degree	es	Heav	y Trucks:	62.23	4			
FHWA Noise Model Calculations		1						
VehicleType REMEL Traffic Flow	Distance	e Finite	Road	Fresnel	Barr	ier Atte	n Ben	m Atten
Autos: 68.46 2.06	-1	1.54	-1.20	-4	.71	0.00	00	0.000
Medium Trucks: 79.45 -14.08	-1	1.53	-1.20	-4	.88	0.00	00	0.000
Heavy Trucks: 84.25 -19.88	-1	1.53	-1.20	-5	.29	0.00	00	0.000
Unmitigated Noise Levels (without Topo and	barrier att	tenuation)						
VehicleType Leq Peak Hour Leq Day		r Evening	Leq Ni	•	Ldn		CI	IEL
	65.9	64.1		58.1		66.7		67.3
	61.1	54.8		53.2		61.7		61.9
Heavy Trucks: 61.6	60.2	51.2		52.4		60.8		60.9
						68.7		69.1
Vehicle Noise: 69.7	67.9	64.8		60.1		00.7		
Vehicle Noise: 69.7)							
Vehicle Noise: 69.7 Centerline Distance to Noise Contour (in feet	7	70 dBA	65 dE	BA	60 dE	BA	55	dBA
Vehicle Noise: 69.7 Centerline Distance to Noise Contour (in feet)				60 dE		55	dBA 545 584

	FHWA-RD	-77-108 HIGH	WAY N	NOISE P	REDICTION	MODE	L (9/12/2	021)				
Scenar								ce Comme	erce			
	e: 190th St.				Job	Numbe	er: 14092					
Road Segmer	nt: e/o Van Ne	ss Av.										
	SPECIFIC IN	PUT DATA			NOISE MODEL INPUTS							
Highway Data				Si	te Conditio	ns (Harc	l = 10, So	oft = 15)				
Average Daily	Traffic (Adt):	26,151 vehicle	s				Autos:	15				
Peak Hour	Percentage:	10.00%			Medium	Trucks (2 Axles):	15				
Peak H	our Volume:	2,615 vehicles	5		Heavy T	rucks (3	+ Axles):	15				
Ve	hicle Speed:	45 mph		Ve	hicle Mix							
Near/Far La	ne Distance:	50 feet		-	VehicleTy	pe	Dav	Evening	Night	Daily		
Site Data						Autos.	77.5%	12.9%	9.6%	96.69%		
Bai	rier Height:	0.0 feet			Medium	Trucks.	84.8%	4.9%	10.3%	2.329		
Barrier Type (0-W		0.0			Heavy	Trucks.	86.5%	2.7%	10.8%	0.999		
Centerline Dis		67.0 feet				Floresti		41				
Centerline Dist.	to Observer:	67.0 feet		/\c	ise Source			eet)				
Barrier Distance	to Observer:	0.0 feet			AL Medium Tru	tos:	0.000					
Observer Height (Above Pad):	5.0 feet					2.297	Grade Ad	iuotmont	0.0		
Pa	ad Elevation:	0.0 feet			Heavy Tru	CKS:	8.004	Grade Ad	Justinent	0.0		
Roa	ad Elevation:	0.0 feet		La	ne Equivale	ent Dist	ance (in i	feet)				
1	Road Grade:	0.0%			AL	tos: (52.362					
	Left View:	-90.0 degree	s		Medium Tru	cks: (62.220					
	Right View:	90.0 degree	s		Heavy Tru	cks: (52.234					
FHWA Noise Mode	el Calculations	5										
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite Road	Fre	esnel	Barrier Att	en Ber	m Atten		
Autos:	68.46	2.19		-1.54	-1.2		-4.71		000	0.00		
Medium Trucks:	79.45	-14.01		-1.53	-1.2		-4.88		000	0.00		
Heavy Trucks:	84.25	-17.69		-1.53	-1.2	0	-5.29	0.0	000	0.00		
Unmitigated Noise	e Levels (with	out Topo and	barrier	r attenua	ation)							
VehicleType	Leq Peak Hou			Leq Eve		eq Night		Ldn		VEL		
Autos:	67		66.0		64.2		8.2	66.		67		
Medium Trucks:	62		61.2		54.8		3.3	61.		62		
Heavy Trucks:	63		62.4		53.4		4.6	63.		63		
Vehicle Noise:	70	.2	68.5		65.0	6	0.7	69.3	2	69.		
Centerline Distance	e to Noise Co	ntour (in feet)		70 -15				0.404		-10.4		
			Ldn:	70 dE		5 dBA		60 dBA		dBA		
			Lan: VEL:		59 63		27 36	274		59		
								293		631		

Monday, December 20, 2021

FHWA	-RD-77-108 HIGI	IWAY NOI	SE PREDIC		DEL (9/12/	2021)	
Scenario: OY 2023 Road Name: 190th Si Road Segment: e/o Van	-				ame: Torra nber: 1409	ince Commer 2	ce
SITE SPECIFIC	INPUT DATA					EL INPUTS	
Highway Data			Site Con	ditions (H	ard = 10, S	Soft = 15)	
Average Daily Traffic (Adt	25,560 vehic	les			Auto	s: 15	
Peak Hour Percentage	e: 10.00%		Me	dium Truci	ks (2 Axles): 15	
Peak Hour Volume	2,556 vehicle	es	He	avy Trucks	s (3+ Axles): 15	
Vehicle Speed	l: 45 mph		Vehicle	Mix			
Near/Far Lane Distance	: 50 feet			icleType	Day	Evening	Night Daily
Site Data					tos: 77.5	•	9.6% 97.02
Barrier Heigh	t: 0.0 feet		М	edium Truc	ks: 84.8	% 4.9%	10.3% 2.36
Barrier Type (0-Wall, 1-Berm			1	Heavy Truc	ks: 86.5	% 2.7%	10.8% 0.62
Centerline Dist. to Barrie							
Centerline Dist. to Observe			Noise So	ource Elev		feet)	
Barrier Distance to Observe	r: 0.0 feet			Autos:	0.000		
Observer Height (Above Pad): 5.0 feet			m Trucks:	2.297	Crada Adi	stment: 0.0
Pad Elevation	n: 0.0 feet		Heav	vy Trucks:	8.004	Grade Adju	isument. 0.0
Road Elevation	n: 0.0 feet		Lane Eq	uivalent D	istance (ir	n feet)	
Road Grade	e: 0.0%			Autos:	62.362		
Left Viev	/: -90.0 degre	es	Mediu	m Trucks:	62.220		
Right Viev	/: 90.0 degre	es	Heav	/y Trucks:	62.234		
FHWA Noise Model Calculati	ons						
VehicleType REMEL	Traffic Flow	Distanc		Road	Fresnel	Barrier Atte	n Berm Atter
Autos: 68			1.54	-1.20	-4.7		
Medium Trucks: 79			1.53	-1.20	-4.8		
Heavy Trucks: 84	25 -19.84	-	1.53	-1.20	-5.2	9 0.00	0.00
Unmitigated Noise Levels (w	ithout Topo and	l barrier at	tenuation)				
VehicleType Leq Peak I			q Evening	Leq Ni		Ldn	CNEL
Autos:	67.8	65.9	64.2		58.1	66.7	67
Medium Trucks:	62.7	61.2	54.8		53.3	61.7	62
Heavy Trucks:	61.7	60.3	51.2		52.5	60.8	61
Vehicle Noise:	69.7	68.0	64.8		60.2	68.7	69
Centerline Distance to Noise	Contour (in fee			1	1	1	
			70 dBA	65 dB	A	60 dBA	55 dBA
		Ldn: NEL:	55 59		118 127	255 273	54 58

FHWA-RD-77-108 HIC	SHWAY NOIS	SE PREDIC	TION MODE	EL (9/12/2	021)				
Scenario: OYP 2023 Road Name: 190th St. Road Segment: e/o Van Ness Av.			Project Nan Job Numb		ice Comme	erce			
SITE SPECIFIC INPUT DAT	4	NOISE MODEL INPUTS							
Highway Data		Site Cond	ditions (Har	d = 10, So	oft = 15)				
Average Daily Traffic (Adt): 26,421 vehi	cles			Autos:	15				
Peak Hour Percentage: 10.00%		Med	dium Trucks	(2 Axles):	15				
Peak Hour Volume: 2,642 vehic	les	Hea	avy Trucks (3+ Axles):	15				
Vehicle Speed: 45 mph		Vehicle N	liv						
Near/Far Lane Distance: 50 feet			cleType	Day	Evening	Night	Daily		
Site Data		veni	Autos				96.69%		
		Ma	dium Trucks			9.0%	2.32%		
Barrier Height: 0.0 feet			leavy Trucks			10.3%	0.99%		
Barrier Type (0-Wall, 1-Berm): 0.0			icavy mucha	. 00.37	2.170	10.070	0.557		
Centerline Dist. to Barrier: 67.0 feet		Noise So	urce Elevat	ions (in f	eet)				
Centerline Dist. to Observer: 67.0 feet			Autos:	0.000					
Barrier Distance to Observer: 0.0 feet		Medium	n Trucks:	2.297					
Observer Height (Above Pad): 5.0 feet		Heav	y Trucks:	8.004	Grade Adj	justment:	0.0		
Pad Elevation: 0.0 feet		Lana Fre	in a la set Dias		f 4)				
Road Elevation: 0.0 feet		Lane Equ	Autos:	62.362	ieelj				
Road Grade: 0.0%		Marking							
Left View: -90.0 deg				62.220					
Right View: 90.0 deg	rees	neav.	y Trucks:	62.234					
FHWA Noise Model Calculations									
VehicleType REMEL Traffic Flow				resnel	Barrier Atte		m Atten		
Autos: 68.46 2.2		.54	-1.20	-4.71		000	0.000		
Medium Trucks: 79.45 -13.9		.53	-1.20	-4.88		000	0.000		
Heavy Trucks: 84.25 -17.6	36 -1	.53	-1.20	-5.29	0.0	000	0.00		
Unmitigated Noise Levels (without Topo an									
VehicleType Leq Peak Hour Leq D		Evening	Leq Nigh		Ldn		VEL		
Autos: 68.0	66.1	64.3		58.2	66.9		67.		
Medium Trucks: 62.8	61.2	54.9		53.3	61.8	-	62.0		
Heavy Trucks: 63.9	62.4	53.4		54.7	63.0		63.		
Vehicle Noise: 70.2	68.5	65.1		60.7	69.2	2	69.3		
Centerline Distance to Noise Contour (in fe		0 dBA	65 - (D A		0 -0		-10.4		
	Ldn:	0 dBA 59	65 dBA	128	50 dBA 276		dBA 595		
	CNEL:	59 64		128 137	276		595 635		
	UNEL:	04		13/	295		035		

