AutoNation

NOISE IMPACT ANALYSIS

CITY OF NEWPORT BEACH

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JULY 7, 2016

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
MPAH	Master Plan of Arterial Highways
mph	Miles per hour
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PPV	Peak Particle Velocity
Project	AutoNation
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
TPO	Traffic Phasing Ordinance
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed AutoNation development ("Project"). The Project site is located at 320 to 600 West Coast Highway in the City of Newport Beach. The proposed Project consists of the development of up to 37,954 square feet of automobile sales land use in a single, three-story building. This noise impact analysis was prepared to satisfy the City of Newport Beach noise level standards and ensure that adequate noise mitigation measures are incorporated into the Project's development.

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 17 roadway segments surrounding the Project site were estimated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *AutoNation Traffic Impact Analysis* prepared by Kunzman Associates, Inc.. (1) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Traffic Phasing Ordinance (TPO) Year 2019, and Cumulative Year 2019 conditions for both the with and without Project traffic conditions. The off-site traffic noise analysis shows that the Project noise level contributions will be *less than significant* under all of the with Project conditions.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the potential noise sources within the AutoNation site, this analysis estimates the Project-related operational (stationary-source) noise levels at the nearby noise-sensitive receiver locations. The Project-related operational noise sources are expected to include: service bay activities, car wash/detailing, car horns, car transport deliveries, parking lot car movements, car alarms, roll-up doors, and roof-top mechanical ventilation equipment.

The analysis shows that the Project-related operational noise levels will satisfy the City of Newport Beach exterior noise level standards at the off-site receiver locations in the Project study area. Further, this analysis demonstrates that the Project will not contribute an operational noise level impact to the existing ambient noise environment at any of the nearby sensitive receiver locations. Therefore, the operational noise level impacts associated with the proposed Project activities, such as the service bay activities, car wash/detailing, car horns, car transport deliveries, parking lot car movements, car alarms, roll-up doors, and roof-top mechanical ventilation equipment will be *less than significant*.

To further reduce the noise levels experienced by the nearby sensitive receiver locations, the use of car horns as a warning device shall be restricted. Substitute warning devices that do not rely

on audible warnings such as convex circular mirrors or other signaling devices shall be used at any on-site locations with sight distance limitations (blind corners).

CONSTRUCTION NOISE AND VIBRATION ANALYSIS

Construction noise represents a short-term increase on the ambient noise levels. Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site. Using sample reference noise levels to represent the planned construction activities of the AutoNation site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. Construction activities are regulated in the City of Newport Beach Municipal Code, Sections 10.26.035 (D) and (E), which indicate construction activities are considered exempt from the noise level standards if they occur between the permitted hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and on Saturdays between 8:00 a.m. and 6:00 p.m. (2) Therefore, if construction activities occur within the permitted hours of the Municipal Code, Project construction noise levels will be exempt from the noise ordinance standards, and the construction noise level impacts are considered *less than significant*. The construction noise analysis presents a conservative, worst-case approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from the center of construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will actually be experienced at each receiver location.

To describe the potential effects of Project-related construction noise levels, the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH) identifies an acceptable noise exposure level for construction workers over an 8-hour period. (3) For the purposes of this report, the NIOSH construction noise exposure level of 85 dBA Leq is used to describe the construction noise at the nearby sensitive receiver locations in relation to human health (i.e. hearing conservation, etc.) and not as a threshold of significance. Since the NIOSH construction-related noise level represents the energy average of the noise source over a given time period, they are expressed as Leq noise levels. The Project-related short-term construction noise levels are expected to approach 72.3 dBA Leq and will not exceed the 85 dBA Leq noise exposure level at all receiver locations. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (4)

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 87 VdB at a distance of 25 feet. At distances ranging from 63 to 273 feet from the Project construction activities, construction vibration velocity levels are expected to approach 75.0 VdB. Based on the FTA vibration standards, the proposed Project site will not include or require equipment, facilities, or

activities that would result in a *barely perceptible* human response (annoyance) for infrequent events. Therefore, the vibration levels due to Project construction are considered *less than significant* impacts.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating close to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

CONSTRUCTION NOISE AND VIBRATION ABATEMENT MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following mitigation measures would reduce any noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses.

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities shall only occur between the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays (City of Newport Beach Municipal Code, Section 10.28.040). The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site (i.e., to the center) during all Project construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays). The contractor shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.

SUMMARY OF SIGNIFICANCE FINDINGS

The results of this AutoNation Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise impact before and after any needed mitigation measures.

TABLE ES-1: NOISE & VIBRATION IMPACT SIGNIFICANCE SUMMARY

Analysis	Report Section	Significance	
		Without Mitigation	**With Mitigation**
Off-Site Traffic Noise	7	*Less than significant*	*n/a*
Operational Noise	9	*Less than significant*	*n/a*
Construction Noise	10	*Less than significant*	*n/a*
Construction Vibration		*Less than significant*	*n/a*

"n/a" = No mitigation required since the impact will be less than significant.

1 INTRODUCTION

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

1.1 SITE LOCATION

The proposed AutoNation Project is located at 320 to 600 West Coast Highway in the City of Newport Beach, as shown on Exhibit 1-A. Existing residential land uses are located south of the Project site across West Coast Highway and north of the Project site on Kings Road at elevations roughly 50 to 60 feet higher than the proposed finished floor elevation and approximately 20 to 30 feet higher than the proposed roof elevation of the Project building. West of the Project site there is an existing McDonald's fast food restaurant, and east of the Project site lies existing commercial land uses.

1.2 PROJECT DESCRIPTION

The proposed Project consists of the development of up to 37,954 square feet of automobile sales land use in a single, three-story building, as shown on Exhibits 1-B, 1-C, and 1-D for each floor, respectively. The proposed Opening Year for the Project is 2018. Project-related stationary-source (operational) noise would be generated by the proposed land uses at the Project site. The on-site Project-related noise sources are expected to include: service bay activities, car wash/detailing, car horns, car transport deliveries, parking lot car movements, car alarms, roll-up doors, and roof-top mechanical ventilation equipment. The Project cross-sections indicate the neighboring residential homes located on the Kings Road will not have a direct line of sight to the majority of the Project-related noise source activities.

Pursuant to the Circulation Element of the City of Newport Beach General Plan, the Newport Beach Municipal Code, and the Master Plan of Arterial Highways (MPAH), the applicant is required to dedicate the southerly 12 feet of the Project site for streets and highway purposes to facilitate the widening of Coast Highway. The City is requiring the applicant to construct new street improvements including pavement, curb and gutter, sidewalk, drive approaches, and an additional northbound travel lane across the frontage of the Project site. The Project includes a 170-foot long median in West Coast Highway which is included in the construction noise analysis of this report.

EXHIBIT 1-A: LOCATION MAP

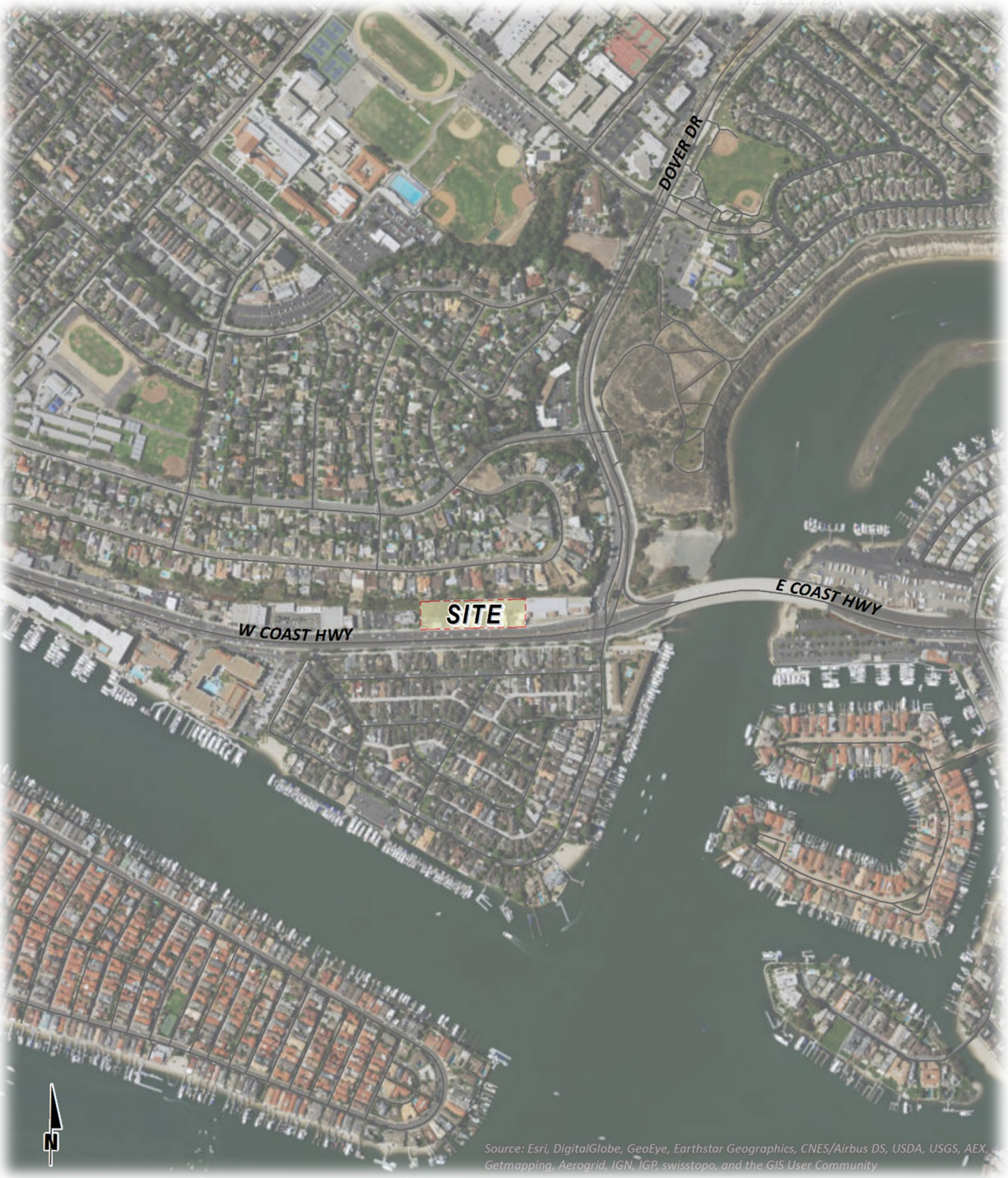


EXHIBIT 1-B: FIRST FLOOR PLAN

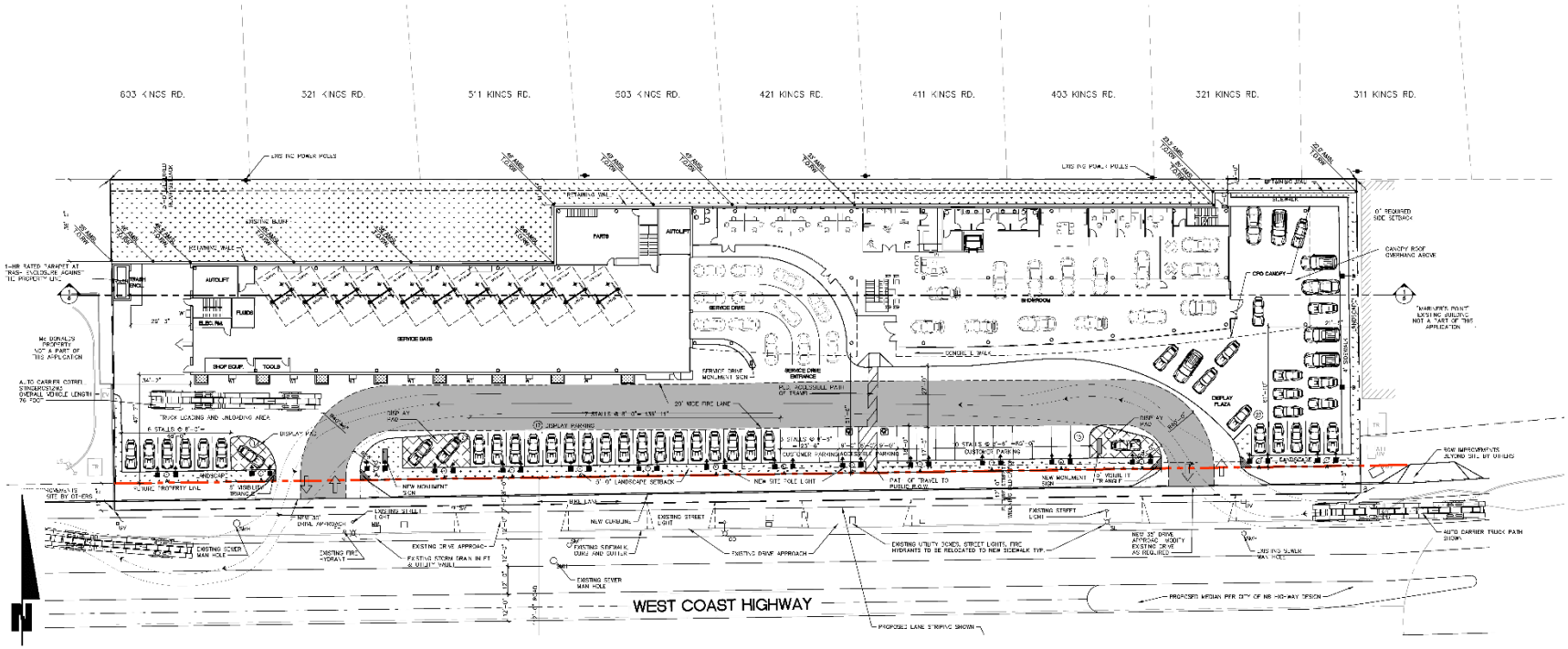


EXHIBIT 1-C: SECOND FLOOR PLAN

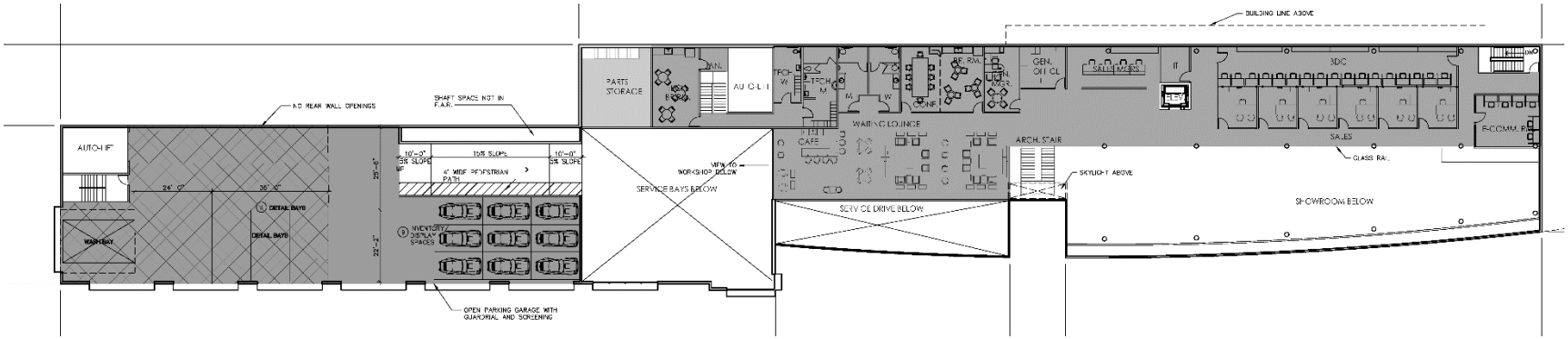
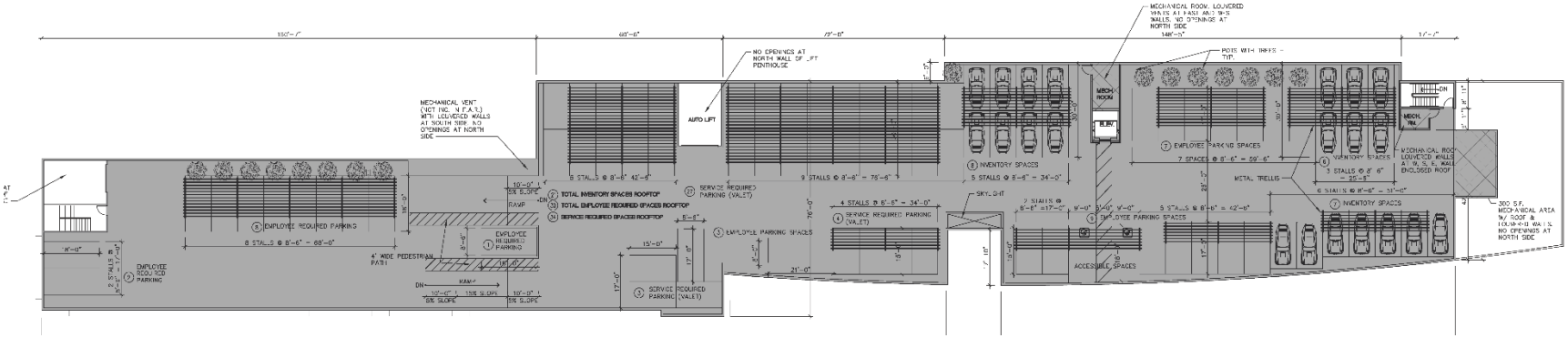


EXHIBIT 1-D: THIRD FLOOR PLAN



2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (5) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

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

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period 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 Day-Night Average Noise Level (LDN) and the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The LDN and CNEL are weighted averages of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The LDN time of day corrections include the addition of 10 decibels to dBA Leq sound levels at night between 10:00 p.m. and 7:00 a.m. The CNEL time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., in addition to the corrections for the LDN. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. LDN and CNEL do not represent the actual sound level heard at any particular time, but rather represent the total sound exposure. The City of Newport Beach relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources, and therefore, this analysis uses the CNEL noise level to apply the more conservative evening hour corrections to the 24-hour noise levels.

While sound pressure levels (e.g. Leq) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (PWL) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source, and also diminish as a result of intervening obstacles and barriers, air absorption, wind and other factors. Sound power is the acoustical energy emitted by the sound source, and is an absolute value that is not affected by the environment.

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined

path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source.