FHWA-RD-77-10	8 HIGHWAY N	OISE PREI	DICTION M	ODEL (9/1	2/2021)	
Scenario: E Road Name: 190th St. Road Segment: w/o Western Av.				Name: Tor umber: 140	rance Comme 192	rce
SITE SPECIFIC INPUT	ATA		N	IOISE MO	DEL INPUTS	;
Highway Data		Site C	onditions	(Hard = 10,	Soft = 15)	
Average Daily Traffic (Adt): 25,060	vehicles			Aut	os: 15	
Peak Hour Percentage: 10.00%	6		Medium Tru	ucks (2 Axle	es): 15	
Peak Hour Volume: 2,506	vehicles		Heavy Truc	cks (3+ Axle	es): 15	
Vehicle Speed: 45	mph	Vehic	o Mix			
Near/Far Lane Distance: 50	feet		e hicleType	Da	y Evening	Night Daily
Site Data					.5% 12.9%	9.6% 97.02%
	feet		Medium Tr		8% 4.9%	10.3% 2.36%
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Tr	rucks: 86	.5% 2.7%	10.8% 0.62%
	feet				-	
	feet	Noise		evations (i	,	
	feet		Autos			
	feet		lium Trucks			
	feet	H	eavy Trucks	s: 8.004	Grade Adj	ustment: 0.0
	feet	Lane	Equivalent	Distance	(in feet)	
Road Grade: 0.0%			Autos		,	
	dearees	Med	lium Truck			
	degrees		avy Truck			
FHWA Noise Model Calculations						
VehicleType REMEL Traffic	Flow Dista	nce Fin	ite Road	Fresnel	Barrier Atte	n Berm Atten
Autos: 68.46	2.02	-1.54	-1.20	-4.		
	-14.12	-1.53	-1.20	-4.		
Heavy Trucks: 84.25	-19.92	-1.53	-1.20	-5.	29 0.0	00 0.000
Unmitigated Noise Levels (without Top			,			-
		eq Evening.		Night	Ldn	CNEL
Autos: 67.7	65.8	-	l.1	58.0	66.6	
Medium Trucks: 62.6	61.1		.7	53.2	61.6	
Heavy Trucks: 61.6	60.2		.1	52.4	60.7	
Vehicle Noise: 69.6	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:					
	CNEL:		54	117 125	251 270	541 581
	GIVEL:	:	58	125	270	581

	FHWA-RD-	77-108 HIGHWA	Y NOISE	PREDIC	TION MC	DDEL (9	/12/20)21)				
Scenario: Road Name: Road Segment:	190th St.	Av.				Vame: T mber: 1		ce Comme	erce			
SITE SP	ECIFIC INF	UT DATA		NOISE MODEL INPUTS								
Highway Data				Site Con	ditions (l	Hard =	10, So	ft = 15)				
Average Daily Tra	ffic (Adt): 2	25,700 vehicles				A	Autos:	15				
Peak Hour Pe	rcentage: 1	10.00%		Me	dium Tru	cks (2 A	xles):	15				
Peak Hou	Volume: 2	2,570 vehicles		Hei	avy Truck	ks (3+ A	xles):	15				
Vehic	le Speed:	45 mph	-	Vehicle N	Niv							
Near/Far Lane	Distance:	50 feet	ŀ		cleType		Day	Evening	Night	Daily		
Site Data				10/11			77.5%	•	9.6%			
	r Heiaht:	0.0 feet		Me	edium Tru		84.8%		10.3%			
Barrier Type (0-Wall,		0.0 feet			leavy Tru		86.5%		10.8%			
Centerline Dist. t	,	67.0 feet	_									
Centerline Dist. to (67.0 feet	-	Noise So				et)				
Barrier Distance to (0.0 feet			Autos.							
Observer Height (Ab		5.0 feet			n Trucks.							
	Elevation:	0.0 feet		Heav	y Trucks.	8.0	004	Grade Ad	ustment.	0.0		
Road I	Elevation:	0.0 feet		Lane Equ	ivalent l	Distanc	e (in f	ieet)				
Roa	ad Grade:	0.0%			Autos.	62.3	362					
1	eft View:	-90.0 degrees		Mediur	n Trucks.	62.2	220					
Ri	ght View:	90.0 degrees		Heav	y Trucks.	62.2	234					
FHWA Noise Model C												
			istance	Finite		Fresn		Barrier Att		m Atten		
Autos: Medium Trucks:	68.46 79.45	2.12 -14.07	-1.5 -1.5		-1.20 -1.20		-4.71 -4.88		000 000	0.00		
Heavy Trucks:	79.45 84.25	-14.07	-1.5		-1.20		-4.00		000	0.00		
			-	-	-1.20		-5.25	0.0	000	0.00		
Unmitigated Noise Le				<u> </u>								
VehicleType Le Autos:	q Peak Hour			vening 64.2	Leq N	•		Ldn 66.3		VEL		
Autos: Medium Trucks:	67.8			64.2 54.8		58.1 53.2		61.7		67 61		
Heavy Trucks:	63.3	• · · ·		54.8 52.9		53.2 54.1		62.5		62		
Vehicle Noise:	70.0			64.9		60.5		69.0		69		
Centerline Distance t				04.5		00.0		00.0	,	00		
Centernine DistdfiCe t	o noise con	itour (in reet)	70	dBA	65 d	BA	6	0 dBA	55	dBA		
		Ldn:		58		124		267		57		

Monday, December 20, 2021

F	HWA-RD)-77-108 HIGH\	NAY NOI	SE PREI		ODEL (9/	12/2021)		_	
Scenario: O Road Name: 19 Road Segment: w	00th St.	n Av.				Name: To umber: 14	orrance Co 1092	mmerce		
	CIFIC IN	PUT DATA					DEL IN			
Highway Data				Site C	onditions	(Hard = 1	0, Soft = 1	5)		
Average Daily Traffi	c (Adt):	25,310 vehicle	s			A	utos: 15	5		
Peak Hour Perce	entage:	10.00%			Medium Tru	ıcks (2 Ax	<i>les):</i> 15	5		
Peak Hour V	/olume:	2,531 vehicles			Heavy Truc	cks (3+ Ax	<i>les):</i> 15	5		
Vehicle	· · · · ·	45 mph		Vehic	e Mix					
Near/Far Lane Di	stance:	50 feet			ehicleType	D	ay Ever	nina Ni	ght D	Daily
Site Data								•		7.029
Barrier	Hoiaht.	0.0 feet		-	Medium Tr	ucks: 8	4.8% 4	.9% 10	0.3% 2	2.36%
Barrier Type (0-Wall, 1-		0.0			Heavy Tr	ucks: 8	6.5% 2	.7% 10	0.8%	0.62%
Centerline Dist. to		67.0 feet		Noico	Source El	ovations	(in foot)			
Centerline Dist. to Ob	oserver:	67.0 feet		NUISE	Auto:		· /			
Barrier Distance to Ob	server:	0.0 feet		Mar	lium Trucks	. 0.00	-			
Observer Height (Abov	re Pad):	5.0 feet			avv Truck			le Adjusti	ment [.] 0	0
Pad Ele	evation:	0.0 feet						o / lajaoli		° .
Road Ele	evation:	0.0 feet		Lane	quivalent		, ,			
Road	Grade:	0.0%			Autos					
	ft View:	-90.0 degree	S		lium Trucks					
Righ	nt View:	90.0 degree	S	He	avy Trucks	s: 62.23	34			
FHWA Noise Model Ca	lculation	5		-						
VehicleType RI	EMEL	Traffic Flow	Distanc	e Fin	ite Road	Fresne	Barrie	er Atten	Berm A	Atten
Autos:	68.46	2.06	-	1.54	-1.20	-4	1.71	0.000		0.00
Medium Trucks:	79.45	-14.08	-	1.53	-1.20	-4	1.88	0.000		0.00
Heavy Trucks:	84.25	-19.88	-	1.53	-1.20	-{	5.29	0.000		0.00
Unmitigated Noise Lev	els (with	out Topo and L	oarrier at	tenuatio	ı)					
VehicleType Leq	Peak Hou	r Leq Day	Leo	q Evening	Leq	Night	Ldn		CNEL	
VehicleType Leq Autos:	Peak Hou 67	r Leq Day .8 6	Lec 65.9	q Evening 64	Leq	58.1	Ldn	66.7	CNEL	67.3
VehicleType Leq Autos: Medium Trucks:	Peak Hou 67 62	r Leq Day .8 6 .6 6	Leo 5.9 51.1	q Evening 64 54	Leq . .1 .8	58.1 53.2	Ldn	61.7	CNEL	67.3 61.9
VehicleType Leq Autos: Medium Trucks: Heavy Trucks:	Peak Hou 67 62 61	r Leq Day .8 6 .6 6	Lec 55.9 51.1 50.2	Evening 64 54 51	Leq . .1 .8 .2	58.1 53.2 52.4	Ldn	61.7 60.8	CNEL	67. 61. 60.
VehicleType Leq Autos: Medium Trucks:	Peak Hou 67 62	r Leq Day .8 6 .6 6	Leo 5.9 51.1	Evening 64 54 51	Leq . .1 .8	58.1 53.2	Ldn	61.7	CNEL	67. 61. 60.
Autos: Medium Trucks: Heavy Trucks:	Peak Hou 67 62 61 69	r Leq Day .8 6 .6 6 .7 6	Lec 55.9 51.1 50.2 57.9	g Evening 64 54 57 64	Leq :	58.1 53.2 52.4 60.1		61.7 60.8 68.7		67. 61. 60. 69.
VehicleType Leq Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	Peak Hou 67 62 61 69	r Leq Day .8 (6 .6 (6 .7 (6 ontour (in feet)	Lec 55.9 51.1 50.2 57.9	2 Evening 64 54 57 64 70 dBA	Leq	58.1 53.2 52.4 60.1	Ldn 60 dB/	61.7 60.8 68.7	CNEL 55 dB	67.3 61.9 60.9 69.3
VehicleType Leq Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	Peak Hou 67 62 61 69	r Leq Day .8 (6 .6 (6 .7 (6 ntour (in feet)	Lec 55.9 51.1 50.2 57.9	q Evening 64 52 57 62 70 dBA	Leq :	58.1 53.2 52.4 60.1		61.7 60.8 68.7		67. 61. 60. 69.

	FHWA-RD)-77-108 HIGH	WAY N	OISE	PREDIC	TION M	IODEL (9/	12/2	021)				
Road Nam	Scenario: OYP 2023 Road Name: 190th St. Road Segment: w/o Western Av.				Project Name: Torrance Commerce Job Number: 14092								
SITE	SPECIFIC IN	PUT DATA			NOISE MODEL INPUTS								
Highway Data				3	Site Con	ditions	(Hard = 1	0, Sc	oft = 15)				
Average Daily	Traffic (Adt):	25,950 vehicle	s				A	utos:	15				
Peak Hour	Percentage:	10.00%			Me	dium Tri	ucks (2 Ax	(les):	15				
Peak H	lour Volume:	2,595 vehicles	5		He	avy Tru	cks (3+ Ax	(les):	15				
Ve	hicle Speed:	45 mph		1	Vehicle I	Nix							
Near/Far La	ne Distance:	50 feet		H		cleType		Day	Evening	Night	Daily		
Site Data				-				7.5%	•	9.6%			
Ba	rrier Height:	0.0 feet			Me	edium T	rucks: 8	4.8%	4.9%	10.3%	2.33%		
Barrier Type (0-W		0.0			ŀ	leavy Ti	rucks: 8	6.5%	2.7%	10.8%	0.90%		
Centerline Di	. ,	67.0 feet			Noiso Sa	urco El	evations	(in fe	of)				
Centerline Dist.	to Observer:	67.0 feet		'	140/36 30	Auto			eu				
Barrier Distance	to Observer:	0.0 feet			Madiu	n Truck							
Observer Height (Above Pad):	5.0 feet				y Truck			Grade Adju	ustment	. 0 0		
Pa	ad Elevation:	0.0 feet			Ticav	y much	3. 0.00	04	0/000 / 10/0	Journome	. 0.0		
Roa	ad Elevation:	0.0 feet		1	Lane Equ	uivalent	Distance	e (in i	feet)				
	Road Grade:	0.0%				Auto		62					
	Left View:	-90.0 degree	es		Mediur	n Truck	s: 62.22	20					
	Right View:	90.0 degree	es		Heav	y Truck	s: 62.23	34					
FHWA Noise Mode	el Calculations	5											
VehicleType	REMEL	Traffic Flow	Dista	nce	Finite		Fresne		Barrier Atte	en Ber	m Atten		
Autos:	68.46	2.16		-1.54		-1.20		4.71	0.0		0.000		
Medium Trucks:	79.45	-14.03		-1.5		-1.20		4.88	0.0	00	0.000		
Heavy Trucks:	84.25	-18.16		-1.5	3	-1.20		5.29	0.0	00	0.000		
Unmitigated Noise	e Levels (with	out Topo and	barrier	atten	uation)								
VehicleType	Leq Peak Hou			.eq E	vening	Leq	Night		Ldn		NEL		
Autos	67		66.0		64.2		58.2		66.8		67.4		
		.7 61.2			54.8		53.3		61.7		62.0		
Medium Trucks:	62												
Medium Trucks: Heavy Trucks:	63	.4	61.9		52.9		54.2		62.5				
Medium Trucks:		.4							62.5 69.1				
Medium Trucks: Heavy Trucks:	63 70	.4	61.9 68.4		52.9 65.0		54.2 60.5		69.1		69.5		
Medium Trucks: Heavy Trucks: Vehicle Noise:	63 70	.4 .1 ntour (in feet,	61.9 68.4	70 c	52.9 65.0 dBA	65	54.2 60.5	6	69.1		69.5 dBA		
Medium Trucks: Heavy Trucks: Vehicle Noise:	63 70	.4 .1 ontour (in feet,	61.9 68.4	70 c	52.9 65.0	65	54.2 60.5	6	69.1		62.6 69.5 dBA 579 620		

FHWA-RD-77-108 HIGHWAY NC	DISE PREDICTION MODEL (9/12/2021)
Scenario: E Road Name: 195th St. Road Segment: w/o Gramercy Pl.	Project Name: Torrance Commerce Job Number: 14092
SITE SPECIFIC INPUT DATA	NOISE MODEL INPUTS
Highway Data	Site Conditions (Hard = 10, Soft = 15)
Average Daily Traffic (Adt): 700 vehicles	Autos: 15
Peak Hour Percentage: 10.00%	Medium Trucks (2 Axles): 15
Peak Hour Volume: 70 vehicles	Heavy Trucks (3+ Axles): 15
Vehicle Speed: 25 mph	Vehicle Mix
Near/Far Lane Distance: 45 feet	VehicleType Day Evening Night Daily
Site Data	Autos: 77.5% 12.9% 9.6% 97.02%
Barrier Height: 0.0 feet	Medium Trucks: 84.8% 4.9% 10.3% 2.36%
Barrier Type (0-Wall, 1-Berm): 0.0	Heavy Trucks: 86.5% 2.7% 10.8% 0.62%
Centerline Dist. to Barrier: 40.0 feet	Noise Source Elevations (in feet)
Centerline Dist. to Observer: 40.0 feet	Autos: 0.000
Barrier Distance to Observer: 0.0 feet	Medium Trucks: 2,297
Observer Height (Above Pad): 5.0 feet	
Pad Elevation: 0.0 feet	Heavy Trucks: 8.004 Grade Adjustment: 0.0
Road Elevation: 0.0 feet	Lane Equivalent Distance (in feet)
Road Grade: 0.0%	Autos: 33.448
Left View: -90.0 degrees	Medium Trucks: 33.182
Right View: 90.0 degrees	Heavy Trucks: 33.208
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Distan	ce Finite Road Fresnel Barrier Atten Berm Atten
Autos: 58.73 -10.97	2.52 -1.20 -4.59 0.000 0.000
Medium Trucks: 70.80 -27.10	2.57 -1.20 -4.87 0.000 0.000
Heavy Trucks: 77.97 -32.91	2.56 -1.20 -5.56 0.000 0.000
Unmitigated Noise Levels (without Topo and barrier a	ttenuation)
	eq Evening Leq Night Ldn CNEL
Autos: 49.1 47.2	45.4 39.4 48.0 48.6
Medium Trucks: 45.1 43.6	37.2 35.6 44.1 44.3
	36.0 37.2 45.6 45.7
Heavy Trucks: 46.4 45.0	
Heavy Trucks: 46.4 45.0 Vehicle Noise: 52.0 50.3	46.4 42.4 51.0 51.4
Vehicle Noise: 52.0 50.3 Centerline Distance to Noise Contour (in feet)	70 dBA 65 dBA 60 dBA 55 dBA
Vehicle Noise: 52.0 50.3	