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

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

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all

three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.5 NOISE BARRIER ATTENUATION

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

2.6 LAND USE COMPATIBILITY WITH NOISE

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

2.7 COMMUNITY RESPONSE TO NOISE

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

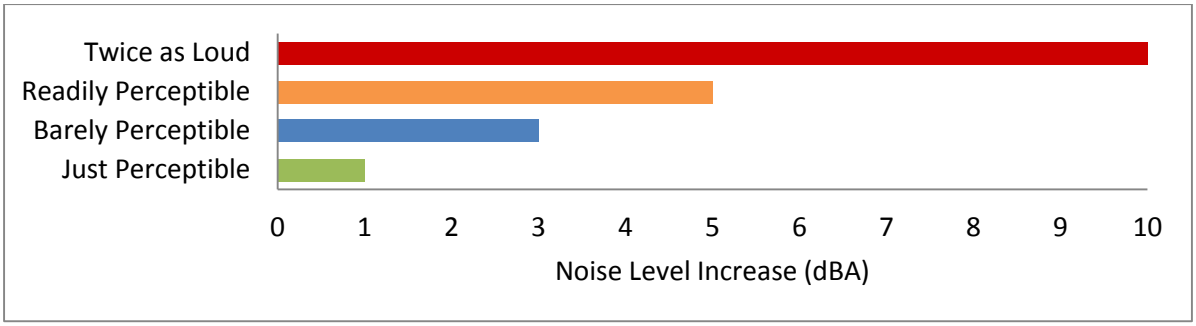
- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (9) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (9)

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory

experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (7)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

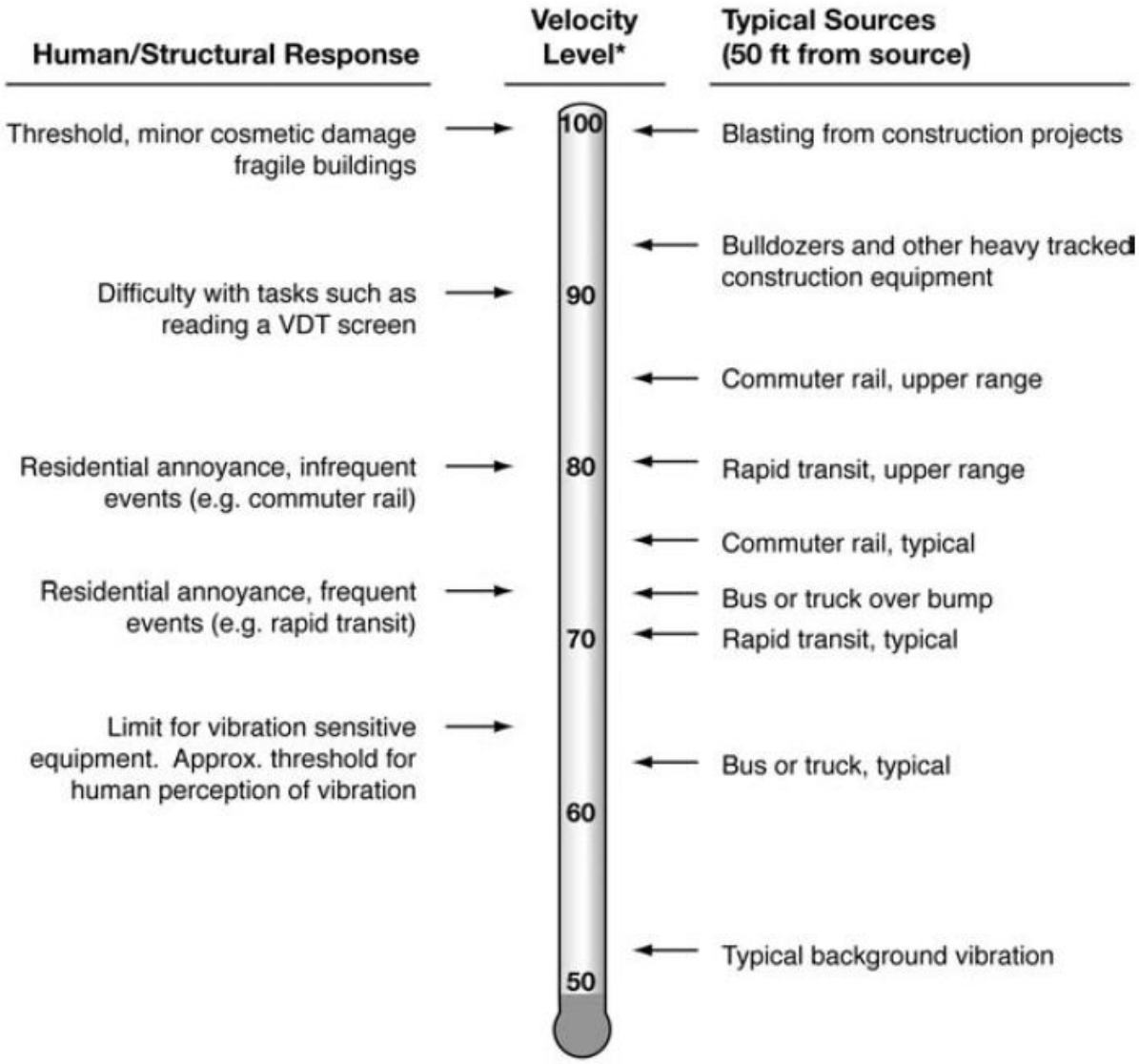
According to the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (10), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include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

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

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50

VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

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



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

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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The 2014 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507on Environmental Comfort. (12) These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA Leq for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 CITY OF NEWPORT BEACH GENERAL PLAN NOISE ELEMENT

The City of Newport Beach has adopted a Noise Element of the General Plan to include *noise control in the planning process in order to maintain compatible land use with environmental noise levels*. (13) The General Plan Noise Element identifies the following goals related to noise:

- ***N 1*** ***Noise Compatibility –*** *Minimized Land use conflicts between various noise sources and other human activities.*
- ***N 2*** *Minimized motor vehicle traffic and boat noise impacts on sensitive noise receptors.*
- ***N 3*** *Protection of Newport Beach residents from the adverse noise impacts of commercial air carrier operations at John Wayne Airport as provided in the City Council Airport Policy.*
- ***N 4*** ***Minimization of Non-Transportation-Related Noise –*** *Minimized non-transportation-related noise impacts on sensitive noise receptors.*
- ***N 5*** *Minimized excessive construction-related noise.*

3.3.1 LAND USE COMPATIBILITY

The policies included in the General Plan Noise Element consider land use compatibility and identify exterior noise level compatibility standards for transportation-related noise. The *Land Use Noise Compatibility Matrix*, 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.

According to the City's *Land Use Noise Compatibility Matrix*, noise-sensitive land use, such as residential, is *clearly compatible* with exterior noise levels below 60 dBA CNEL and *normally compatible* with noise levels below 65 dBA CNEL. Commercial auto dealership land use, such as the Project, is considered *clearly acceptable* with exterior noise levels below 70 dBA CNEL and *normally compatible* with exterior noise levels up to or greater than 80 dBA CNEL. Based on these guidelines, an exterior noise level of 65 dBA CNEL is generally considered the maximum exterior noise level for noise-sensitive receivers.

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY MATRIX

Land Use Categories		Community Noise Equivalent Level (CNEL)						
Categories	Uses	<55	55–60	60–65	65–70	70–75	75–80	>80
Residential	Single Family, Two Family, Multiple Family	A	A	B	C	C	D	D
Residential	Mixed Use	A	A	A	C	C	C	D
Residential	Mobile Home	A	A	B	C	C	D	D
Commercial Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Recreational **Institutional** Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special **Industrial, Institutional**	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

SOURCE: Newport Beach, 2006

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

Zone B: Normally Compatible**—New construction or development should be undertaken only after detailed analysis of the noise reduction requirements and are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

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

Zone D: Clearly Incompatible—New construction or development should generally not be undertaken.

Source: City of Newport Beach General Plan Noise Element, Table N2.

3.4 CITY OF NEWPORT BEACH MUNICIPAL CODE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the AutoNation Project, stationary-source noise such as the expected service bay activities, car wash/detailing, car horns, car transport deliveries, parking lot car movements, car alarms, roll-up doors, and roof-top mechanical ventilation equipment, and noise from construction activities are typically evaluated against standards established under the City's Municipal Code.

3.4.1 OPERATIONAL NOISE STANDARDS

The City of Newport Beach Municipal Code, Chapter10.26 *Community Noise Control*, establishes the permissible exterior noise levels that may intrude into a neighboring property. According to Section 10.26.025(A) the exterior noise level at single-family residential land uses (Noise Zone 1) shall not exceed 55 dBA Leq during the daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA Leq during the nighttime hours (10:00 p.m. to 7:00 a.m.). (2) However, Section 10.26.025(C) states that if the existing ambient noise level exceeds the base noise level standards, *the ambient shall be the standard*. Since the lowest measured daytime ambient noise level of 58 dBA Leq at the nearby sensitive receiver locations, provided in Section 5 of this report, exceeds the daytime noise level standard of 55 dBA Leq, the base noise level standard is adjusted to the ambient noise level of 58 dBA Leq during the daytime hours, as shown on Table 3-1. For the purposes of this noise study, the Project-related operational noise levels shall not exceed the daytime ambient noise level standard of 58 dBA Leq, and the nighttime noise level standard of 50 dBA Leq. The City of Newport Beach Municipal Code, Chapter10.26 *Community Noise Control*, is included in Appendix 3.1.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

City	Land Use	Time Period	Base Exterior Noise Level Standards (dBA Leq)[2]	Exterior Noise Level Standards Based on Lowest Ambient Noise Levels (dBA Leq)[3]
Newport Beach[1]	Residential (Noise Zone I)	Daytime	55	58
		Nighttime	50	50

[1] Source: City of Newport Beach Municipal Code, Section 10.26.025 (Appendix 3.1).
[2] Leq represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.
[3] Based on Section 10.26.025 (A) of the City of Newport Beach Municipal Code, when the ambient noise level exceeds the noise level standard, the ambient shall be the standard. Therefore, the lowest daytime ambient noise level measured at location L1, shown on Exhibit 5-A, is used to establish the daytime exterior noise level standard. The lowest nighttime ambient noise level at L1 does not exceed the 50 dBA Leq nighttime exterior noise level standard. See Table 5-1 and Appendix 5-2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

3.4.2 CONSTRUCTION NOISE STANDARDS

The City of Newport Beach has set restrictions to control noise impacts associated with the construction of the proposed Project. According to the City of Newport Beach Municipal Code Section 10.28.040, construction activities are considered exempt from the noise standards of the noise ordinance if limited to the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays. (14) Therefore, if construction activities occur within the permitted hours of the Municipal Code, Project construction noise levels are considered exempt from the noise ordinance standards. Table 3-2 shows the construction noise standards of the City of Newport Beach Municipal Code.

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

City	Permitted Hours of Construction Activity
Newport Beach[1]	7:00 a.m. to 6:30 p.m. Mondays to Fridays; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity on Sundays or national holidays

[1] Source: City of Newport Beach Municipal Code, Section 10.28.040 (Appendix 3.1).

3.4.3 CONSTRUCTION-RELATED HEARING CONSERVATION

The Occupational Safety and Health Administration (OSHA) requires hearing protection be provided by employers in workplaces where the noise levels may, over long periods of exposure to high noise levels, endanger the hearing of their employees. Standard 29 CFR, Part 1910 indicates the noise levels under which a hearing conservation program is required to be provided to workers exposed to high noise levels. (15) This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (4)

To describe the potential effects of Project-related construction noise levels, the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH) identifies an acceptable noise exposure level for construction workers over an 8-hour period. (3) For the purposes of this report, the NIOSH construction noise level of 85 dBA Leq is used to describe the construction noise at the nearby sensitive receiver locations in relation to human health (i.e. hearing conservation, etc.). Since the NIOSH construction-related noise level represents the energy average of the noise source over a given time period, they are expressed as Leq noise levels. Therefore, the noise level of 85 dBA Leq over a period of eight hours or more is used for comparison purposes with the potential Project-related construction noise levels at the nearby sensitive receiver locations.

3.5 CONSTRUCTION VIBRATION STANDARDS

The City of Newport Beach has not identified or adopted vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 80 VdB for residential uses and buildings where people normally sleep. (10)

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. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. While not enforceable regulations within the City of Newport Beach, the FTA guidelines of 80 VdB for sensitive land uses provide the basis for determining the relative significance of potential Project-related vibration impacts.

4 SIGNIFICANCE CRITERIA

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

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

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

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

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

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

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

While the CEQA Guidelines and the City of Newport Beach General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, however, the Project site is not located within two miles of a public airport or the vicinity of a private airstrip. Therefore, the potential impacts under CEQA guidelines E and F are considered to be *less than significant*, and are not further analyzed in this noise study.

Under CEQA Guidelines C and D, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (16) Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. With this in mind, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-

generated increases in noise levels that take into account the ambient noise level. (17) 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 (i.e., CNEL).

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 even though the noise criteria might not be exceeded. Therefore, for the purpose of this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project related noise level increase is considered a significant impact when nearby noise-sensitive receivers are affected. According to 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 noise-sensitive receivers are affected, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE LEVEL INCREASES

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Source: Federal Interagency Committee on Noise (FICON), 1992.

Based on the significance of noise impacts outlined below on Table 4-2, noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development:

OFF-SITE TRAFFIC NOISE

- If the off-site traffic noise levels at nearby noise-sensitive land uses adjacent to roadways conveying Project traffic:
    - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase; or
    - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase; or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level impact of greater than 1.5 dBA CNEL (FICON, 1992.).

OPERATIONAL NOISE

- If Project-related operational (stationary source) noise levels exceed the exterior daytime 58 dBA Leq and nighttime 50 dBA Leq noise level standards at adjacent land uses in the City of Newport Beach (City of Newport Beach Municipal Code, Section 10.26.025).
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities occur at any time other than the permitted hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays (City of Newport Beach Municipal Code, Section 10.28.040).
- If short-term Project generated construction vibration levels exceed the FTA acceptable vibration standard of 80 VdB at sensitive receiver locations (FTA Transit Noise and Vibration Impact Assessment).

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site Traffic Noise[1]	if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Operational Noise[2]	Exterior Noise Level Standards	58 dBA Leq	50 dBA Leq
Construction Noise & Vibration	7:00 a.m. to 6:30 p.m. Mondays to Fridays; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity on Sundays or national holidays.[3]		
	Noise Level Threshold[3]	n/a	No Nighttime Activity
	Vibration Level Threshold[4]	80 VdB	No Nighttime Activity

[1] Source: FICON, 1992.
[2] Source: City of Newport Beach Municipal Code, Section 10.26.025 (Appendix 3.1).
[3] Source: City of Newport Beach Municipal Code, Section 10.28.040 (Appendix 3.1).
[4] Source: U.S. Department of Transportation Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.; "n/a" = Construction noise levels are exempt from the Municipal Code if activities occur within the permitted hours.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, five 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. The locations were selected based on actual conditions in the field and our ability to locate the noise meter to accurately reflect the ambient noise environment. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, June 8th, 2016. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. To describe the existing noise environment, 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. 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 the potential Project-related noise level contributions.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. 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. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels north of the Project site on Kings Road adjacent to existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 57.8 dBA CNEL. The hourly noise levels measured at location L1 ranged from 55.0 to 61.0 dBA Leq during the daytime hours and from 38.5 to 52.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 57.8 dBA Leq with an average nighttime noise level of 45.6 dBA Leq.
- Location L2 represents the noise levels on the hillside between the Project site and residential homes on Kings Road. The noise level measurements collected show an overall 24-hour exterior noise level of 61.6 dBA CNEL. The hourly noise levels measured at location L2 ranged from 56.1 to 60.7 dBA Leq during the daytime hours and from 45.4 to 58.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 59.3 dBA Leq with an average nighttime noise level of 52.7 dBA Leq.
- Location L3 represents the noise levels at the southwest corner of the Project site on West Coast Highway. The 24-hour CNEL indicates that the overall exterior noise level is 76.8 dBA CNEL. At location L3 the background ambient noise levels ranged from 71.3 to 75.1 dBA Leq during the daytime hours to levels of 59.2 to 72.6 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 73.2 dBA Leq with an average nighttime noise level of 69.0 dBA Leq.
- Location L4 represents the noise levels adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 75.8 dBA CNEL. The hourly noise levels measured at location L4 ranged from 70.6 to 75.5 dBA Leq during the daytime hours and from 59.5 to 73.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 73.3 dBA Leq with an average nighttime noise level of 67.6 dBA Leq.
- Location L5 represents the noise levels adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site. The 24-hour CNEL indicates that the overall exterior noise level is 80.5 dBA CNEL. At location L5 the background ambient noise levels ranged from 75.6 to 79.3 dBA Leq during the daytime hours to levels of 64.5 to 77.7 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 77.7 dBA Leq with an average nighttime noise level of 72.3 dBA Leq.

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

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. This includes the auto and heavy truck activities on West Coast Highway near the noise level measurement locations. The 24-hour existing noise level measurements shown on Table 5-1 present the worst-case existing unmitigated ambient noise conditions.

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

Location[1]	Distance To Project Boundary	Description	Energy Average Hourly Noise Level (dBA Leq)[2]		CNEL
			Daytime	Nighttime	
L1	195'	Located north of the Project site on Kings Road adjacent to existing residential homes.	57.8	45.6	57.8
L2	220'	Located on the hillside between the Project site and residential homes on Kings Road.	59.3	52.7	61.6
L3	0'	Located at the southwest corner of the Project site on West Coast Highway.	73.2	69.0	76.8
L4	290'	Located adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site.	73.3	67.6	75.8
L5	100'	Located adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site.	77.7	72.3	80.5

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average hourly levels. The long-term 24-hour measurement printouts 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.