	FHWA-RD)-77-108 HIGH	WAY	' NOISE F	PREDICT		IODEL (9/12/2	021)					
Scenario Road Name Road Segment	: 195th St.	cy Pl.					Name: lumber:		ce Comme	erce				
SITE SPECIFIC INPUT DATA					NOISE MODEL INPUTS									
Highway Data				S	ite Cond	litions	(Hard =	10, So	oft = 15)					
Average Daily T	raffic (Adt):	1,561 vehicle	es					Autos:	15					
Peak Hour F	Percentage:	10.00%			Medium Trucks (2 Axles): 15									
Peak Ho	ur Volume:	156 vehicles	s		Hea	vy Tru	cks (3+)	Axles):	15					
Veh	icle Speed:	25 mph		V	ehicle M	ix								
Near/Far Lan	e Distance:	45 feet		-		leType		Day	Evening	Night	Daily			
Site Data							Autos:	77.5%		9.6%	91.49%			
Barr	ier Heiaht:	0.0 feet			Me	dium T	rucks:	84.8%	4.9%	10.3%	1.63%			
Barrier Type (0-Wa		0.0			н	eavy T	rucks:	86.5%	2.7%	10.8%	6.87%			
Centerline Dist	. ,	40.0 feet		N	oise Sol	Irco E	lovation	e (in fi	nof)					
Centerline Dist. to	Observer:	40.0 feet		14	0136 301	Auto		000	eel)					
Barrier Distance to	Observer:	0.0 feet			Medium			297						
Observer Height (A	bove Pad):	5.0 feet				Truck		257	Grade Ad	iustment	0.0			
Pad	d Elevation:	0.0 feet								aounom	0.0			
	d Elevation:	0.0 feet		Li	ane Equ				feet)					
R	oad Grade:	0.0%				Auto		448						
	Left View:	-90.0 degree			Medium			182						
	Right View:	90.0 degree	es		Heavy	Truck	s: 33.	208						
FHWA Noise Model	Calculation													
VehicleType	REMEL	Traffic Flow		stance	Finite F		Fresr		Barrier Att		m Atten			
Autos:	58.73	-7.74		2.52		-1.20		-4.59		000	0.00			
Medium Trucks:	70.80	-25.22		2.57		-1.20		-4.87		000	0.00			
Heavy Trucks:	77.97	-18.98		2.56		-1.20		-5.56	0.0	000	0.00			
Unmitigated Noise			- T		<u> </u>			1						
	.eq Peak Hou			Leq Eve		Leq	Night		Ldn		VEL			
Autos:	52	-	50.4		48.6		42.6	-	51.	-	51.			
Medium Trucks: Heavy Trucks:	46 60		45.4 58.9		39.1 49.9		37.5 51.1		46. 59.		46. 59.			
Vehicle Noise:	60		59.7		49.9 52.5		51.		59. 60.3		59. 60.			
	-				52.5		51.3	,	00.	,	00.			
Centerline Distance	e to Noise Co	ntour (in feet,)	70 dl	84	65	dBA		60 dBA	55	dBA			
			Ldn:	70 01	9	05	19		42		90			
					9		15		43		93			

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	FHWA-RD	0-77-108 HIGH\	VAY I	NOISE	PREDIC		ODEL (9/12/2	.021)			
Scenario Road Name Road Segmen		rcy Pl.					Name: umber:		nce Comm	erce		
SITE S	PECIFIC IN	IPUT DATA				N	IOISE N	NODE	L INPU	rs		
Highway Data					Site Con	ditions	(Hard =	10, S	oft = 15)			
	Percentage: our Volume: hicle Speed:	700 vehicle 10.00% 70 vehicles 25 mph 45 feet	-	-	He Vehicle I	avy Tru	ucks (2 A cks (3+ A	(xles	: 15	A.C.	- 64	Dailte
Site Data					ven			Day 77.5%			9 <i>ht</i>	Daily 97.02%
	r ier Height: all, 1-Berm):	0.0 feet 0.0				, edium Ti Heavy Ti	rucks:	84.8% 86.5%	6 4.9%	10).3%).8%	2.36% 0.62%
Centerline Dis		40.0 feet		1	Noise So	urce El	evation	s (in f	eet)			
Centerline Dist. to Observe Barrier Distance to Observe Observer Height (Above Pad Pad Elevatio Road Elevatio Road Grad		40.0 feet 0.0 feet 5.0 feet 0.0 feet 0.0 feet 0.0%				Auto m Truck y Truck uivalent Auto	s: 2.1 s: 8.0		Grade A feet)	djustr	nent:	0.0
	Left View: Right View:	-90.0 degree 90.0 degree				n Truck y Truck						
FHWA Noise Mode VehicleType	REMEL	s Traffic Flow	Diet	ance	Finite	Bood	Fresn		Barrier A	Hon	Born	n Atten
Autos: Medium Trucks: Heavy Trucks:	58.73 70.80 77.97	-10.97 -27.10 -32.91	Dist	2.5 2.5 2.5	2 7	-1.20 -1.20 -1.20		-4.59 -4.87 -5.56	0	.000 .000 .000	Dem	0.00 0.00 0.00
Unmitigated Noise	Levels (with	out Topo and L	arrie	r atten	uation)							
VehicleType I	Leq Peak Hou	Ir Leq Day		Leq E	vening	Leq	Night		Ldn		CN	EL
Autos: Medium Trucks: Heavy Trucks:	49 45 46	.1 4	7.2 3.6		45.4 37.2 36.0		39.4 35.6 37.2	5	48 44 45	.1		48. 44. 45.
Vehicle Noise:	52		i0.3		46.4		42.4		43			51.
Centerline Distance										-		
			. L	70 (65	dBA		60 dBA		55 a	
			.dn: IEL:		2 2		5 5		1	0 1		22 23

FHWA-R	D-77-108 HIGHW	AY NOIS	E PREDIC	TION M	ODEL (9/1:	2/2021)	
Scenario: OYP 2023 Road Name: 195th St. Road Segment: w/o Grame	rcy Pl.				Name: Tor umber: 140	rance Comme 192	rce
SITE SPECIFIC I	IPUT DATA			N	OISE MO	DEL INPUTS	6
Highway Data			Site Con	ditions ((Hard = 10,	, Soft = 15)	
Average Daily Traffic (Adt):	1,561 vehicles				Aut	os: 15	
Peak Hour Percentage:	10.00%		Me	dium Tru	icks (2 Axle	es): 15	
Peak Hour Volume:	156 vehicles		He	avy Truc	:ks (3+ Axle	es): 15	
Vehicle Speed:	25 mph		Vehicle I	Mix			
Near/Far Lane Distance:	45 feet			icleType	Da	y Evening	Night Daily
Site Data						.5% 12.9%	9.6% 91.49
Barrier Height:	0.0 feet		M	edium Tr	ucks: 84	.8% 4.9%	10.3% 1.63
Barrier Type (0-Wall, 1-Berm):	0.0		F	leavy Tr	ucks: 86	.5% 2.7%	10.8% 6.87
Centerline Dist. to Barrier:	40.0 feet		Noiso Se	urco Ek	evations (i	n foot)	
Centerline Dist. to Observer:	40.0 feet		10136 30	Autos		,	
Barrier Distance to Observer:	0.0 feet		Modiu	m Trucks	0.000		
Observer Height (Above Pad):	5.0 feet			v Trucks			ustment: 0.0
Pad Elevation:	0.0 feet						
Road Elevation:	0.0 feet		Lane Eq		Distance (, ,	
Road Grade:	0.0%			Autos			
Left View:	-90.0 degrees			m Trucks			
Right View:	90.0 degrees		neav	y Trucks	33.208	5	
FHWA Noise Model Calculation	s						
VehicleType REMEL		Distance			Fresnel	Barrier Atte	
Autos: 58.73			52	-1.20	-4.		
Medium Trucks: 70.80			57	-1.20	-4.		
Heavy Trucks: 77.97	-18.98	2.	56	-1.20	-5.	56 0.0	00 0.0
Unmitigated Noise Levels (with			,				
VehicleType Leq Peak Ho			Evening	Leq I		Ldn	CNEL
	2.3 50		48.6		42.6	51.2	
	6.9 45		39.1		37.5 51.1	46.0	
).4 58 1.2 59		49.9 52.5		51.1	59.5 60.3	
		.1	52.5		51.9	60.3	60.
Centerline Distance to Noise C	ontour (in feet)						
) dBA	65 0		60 dBA	55 dBA
	Ld	n:	9		19	42	9
	CNE	· ·	9		20	43	ç

FHWA-RD-77-108 HIGHW	AY NOI	SE PREDIO	CTION M	ODEL (S	/12/20	021)		
Scenario: E Road Name: Del Amo Blvd. Road Segment: w/o Van Ness Av.				Name: 1 umber: 1		ce Comme	rce	
SITE SPECIFIC INPUT DATA						L INPUTS	5	
Highway Data		Site Cor	nditions (Hard =	10, So	ft = 15)		
Average Daily Traffic (Adt): 14,330 vehicles				-	Autos:	15		
Peak Hour Percentage: 10.00%		Me	edium Tru	icks (2 A	xles):	15		
Peak Hour Volume: 1,433 vehicles		He	eavy Truc	ks (3+ A	xles):	15		
Vehicle Speed: 35 mph		Vehicle	Mix					
Near/Far Lane Distance: 42 feet			nicleType		Dav	Evenina	Niaht	Daily
Site Data					77.5%		9.6%	
Barrier Height: 0.0 feet		М	ledium Tr	ucks:	84.8%	4.9%	10.3%	2.36%
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Tr	ucks:	86.5%	2.7%	10.8%	0.62%
Centerline Dist. to Barrier: 61.0 feet		Noise O			(i	- 41		
Centerline Dist. to Observer: 61.0 feet		Noise Se	ource Ele			et)		
Barrier Distance to Observer: 0.0 feet			Autos					
Observer Height (Above Pad): 5.0 feet			m Trucks			Crada Adi	unternant	
Pad Elevation: 0.0 feet		неа	vy Trucks	. 8.0	104	Grade Adj	usuneni	. 0.0
Road Elevation: 0.0 feet		Lane Eq	uivalent	Distanc	e (in f	eet)		
Road Grade: 0.0%			Autos	: 57.4	89			
Left View: -90.0 degrees		Mediu	m Trucks	: 57.3	35			
Right View: 90.0 degrees		Hea	vy Trucks	: 57.3	850			
FHWA Noise Model Calculations		1						
VehicleType REMEL Traffic Flow	Distance	e Finite	Road	Fresn	e/	Barrier Atte	en Ber	m Atten
Autos: 64.30 0.69	-1	1.01	-1.20		4.69	0.0	00	0.000
Medium Trucks: 75.75 -15.45	-1	1.00	-1.20		4.88	0.0	00	0.000
Heavy Trucks: 81.57 -21.26	-1	1.00	-1.20		-5.33	0.0	00	0.000
Unmitigated Noise Levels (without Topo and ba	arrier att	enuation)						
VehicleType Leq Peak Hour Leq Day	_	Evening	Leq I	•		Ldn		NEL
	0.9	59.1		53.1		61.7		62.3
	3.6	50.2		48.7		57.1		57.4
Heavy Trucks: 58.1 56	6.7	47.7		48.9		57.3		57.4
				55.5		64.0)	64.4
Vehicle Noise: 65.0 63	3.3	59.9	,	00.0				
Vehicle Noise: 65.0 63 Centerline Distance to Noise Contour (in feet)								
Centerline Distance to Noise Contour (in feet)	7	0 dBA	65 0	iBA		0 dBA	55	dBA
Centerline Distance to Noise Contour (in feet)	7 dn:					0 dBA 113 121	55	dBA 243 260

FHW	A-RD	-77-108 HIGH	۱WA۱	(NOISE	PREDIC	TION N	IODEL (9/12/2	021)		
Scenario: E+P Road Name: Del An							t Name: Number:		ce Comme	erce	
Road Segment: w/o Va	in Nes	ss Av.									
SITE SPECIFI	C INI	PUT DATA							L INPUT	s	
Highway Data					Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (Ad	dt):	14,576 vehicle	es					Autos:	15		
Peak Hour Percentag	ge:	10.00%			Mee	dium Ti	rucks (2)	Axles):	15		
Peak Hour Volun	ne:	1,458 vehicle	s		Hei	avy Tru	icks (3+)	Axles):	15		
Vehicle Spee	ed:	35 mph			Vehicle I	Niv					
Near/Far Lane Distan	ce:	42 feet		-		cleTyp	•	Dav	Evening	Night	Daily
Site Data					10/11		Autos:	77.5%		9.6%	
Barrier Heig	hé.	0.0 feet			Me		rucks:	84.8%		10.3%	
Barrier Type (0-Wall, 1-Ber		0.0 reet 0.0			F	leavy 1	rucks:	86.5%		10.8%	
Centerline Dist. to Barn		61.0 feet		-							
Centerline Dist. to Observ		61.0 feet		1	Noise So				eet)		
Barrier Distance to Observ		0.0 feet				Auto		000			
Observer Height (Above Pa		5.0 feet			Mediur			297			
Pad Elevati		0.0 feet			Heav	y Truck	(s: 8.	004	Grade Ad	ustment.	0.0
Road Elevati		0.0 feet			Lane Equ	uivalen	t Distan	ce (in	feet)		
Road Gra	de:	0.0%				Auto	os: 57.	489	,		
Left Vie	W:	-90.0 degree	es		Mediur	n Truck	(s: 57.	335			
Right Vie	ew:	90.0 degree	es		Heav	y Truck	(s: 57.	350			
FHWA Noise Model Calcula					1					1	
VehicleType REME		Traffic Flow		istance	Finite		Fresr		Barrier Att		m Atten
	4.30	0.75		-1.0		-1.20		-4.69		000	0.00
	5.75	-15.42		-1.0	-	-1.20		-4.88		000	0.00
	1.57	-20.02		-1.0	-	-1.20		-5.33	0.0	000	0.00
Unmitigated Noise Levels (· ·			<u> </u>			1			
VehicleType Leq Peak				Leq E	vening	Leq	Night		Ldn		VEL
Autos:	62.		60.9		59.2		53.		61.		62
Medium Trucks:	58.		56.6		50.3		48.		57.3		57
Heavy Trucks: Vehicle Noise:	59.4 65.4		57.9 63.7		48.9		50. 55.1		58. 64.		58 64
					60.0		55.6	5	64.4	ŧ	64
Centerline Distance to Nois	e Col	ntour (in feet)	70	100	67	dD A		C dBA	57	dD A
			Ldn:	70 0	dBA	65	dBA		50 dBA		dBA
		~	Lan: NEL:		26 27		55 59		119 127		25 27
		6	VEL:		27		59	1	127		27

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FHWA	-RD-77-	-108 HIGHW	AY NO	ISE	PREDIC	TION MO	DEL (9)	/12/20	021)		
Scenario: OY 2023	3					Project N	lame: T	orran	ce Comme	erce	
Road Name: Del Amo	o Blvd.					Job Nur	nber: 14	4092			
Road Segment: w/o Van	Ness A	ν.									
SITE SPECIFIC	INPU	T DATA								S	
Highway Data				2	site Cond	ditions (H		· ·	,		
Average Daily Traffic (Adt		180 vehicles						utos:	15		
Peak Hour Percentage		00%				dium Truc					
Peak Hour Volume		48 vehicles			Hea	avy Truck	s (3+ A)	kles):	15		
Vehicle Speed		35 mph		۱	Vehicle N	lix					
Near/Far Lane Distance	9: 4	42 feet			Vehi	cleType	Ľ	Day	Evening	Night	Daily
Site Data						Au	tos: 7	7.5%	12.9%	9.6%	97.02
Barrier Heigh	t:	0.0 feet			Me	dium Tru	cks: 8	4.8%	4.9%	10.3%	2.36
Barrier Type (0-Wall, 1-Berm		0.0			H	leavy Tru	cks: 8	6.5%	2.7%	10.8%	0.62
Centerline Dist. to Barrie	r: 6	1.0 feet		1	Voise So	urce Elev	/ations	(in fe	et)		
Centerline Dist. to Observe		1.0 feet				Autos:			.,		
Barrier Distance to Observe	r:	0.0 feet			Mediun	n Trucks:	2.29				
Observer Height (Above Pad	· ·	5.0 feet				v Trucks:			Grade Ad	iustment	: 0.0
Pad Elevation		0.0 feet									
Road Elevation		0.0 feet		1	ane Equ	ivalent D			'eet)		
Road Grade		0%				Autos:					
Left Viev		0.0 degrees				n Trucks:					
Right Viev	V: 9	0.0 degrees			Heav	y Trucks:	57.3	50			
FHWA Noise Model Calculati											
VehicleType REMEL		ffic Flow	Distan		Finite		Fresne		Barrier Atte		rm Atter
	.30	0.73		-1.0		-1.20		4.69		000	0.00
	.75	-15.41		-1.00	-	-1.20		4.88		000	0.00
Heavy Trucks: 81.	.57	-21.21		-1.00	D	-1.20	-	5.33	0.0	000	0.00
Unmitigated Noise Levels (w											
VehicleType Leq Peak I		Leq Day		eq Ev	/ening	Leq Ni	•		Ldn		NEL
Autos:	62.8).9		59.2		53.1		61.7		62
Medium Trucks:	58.1		6.6		50.3		48.7		57.2		57
Heavy Trucks:	58.2	-	6.7		47.7		48.9		57.3		57
Vehicle Noise:	65.1		3.4		59.9		55.5		64.1	1	64
Centerline Distance to Noise	Conto	ur (in feet)									
				70 c	1BA	65 dE	3A	6	60 dBA		dBA
		L	in:		25 26		53 56		114 122		24 26