6 METHODS AND PROCEDURES

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

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (19) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (20) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 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 on roadway segments in the Project study area. Table 6-1 identifies the 17 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications according to the City of Newport Beach General Plan Circulation Element, and the posted vehicle speeds. Soft site conditions are used to analyze the traffic noise impacts within the Project study area to account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. 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 off-site traffic noise analysis. (21)

The Existing, Traffic Phasing Ordinance (TPO) Year 2019, and Cumulative Year 2019 average daily traffic volumes used for this study are presented on Table 6-2 and were provided by the *AutoNation Traffic Impact Analysis* prepared by Kunzman Associates, Inc. (1) Table 6-3 presents the time of day vehicle splits by vehicle type, and Table 6-4 presents the total traffic flow distributions (vehicle mixes) used in this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Land Use[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Posted Speed Limit (mph)[3]
1	Newport Bl.	n/o West Coast Hwy.	Residential	64'	45
2	Irvine Av.	n/o 19th St.	Residential	52'	40
3	Dover Dr.	n/o Westcliff Dr.	Residential	28'	45
4	Dover Dr.	s/o Westcliff Dr.	Residential	52'	45
5	Dover Dr.	s/o 16th St.	Residential	52'	45
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	64'	55
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	64'	55
8	17th St.	w/o Irvine Av.	Residential	52'	35
9	Westcliff Dr.	e/o Irvine Av.	Commercial	52'	35
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	64'	45
11	West Coast Hwy.	e/o Newport Bl.	Commercial	64'	40
12	West Coast Hwy.	e/o Tustin Av.	Commercial	64'	40
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	72'	40
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72'	50
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	64'	50
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	64'	50
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	52'	35

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the City of Newport Beach Circulation Element.
[3] Posted speed limits.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]					
			Existing		TPO 2019		Cumulative 2019	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Newport Bl.	n/o West Coast Hwy.	9.8	9.9	10.6	10.7	10.7	10.8
2	Irvine Av.	n/o 19th St.	14.7	14.7	15.4	15.5	15.4	15.5
3	Dover Dr.	n/o Westcliff Dr.	4.7	4.7	4.9	5.0	4.9	5.0
4	Dover Dr.	s/o Westcliff Dr.	11.8	11.9	12.3	12.3	12.6	12.6
5	Dover Dr.	s/o 16th St.	13.4	13.4	14.2	14.2	14.4	14.5
6	Jamboree Rd.	n/o East Coast Hwy.	16.3	16.4	17.8	17.9	19.4	19.5
7	MacArthur Bl.	n/o East Coast Hwy.	10.5	10.6	10.9	10.9	12.1	12.2
8	17th St.	w/o Irvine Av.	10.2	10.2	10.7	10.7	11.8	11.8
9	Westcliff Dr.	e/o Irvine Av.	8.5	8.5	9.1	9.1	10.2	10.3
10	West Coast Hwy.	w/o Newport Bl.	13.3	13.4	14.8	14.9	16.9	16.9
11	West Coast Hwy.	e/o Newport Bl.	26.0	26.0	27.4	27.4	29.2	29.2
12	West Coast Hwy.	e/o Tustin Av.	25.8	25.9	28.2	28.3	29.8	29.9
13	West Coast Hwy.	e/o Dover Dr.	32.3	32.4	35.2	35.4	37.1	37.2
14	West Coast Hwy.	e/o Bayside Dr.	28.6	28.8	30.8	30.9	32.6	32.8
15	East Coast Hwy.	e/o Jamboree Rd.	20.5	20.5	22.0	22.2	24.5	24.6
16	East Coast Hwy.	w/o MacArthur Bl.	14.9	15.0	15.7	15.7	19.2	19.4
17	East Coast Hwy.	e/o MacArthur Bl.	15.5	15.5	16.1	16.2	19.4	19.5

[1] Source: AutoNation Porsche Dealership Traffic Impact Analysis, prepared by Kunzman Associates, Inc., June 2016.
"TPO" = Traffic Phasing Ordinance

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	77.5%	84.8%	86.5%
Evening (7:00 p.m. - 10:00 p.m.)	12.9%	4.9%	2.7%
Nighttime (10:00 p.m. - 7:00 a.m.)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

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

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways	97.42%	1.84%	0.74%	100.00%

6.3 VIBRATION ASSESSMENT

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

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation (10): $L_{VdB}(D) = L_{VdB}(25\text{ ft}) - 30\log(D/25)$

TABLE 6-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

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

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the *AutoNation Traffic Impact Analysis*. (1) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project Conditions: This scenario refers to the existing present-day noise conditions, without and with buildout of the proposed Project.
- Traffic Phasing Ordinance (TPO) Year 2019 Without / With Project Conditions: This scenario refers to the background noise conditions at future TPO Year 2019 without and with the proposed Project. This scenario corresponds to Year 2019 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- Cumulative Year 2019 Without / With Project: This scenario refers to the background noise conditions at Cumulative Year 2019 without and with the proposed Project. This scenario corresponds to Year 2019 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.

7.1 TRAFFIC NOISE CONTOURS

To quantify the Project's traffic noise impacts on the surrounding areas, the changes in traffic noise levels on 17 roadway segments surrounding the Project were calculated based on the changes in the average daily traffic volumes. The noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. Based on the noise impact significance criteria described in Section 4, a significant off-site traffic noise level impact occurs if the without Project noise levels at nearby noise-sensitive receivers:

- are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase, or:
- range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase, or;
- already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA.

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 take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. In addition, since the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contribution from any surrounding stationary noise sources within the Project study area. Tables 7-1 to 7-6 present a summary of the unmitigated exterior traffic noise levels for the 17 study area roadway segments analyzed from the without Project to the with Project conditions in each of the three timeframes: Existing, TPO

Year 2019, and Cumulative Year 2019 conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the six traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.0	RW	75	161
2	Irvine Av.	n/o 19th St.	Residential	67.4	RW	75	161
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.0	RW	38	82
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.7	RW	79	169
5	Dover Dr.	s/o 16th St.	Residential	68.2	RW	85	184
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.4	68	147	316
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.5	RW	109	236
8	17th St.	w/o Irvine Av.	Residential	64.4	RW	RW	102
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.6	RW	RW	90
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.3	RW	91	197
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.0	RW	117	253
12	West Coast Hwy.	e/o Tustin Av.	Commercial	68.9	RW	117	252
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	69.8	RW	151	325
14	West Coast Hwy.	e/o Bayside Dr.	Residential	71.7	93	201	434
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.3	67	145	313
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.0	RW	118	253
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.2	RW	62	134

[1] Source: City of Newport Beach General Plan, Figure LU-1.

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

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.0	RW	75	162
2	Irvine Av.	n/o 19th St.	Residential	67.4	RW	75	161
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.0	RW	38	82
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.7	RW	79	170
5	Dover Dr.	s/o 16th St.	Residential	68.2	RW	85	184
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.4	68	147	317
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.5	RW	110	237
8	17th St.	w/o Irvine Av.	Residential	64.4	RW	RW	102
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.6	RW	RW	90
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.3	RW	92	198
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.0	RW	117	253
12	West Coast Hwy.	e/o Tustin Av.	Commercial	68.9	RW	117	252
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	69.8	RW	151	325
14	West Coast Hwy.	e/o Bayside Dr.	Residential	71.7	94	202	436
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.3	67	145	313
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.0	RW	118	254
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.2	RW	62	134

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: TPO YEAR 2019 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.3	RW	79	169
2	Irvine Av.	n/o 19th St.	Residential	67.6	RW	77	166
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.2	RW	39	85
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.9	RW	81	174
5	Dover Dr.	s/o 16th St.	Residential	68.5	RW	89	191
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.8	72	155	335
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.7	RW	112	242
8	17th St.	w/o Irvine Av.	Residential	64.6	RW	RW	105
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.9	RW	RW	94
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.8	RW	98	211
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.2	RW	122	262
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.3	RW	124	267
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.2	74	160	344
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.0	98	212	456
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.7	71	152	328
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.2	RW	122	262
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.3	RW	64	138

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: TPO YEAR 2019 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.4	RW	79	170
2	Irvine Av.	n/o 19th St.	Residential	67.6	RW	77	167
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.3	RW	40	86
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.9	RW	81	174
5	Dover Dr.	s/o 16th St.	Residential	68.5	RW	89	191
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.8	72	156	336
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.7	RW	112	242
8	17th St.	w/o Irvine Av.	Residential	64.6	RW	RW	105
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.9	RW	RW	94
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.8	RW	99	212
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.2	RW	122	262
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.3	RW	124	268
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.2	74	160	345
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.0	98	212	457
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.7	71	153	330
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.2	RW	122	262
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.4	RW	64	138

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: CUMULATIVE YEAR 2019 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.4	RW	79	170
2	Irvine Av.	n/o 19th St.	Residential	67.6	RW	77	166
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.2	RW	39	85
4	Dover Dr.	s/o Westcliff Dr.	Residential	68.0	RW	82	177
5	Dover Dr.	s/o 16th St.	Residential	68.5	RW	90	193
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	71.2	76	165	355
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	69.1	RW	120	259
8	17th St.	w/o Irvine Av.	Residential	65.0	RW	52	112
9	Westcliff Dr.	e/o Irvine Av.	Commercial	64.4	RW	RW	102
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	68.4	RW	107	231
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.5	RW	127	273
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.5	RW	129	277
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.4	77	165	356
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.3	102	220	473
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	71.1	76	164	353
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	70.1	65	139	300
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	67.2	RW	72	156

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: CUMULATIVE YEAR 2019 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)	Distance to Contour from Centerline (Feet)[2]		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.4	RW	79	171
2	Irvine Av.	n/o 19th St.	Residential	67.6	RW	77	167
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.3	RW	40	86
4	Dover Dr.	s/o Westcliff Dr.	Residential	68.0	RW	82	177
5	Dover Dr.	s/o 16th St.	Residential	68.6	RW	90	194
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	71.2	77	165	356
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	69.1	RW	121	260
8	17th St.	w/o Irvine Av.	Residential	65.0	RW	52	112
9	Westcliff Dr.	e/o Irvine Av.	Commercial	64.4	RW	RW	102
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	68.4	RW	107	231
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.5	RW	127	273
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.6	RW	129	278
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.4	77	165	357
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.3	102	221	475
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	71.1	76	164	354
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	70.1	65	140	302
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	67.2	RW	73	156

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVELS

Table 7-7 presents a comparison of the Existing without and with Project conditions CNEL noise levels. Table 7-1 presents the Existing without Project conditions noise level contours that are expected to range from 63.6 to 71.7 dBA CNEL. Table 7-2 shows the Existing with Project conditions noise level contours which are expected to range from 63.6 to 71.7 dBA CNEL. As shown on Table 7-7 the Project not is expected to generate an exterior noise level increase, and therefore, will satisfy the significance thresholds identified in Section 4 for the study area roadway segments. Therefore, the off-site Project-related traffic noise level increases are considered *less than significant* under Existing conditions.

7.3 TRAFFIC PHASING ORDINANCE (TPO) YEAR 2019 PROJECT TRAFFIC NOISE LEVELS

Table 7-8 presents a comparison of the TPO Year 2019 without and with Project conditions CNEL noise levels. Table 7-3 shows that the unmitigated exterior noise levels are expected to range from 63.9 to 72.0 dBA CNEL for TPO Year 2019 without Project conditions. Table 7-4 presents the TPO Year 2019 with Project conditions noise level contours that are expected to range from 63.9 to 72.0 dBA CNEL. As shown on Table 7-8 the Project is expected to generate an exterior noise level increase of up to 0.1 dBA CNEL, which is below the significance thresholds identified in Section 4 for all without Project ambient noise conditions. Therefore, the Project-related off-site traffic noise level increases are considered *less than significant* for TPO Year 2019 conditions.

7.4 CUMULATIVE YEAR 2019 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-9 presents a comparison of the Cumulative Year 2019 without and with Project conditions CNEL noise levels. Table 7-5 shows that the unmitigated exterior noise levels are expected to range from 64.4 to 72.3 dBA CNEL for Cumulative Year 2019 without Project conditions. Table 7-9 presents the Cumulative Year 2019 with Project conditions noise level contours that are expected to range from 64.4 to 72.3 dBA CNEL. As shown on Table 7-9 the Project is expected to generate an exterior noise level increase of up to 0.1 dBA CNEL, which is below the significance thresholds identified in Section 4 for all without Project ambient noise conditions. Therefore, the Project-related off-site traffic noise level increases are considered *less than significant* for Cumulative Year 2019 conditions.

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

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Adjacent Land Use (dBA)			Threshold Exceeded?[2]
				Without Project	With Project	Project Addition	
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.0	66.0	0.0	No
2	Irvine Av.	n/o 19th St.	Residential	67.4	67.4	0.0	No
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.0	67.0	0.0	No
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.7	67.7	0.0	No
5	Dover Dr.	s/o 16th St.	Residential	68.2	68.2	0.0	No
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.4	70.4	0.0	No
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.5	68.5	0.0	No
8	17th St.	w/o Irvine Av.	Residential	64.4	64.4	0.0	No
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.6	63.6	0.0	No
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.3	67.3	0.0	No
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.0	69.0	0.0	No
12	West Coast Hwy.	e/o Tustin Av.	Commercial	68.9	68.9	0.0	No
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	69.8	69.8	0.0	No
14	West Coast Hwy.	e/o Bayside Dr.	Residential	71.7	71.7	0.0	No
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.3	70.3	0.0	No
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.0	69.0	0.0	No
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.2	66.2	0.0	No

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] Significance Criteria (Section 4).

TABLE 7-8: TPO YEAR 2019 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Adjacent Land Use (dBA)			Threshold Exceeded?[2]
				Without Project	With Project	Project Addition	
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.3	66.4	0.1	No
2	Irvine Av.	n/o 19th St.	Residential	67.6	67.6	0.0	No
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.2	67.3	0.1	No
4	Dover Dr.	s/o Westcliff Dr.	Residential	67.9	67.9	0.0	No
5	Dover Dr.	s/o 16th St.	Residential	68.5	68.5	0.0	No
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	70.8	70.8	0.0	No
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	68.7	68.7	0.0	No
8	17th St.	w/o Irvine Av.	Residential	64.6	64.6	0.0	No
9	Westcliff Dr.	e/o Irvine Av.	Commercial	63.9	63.9	0.0	No
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	67.8	67.8	0.0	No
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.2	69.2	0.0	No
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.3	69.3	0.0	No
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.2	70.2	0.0	No
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.0	72.0	0.0	No
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	70.7	70.7	0.0	No
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	69.2	69.2	0.0	No
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	66.3	66.4	0.1	No

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] Significance Criteria (Section 4).

TABLE 7-9: CUMULATIVE YEAR 2019 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Land Use[1]	CNEL at Adjacent Land Use (dBA)			Threshold Exceeded?[2]
				Without Project	With Project	Project Addition	
1	Newport Bl.	n/o West Coast Hwy.	Residential	66.4	66.4	0.0	No
2	Irvine Av.	n/o 19th St.	Residential	67.6	67.6	0.0	No
3	Dover Dr.	n/o Westcliff Dr.	Residential	67.2	67.3	0.1	No
4	Dover Dr.	s/o Westcliff Dr.	Residential	68.0	68.0	0.0	No
5	Dover Dr.	s/o 16th St.	Residential	68.5	68.6	0.1	No
6	Jamboree Rd.	n/o East Coast Hwy.	Residential	71.2	71.2	0.0	No
7	MacArthur Bl.	n/o East Coast Hwy.	Commercial/Office	69.1	69.1	0.0	No
8	17th St.	w/o Irvine Av.	Residential	65.0	65.0	0.0	No
9	Westcliff Dr.	e/o Irvine Av.	Commercial	64.4	64.4	0.0	No
10	West Coast Hwy.	w/o Newport Bl.	Private Institutions	68.4	68.4	0.0	No
11	West Coast Hwy.	e/o Newport Bl.	Commercial	69.5	69.5	0.0	No
12	West Coast Hwy.	e/o Tustin Av.	Commercial	69.5	69.6	0.1	No
13	West Coast Hwy.	e/o Dover Dr.	Recreation/Marine Comm.	70.4	70.4	0.0	No
14	West Coast Hwy.	e/o Bayside Dr.	Residential	72.3	72.3	0.0	No
15	East Coast Hwy.	e/o Jamboree Rd.	Residential	71.1	71.1	0.0	No
16	East Coast Hwy.	w/o MacArthur Bl.	Residential	70.1	70.1	0.0	No
17	East Coast Hwy.	e/o MacArthur Bl.	Commercial	67.2	67.2	0.0	No

[1] Source: City of Newport Beach General Plan, Figure LU-1.
[2] Significance Criteria (Section 4).

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8 RECEIVER LOCATIONS

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

Sensitive receivers in the vicinity of the Project site include the existing single-family residential homes located at receiver locations R1 and R8. The closest sensitive receiver (i.e. residential land use) is represented by location R1 at a distance of approximately 37 feet north of the Project site boundary. 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.

R1: Located approximately 37 feet north of the Project site, R1 represents existing residential homes on Kings Road. A 24-hour noise level measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents existing residential homes on Kings Road located north of the Project site at a distance of roughly 54 feet.

R3: Location R2 represents existing residential homes on Kings Road located north of the Project site at a distance of roughly 65 feet.

R4: Location R4 represents an existing residential home located northeast of the Project site at a distance of roughly 109 feet. A 24-hour noise level measurement was taken near this location, L2, to describe the existing ambient noise environment.

R5: Location R5 represents existing single-family residential homes which are situated approximately 273 feet southwest of the Project site boundary across West Coast Highway. A 24-hour noise level measurement was taken near this location, L4, to describe the existing ambient noise environment.

R6: At a distance of approximately 116 feet south of the Project site, location R6 represents noise-sensitive residential homes across West Coast Highway. A 24-hour noise level measurement was taken near this location, L5, to describe the existing ambient noise environment.

R7: Located approximately 115 feet south of the Project site, R7 represents the existing residential homes across West Coast Highway.

R8: Location R8 represents existing single-family residential homes which are situated approximately 119 feet south of the Project site boundary across West Coast Highway.

EXHIBIT 8-A: RECEIVER LOCATIONS

9 OPERATIONAL IMPACTS

This section analyzes the potential stationary-source operational noise impacts due to the Project's stationary noise sources on the off-site sensitive receiver locations identified in Section 8. Exhibits 9-A to 9-C identify the noise source locations used to assess the Project-related operational noise levels on each floor of the proposed three-story building.