FHW	A-RD-77	108 HIGH	WAY	NOISE	PREDIC	TION	NODEL (9/12/2	021)		
Scenario: OYP 2 Road Name: Del An Road Segment: w/o Va	no Blvd.	v.					t Name: lumber:		ce Comme	erce	
SITE SPECIFI	C INPU	T DATA								S	
Highway Data					Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (Ad	tt): 14,7	26 vehicle	s					Autos:	15		
Peak Hour Percentag	ge: 10.0	00%			Me	dium Tr	rucks (2 A	Axles):	15		
Peak Hour Volun	ne: 1,47	73 vehicles			He	avy Tru	cks (3+ A	Axles):	15		
Vehicle Spee		35 mph			Vehicle I	Nix					
Near/Far Lane Distant	ce: 4	12 feet		F	Vehi	cleType	9	Day	Evening	Night	Daily
Site Data							Autos:	77.5%	12.9%	9.6%	96.85%
Barrier Heig	ht.	0.0 feet			Me	edium T	rucks:	84.8%	4.9%	10.3%	2.34%
Barrier Type (0-Wall, 1-Berr		0.0			ŀ	leavy T	rucks:	86.5%	2.7%	10.8%	0.81%
Centerline Dist. to Barri	·	1.0 feet		-	N 0-			- (i f	41		
Centerline Dist. to Observ	er: 6	1.0 feet		-	Noise So				eet)		
Barrier Distance to Observ	er:	0.0 feet				Auto n Truck		000 297			
Observer Height (Above Pa	d):	5.0 feet						297	Grade Ad	iustmeni	. 0 0
Pad Elevation	on:	0.0 feet			Heav	y Truck	S: 8.	004	Grade Au	Jusuneni	. 0.0
Road Elevation	on:	0.0 feet		1	Lane Equ	uivalen	t Distand	ce (in i	feet)		
Road Grad	de: 0.0	0%				Auto	s: 57.	489			
Left Vie	ew: -9	0.0 degree	s			n Truck		335			
Right Vie	ew: 9	0.0 degree	s		Heav	y Truck	s: 57.	350			
FHWA Noise Model Calcula	tions										
VehicleType REME		ffic Flow	Dis	stance	Finite		Fresh		Barrier Att	en Bei	m Atten
	4.30	0.80		-1.0		-1.20		-4.69		000	0.000
	5.75	-15.38		-1.0		-1.20		-4.88		000	0.000
Heavy Trucks: 8	1.57	-19.98		-1.0	0	-1.20		-5.33	0.0	000	0.000
Unmitigated Noise Levels (
VehicleType Leq Peak		Leq Day		Leq E	vening	Leq	Night		Ldn		NEL
Autos:	62.9		51.0		59.2		53.2		61.8		62.4
Medium Trucks:	58.2		56.7		50.3		48.8		57.2	-	57.5
Heavy Trucks:	59.4		58.0		48.9		50.2		58.5		58.7
Vehicle Noise:	65.4		53.7		60.1		55.9	ł	64.4	4	64.8
Centerline Distance to Nois	e Conto	ur (in feet)						-		_	
			L	70 (dBA	65	dBA		60 dBA		dBA
			Ldn:		26		56		120		258
		CN	IEL:		27		59		128		275

Monday, December 20, 2021



APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS





14092 - Torrance Commerce Center Phase 3

CadnaA Noise Prediction Model: 14092_03.cna Date: 15.12.21 Analyst: S. Shami

Calculation Configuration

Configurat	ion
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	10.00
Standard Height (m)	0.00
Model of Terrain	
Reflection	Triangulation
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	100.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
	0.10
Industrial (ISO 9613)	anna Ohi
Lateral Diffraction	some Obj On
Obst. within Area Src do not shield	-
Screening	Incl. Ground Att. over Barrier
Parrier Coofficients C1 2 2	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

	-	-			-											
Name	М.	ID		Level Lr		Lir	nit. Valı	ue		Land	l Use	Height		C	oordinates	
			Day	Night	CNEL	Day	Night	CNEL	Туре	Auto	Noise Type			Х	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	39.2	38.3	44.8	55.0	50.0	0.0				5.00	а	5934062.05	2262231.34	5.00
RECEIVERS		R2	41.7	40.8	47.2	55.0	50.0	0.0				5.00	а	5934558.43	2262223.03	5.00
RECEIVERS		R3	49.9	49.4	56.0	55.0	50.0	0.0				5.00	а	5935686.07	2262311.98	5.00
RECEIVERS		R4	35.5	34.7	41.2	55.0	50.0	0.0				5.00	а	5938301.21	2261189.91	5.00
RECEIVERS		R5	36.2	35.8	42.4	55.0	50.0	0.0				5.00	а	5936569.28	2258085.61	5.00
RECEIVERS		R6	34.4	34.0	40.6	55.0	50.0	0.0				5.00	а	5933764.97	2258138.50	5.00

Point Source(s)

Name	M.	ID	R	esult. PW	'L		Lw/L	i	Op	erating Ti	me	К0	Height	t	C	oordinates	
			Day	Evening	Night	Туре	Value	norm.	Day	Special	Night				Х	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH10	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935444.41	2261642.02	5.00
POINTSOURCE		TRASH09	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935400.93	2261642.33	5.00
POINTSOURCE		TRASH08	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935202.48	2261244.54	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935194.24	2260853.05	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935945.69	2261878.21	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935944.90	2261554.10	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935998.97	2261230.12	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935989.52	2260839.40	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935400.90	2261877.91	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	5935454.40	2261878.40	5.00

Name I	М.	ID	R	esult. PW	/L		Lw/L	i	Ope	erating Ti	ime	ко	Height		C	oordinates	
			Day	Evening	Night	Туре	Value	norm.	Day	Special	Night				х	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5936264.01	2261301.48	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5934912.80	2261326.21	50.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5936251.30	2260758.12	50.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5934900.12	2260785.04	50.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5936263.27	2261927.73	50.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5935584.02	2261954.28	50.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5935095.55	2261965.89	50.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936093.08	2260690.53	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936175.74	2260689.15	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936268.55	2260689.29	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936281.54	2261367.41	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	5936193.82	2261368.87	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936109.45	2261368.59	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934926.03	2261538.50	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934925.89	2261631.31	5.00
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935088.99	2261394.04	5.00
POINTSOURCE		PARK10	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934987.78	2261395.73	5.00
POINTSOURCE		PARK11	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934903.43	2261397.14	5.00
POINTSOURCE		PARK12	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935083.62	2260666.86	5.00
POINTSOURCE		PARK13	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934984.48	2260692.14	5.00
POINTSOURCE		PARK14	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934824.81	2260831.48	5.00
POINTSOURCE		PARK15	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934829.51	2260910.71	5.00
POINTSOURCE		PARK16	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934825.80	2260991.77	5.00
POINTSOURCE		PARK17	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934826.11	2261111.57	5.00
POINTSOURCE		PARK18	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934827.60	2261200.97	5.00
POINTSOURCE		PARK19	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5934832.38	2261285.26	5.00
POINTSOURCE		PARK20	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936351.32	2260795.90	5.00
POINTSOURCE		PARK21	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936347.86	2260892.14	5.00
POINTSOURCE		PARK22	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	5936345.84	2260973.17	5.00
POINTSOURCE		PARK23	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936352.87	2261091.17	5.00
POINTSOURCE		PARK24	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936360.80	2261209.25	5.00
POINTSOURCE		PARK25	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936358.64	2261330.31	5.00
POINTSOURCE		PARK26	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935885.24	2261845.22	5.00
POINTSOURCE		PARK27	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935880.86	2261707.59	5.00
POINTSOURCE		PARK28	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935881.31	2261609.51	5.00
POINTSOURCE		PARK29	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936108.92	2261495.13	5.00
POINTSOURCE		PARK30	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	5936219.41	2261489.12	5.00
POINTSOURCE		PARK31	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936357.46	2261634.96	5.00
POINTSOURCE		PARK32	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936368.38	2261789.18	5.00
POINTSOURCE		PARK33	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	5936371.58	2261855.89	5.00
POINTSOURCE		PARK34	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936369.15	2261960.26	5.00
POINTSOURCE		PARK35	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936228.38	2262027.29	5.00
POINTSOURCE		PARK36	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936157.46	2262028.47	5.00
POINTSOURCE		PARK37	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5936076.11	2262029.83	5.00
POINTSOURCE		PARK38	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935986.45	2262033.41	5.00
POINTSOURCE		PARK39	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	5935283.45	2262043.04	5.00
		PARK40	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	5935187.50	2262044.64	5.00
POINTSOURCE																	

Line Source(s)

Name	М.	ID	R	esult. PW	′L	R	esult. PW	Ľ		Lw / L	i	Op	erating Ti	me		Moving	Pt. Src		Height
			Day	Evening	Night	Day	Evening	Night	Туре	Value	norm.	Day	Special	Night		Number		Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		TRUCK01	93.2	93.2	93.2	74.6	74.6	74.6	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK02	93.2	93.2	93.2	70.8	70.8	70.8	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK03	93.2	93.2	93.2	71.6	71.6	71.6	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK04	93.2	93.2	93.2	76.0	76.0	76.0	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK05	93.2	93.2	93.2	70.2	70.2	70.2	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK06	93.2	93.2	93.2	74.5	74.5	74.5	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK07	93.2	93.2	93.2	72.5	72.5	72.5	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK08	93.2	93.2	93.2	69.9	69.9	69.9	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK09	93.2	93.2	93.2	75.2	75.2	75.2	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK10	93.2	93.2	93.2	76.2	76.2	76.2	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK11	93.2	93.2	93.2	75.9	75.9	75.9	Lw	93.2		900.00	0.00	540.00					8
LINESOURCE		TRUCK12	93.2	93.2	93.2	71.9	71.9	71.9	Lw	93.2		900.00	0.00	540.00					8