9.1 OPERATIONAL NOISE STANDARDS

The City of Newport Beach Municipal Code, Chapter10.26 *Community Noise Control*, establishes the permissible exterior noise levels that may intrude into a neighboring property. According to Section 10.26.025(A) the exterior noise level at single-family residential land uses (Noise Zone 1) shall not exceed 55 dBA Leq during the daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA Leq during the nighttime hours (10:00 p.m. to 7:00 a.m.). (2) However, Section 10.26.025(C) states that if the existing ambient noise level exceeds the base noise level standards, *the ambient shall be the standard*. Since the lowest measured daytime ambient noise level of 58 dBA Leq at the nearby sensitive receiver locations, provided in Section 5 of this report, exceeds the daytime noise level standard of 55 dBA Leq, the base noise level standard is adjusted to the ambient noise level of 58 dBA Leq during the daytime hours. For the purposes of this noise study, the Project-related operational noise levels shall not exceed the daytime ambient noise level standard of 58 dBA Leq, and the nighttime noise level standard of 50 dBA Leq. The City of Newport Beach Municipal Code, Chapter10.26 *Community Noise Control*, is included in Appendix 3.1.

9.2 OPERATIONAL NOISE SOURCES

Project-related stationary-source (operational) noise would be generated by the proposed land uses at the Project site. The on-site Project-related noise sources are expected to include: service bay activities, car wash/detailing, car horns, car transport deliveries, parking lot car movements, car alarms, roll-up doors, and roof-top mechanical ventilation equipment. The Project cross-sections indicate the neighboring residential homes located on the Kings Road will not have a direct line of sight to the majority of the Project-related noise source activities.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the AutoNation development, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA has the ability to analyze the noise level of multiple types of noise sources and calculates the noise levels at any location using the spatially accurate Project site plan. The program has the ability to analyze the noise level of multiple types of noise sources and to calculate the effects of topography, buildings and multiple barriers using the latest calculation standards to predict outdoor noise impacts.

Using the spatially accurate Project site plan and flown aerial imagery from Google Earth, a CadnaA noise prediction model of the Project study area was developed. The noise model

provides a spatially accurate three dimensional representation of the Project study area using the following key data inputs:

- Ground elevations (topography) in meters;
- Ground absorption;
- Reflections at buildings and barriers;
- Reference noise level sources by type (area, line, point, etc.), frequency spectral content, noise source height and attenuation rate;
- Multiple noise receiver locations and heights;
- Barrier analysis.

Based on these data inputs, the CadnaA noise prediction model 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 calculations at each receiver location and the partial noise level contributions by noise source. The reference sound power level (PWL) for each piece of equipment expected at the Project site is then input into the CadnaA noise prediction model. While sound pressure levels (e.g. Leq) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (PWL) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source, and also diminish as a result of intervening obstacles and barriers, air absorption, wind and other factors. Sound power is the acoustical energy emitted by the sound source, and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source and at a rate of 4.5 dBA for each doubling of distance from a line source. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL_1):

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

Where SPL_2 is the resulting noise level after attenuation, SPL_1 is the source noise level, D_2 is the distance to the reference sound pressure level (SPL_1), and D_1 is the distance to the receiver location. Exhibits 9-A, 9-B, and 9-C show the locations of each noise source used in this analysis for the first, second, and third floor plans, respectively. Appendix 9.1 includes the CadnaA noise model inputs and calculation data.

9.4 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. Additional reference noise level measurements were obtained from a previous noise study for the Project site, the *AutoNation Newport Porsche Noise Impact Analysis*, prepared by Eilar Associates, Inc. in July 2015, to describe the potential Project-related operational noise sources. (22) Table 9-1 presents a summary of the operational noise source activities, separated by category of activity, used in this analysis to describe the daytime Project noise levels. No nighttime Project-related operational noise levels are expected at the Project site, since existing auto dealerships in the Project study area, including an existing Porsche dealership on East Coast Highway, do not operate during the City of Newport Beach Municipal Code nighttime hours of 10:00 p.m. to 7:00 a.m.

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. Table 9-1 identifies the noise source, the duration of the reference noise level measurement, the distance from the source, the noise source height, and the reference hourly Leq noise levels. In addition, Table 9-1 provides the sound power levels (PWL) for input into the CadnaA noise prediction model. The sound power levels have been individually calibrated in the noise prediction model to accurately describe the reference hourly Leq noise levels. Based on the technical guidance provided for CadnaA, (23) each reference noise source is created in an individual CadnaA noise model with a receiver at the reference distance of the noise level measurement. The PWL of each noise source is then adjusted in each individual CadnaA noise model until the noise level at the given reference distance equals the measured reference noise level shown on Table 9-1. The calibrated PWLs are then input into the operational CadnaA noise model for each Project-related noise source.

EXHIBIT 9-A: FIRST FLOOR OPERATIONAL NOISE SOURCES

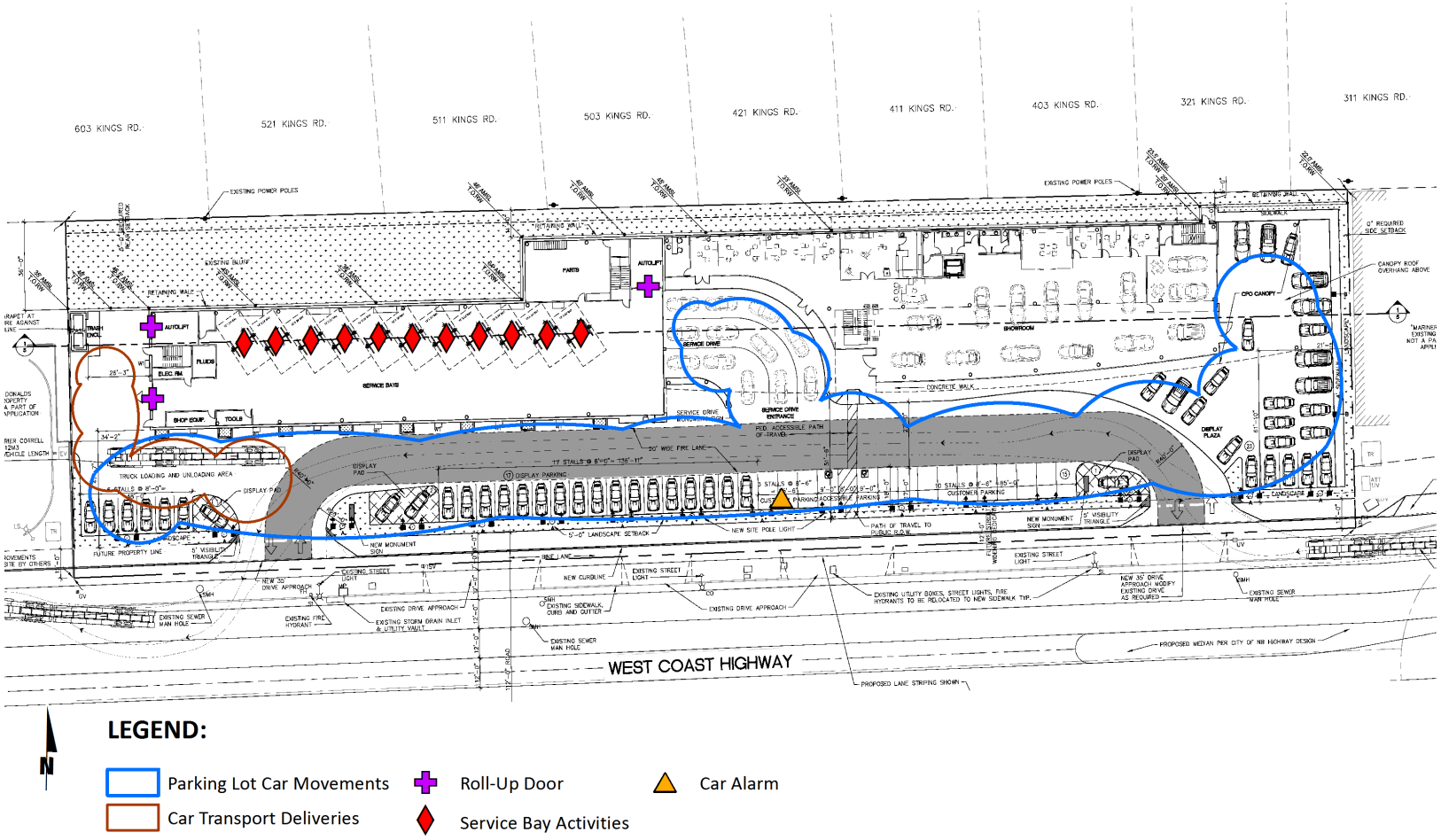


EXHIBIT 9-B: SECOND FLOOR OPERATIONAL NOISE SOURCES

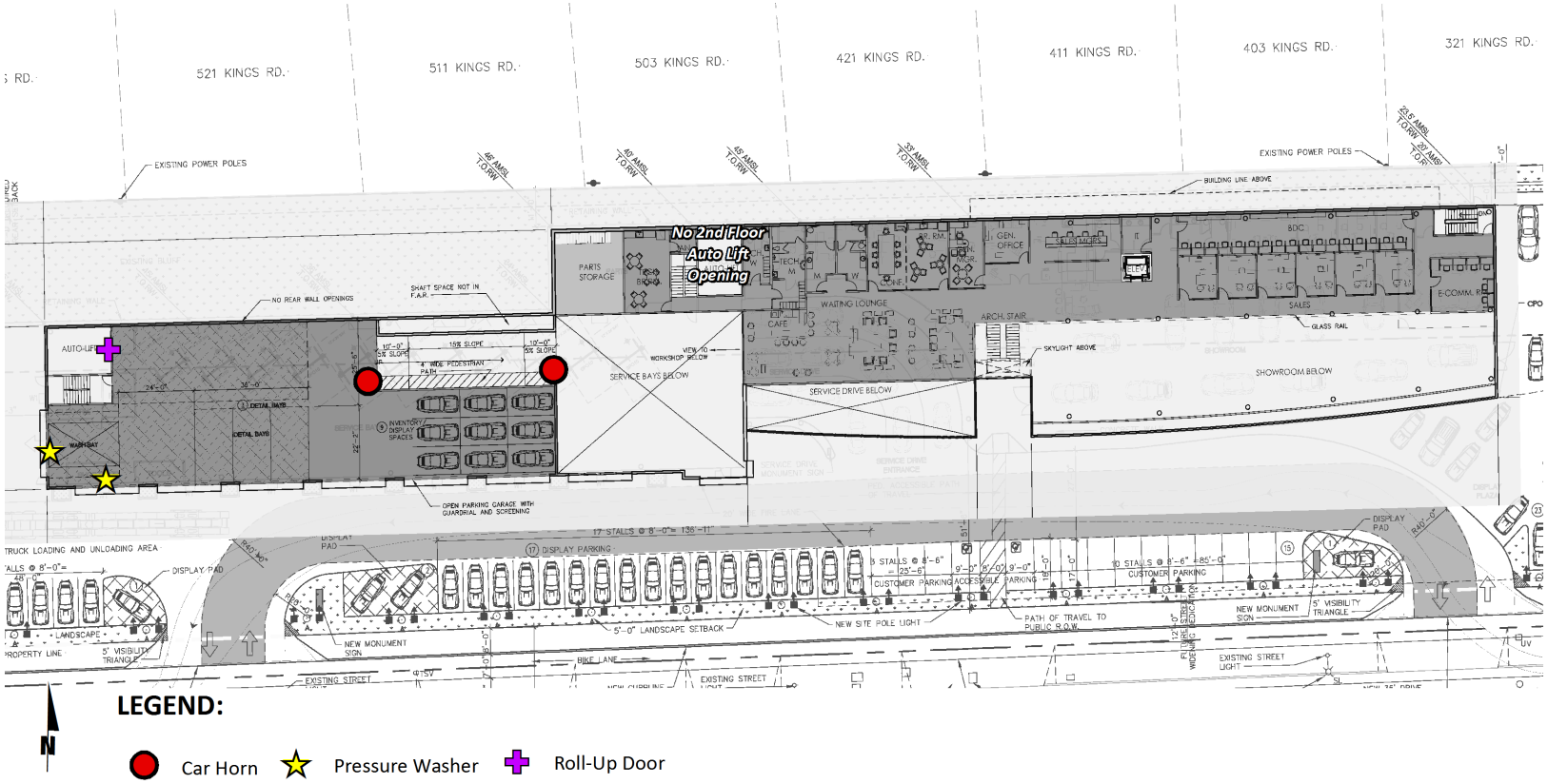


EXHIBIT 9-C: THIRD FLOOR OPERATIONAL NOISE SOURCES

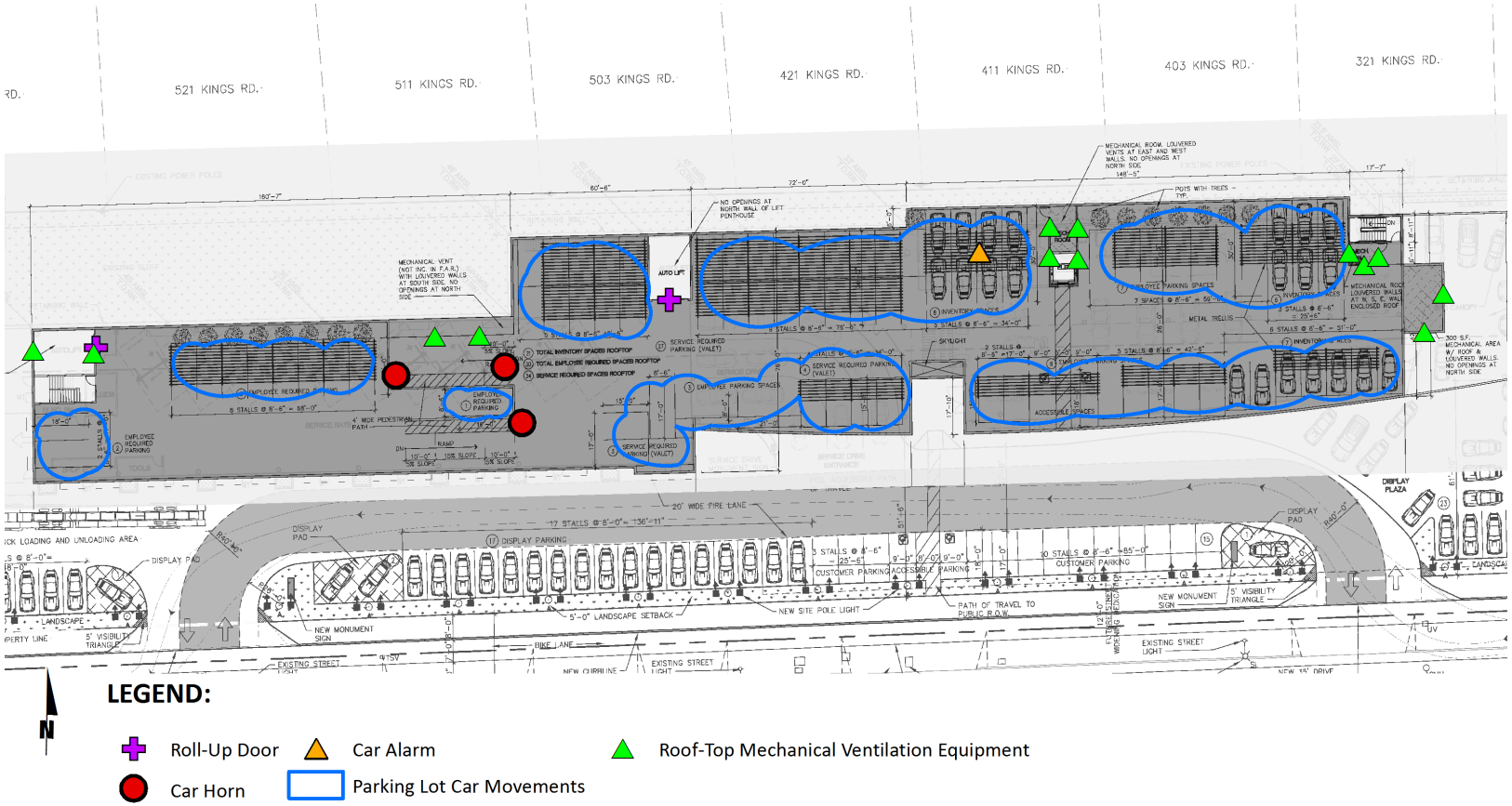


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Source Height (Feet)	Hourly Activity (Mins)[6]	Reference Noise Levels (dBA Leq)		Sound Power Level (PWL)[8]
					@ Ref. Distance	@ 50 Feet[7]	
Service Bay Activities				***Peak Reference Noise Levels:***		*68.2*	*103.6*
Service Bay Activities[1]	00:02:00	30'	8'	60	66.5	62.1	n/a
Service Bay Fan[1]	00:01:30	10'	4'	60	75.2	61.2	n/a
Tire Changer[2]	-	10'	4'	60	74.8	60.8	n/a
Service Lifts[2]	-	10'	8'	60	70.5	56.5	n/a
Impact Tools[2]	-	10'	8'	60	81.4	67.4	n/a
Car Lift[3]	00:00:34	15'	8'	60	75.1	64.6	n/a
Air Impact Wrench[3]	00:01:13	15'	5'	60	78.7	68.2	103.6
Car Wash/Detailing				***Peak Reference Noise Levels:***		*68.4*	*97.2*
Pressure Washer[1]	00:00:45	10'	5'	30	82.4	68.4	97.2
Shop Vacuum, Car Idle & Horns[1]	00:01:30	10'	4'	30	75.5	61.5	n/a
Normal Detail Bay[2]	-	10'	8'	30	69.0	55.0	n/a
Car Horns				***Peak Reference Noise Levels:***		*71.2*	*107.3*
Car Horns[1]	00:00:10	20'	4'	30	79.2	71.2	107.3
Car Transport Deliveries				***Peak Reference Noise Levels:***		*78.7*	*112.4*
Car Transport Deliveries[1]	00:01:05	20'	8'	20	84.7	78.7	112.4
Car Transport Deliveries[1]	00:00:16	20'	8'	20	80.8	74.8	n/a
Truck Backup Alarm & Air Brakes[4]	00:01:00	50'	8'	20	71.6	71.6	n/a
Delivery Truck Car Transport Trailer[2]	-	10'	8'	20	80.6	70.1	n/a
Parking Lot Car Movements				***Peak Reference Noise Levels:***		*62.7*	*95.5*
Parking Lot Car Movements[1]	00:02:00	20'	4'	60	62.9	56.9	n/a
Car Wheels On Epoxy Sealed Concrete[2]	-	10'	4'	60	73.2	62.7	95.5
Car Alarms				***Peak Reference Noise Levels:***		*79.6*	*114.2*
Car Alarm[2]	-	10'	4'	5	93.6	79.6	114.2

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Source Height (Feet)	Hourly Activity (Mins)[6]	Reference Noise Levels (dBA Leq)		Sound Power Level (PWL)[8]
					@ Ref. Distance	@ 50 Feet[7]	
Roll-Up Doors				***Peak Reference Noise Levels:***		*40.7*	*78.5*
Roll-Up Door[1]	00:00:24	5'	10'	30	60.7	40.7	78.5
Roof-Top Mechanical Ventilation Equipment				***Peak Reference Noise Levels:***		*66.4*	*101.0*
Roof-Top Air Conditioning Unit[5]	96:00:00	5'	25'	39	77.2	57.2	n/a
Trane 12.5 Ton Air Conditioning Unit[2]	-	-	-	39	92.0	66.4	101.0
Enclosed Compressor Room[2]	-	10'	4'	30	74.0	60.0	n/a

[1] As measured by Urban Crossroads, Inc. at the Audi Mission Viejo dealership on 6/10/2016.
[2] Reference noise levels obtained from the previous noise study for the Project (AutoNation Newport Porsche Noise Impact Analysis, Eilar Associates, Inc. July 2015).
[3] As measured by Urban Crossroads, Inc. at the Lake Forest Discount Tire Center on 6/19/2015.
[4] As measured by Urban Crossroads, Inc. at a nighttime concrete pour at in the City of Redlands on 7/1/2015.
[5] As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.
[6] Anticipated duration (minutes within the hour) of noise activity during peak hourly conditions expected at the Project site.
[7] Reference noise levels at 50 feet represent the normalized noise source levels for comparison at a common distance.
[8] Calculated using the CadnaA noise model at the reference distance to the noise source.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "n/a" = Highest reference noise level of the same reference noise source is used.

9.4.1 SERVICE BAY ACTIVITIES

The peak reference noise level measurement used to describe the service bay activities is the reference air impact wrench noise level of 68.2 dBA Leq at a distance of 50 feet. This reference noise level measurement was collected by Urban Crossroads, Inc. on June 19th, 2015 at the Lake Forest Discount Tire Center located at 22482 Muirlands Boulevard in the City of Lake Forest. The service bay activities are expected to occur during the full hour (60 minutes) of peak operating conditions.

9.4.2 CAR WASH/DETAILING

The highest reference noise level, shown on Table 9-1, for the car wash/detailing activities at the Project site is the reference pressure washer noise level of 68.4 dBA Leq at a normalized distance of 50 feet. To describe pressure washers at the Project site car wash/detailing area, a reference noise level measurement was collected at the Audi Mission Viejo dealership on June 10th, 2016. It is expected that pressure washers would be located in the second floor covered car wash/detailing area within the Project site. Pressure washers and car wash/detailing activities are expected to occur for 30 minutes during peak hour conditions.

9.4.3 CAR HORNS

Frequent and regular car horn activities were observed at the Audi Mission Viejo dealership to signal to other employees that a car was turning around a blind corner. Since the Project building includes a partially-covered second floor car wash area with a ramp to the uncovered third floor parking area, the use of car horns as a warning device may occur at the Project site. A reference noise level of 71.2 dBA Leq at a distance of 50 feet was collected to describe the potential noise levels from car horns, should they be used at the Project site. The car horns are anticipated to occur over roughly 30 minutes during the peak hour conditions of Project operation.

9.4.4 CAR TRANSPORT DELIVERIES

An additional noise level measurement was taken of a car transport delivery unloading activities to describe the car transport deliveries at the Project site. The exact schedule of Project car transport deliveries was unknown at the time of this analysis, and therefore, the estimated operational minutes of activity for car delivery is based on the observed conditions at the Audi Mission Viejo dealership. With an estimated one-minute unloading time per car for a total of approximately 20 cars per truck, the total operating time is expected to occur over 20 minutes during peak hour conditions. The highest of the car transport deliveries reference noise level measurements collected is used to represent the car transport deliveries at the Project site with a reference noise level of 78.7 dBA Leq at a distance of 50 feet.

9.4.5 PARKING LOT CAR MOVEMENTS

The highest parking lot car movement reference noise level of 62.7 dBA Leq at a distance of 50 feet was generated by car wheels on epoxy sealed concrete as measured by Eilar Associates, Inc. Parking lot car movements are expected to take place during the full hour (60 minutes) of peak hour operating conditions on the first and third floors of the Project building.

9.4.6 CAR ALARMS

An additional reference noise level is used from the previous noise study for the Project, prepared by Eilar Associates, Inc., to describe the potential car alarm noise at the Project site, should one be triggered intentionally or by accident. The reference car alarm noise level is 79.6 dBA Leq at a distance of 50 feet. The car alarm activity at the Project site is estimated to occur for only five minutes during the peak hour conditions, since the alarms are usually shut off shortly after sounding and occur on an infrequent basis.

9.4.7 ROLL-UP DOORS

A roll-up door was measured at the Audi Mission Viejo dealership to represent multiple roll-up doors within the Project's proposed facilities. At a distance of 50 feet, the reference noise level is 40.7 dBA Leq at a noise source height of 10 feet. The roll-up doors at the Project site are anticipated to remain open during business hours, especially at the service bays, however, to analyze the worst-case Project operational conditions, they are estimated to open and close for a duration of 30 minutes during peak hour conditions.

9.4.8 ROOF-TOP MECHANICAL VENTILATION EQUIPMENT

The previous noise study for the Project prepared by Eilar Associates, Inc. used a Trane 12.5-ton air conditioning unit to model the roof-top mechanical equipment at the Project site. Based on the reference noise levels previously shown on Table 9-1, the Trane 12.5-ton unit has the highest reference noise level, and therefore, represents the worst-case conditions for roof-top mechanical equipment in this report. At the time this noise analysis was prepared, the exact mechanical equipment planned for use at the Project site was unknown, however, this reference noise level represents a worst-case roof-top mechanical ventilation equipment noise level of 66.4 dBA Leq at a distance of 50 feet. Further, all mechanical equipment will be enclosed on the roof of the building with louvered walls and no openings facing the sensitive residential receivers to the north. The louvers used in the rooftop mechanical ventilation rooms are estimated to have the transmission loss (TL) values of a 40 to 50% open, 6-inch Vibron Acoustic Louver (VAL) model from Kinetics Noise Control, Inc. (24) This louver model represents the most conservative of the Kinetics Noise Control, Inc. models as it has a larger open area, thinner width, and lower TL values than the other models. The additional attenuation provided by the louvers is then added to the CadnaA noise models for each mechanical room louver planned at the Project site. The roof-top mechanical ventilation equipment is expected to operate for 39 minutes of peak hour conditions based on peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F.

9.5 OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at each of the sensitive receiver locations. The operational noise levels shown on Table 9-2 accounts 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. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source and 4.5 dB for each doubling of distance from a line source.

Table 9-2 presents the exterior noise levels including the barrier attenuation provided by the planned parapet wall on the third floor of the Project building, which is based on the architectural elevations for the Project prepared by Stantec Architecture. Table 9-2 indicates that the typical hourly Project noise levels are expected to range from 45.6 to 58.0 dBA Leq at the sensitive receiver locations. To demonstrate compliance with local noise standards, the Project-only operational noise levels are evaluated against the City of Newport Beach Municipal Code daytime noise level standard of 58 dBA Leq, as previously shown on Table 3-1. The Project-related operational noise levels approaching 58.0 at one receiver location will satisfy the City of Newport Beach Municipal Code noise level standards, and therefore, represents a *less than significant* noise impact. The operational noise level calculation results from the CadnaA noise prediction model are included in Appendix 9.1. Exhibit 9-D shows the Project-related operational noise level contour boundaries at the receiver heights and elevations. Exhibit 9-E shows cross section view of the operational noise level contour boundaries at receiver location R2.

To further reduce the noise levels experienced by the nearby sensitive receiver locations, the use of car horns as a warning device shall be restricted. Substitute warning devices that do not rely on audible warnings such as convex circular mirrors or other signaling devices shall be used at any on-site locations with sight distance limitations (blind corners).

TABLE 9-2: PROJECT OPERATIONAL NOISE LEVELS (DBA LEQ)

Receiver Location[1]	Total Project-Only Noise Levels (dBA Leq)[2]	Noise Level Standard (dBA Leq)[3]	Threshold Exceeded?[4]
R1	52.2	58	No
R2	57.5	58	No
R3	58.0	58	No
R4	51.8	58	No
R5	49.4	58	No
R6	55.6	58	No
R7	50.4	58	No
R8	45.6	58	No

[1] See Exhibit 9-A for the noise receiver locations.
[2] CadnaA noise model results as shown in Appendix 9.1.
[3] Daytime exterior noise level standard as shown on Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level threshold?

EXHIBIT 9-D: OPERATIONAL NOISE LEVEL CONTOUR BOUNDARIES AT RECEIVER LOCATIONS

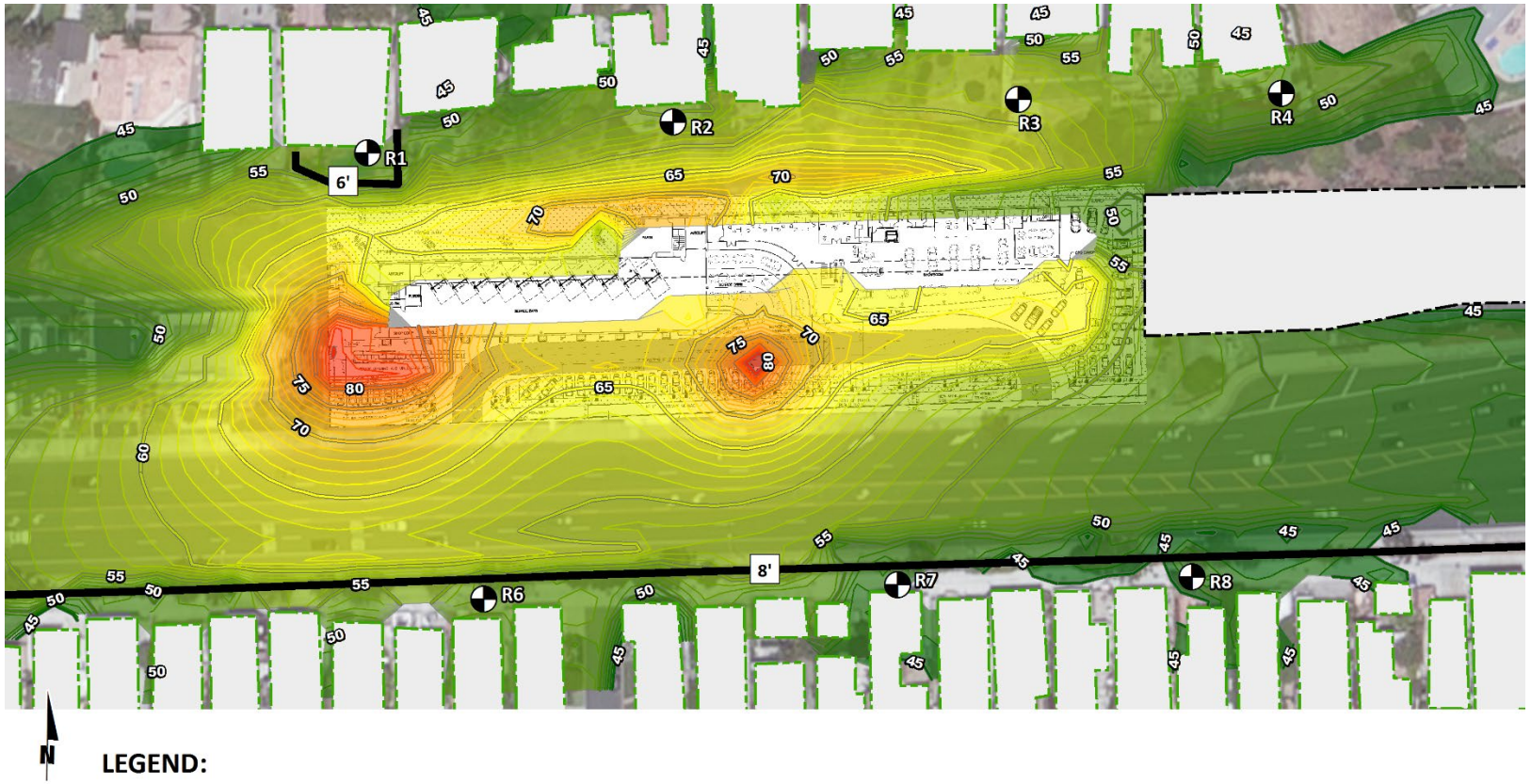
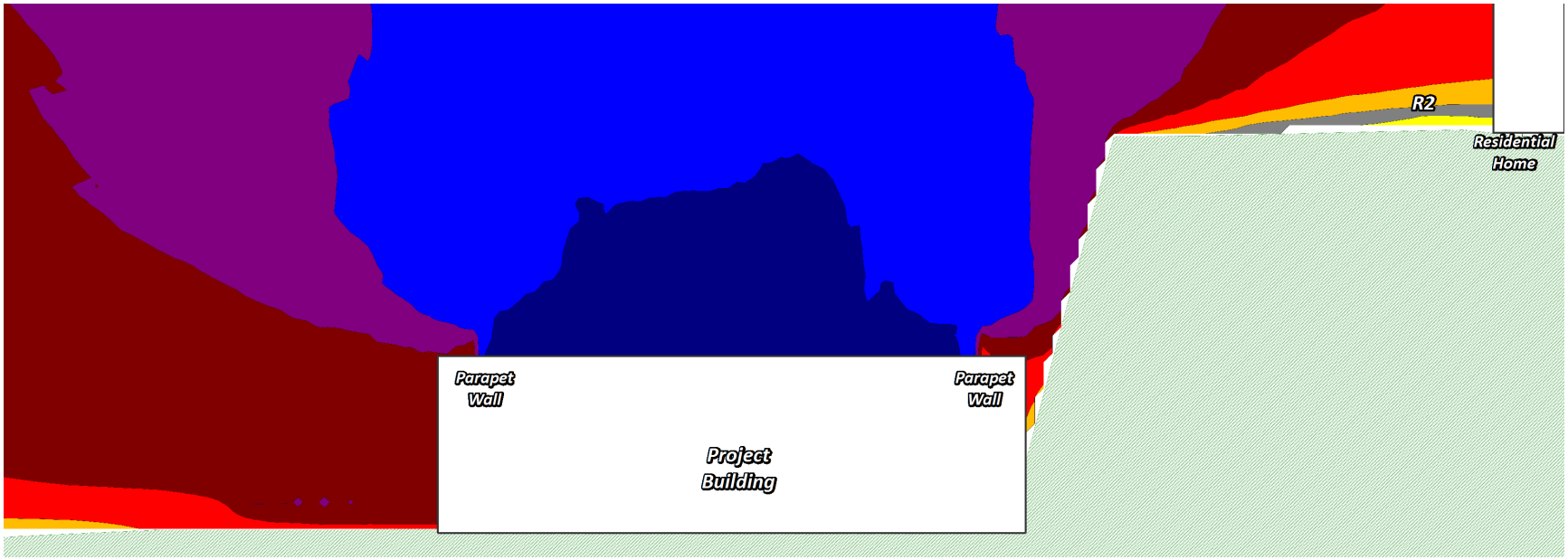


EXHIBIT 9-E: OPERATIONAL NOISE LEVELS AT RECEIVER LOCATION R2



LEGEND:

Noise Level Contour Boundaries (dBA Leq)

45 - 50 dBA	55 - 60 dBA	65 - 70 dBA	75 - 80 dBA
50 - 55 dBA	60 - 65 dBA	70 - 75 dBA	80 - 85 dBA

9.6 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels were combined with the existing ambient noise levels measurements for the off-site 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. (5) Instead, they must be logarithmically added using the following base equation:

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

Where SPL1, SPL2, etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient conditions are presented on Table 9-3 for the daytime hours.

As indicated in Table 9-3, the Project will contribute an operational noise level increase of up to 3.1 dBA Leq during the daytime hours at the existing sensitive receiver locations potentially impacted by the operation of the Project. Since the Project-related operational noise level contributions will not exceed the significance criteria discussed in Section 4, the increases at the sensitive receiver locations are considered *less than significant* impacts. On this basis, Project operational stationary-source noise would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.

TABLE 9-3: DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS (DBA LEQ)

Receiver Location[1]	Total Project Operational Noise Level (dBA Leq)[2]	Measurement Location[3]	Reference Ambient Noise Levels (dBA Leq)[4]	Combined Project and Ambient (dBA Leq)[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	52.2	L1	57.8	58.9	1.1	No
R2	57.5	L1	57.8	60.7	2.9	No
R3	58.0	L1	57.8	60.9	3.1	No
R4	51.8	L2	59.3	60.0	0.7	No
R5	49.4	L4	73.3	73.3	0.0	No
R6	55.6	L5	77.7	77.7	0.0	No
R7	50.4	L5	77.7	77.7	0.0	No
R8	45.6	L5	77.7	77.7	0.0	No

[1] See Exhibit 8-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

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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 distance from each of the nearby sensitive receiver locations to the center of Project construction activities.

10.1 CONSTRUCTION NOISE STANDARDS

The City of Newport Beach has set restrictions to control noise impacts associated with the construction of the proposed Project. According to the City of Newport Beach Municipal Code Section 10.28.040, construction activities are considered exempt from the noise standards of the noise ordinance if limited to the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays. (14) Therefore, if construction activities occur within the permitted hours of the Municipal Code, Project construction noise levels are considered exempt from the noise ordinance standards. Table 3-2 shows the construction noise standards of the City of Newport Beach Municipal Code.