Name	ŀ	lei	ight			Coordinat	es	
	Begin		End		х	у	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	а	(5935174.83	2260843.83	8.00	0.00
					5935166.22	2260608.94	8.00	0.00
LINESOURCE	8.00	а			5935184.00	2261258.60	8.00	0.00
					5935186.28	2261439.88	8.00	0.00
					5934792.59	2261445.65	8.00	0.00
LINESOURCE	8.00	а			5935372.45	2261631.91	8.00	0.00
					5935371.77	2261507.28	8.00	0.00

Name	ŀ	lei	ght		Coordinat	es	1
	Begin		End	x	У	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
				5935418.23	2261505.73	8.00	0.00
				5935420.25	2261441.40	8.00	0.00
				5935186.28	2261439.88	8.00	0.00
LINESOURCE	8.00	а		5935470.63	2261630.73	8.00	0.00
				5935467.85	2261508.00	8.00	0.00
				5935418.23	2261505.73	8.00	0.00
LINESOURCE	8.00	а		5935964.95	2261540.49	8.00	0.00
				5935963.86	2261428.46	8.00	0.00
				5935420.25	2261441.40	8.00	0.00
LINESOURCE	8.00	а		5936017.31	2261241.93	8.00	0.00
				5936020.40	2261427.52	8.00	0.00
				5935963.86	2261428.46	8.00	0.00
LINESOURCE	8.00	а		5936020.40	2261427.52	8.00	0.00
				5936409.72	2261420.30	8.00	0.00
LINESOURCE	8.00	а		5935931.51	2261868.60	8.00	0.00
				5935907.06	2261870.75	8.00	0.00
				5935896.71	2261876.73	8.00	0.00
				5935892.81	2261886.66	8.00	0.00
				5935888.31	2261895.44	8.00	0.00
				5935890.57	2262031.26	8.00	0.00
				5935430.37	2262042.41	8.00	0.00
				5935428.97	2262096.83	8.00	0.00
LINESOURCE	8.00	а		5935476.62	2261889.95	8.00	0.00
				5935479.65	2262003.28	8.00	0.00
				5935428.00	2262004.72	8.00	0.00
				5935430.25	2262047.22	8.00	0.00
LINESOURCE	8.00	а		5935373.85	2261892.27	8.00	0.00
				5935375.17	2262004.44	8.00	0.00
				5935428.00	2262004.72	8.00	0.00
LINESOURCE	8.00	а		5936009.22	2260827.64	8.00	0.00
				5936009.49	2260652.14	8.00	0.00
LINESOURCE	8.00	а		5935371.77	2261507.28	8.00	0.00
				5934994.74	2261511.23	8.00	0.00
				5934993.59	2261442.70	8.00	0.00

Area Source(s)

Name	М.	ID	R	esult. PW	'L	Re	esult. PW	L''		Lw / L	i	Op	erating Ti	me	Height
			Day	Evening	Night	Day	Evening	Night	Туре	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	103.4	103.4	103.4	68.3	68.3	68.3	Lw	103.4					8
AREASOURCE		DOCK02	103.4	103.4	103.4	68.3	68.3	68.3	Lw	103.4					8
AREASOURCE		DOCK03	103.4	103.4	103.4	66.8	66.8	66.8	Lw	103.4					8
AREASOURCE		DOCK04	103.4	103.4	103.4	66.2	66.2	66.2	Lw	103.4					8
AREASOURCE		DOCK05	103.4	103.4	103.4	66.2	66.2	66.2	Lw	103.4					8

Name	ŀ	lei	ght		Coordinat	es	
	Begin		End	x	У	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	а		5935287.55	2261894.08	8.00	0.00
				5935332.73	2261892.70	8.00	0.00
				5935420.83	2261891.78	8.00	0.00
				5935415.94	2261629.73	8.00	0.00
				5935327.16	2261634.17	8.00	0.00
				5935282.57	2261633.03	8.00	0.00
AREASOURCE	8.00	а		5935563.09	2261628.35	8.00	0.00
				5935517.92	2261630.36	8.00	0.00
				5935428.25	2261631.06	8.00	0.00
				5935432.09	2261891.60	8.00	0.00
				5935521.60	2261888.29	8.00	0.00
				5935566.78	2261887.54	8.00	0.00
AREASOURCE	8.00	а		5936074.03	2261891.01	8.00	0.00
				5936067.54	2261539.60	8.00	0.00
				5935927.47	2261540.82	8.00	0.00
				5935931.82	2261893.50	8.00	0.00
				5935952.93	2261893.66	8.00	0.00
AREASOURCE	8.00	а		5936114.04	2261241.28	8.00	0.00
				5936107.13	2260826.48	8.00	0.00
				5936046.24	2260826.87	8.00	0.00
				5935970.89	2260828.44	8.00	0.00
				5935978.32	2261243.53	8.00	0.00
				5936055.02	2261240.38	8.00	0.00
AREASOURCE	8.00	а		5935082.38	2261259.11	8.00	0.00
				5935141.48	2261259.02	8.00	0.00
				5935217.24	2261258.27	8.00	0.00
				5935209.30	2260843.18	8.00	0.00
				5935133.84	2260844.59	8.00	0.00

Name	н	eight			Coordinat	es	
	Begin	Begin End		х	У	y z G	
	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)
				5935074.21	2260844.33	8.00	0.00

Barrier(s)

-													
Name	e M.	ID	Abso	rption	Z-Ext.	Canti	ilever	Hei	ight				
			left	right		horz.	vert.	Begin	End	x	y z		Ground
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Dunun	1 8'	3/					_				
Name	М.	ID	RB	Residents	Absorption	Height			Coordinat	es	
						Begin		x	У	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	2			45.00	0.00
BUILDING		BUILDINGUUUUI		0		45.00	a				
								5935334.55	2262001.89	45.00	0.00
								5935332.73	2261892.70	45.00	0.00
								5935287.55	2261894.08	45.00	0.00
								5935282.57	2261633.03	45.00	0.00
								5935327.16	2261634.17	45.00	0.00
								5935326.07	2261531.24	45.00	0.00
								5935046.82		45.00	0.00
									2261638.81	45.00	0.00
								5935037.85		45.00	0.00
								5935040.29	2261897.57	45.00	0.00
								5935054.10	2261897.34	45.00	0.00
BUILDING		BUILDING00002	х	0		45.00	а	5935524.66	2261996.84	45.00	0.00
								5935780.71	2261993.19	45.00	0.00
								5935781.07		45.00	0.00
	-		-					5935804.28		45.00	0.00
			<u> </u>					5935804.74		45.00	0.00
								5935834.85		45.00	0.00
								5935834.62	2261951.49	45.00	0.00
								5935858.48	2261951.72	45.00	0.00
								5935858.44	2261949.21	45.00	0.00
								5935847.13		45.00	0.00
								5935846.12		45.00	0.00
							_				
								5935842.34		45.00	0.00
								5935839.21	2261624.38	45.00	0.00
								5935827.91	2261623.94	45.00	0.00
								5935825.58	2261522.29	45.00	0.00
								5935515.58	2261527.46	45.00	0.00
								5935517.92		45.00	0.00
								5935563.09		45.00	0.00
								5935566.78	2261887.54	45.00	0.00
								5935521.60	2261888.29	45.00	0.00
BUILDING		BUILDING00003	х	0		45.00	а	5935953.80	2261946.37	45.00	0.00
								5935941.89	2261947.20	45.00	0.00
								5935942.57	2261950.32	45.00	0.00
								5935965.16		45.00	0.00
											0.00
								5935965.41		45.00	
								5935971.70	2261965.53	45.00	0.00
								5935971.63	2261961.14	45.00	0.00
								5935996.09	2261960.10	45.00	0.00
								5935996.96	2261974.52	45.00	0.00
								5936021 40	2261972.23	45.00	0.00
							Η	5936022.89		45.00	0.00
	-		-				Η				
			<u> </u>					5936112.63		45.00	0.00
								5936113.18	2261980.12	45.00	0.00
								5936178.45	2261979.66	45.00	0.00
								5936177.89	2261983.43	45.00	0.00
								5936255.71		45.00	0.00
								5936256.91		45.00	0.00
							\vdash				
	1		1	1				5936302.71	2261977.59	45.00	0.00
								5936303.55	2261990.75	45.00	0.00
								5936303.55 5936306.06		45.00 45.00	0.00
									2261990.71		
								5936306.06	2261990.71 2261969.39	45.00	0.00
								5936306.06 5936305.08 5936317.03	2261990.71 2261969.39 2261970.44	45.00 45.00 45.00	0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27	2261990.71 2261969.39 2261970.44 2261849.93	45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61	45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78	45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78	45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261766.52	45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63 5936311.74	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261766.52 2261702.51	45.00 45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63 5936311.74 5936310.67 5936307.54	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261766.52 2261702.51 2261702.57	45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63 5936311.74 5936310.67 5936307.54 5936305.50	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261766.52 2261702.51 2261702.57 2261542.53	45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
								5936306.06 5936305.08 5936317.03 5936316.27 5936310.64 5936318.63 5936311.74 5936310.67 5936307.54 5936305.50 5936292.95	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261765.52 2261702.51 2261702.57 2261542.53 2261542.74	45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
								5936306.06 5936305.08 5936317.03 5936316.27 5936320.64 5936318.63 5936311.74 5936310.67 5936307.54 5936305.50	2261990.71 2261969.39 2261970.44 2261849.93 2261848.61 2261765.78 2261766.52 2261702.51 2261702.57 2261542.53	45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0