10.2 CONSTRUCTION NOISE LEVELS

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

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

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages used in this analysis are consistent with the data used to support the construction emissions in the *AutoNation Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (25) Exhibit 10-A shows the distance from each of the nearby sensitive receiver locations to the center of Project construction activities.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

10.3 CONSTRUCTION REFERENCE NOISE LEVELS

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

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA Leq)	Reference Noise Levels @ 50 Feet (dBA Leq)[6]
1	Truck Pass-Bys & Dozer Activity[1]	30'	63.6	59.2
2	Dozer Activity[1]	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities[2]	30'	71.9	67.5
4	Foundation Trenching[2]	30'	72.6	68.2
5	Rough Grading Activities[2]	30'	77.9	73.5
6	Residential Framing[3]	30'	66.7	62.3
7	Water Truck Pass-By & Backup Alarm[4]	30'	76.3	71.9
8	Dozer Pass-By[4]	30'	84.0	79.6
9	Two Scrapers & Water Truck Pass-By[4]	30'	83.4	79.0
10	Two Scrapers Pass-By[4]	30'	83.7	79.3
11	Scraper, Water Truck, & Dozer Activity[4]	30'	79.7	75.3
12	Concrete Mixer Truck Movements[5]	50'	71.2	71.2
13	Concrete Paver Activities[5]	30'	70.0	65.6
14	Concrete Mixer Pour & Paving Activities[5]	30'	70.3	65.9
15	Concrete Mixer Backup Alarms & Air Brakes[5]	50'	71.6	71.6
16	Concrete Mixer Pour Activities[5]	50'	67.7	67.7

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

10.4 CONSTRUCTION NOISE ANALYSIS

Tables 10-2 to 10-7 show the Project construction stages and the reference construction noise levels used for each stage. Table 10-8 provides a summary of the noise levels from each stage of construction at each of the sensitive receiver locations in the City of Newport Beach. Based on the reference construction noise levels, the Project-related construction noise levels when the peak reference noise level is operating at a single point nearest the sensitive receiver location will range from 59.8 to 72.3 dBA Leq at the sensitive receiver locations.

TABLE 10-2: DEMOLITION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Dozer Pass-By	79.6
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	70.9
R2	65'	-2.3	-5.0	72.3
R3	68'	-2.7	-5.0	71.9
R4	129'	-8.2	-5.0	66.3
R5	273'	-14.7	-5.0	59.8
R6	65'	-2.3	-5.0	72.3
R7	63'	-2.0	-5.0	72.6
R8	94'	-5.5	-5.0	69.1

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

TABLE 10-3: SITE PREPARATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Dozer Pass-By	79.6
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	70.9
R2	65'	-2.3	-5.0	72.3
R3	68'	-2.7	-5.0	71.9
R4	129'	-8.2	-5.0	66.3
R5	273'	-14.7	-5.0	59.8
R6	65'	-2.3	-5.0	72.3
R7	63'	-2.0	-5.0	72.6
R8	94'	-5.5	-5.0	69.1

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

TABLE 10-4: GRADING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Dozer Pass-By	79.6
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	70.9
R2	65'	-2.3	-5.0	72.3
R3	68'	-2.7	-5.0	71.9
R4	129'	-8.2	-5.0	66.3
R5	273'	-14.7	-5.0	59.8
R6	65'	-2.3	-5.0	72.3
R7	63'	-2.0	-5.0	72.6
R8	94'	-5.5	-5.0	69.1

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

TABLE 10-5: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Peak Reference Noise Level at 50 Feet (dBA Leq):	68.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	59.5
R2	65'	-2.3	-5.0	60.9
R3	68'	-2.7	-5.0	60.5
R4	129'	-8.2	-5.0	54.9
R5	273'	-14.7	-5.0	48.4
R6	65'	-2.3	-5.0	60.9
R7	63'	-2.0	-5.0	61.2
R8	94'	-5.5	-5.0	57.7

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

TABLE 10-6: PAVING EQUIPMENT NOISE LEVELS

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

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	63.0
R2	65'	-2.3	-5.0	64.3
R3	68'	-2.7	-5.0	63.9
R4	129'	-8.2	-5.0	58.4
R5	273'	-14.7	-5.0	51.9
R6	65'	-2.3	-5.0	64.3
R7	63'	-2.0	-5.0	64.6
R8	94'	-5.5	-5.0	61.1

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

TABLE 10-7: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Construction Vehicle Maintenance Activities	67.5
Peak Reference Noise Level at 50 Feet (dBA Leq):	67.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA Leq)[3]	Estimated Noise Barrier Attenuation (dBA Leq)[4]	Construction Noise Level (dBA Leq)
R1	76'	-3.6	-5.0	58.8
R2	65'	-2.3	-5.0	60.2
R3	68'	-2.7	-5.0	59.8
R4	129'	-8.2	-5.0	54.2
R5	273'	-14.7	-5.0	47.7
R6	65'	-2.3	-5.0	60.2
R7	63'	-2.0	-5.0	60.5
R8	94'	-5.5	-5.0	57.0

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

10.5 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the center of Project construction activity. As shown on Table 10-8, the unmitigated construction noise levels are expected to range from 59.8 to 72.3 dBA Leq at the receiver locations in the City of Newport Beach. To control noise impacts associated with the construction of the proposed Project, the City of Newport Beach has established limits to the hours of operation. The City of Newport Beach Municipal Code indicates that construction activities are considered exempt from the standards of the noise ordinance if limited to the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays. (14) Therefore, if construction activities occur within the permitted hours of the Municipal Code, Project construction noise levels are considered exempt from the noise ordinance standards, and the construction noise level impacts are considered *less than significant*. The construction noise analysis presents a conservative, worst-case approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from the center of construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities

and likely overstates the construction noise levels which will actually be experienced at each receiver location.

To describe the potential effects of Project-related construction noise levels, the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH) identifies an acceptable noise exposure level for construction workers over an 8-hour period. (3) For the purposes of this report, the NIOSH construction noise level of 85 dBA Leq is used to describe the construction noise at the nearby sensitive receiver locations in relation to human health (i.e. hearing conservation, etc.) and not as a threshold of significance. Since the NIOSH construction-related noise level represents the energy average of the noise source over a given time period, they are expressed as Leq noise levels. The Project-related short-term construction noise levels are expected to approach 72.3 dBA Leq and will not exceed the 85 dBA Leq noise exposure level at all receiver locations. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (4)

TABLE 10-8: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY (DBA LEQ)

Receiver Location[1]	Construction Phase Hourly Noise Level (dBA Leq)						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Peak Activity[2]
R1	70.9	70.9	70.9	59.5	63.0	58.8	70.9
R2	72.3	72.3	72.3	60.9	64.3	60.2	72.3
R3	71.9	71.9	71.9	60.5	63.9	59.8	71.9
R4	66.3	66.3	66.3	54.9	58.4	54.2	66.3
R5	59.8	59.8	59.8	48.4	51.9	47.7	59.8
R6	72.3	72.3	72.3	60.9	64.3	60.2	72.3
R7	72.6	72.6	72.6	61.2	64.6	60.5	72.6
R8	69.1	69.1	69.1	57.7	61.1	57.0	69.1

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Estimated construction noise levels during peak operating conditions.

10.6 CONSTRUCTION VIBRATION IMPACTS

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

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

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-5 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-9 presents the expected Project related vibration levels at each of the sensitive receiver locations.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 87 VdB at a distance of 25 feet. At distances ranging from 63 to 273 feet from the Project construction activities, construction vibration velocity levels are expected to approach 75.0 VdB, as shown on Table 10-9. Based on the FTA vibration standards, the proposed Project site will not include or require equipment, facilities, or activities that would result in a *barely perceptible* human response (annoyance) for infrequent events. Therefore, the vibration levels due to Project construction are considered *less than significant* impacts.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating close to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

TABLE 10-9: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold Exceeded?[3]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Peak Vibration	
R1	76'	43.5	64.5	71.5	72.5	72.5	No
R2	65'	45.6	66.6	73.6	74.6	74.6	No
R3	68'	45.0	66.0	73.0	74.0	74.0	No
R4	129'	36.6	57.6	64.6	65.6	65.6	No
R5	273'	26.9	47.9	54.9	55.9	55.9	No
R6	65'	45.6	66.6	73.6	74.6	74.6	No
R7	63'	46.0	67.0	74.0	75.0	75.0	No
R8	94'	40.7	61.7	68.7	69.7	69.7	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-5.
[3] Does the Peak Vibration exceed the FTA maximum acceptable vibration standard of 80 VdB?

10.6.1 SOIL EXPORT TRUCK HAUL TRIPS

The Project will require approximately 9,000 cubic yards of soil export. It is expected that the soil export will occur at the same time as the grading activity phase of Project construction. To describe the potential vibration impacts from the truck haul trips associated with soil export activities this analysis relies on the FTA vibration threshold of 80 VdB, previously discussed in Section 3. Since truck haul deliveries transiting on site will be travelling at very low speeds, vibration levels for the AutoNation heavy truck activity at normal traffic speeds will not exceed 65 VdB, as previously shown on Exhibit 2-C. Since truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement condition it is expected that delivery truck vibration impacts at nearby homes will not exceed the FTA vibration threshold of 80 VdB, and therefore, will be *less than significant*.

10.7 CONSTRUCTION NOISE AND VIBRATION ABATEMENT MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following mitigation measures would reduce any noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses.

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities shall only occur between the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays (City of Newport Beach Municipal Code, Section 10.28.040). The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with

manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.

- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site (i.e., to the center) during all Project construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 7:00 a.m. to 6:30 p.m. on Mondays to Fridays, and 8:00 a.m. to 6:00 p.m. on Saturdays, with no activity allowed on Sundays or national holidays). The contractor shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.

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11 REFERENCES

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12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed AutoNation 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) 336-5979.

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF NEWPORT BEACH MUNICIPAL CODE

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Chapter 10.26
COMMUNITY NOISE CONTROL

Sections:

10.26.005 Declaration of Policy.

A. In order to control unnecessary, excessive and annoying noise in the City of Newport Beach, it is declared to be the policy of the City to prohibit such noise generated from or by all sources as specified in this chapter.

B. It is determined that certain noise levels are detrimental to the public health, welfare and safety and contrary to public interest, therefore, the City Council of the City of Newport Beach does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise in a manner prohibited by, or not in conformity with, the provisions of this chapter, is a public nuisance and may be punished as a public nuisance. The ordinance codified in this chapter is effective thirty (30) days from adoption, however, all fixed noise sources existing at the date of adoption shall have ninety (90) days from the date of adoption to achieve compliance with this chapter. (Ord. 95-38 § 11 (part), 1995)

10.26.010 Definitions.

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

“Agricultural property” means a parcel of real property which is undeveloped for any use other than agricultural purposes.

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

“A-weighted sound level” means the total sound level meter with a reference pressure of twenty (20) micropascals using the A-weighted network (scale) at slow response. The unit of measurement shall be defined

as DBA.

“Code Enforcement Officer” means the Code Enforcement Officer of the City or his duly authorized deputy.

“Commercial property” means a parcel of real property which is used as either in part or in whole for commercial purposes.

“Cumulative period” means an additive period of time composed of individual time segments which may be continuous or interrupted.

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

“Dwelling unit” means any area within a structure on any parcel which:

1. Contains separate or independent living facilities for one or more persons, with an area or equipment for sleeping, sanitation and food preparation, and which has independent exterior access to ground level; or

2. Is being utilized for residential purposes by one or more persons separately or independently from occupants of other areas within the structure.

“Emergency machinery, vehicle, work or alarm” means any machinery, vehicle, work or alarm used, employed, performed or operated in an effort to protect, provide or restore safety conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

“Equivalent, noise, level, leq.” means the sound level corresponding to a steady state noise level over a given measurement period with the same amount of acoustic energy as the actual time varying noise level. Also known as the energy average noise level during the measurement period. The measurement period shall be fifteen (15) minutes under the terms of this chapter.

“Fixed noise source” means a stationary device which creates sounds while fixed or motionless including but not limited to residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners and refrigeration equipment.

“Grading” means any excavating of filling of earth material or any combination thereof conducted at a site to prepare said site for construction or other improvements thereon.

“Health care institution” means any hospital, convalescent home or other similar facility excluding residential.

“Hertz (HZ)” means the unit which describes the frequency of a function periodic in time which is the reciprocal of the period.

“Impulsive noise” means a noise of short duration usually less than one second and of high intensity, with an abrupt onset and rapid decay.

“Industrial property” means a parcel of real property which is used either in part or in whole for manufacturing purposes.

“Intruding noise level” means the total sound level, in decibels, created, caused, maintained or originating from an alleged offensive source at a specified location while the alleged offensive source is in operation.

“Licensed” means the issuance of a formal license or permit by the appropriate jurisdictional authority, or where no permits or licenses are issued, the sanctioning of the activity by the jurisdiction as noted in public record.

"Major roadway" means any street, avenue, boulevard or highway used for motor vehicle traffic which is owned or controlled by a public government entity.

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

"Person" means any individual, firm, partnership, association, corporation, company or organization of any kind, including public agencies.

"Residential property" means a parcel of real property which is used either in part or in whole for residential purposes, other than transient uses such as hotels and motels, and residential care facilities. Residential property includes the residential portion of mixed use properties.

"Simple tone noise" means a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished. If measured, simple tone noise shall exist if the one-third octave band sound pressure levels in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two continuous one-third octave bands as follows: five Db for frequencies of five hundred (500) Hertz (Hz) and above or, by fifteen (15) Db for frequencies less than or equal to one hundred twenty-three (123) Hz.

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

"Sound pressure level" of a sound, in decibels, means twenty (20) times the logarithm to the base ten of the ratio of the pressure of the sound to a reference pressure which shall be explicitly stated.

"Vibration" means any movement of the earth, ground or other similar surface created by a temporal and spatial oscillation device or equipment located upon, affixed in conjunction with that surface. (Ord. 95-38 § 11 (part), 1995)

10.26.015 Decibel Measurement Criteria.

Any decibel measurement made pursuant to the provisions of this chapter shall be based on a reference sound pressure of twenty (20) micropascals as measured with a sound level meter using the A-weighted network (scale) at slow response. (Ord. 95-38 § 11 (part), 1995)

10.26.020 Designated Noise Zones.

The properties hereinafter described assigned to the following noise zones:

Noise Zone I	—	All single-, two- and multiple-family residential properties;
Noise Zone II	—	All commercial properties;
Noise Zone III	—	The residential portion of mixed-use properties;
Noise Zone IV	—	All manufacturing or industrial properties.

The actual use of the property shall be the determining factor in establishing whether a property is in Noise Zone I, II, III or IV provided that the actual use is a legal use in the City of Newport Beach. (Ord. 95-38 § 11 (part), 1995)

10.26.025 Exterior Noise Standards.

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

NOISE ZONE	TYPE OF LAND USE	ALLOWABLE EXTERIOR NOISE LEVEL (Equivalent Noise Level, Leq) 7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Single-, two-or multiple-family residential	55 DBA	50 DBA
II	Commercial	65 DBA	60 DBA
III	Residential portions of mixed-use properties	60 DBA	50 DBA
IV	Industrial or manufacturing	70 DBA	70 DBA

If the ambient noise level exceeds the resulting standard, the ambient shall be the standard.

B. It is unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, to exceed either of the following:

1. The noise standard for the applicable zone for any fifteen-minute period;

2. A maximum instantaneous noise level equal to the value of the noise standard plus twenty (20) DBA for any period of time (measured using A-weighted slow response).

C. In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

D. The Noise Zone III standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property, if the intruding noise originates from that commercial property.

E. If the measurement location is on boundary between two different noise zones, the lower noise level standard applicable to the noise zone shall apply. (Ord. 95-53 § 1, 1995; Ord. 95-38 § 11 (part), 1995)

10.26.030 Interior Noise Standards.

A. The following noise standard, unless otherwise specifically indicated, shall apply to all residential property within all noise zones:

NOISE ZONE	TYPE OF LAND USE	ALLOWABLE INTERIOR NOISE LEVEL (Equivalent Noise Level, Leq) 7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Residential	45 DBA	40 DBA
III	Residential portions of	45 DBA	40 DBA

	mixed-use properties

If the ambient noise level exceeds the resulting standard, the ambient shall be the standard.

B. It shall be unlawful for any person at any location within the incorporated area of the City to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such a person which causes the noise level when measured on any other property, to exceed either of the following:

1. The noise standard for the applicable zone for any fifteen-minute period;

2. A maximum instantaneous noise level equal to the value of the noise standard plus twenty (20) DBA for any period of time (measured using A-weighted slow response).

C. In the event the ambient noise level exceeds the noise standard, the noise standard applicable to said category shall be increased to reflect the maximum ambient noise level.

D. The Noise Zone III standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property, if the intruding noise originates from that commercial property.

E. If the measurement location is on a boundary between two different noise zones, the lower noise level standard applicable to the noise zone shall apply. (Ord. 95-53 § 2, 1995; Ord. 95-38 § 11 (part), 1995)

10.26.035 Exemptions.

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

A. Any activity conducted on public property, or on private properly with the consent of the owner, by any public entity, or its officers, employees, representatives, agents, subcontractors, permittees, licensees, or lessees, which are consistent with, and in furtherance of, the governmental functions or services the public entity has authorized, or responsible, to perform, activities which are exempt from the provisions of this chapter include, without limitation, sporting and recreational activities which are sponsored or co-sponsored by the City of Newport Beach or the Newport Mesa Unified School District;

B. Occasional outdoor gatherings, public dances, show, sporting and entertainment events, provided said events are conducted pursuant to a permit or license issued by the appropriate jurisdiction relative to the staging of said events;

C. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle, work or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within forty-five (45) minutes in any hour of its being activated;

D. Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of Chapter 10.28 of this title;

E. Noise sources associated with construction, repair, remodeling, demolition or grading of public rights-of-way or during authorized seismic surveys;

F. All mechanical devices, apparatus or equipment associated with agriculture operations provided that:

1. Operations do not take place between eight p.m. and seven a.m. on weekdays, including Saturday, or at any time Sunday or a federal holiday, or

2. Such operations and equipment are utilized for the protection or salvage of agricultural crops during

periods of potential or actual frost damage or other adverse weather conditions, or

3. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by or regulations enforced by the California Department of Agriculture;

G. Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of Chapter 10.28 of this title;

H. Any activity to the extent regulation thereof has been preempted by state or federal law. NOTE: Preemption may include motor vehicle, aircraft in flight, and railroad noise regulations;

I. Any noise sources associated with people and/or music associated with a party at a residential property. Such noise is difficult to measure under the terms of this chapter and instead shall be subject to the provisions of Chapters 10.28 and 10.58 of this title;

J. Any noise sources associated with barking dogs or other intermittent noises made by animals on any properly within the City of Newport Beach. Such noise is difficult to measure under the terms of this chapter and instead shall be subject to the provisions of Chapter 7.20 of this Code;

K. Any noise sources associated with the operation of a permanently installed heating, venting and air conditioning (HVAC) equipment on a residential property permitted under the provisions of Section 10.26.045(B) and (C);

L. Any noise sources specifically identified and mitigated under the provisions of a use permit, modification permit, development agreement or planned community district development plan adopted prior to the date of adoption of this chapter. (Ord. 95-53 § 3, 1995; Ord. 95-38 § 11 (part), 1995)

10.26.040 Schools, Day Care Centers, Churches, Libraries, Museums, Health Care Institutions—Special Provisions.

It is unlawful for any person to create any noise which causes the noise level at any school, day care center, hospital or similar health care institution, church, library or museum while the same is in use, to exceed the noise standards specified in Section 10.26.025 prescribed for the assigned Noise Zone I (residential uses). (Ord. 95-38 § 11 (part), 1995)

10.26.045 Heating, Venting and Air Conditioning—Special Provisions.

A. New HVAC Equipment. New permits for heating, venting and air conditioning (HVAC) equipment in or adjacent to residential areas shall be issued only where installations can be shown by computation, based on the sound rating of the proposed equipment, not to exceed an A-weighted sound pressure level of fifty (50) DBA or not to exceed an A-weighted sound pressure level of fifty-five (55) dBA and be installed with a timing device that will deactivate the equipment during the hours of ten p.m. to seven a.m. The method of computation used shall be that specified in “Standard Application of Sound Rated Outdoor Unitary Equipment,” Standard 275, Air conditioning and Refrigeration Institute, 1984 or latest revision thereof.

B. Existing HVAC Equipment.

1. HVAC equipment legally installed prior to April 22, 1981, shall be permitted to operate with an exterior noise limit of sixty-five (65) dBA until January 1, 1998.

2. HVAC equipment legally installed prior to April 22, 1981, shall be exempted from the interior noise level standard as specified in Section 10.26.030 of this chapter until January 1, 1998.

3. HVAC equipment legally installed after April 22, 1981, and prior to the date of adoption of this chapter shall not exceed a maximum exterior noise limit of fifty-five (55) dBA during the ninety-day compliance period set forth in Section 10.26.005.

C. In the event that HVAC equipment cannot meet the requirements set forth in this chapter, then the exterior noise limit for such equipment may be raised to sixty-five (65) dBA and exempted from the interior noise level standard as specified in Section 10.26.030 of this chapter, provided that the applicant obtains the written consent of all the owners of the affected properties. (Ord. 95-38 § 11 (part), 1995)

10.26.050 Sound-Amplifying Equipment.

Loudspeakers, sound amplifiers, public address systems or similar devices used to amplify sounds shall be subject to the provisions of Chapter 10.32 of this title. Such sound-amplifying equipment shall not be construed to include electronic devices, including but not limited to, radios, tape players, tape recorders, compact disc players, electric keyboards, music synthesizers, record players or televisions, which are designed and operated for personal use, or used entirely within a building and are not designed or used to convey the human voice, music or any other sound to an audience outside such building, or which are used in vehicles and heard only by occupants of the vehicle in which installed, which shall be subject to the provisions of Chapter 10.28 of this title. (Ord. 95-38 § 11 (part), 1995)

10.26.055 Noise Level Measurement.

A. The location selected for measuring exterior noise levels in a residential area shall be at any part of a private yard, patio, deck or balcony normally used for human activity and identified by the owner of the affected property as suspected of exceeding the noise level standard. This location may be the closest point in the private yard or patio, or on the deck or balcony, to the noise source, but should not be located in nonhuman activity areas such as trash container storage areas, planter beds, above or contacting a property line fence, or other areas not normally used as part of the yard, patio, deck or balcony. The location selected for measuring exterior noise levels in a nonresidential area shall be at the closest point to the noise source. The measurement microphone height shall be five feet above finish elevation or, in the case of a deck or balcony, the measurement microphone height shall be five feet above the finished floor level.

B. The location selected for measuring interior noise levels shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling or floor, or within the frame of a window opening, nearest the noise source. The measurements shall be made with windows in an open position. (Ord. 95-38 § 11 (part), 1995)

10.26.065 Proposed Developments.

Each department whose duty it is to review and approve new projects or changes to existing projects that result or may result in the creation of noise shall consult with the Code Enforcement Officer prior to any such approval. If at any time the Code Enforcement Officer has reason to believe that a standard, regulation, action, proposed standard, regulation or action of any department respecting noise does not conform to the provisions as specified in this chapter, the Code Enforcement Officer may request such department to consult with him on the advisability of revising such standard or regulation to obtain uniformity. (Ord. 95-38 § 11 (part), 1995)

10.26.070 Prima Facie Violation.

Any noise exceeding the noise level standard as specified in Section 10.26.025 and 10.26.030 of this chapter, shall be deemed to be prima facie evidence of a violation of the provisions of this chapter. (Ord. 95-38 § 11 (part), 1995)

10.26.075 Violations.

Any persons violating any of the provisions of this chapter shall be deemed guilty of an infraction. (Ord. 95-38 § 11 (part), 1995)

10.26.080 Violations—Additional Remedies—Injunctions.

A. As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provisions of this chapter which operation or maintenance causes or creates sound levels exceeding the allowable standards as specified in this chapter shall be deemed and is declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

B. Any violation of this chapter is declared to be a public nuisance and may be abated in accordance with law. The expense of this chapter is declared to be public nuisance and may be by resolution of the City Council declared to be a lien against the property on which such nuisance is maintained, and such lien shall be made a personal obligation of the property owner. (Ord. 95-38 § 11 (part), 1995)

10.26.085 City Manager Waiver.

The City Manager is authorized to grant a temporary waiver to the provisions of this chapter for a period of time not to exceed thirty (30) days if such temporary waiver would be in the public interest and there is no feasible and prudent alternative to the activity, or the method of conducting the activity, for which the temporary waiver is sought. (Ord. 95-38 § 11 (part), 1995)

10.26.090 Noise Abatement Programs.

A. In circumstances which adopted community-wide noise standards and policies prove impractical in controlling noise generated from a specific source, the City Council may establish a noise abatement program which recognizes the characteristics of the noise source and affected property and which incorporates specialized mitigation measures.

B. Noise abatement programs shall set forth in detail the approved terms, conditions and requirements for achieving maximum compliance with noise standards and policies. Said terms, conditions and requirements may include, but shall not be limited to, limitations, restrictions, or prohibitions on operating hours, location of operations, and the types of equipment. (Ord. 95-38 § 11 (part), 1995)

10.26.095 Manner of Enforcement.

A. The City Code Enforcement Officer is directed to enforce the provisions of this chapter and may issue citations for any violation of the provisions of this chapter or violations of this chapter may be prosecuted or enforced in the same manner as other infractions pursuant to this Code; provided, however, that in the event of an initial violation of the provisions of this chapter, a written notice may be given to the alleged violator which specifies the time by which the condition shall be corrected.

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

C. In the event the alleged violator cannot be located in order to serve any notice, the notice shall be deemed to be given upon mailing such notice by registered or certified mail to the alleged violator at his last known address or at the place where the violation occurred in which event the specified time period for abating the violation or applying for a variance shall commence at the date of the day following the mailing of such notice. (Ord. 95-38 § 11 (part), 1995)

10.26.100 Severability.

If any provision, clause, sentence, or paragraph of this chapter, or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the other provisions of this chapter which can be given effect without the invalid provisions or application and, to this end, the provisions of this chapter are hereby declared to be severable. (Ord. 95-38 § 11 (part), 1995)

Chapter 10.28
LOUD AND UNREASONABLE NOISE*

Sections:

* Sound-amplifying equipment—See Chapter 10.32.

Prior history: 1949 Code § 4208; Ords. 1191, 1802, 87-11, 87-17 and 93-7.

10.28.005 Policy.

It is found and declared as follows:

A. The making, allowing, creation or maintenance of loud and unreasonable, unnecessary, or unusual noises which are prolonged, unusual, annoying, disturbing and/or unreasonable in their time, place and use are a detriment to public health, comfort, convenience, safety, general welfare and the peace and quiet of the City and its inhabitants.

B. The necessity in the public interest for the provisions and prohibitions contained and enacted is to declare as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, general welfare and property and the peace and quiet of the City and its inhabitants. (Ord. 2001-4 § 1, 2001)

10.28.007 Loud and Unreasonable Noise is Prohibited.

It is unlawful for any person or property owner to make, continue, cause or allow to be made any loud, unreasonable, unusual, penetrating or boisterous noise, disturbance or commotion which annoys, disturbs, injures or endangers the comfort, repose, health, peace and quiet within the limits of the City, and the acts and things listed in this chapter, among others, are declared to be loud, disturbing, injurious and unreasonable noises in violation of this Chapter, but shall not be deemed to be exclusive. (Ord. 2001-4 § 2, 2001)

10.28.010 Loud and Unreasonable Noise.

It is unlawful for any person or property owner to willfully make, allow, continue or cause to be made, allowed, or continued, any loud and unreasonable, unnecessary, or disturbing noise, including, but not limited to, yelling, shouting, hooting, whistling, singing, playing music, or playing a musical instrument, which disturbs the peace, comfort, quiet or repose of any area or which causes discomfort or annoyance to any reasonable person of normal sensitivities in the area, after a peace or code enforcement officer has first requested that the person or property owner cease and desist from making or continuing, or causing to make or continue, such loud, unreasonable, unnecessary, excessive or disturbing noise.

The factors, standards, and conditions which should be considered in determining whether a violation of the provisions of this section has been committed, include, but are not limited to, the following:

A. The level of the noise;

B. Whether the nature of the noise is usual or unusual;

C. Whether the origin of the noise is natural or unnatural;

D. The level and intensity of the background (ambient) noise, if any;

E. The proximity of the noise to residential or commercial sleeping areas;

F. The nature and zoning of the area within which the noise emanates;

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

H. The time of day and night the noise occurs;

I. The duration of the noise;

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

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

L. If the noise is produced by a commercial activity, whether the use is lawful under the provisions of Title 20 of this Code and whether the noise is one that could reasonably be expected from the commercial activity.

M. Penalties. Any person who violates any provision of this section is guilty of a misdemeanor, unless the violation is deemed an infraction pursuant to the provisions of Section 1.04.010 of this Code. (Ord. 2001-4 § 3 (part), 2001: Ord. 95-38 § 3 (part), 1995)

10.28.020 Loud and Raucous Noise from Sound-Making or Amplifying Devices Prohibited.

A. It is unlawful for any person to cause, allow or permit the emission or transmission of any loud or raucous noise from any sound-making or sound-amplifying device in his possession or under his control:

1. Upon any private property; or

2. Upon any public street, alley, sidewalk or thoroughfare; or

3. In or upon any public park, beach or other public place or property.

B. The words “loud and raucous noise,” as used herein, shall mean any sound or any recording thereof when amplified or increased by any electrical, mechanical or other device to such volume, intensity or carrying power as to unreasonably interfere with the peace and quiet of other persons within or upon any one or more of such places or areas, or as to unreasonably annoy, disturb, impair or endanger the comfort, repose, health, or safety of other persons within or upon any one or more such places or areas.

C. The word “unreasonably,” as used herein, shall include, but not be limited to, consideration of the hour, place, nature and circumstances of the emission or transmission of any such loud and raucous noise.

D. Penalties. Any person who violates any provision of this section is guilty of a misdemeanor unless the violation is deemed an infraction pursuant to the provisions of Section 1.04.010 of this Code. (Ord. 2001-4 § 3 (part), 2001: Ord. 95-38 § 3 (part), 1995)

10.28.040 Construction Activity—Noise Regulations.

A. Weekdays and Saturdays. No person shall, while engaged in construction, remodeling, digging, grading, demolition, painting, plastering or any other related building activity, operate any tool, equipment or machine in a manner which produces loud noise that disturbs, or could disturb, a person of normal sensitivity who works or

resides in the vicinity, on any weekday except between the hours of seven a.m. and six-thirty p.m., nor on any Saturday except between the hours of eight a.m. and six p.m.

B. Sundays and Holidays. No person shall, while engaged in construction, remodeling, digging, grading, demolition, painting, plastering or any other related building activity, operate any tool, equipment or machine in a manner which produces loud noise that disturbs, or could disturb, a person of normal sensitivity who works or resides in the vicinity, on any Sunday or any federal holiday.

C. No landowner, construction company owner, contractor, subcontractor, or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.

D. Exceptions.

1. The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the Community Development Director or his or her designee.

2. The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City of Newport Beach, or its employees, contractors or agents, unless:

a. The City Manager or department director determines that the maintenance, repair or improvement is immediately necessary to maintain public services;

b. The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours;

c. The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes construction during hours of the day which would otherwise be prohibited pursuant to this section.

E. Penalties. Any person who violates any provision of this section is guilty of a misdemeanor unless the violation is deemed an infraction pursuant to the provisions of Section 1.04.010 of this Code. (Ord. 2013-11 § 35, 2013; Ord. 2001-4 § 3 (part), 2001: Ord. 95-38 § 3 (part), 1995)

10.28.045 Real Property Maintenance—Noise Regulations.

A. Weekdays and Saturdays. No person shall, while engaged in maintenance of real property, operate any tool, equipment or machine in a manner which produces loud noise that disturbs, or could disturb, a person of normal sensitivity who works or resides in the vicinity, except between the hours of seven a.m. and six-thirty p.m., Monday through Friday, nor on any Saturday, except between the hours of eight a.m. and six p.m.

B. Sundays and Holidays. No person shall, while engaged in maintenance of real property, operate any tool, equipment or machine in a manner which produces loud noise that disturbs, or could disturb, a person of normal sensitivity who works or resides in the vicinity, on any Sunday or any federal holiday.

C. No landowner, gardener, property maintenance service, contractor, subcontractor or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.

D. After January 1, 1996, mechanical blowers, as defined in Section 6.04.055, shall not be operated at a noise level that exceeds an A-weighted sound pressure level of seventy (70) dBA, as measured at a distance of fifty (50) feet. After January 1, 1999, such equipment shall not be operated at a noise level that exceeds an A-

weighted sound pressure level of sixty-five (65) dBA, as measured from a distance of fifty (50) feet.

E. Exceptions. The provisions of this section shall not apply to the following:

1. Emergency property maintenance authorized by the Building Director;

2. The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City of Newport Beach, or its employees, contractors or agents, unless:

a. The City Manager or department director determines that the maintenance, repair or improvement is immediately necessary to maintain public service,

b. The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours,

c. The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes construction during hours of the day which would otherwise be prohibited pursuant to this section;

3. Greens maintenance on golf courses conducted between the hours of six a.m. and eight p.m. and all other types of golf course maintenance between the hours of seven a.m. and eight p.m., provided no maintenance activity commences before six a.m.

F. Penalties. Any person who violates any provision of this section is guilty of a misdemeanor unless the violation is deemed an infraction pursuant to the provisions of Section 1.04.010 of this Code. (Ord. 2001-4 § 3 (part), 2001: Ord. 95-38 § 3 (part), 1995)

10.28.050 Exceptions.

The provisions of Sections 10.28.040 and 10.28.045 shall not be construed to prohibit such work at different hours by or under the direction of any other public agency in cases of necessity or emergency. (Ord. 2001-4 § 3 (part), 2001: Ord. 95-38 § 3 (part), 1995)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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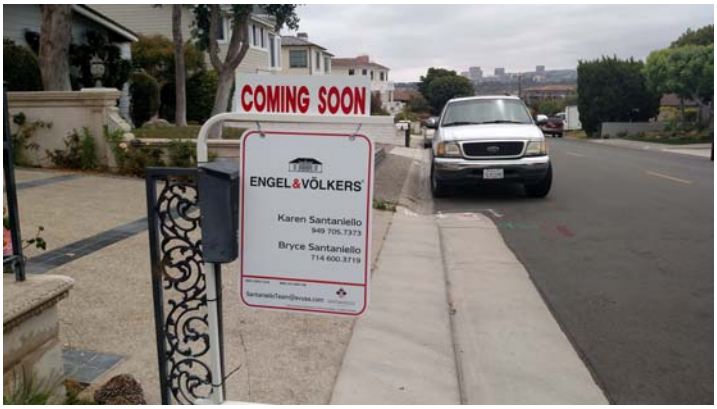
L1
33, 37' 1.875000", 117, 54' 35.326500"



L1_E
33, 37' 1.875000", 117, 54' 35.326500"

L1_N
33, 37' 1.875000", 117, 54' 35.326500"

L2
33, 36' 58.716400", 117, 54' 26.702200"

L2_E
33, 36' 58.716400", 117, 54' 26.702200"

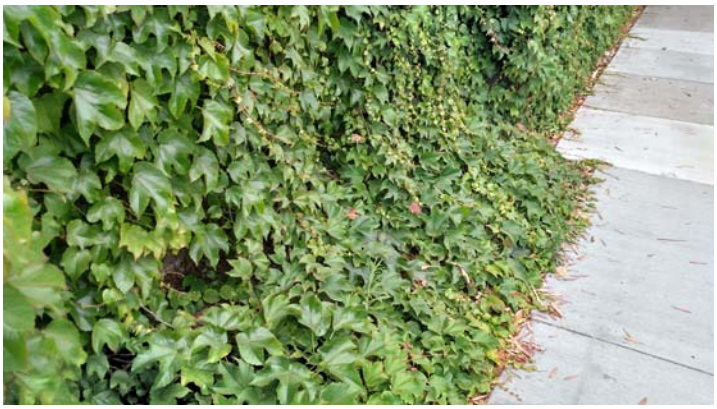
L2_NW
33, 36' 58.716400", 117, 54' 26.702200"

L2_W
33, 36' 58.716400", 117, 54' 26.702200"

L3
33, 36' 58.469200", 117, 54' 38.732300"

L3_S
33, 36' 58.469200", 117, 54' 38.732300"

L3_W
33, 36' 58.469200", 117, 54' 38.732300"



L4
33, 36' 58.469200", 117, 54' 34.612400"

L4_E
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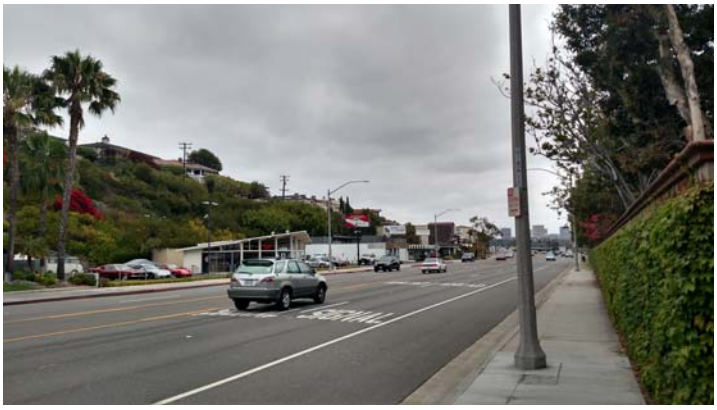
L4_NE
33, 36' 58.675200", 117, 54' 34.942000"