Name	М.	ID	RB	Residents	Absorption	Height			Coordinat	es	
						Begin		x	У	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								5936237.61	2261536.76	45.00	0.00
								5936067.54	2261539.60	45.00	0.00
								5936074.03	2261891.01	45.00	0.00
								5935952.93	2261893.66	45.00	0.00
BUILDING		BUILDING00004	х	0		45.00	а	5934874.92	2261353.59	45.00	0.00
								5934889.36	2261353.35	45.00	0.00
								5934889.55	2261365.27	45.00	0.00
								5935144.34	2261361.03	45.00	0.00
								5935141.48	2261259.02	45.00	0.00
								5935082.38	2261259.11	45.00	0.00
								5935074.21	2260844.33	45.00	0.00
								5935133.84	2260844.59	45.00	0.00
								5935132.12	2260741.05	45.00	0.00
								5934878.59	2260745.27	45.00	0.00
								5934878.18	2260758.46	45.00	0.00
								5934866.26	2260758.66	45.00	0.00
BUILDING		BUILDING00005	х	0		45.00	а	5936056.11	2261343.31	45.00	0.00
								5936298.34	2261339.27	45.00	0.00
								5936298.13	2261326.72	45.00	0.00
								5936310.68	2261326.51	45.00	0.00
								5936300.16	2260732.87	45.00	0.00
								5936286.96	2260731.84	45.00	0.00
								5936286.77	2260720.54	45.00	0.00
								5936044.58	2260727.09	45.00	0.00
								5936046.24	2260826.87	45.00	0.00
								5936107.13	2260826.48	45.00	0.00
								5936114.04	2261241.28	45.00	0.00
								5936055.02	2261240.38	45.00	0.00



APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS



14092 - Torrance Commerce Center Phase 3

CadnaA Noise Prediction Model: 14092_03 - Construction.cna Date: 16.12.21 Analyst: S. Shami

Calculation Configuration

Configurat	Configuration										
Parameter	Value										
General											
Country	(user defined)										
Max. Error (dB)	0.00										
Max. Search Radius (#(Unit,LEN))	2000.01										
Min. Dist Src to Rcvr	0.00										
Partition											
Raster Factor	0.50										
Max. Length of Section (#(Unit,LEN))	999.99										
Min. Length of Section (#(Unit,LEN))	1.01										
Min. Length of Section (%)	0.00										
Proj. Line Sources	On										
Proj. Area Sources	On										
Ref. Time											
Reference Time Day (min)	960.00										
Reference Time Night (min)	480.00										
Daytime Penalty (dB)	0.00										
Recr. Time Penalty (dB)	5.00										
Night-time Penalty (dB)	10.00										
DTM											
Standard Height (m)	0.00										
Model of Terrain	Triangulation										
Reflection	-										
max. Order of Reflection	2										
Search Radius Src	100.00										
Search Radius Rcvr	100.00										
Max. Distance Source - Rcvr	1000.00 1000.00										
Min. Distance Rvcr - Reflector	1.00 1.00										
Min. Distance Source - Reflector	0.10										
Industrial (ISO 9613)											
Lateral Diffraction	some Obj										
Obst. within Area Src do not shield	On										
Screening	Incl. Ground Att. over Barrier										
	Dz with limit (20/25)										
Barrier Coefficients C1,2,3	3.0 20.0 0.0										
Temperature (#(Unit,TEMP))	10										
rel. Humidity (%)	70										
Ground Absorption G	0.50										
Wind Speed for Dir. (#(Unit,SPEED))	3.0										
Roads (RLS-90)											
Strictly acc. to RLS-90											
Railways (FTA/FRA)											
Aircraft (???)											
Strictly acc. to AzB											
Wind Speed for Dir. (#(Unit,SPEED)) Roads (RLS-90) Strictly acc. to RLS-90 Railways (FTA/FRA) Aircraft (???)											

Receiver Noise Levels

Name	M.	ID		Level Lr		Lir	nit. Valı	ue		Land	l Use	Height		C	oordinates	
			Day	Night	CNEL	Day	Night	CNEL	Туре	Auto	Noise Type			Х	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	48.9	48.9	55.6	55.0	50.0	0.0				5.00	а	5934062.05	2262231.34	5.00
RECEIVERS		R2	52.0	52.0	58.6	55.0	50.0	0.0				5.00	а	5934558.43	2262223.03	5.00
RECEIVERS		R3	55.9	55.9	62.6	55.0	50.0	0.0				5.00	а	5935686.07	2262311.98	5.00
RECEIVERS		R4	44.5	44.5	51.1	55.0	50.0	0.0				5.00	а	5938301.21	2261189.91	5.00
RECEIVERS		R5	41.4	41.4	48.1	55.0	50.0	0.0				5.00	а	5936569.28	2258085.61	5.00
RECEIVERS		R6	40.6	40.6	47.3	55.0	50.0	0.0				5.00	а	5933764.97	2258138.50	5.00

Area Source(s)

Name	М.	ID	R	Result. PWL			esult. PW	L''		Lw/L	i	Op	Operating Time		
			Day	Evening	Night	Day	Evening	Night	Туре	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	115.0	115.0	115.0	63.0	63.0	63.0	Lw	115					8

Name	ŀ	lei	ght		Coordinates							
	Begin		egin End		x	У	z	Ground				
	(ft)	(ft) (ft)		(ft)	(ft)	(ft)	(ft)					
SITEBOUNDARY	8.00 a				5934978.03	2262077.03	8.00	0.00				
					5934978.32	2262083.68	8.00	0.00				
					5934980.11	2262090.17	8.00	0.00				
					5934985.46	2262098.06	8.00	0.00				
					5934993.07	2262103.24	8.00	0.00				

Name		eight		Coordinat		Cround	
	Begin	End	x	У	Z	Ground	
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
			5935003.60	2262105.33	8.00	0.00	
			5936098.57	2262083.46	8.00	0.00	
			5936214.54	2262069.20	8.00	0.00	
			5936391.94	2262064.73	8.00	0.00	
			5936408.28	2262060.68	8.00	0.00	
			5936422.18	2262050.02	8.00	0.00	
			5936432.21	2262022.11	8.00	0.00	
			5936427.46	2261993.21	8.00	0.00	
			5936417.75	2261928.17	8.00	0.00	
			5936409.15	2261818.35	8.00	0.00	
			5936411.45	2261683.14	8.00	0.00	
			5936409.62	2261405.21	8.00	0.00	
			5936401.66	2260943.62	8.00	0.00	
			5936386.97	2260886.41	8.00	0.00	
			5936383.89	2260694.36	8.00	0.00	
			5936341.48	2260652.76	8.00	0.00	
			5936159.40	2260658.24	8.00	0.00	
			5936083.81	2260658.75	8.00	0.00	
			5936057.21	2260657.33	8.00	0.00	
			5936022.36	2260654.54	8.00	0.00	
			5935957.78	2260642.52	8.00	0.00	
			5935969.24	2261374.39	8.00	0.00	
			5935933.34	2261376.11	8.00	0.00	
			5935933.48	2261362.26	8.00	0.00	
			5935898.68	2261362.46	8.00	0.00	
			5935897.83	2261401.78	8.00	0.00	
			5935252.00	2261410.30	8.00	0.00	
			5935248.12	2261267.39	8.00	0.00	
			5935227.83	2261267.36	8.00	0.00	
			5935219.04	2260607.04	8.00	0.00	
			5935176.49	2260607.86	8.00	0.00	
			5935128.29	2260612.93	8.00	0.00	
			5935070.13	2260626.25	8.00	0.00	
			5934981.87	2260652.80	8.00	0.00	
			5934917.00	2260667.73	8.00	0.00	
			5934865.46	2260674.20	8.00	0.00	
			5934825.41	2260674.12	8.00	0.00	
			5934804.48	2260675.59	8.00	0.00	
			5934794.80	2260678.75	8.00	0.00	
-			5934786.70	2260687.12	8.00	0.00	
			5934783.90	2260698.77	8.00	0.00	
			5934777.98	2260701.03	8.00	0.00	
			5934792.74	2261453.27	8.00	0.00	
		+ +	5934799.34	2261505.36	8.00	0.00	
		+ +	5934819.02	2261505.30	8.00	0.00	
			5934842.22	2261571.32	8.00	0.00	
			5934842.22	2261018.78	8.00	0.00	
	+ +	+ +	-				
	+ +	+ +	5934941.08	2261795.44	8.00	0.00	
	+ +	+ +	5934958.73	2261844.88	8.00	0.00	
	+ +		5934968.78	2261887.67	8.00	0.00	
		1	5934973.22	2261918.43	8.00	0.00	