L4_NE2
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L4_NE3
33, 36' 58.469200", 117, 54' 34.612400"

L4_NW
33, 36' 58.469200", 117, 54' 34.612400"

L5
33, 36' 58.263200", 117, 54' 38.402700"

L5_NE
33, 36' 58.263200", 117, 54' 38.402700"

Site1
33, 36' 58.208300", 117, 54' 31.481300"

Site2
33, 36' 58.606500", 117, 54' 33.458800"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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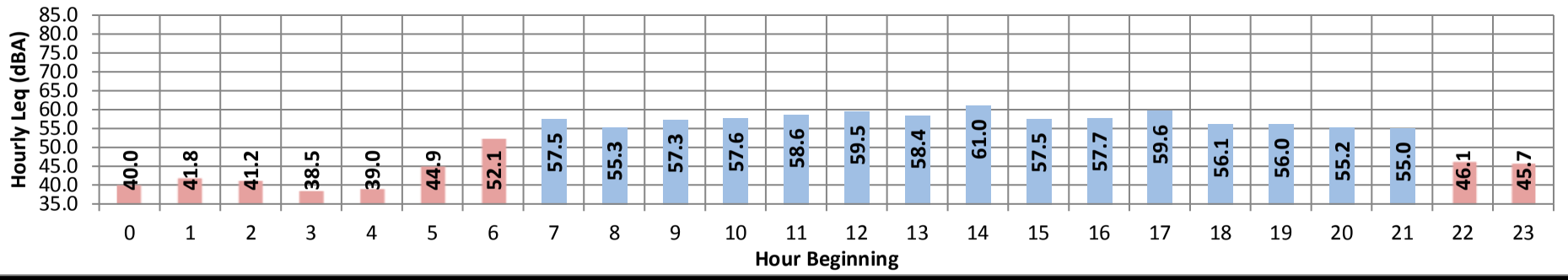
24-Hour Noise Level Measurement Summary

			Energy Average Leq		24-Hour
Project Name: AutoNation	*JN:* 9831		*Day*	*Night*	*CNEL*
Location: L1 - Located north of the Project site on Kings Road adjacent to existing residential homes.	*Analyst:* A. Wolfe		57.8	45.6	57.8
	Date: 6/8/2016				

Hourly Leq dBA Readings (unadjusted)



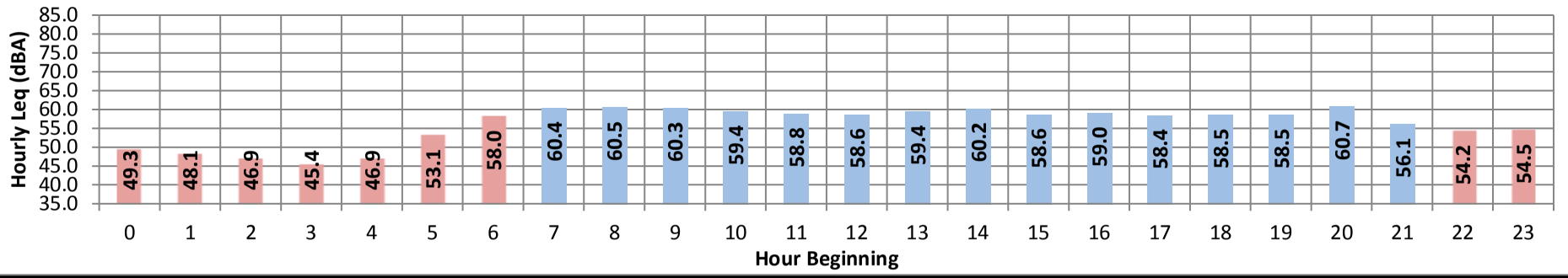
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	55.0	70.0	37.7	66.0	65.0	61.0	59.0	48.0	44.0	40.0	40.0	38.0
	Max	61.0	88.5	43.5	71.0	70.0	66.0	65.0	56.0	50.0	46.0	45.0	44.0
Energy Average:		57.8	Average:		68.6	66.7	63.6	61.3	52.7	47.7	44.2	43.5	42.3
Night	Min	38.5	55.7	34.7	41.0	41.0	39.0	39.0	37.0	37.0	35.0	35.0	35.0
	Max	52.1	72.5	39.0	65.0	63.0	56.0	52.0	48.0	45.0	42.0	41.0	40.0
Energy Average:		45.6	Average:		51.2	49.0	45.1	43.4	40.9	39.1	37.4	36.8	36.6
Hourly Summary													
Night	0	40.0	57.2	37.5	46.0	44.0	42.0	41.0	39.0	38.0	37.0	37.0	37.0
	1	41.8	66.3	34.7	48.0	44.0	41.0	40.0	39.0	37.0	37.0	37.0	36.0
	2	41.2	59.1	34.7	53.0	49.0	44.0	41.0	38.0	37.0	37.0	35.0	35.0
	3	38.5	63.6	34.7	41.0	41.0	39.0	39.0	37.0	37.0	35.0	35.0	35.0
	4	39.0	55.7	34.7	44.0	43.0	41.0	40.0	39.0	37.0	36.0	35.0	35.0
	5	44.9	69.0	37.6	52.0	50.0	46.0	45.0	43.0	41.0	38.0	37.0	37.0
	6	52.1	69.9	39.0	65.0	63.0	56.0	52.0	48.0	45.0	42.0	41.0	40.0
Day	7	57.5	80.3	42.8	68.0	66.0	63.0	62.0	55.0	50.0	46.0	45.0	44.0
	8	55.3	70.0	42.6	66.0	65.0	61.0	59.0	53.0	49.0	45.0	45.0	43.0
	9	57.3	81.3	42.9	67.0	65.0	63.0	61.0	53.0	48.0	45.0	45.0	44.0
	10	57.6	74.6	43.5	69.0	67.0	64.0	62.0	54.0	49.0	46.0	45.0	44.0
	11	58.6	78.4	42.7	70.0	68.0	65.0	63.0	54.0	48.0	45.0	44.0	43.0
	12	59.5	82.4	42.2	71.0	68.0	66.0	63.0	55.0	48.0	45.0	44.0	43.0
	13	58.4	75.3	43.1	69.0	68.0	65.0	63.0	55.0	49.0	45.0	44.0	43.0
	14	61.0	88.5	42.4	71.0	70.0	66.0	65.0	56.0	50.0	45.0	44.0	43.0
	15	57.5	76.6	42.5	70.0	68.0	64.0	61.0	52.0	48.0	45.0	45.0	43.0
	16	57.7	74.6	42.6	68.0	67.0	64.0	62.0	55.0	50.0	45.0	45.0	44.0
	17	59.6	86.9	42.9	69.0	66.0	64.0	61.0	53.0	48.0	45.0	44.0	43.0
	18	56.1	75.7	40.7	69.0	66.0	62.0	59.0	49.0	46.0	43.0	42.0	41.0
	19	56.0	74.7	39.5	68.0	66.0	63.0	61.0	50.0	45.0	42.0	41.0	40.0
	20	55.2	78.7	39.4	67.0	65.0	62.0	59.0	49.0	44.0	41.0	40.0	39.0
	21	55.0	73.8	37.7	67.0	66.0	62.0	59.0	48.0	44.0	40.0	40.0	38.0
Night	22	46.1	72.5	37.6	54.0	52.0	48.0	46.0	43.0	41.0	38.0	37.0	37.0
	23	45.7	65.1	35.9	58.0	55.0	49.0	47.0	42.0	39.0	37.0	37.0	37.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

			Energy Average Leq	
Project Name: AutoNation	*JN:* 9831	*Day*	*Night*	*24-Hour CNEL*
Location: L2 - Located on the hillside between the Project site and residential homes on Kings Road.	*Analyst:* A. Wolfe	59.3	52.7	61.6
	Date: 6/8/2016			

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	56.1	68.3	42.1	64.0	62.0	60.0	59.0	56.0	54.0	49.0	48.0	45.0
	Max	60.7	84.9	50.9	73.0	68.0	65.0	63.0	61.0	59.0	56.0	55.0	53.0
Energy Average:		59.3	Average:		66.9	65.2	62.9	61.6	58.6	56.5	52.9	51.7	49.7
Night	Min	45.4	60.4	39.2	54.0	53.0	50.0	49.0	45.0	41.0	40.0	40.0	39.0
	Max	58.0	79.8	45.0	65.0	64.0	62.0	61.0	58.0	56.0	51.0	49.0	47.0
Energy Average:		52.7	Average:		59.0	57.3	54.6	53.3	50.0	46.9	43.1	42.4	41.3
Hourly Summary													
Night	0	49.3	68.4	40.1	57.0	56.0	53.0	52.0	49.0	46.0	42.0	41.0	40.0
	1	48.1	68.5	39.2	56.0	54.0	52.0	51.0	48.0	44.0	40.0	40.0	39.0
	2	46.9	68.2	39.2	56.0	54.0	51.0	49.0	46.0	42.0	40.0	40.0	40.0
	3	45.4	60.4	39.8	54.0	53.0	50.0	49.0	45.0	41.0	40.0	40.0	40.0
	4	46.9	61.9	39.2	56.0	54.0	52.0	50.0	47.0	43.0	40.0	40.0	40.0
	5	53.1	70.0	40.5	60.0	59.0	57.0	56.0	53.0	51.0	45.0	44.0	41.0
	6	58.0	72.3	45.0	65.0	64.0	62.0	61.0	58.0	56.0	51.0	49.0	47.0
Day	7	60.4	73.1	50.9	67.0	65.0	63.0	63.0	61.0	59.0	56.0	55.0	53.0
	8	60.5	79.5	45.8	67.0	65.0	63.0	62.0	60.0	58.0	55.0	54.0	51.0
	9	60.3	80.4	47.0	67.0	65.0	63.0	62.0	60.0	58.0	54.0	53.0	51.0
	10	59.4	72.1	48.5	66.0	65.0	63.0	62.0	59.0	58.0	54.0	53.0	51.0
	11	58.8	71.2	45.4	65.0	64.0	62.0	61.0	59.0	57.0	54.0	53.0	51.0
	12	58.6	72.0	46.2	65.0	64.0	62.0	61.0	59.0	57.0	53.0	52.0	50.0
	13	59.4	73.9	47.6	67.0	66.0	64.0	63.0	59.0	57.0	53.0	52.0	50.0
	14	60.2	80.3	48.5	69.0	68.0	65.0	63.0	59.0	57.0	53.0	52.0	50.0
	15	58.6	74.9	48.0	67.0	65.0	63.0	61.0	58.0	56.0	53.0	52.0	50.0
	16	59.0	73.2	49.2	66.0	65.0	63.0	62.0	59.0	57.0	53.0	52.0	51.0
	17	58.4	75.8	48.8	67.0	65.0	62.0	61.0	58.0	56.0	53.0	52.0	50.0
	18	58.5	73.3	46.2	67.0	66.0	63.0	61.0	58.0	55.0	52.0	50.0	49.0
	19	58.5	78.1	43.0	67.0	65.0	63.0	62.0	57.0	55.0	51.0	49.0	47.0
	20	60.7	84.9	43.9	73.0	68.0	64.0	61.0	57.0	54.0	50.0	49.0	47.0
	21	56.1	68.3	42.1	64.0	62.0	60.0	59.0	56.0	54.0	49.0	48.0	45.0
Night	22	54.2	72.5	40.5	64.0	62.0	58.0	57.0	53.0	51.0	46.0	45.0	43.0
	23	54.5	79.8	41.2	63.0	60.0	56.0	55.0	51.0	48.0	44.0	43.0	42.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: AutoNation

Location: L3 - Located at the southwest corner of the Project site on West Coast Highway.

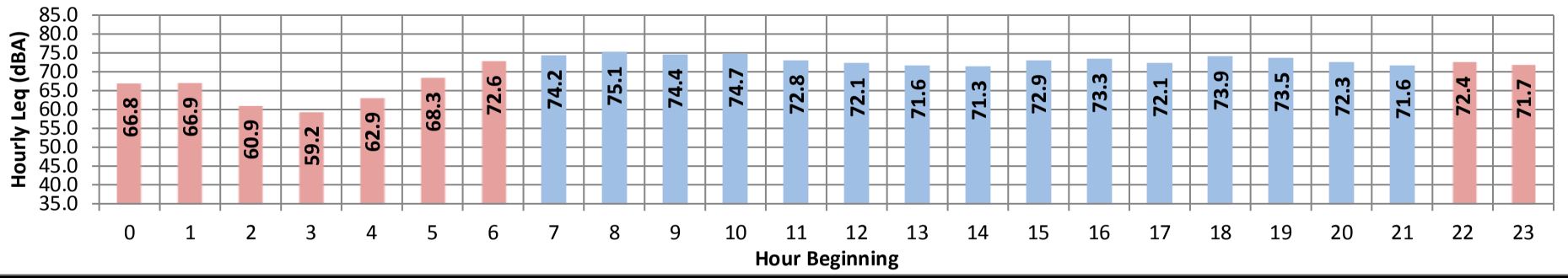
JN: 9831

Analyst: A. Wolfe

Date: 6/8/2016

Energy Average Leq		*24-Hour*
Day	*Night*	*CNEL*
73.2	69.0	76.8

Hourly Leq dBA Readings (unadjusted)



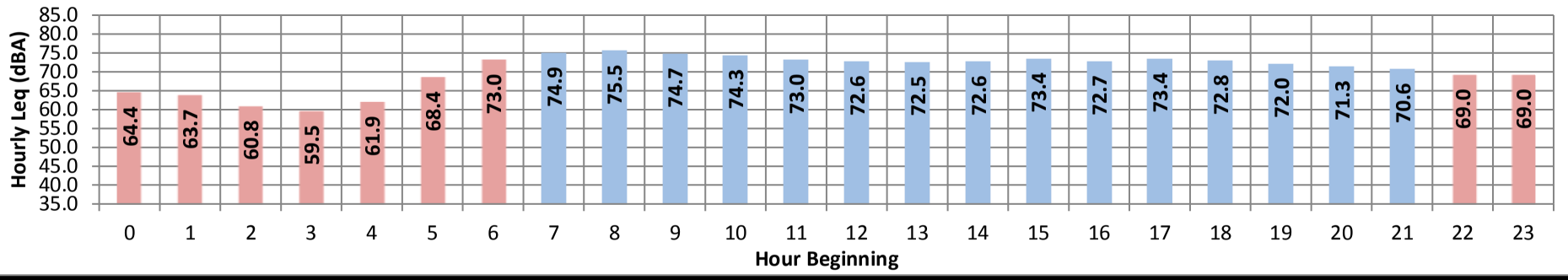
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	71.3	81.5	51.5	78.0	76.0	75.0	74.0	72.0	69.0	59.0	56.0	52.0
	Max	75.1	100.4	55.5	82.0	79.0	78.0	77.0	75.0	73.0	66.0	65.0	62.0
Energy Average:		73.2	Average:		79.7	77.9	76.3	75.7	73.5	70.8	64.0	61.3	56.9
Night	Min	59.2	79.3	47.9	71.0	69.0	66.0	64.0	51.0	49.0	48.0	48.0	48.0
	Max	72.6	101.4	50.7	80.0	78.0	77.0	76.0	74.0	70.0	57.0	54.0	52.0
Energy Average:		69.0	Average:		75.4	73.9	71.8	70.2	63.1	57.2	50.3	49.9	49.1
Hourly Summary													
Night	0	66.8	92.4	48.3	75.0	74.0	72.0	70.0	64.0	55.0	49.0	49.0	48.0
	1	66.9	94.5	48.0	74.0	73.0	70.0	69.0	62.0	53.0	48.0	48.0	48.0
	2	60.9	81.4	47.9	72.0	71.0	68.0	65.0	53.0	49.0	48.0	48.0	48.0
	3	59.2	79.3	48.0	71.0	69.0	66.0	64.0	51.0	49.0	48.0	48.0	48.0
	4	62.9	89.3	47.9	73.0	71.0	69.0	67.0	56.0	51.0	48.0	48.0	48.0
	5	68.3	86.2	49.6	77.0	76.0	74.0	73.0	68.0	61.0	51.0	51.0	50.0
	6	72.6	87.6	50.6	80.0	78.0	77.0	76.0	74.0	70.0	57.0	54.0	52.0
Day	7	74.2	83.8	55.0	79.0	79.0	78.0	77.0	75.0	73.0	64.0	61.0	57.0
	8	75.1	99.8	53.3	81.0	79.0	78.0	77.0	75.0	72.0	65.0	62.0	57.0
	9	74.4	98.0	52.7	81.0	79.0	77.0	77.0	75.0	72.0	65.0	62.0	57.0
	10	74.7	100.4	54.5	81.0	79.0	77.0	76.0	74.0	71.0	66.0	64.0	59.0
	11	72.8	84.8	55.5	79.0	77.0	76.0	76.0	74.0	71.0	66.0	63.0	59.0
	12	72.1	86.5	54.2	78.0	77.0	75.0	75.0	73.0	71.0	65.0	63.0	58.0
	13	71.6	89.3	53.9	78.0	76.0	75.0	74.0	72.0	70.0	65.0	63.0	60.0
	14	71.3	86.6	53.9	78.0	77.0	75.0	74.0	72.0	69.0	62.0	59.0	55.0
	15	72.9	89.1	54.4	80.0	78.0	76.0	75.0	73.0	71.0	64.0	61.0	57.0
	16	73.3	93.9	52.2	80.0	78.0	76.0	75.0	73.0	71.0	65.0	62.0	55.0
	17	72.1	91.2	55.2	79.0	77.0	75.0	74.0	72.0	70.0	66.0	65.0	62.0
	18	73.9	93.3	54.3	82.0	79.0	77.0	77.0	74.0	71.0	66.0	63.0	59.0
	19	73.5	90.5	51.6	82.0	79.0	77.0	77.0	74.0	71.0	62.0	59.0	53.0
	20	72.3	89.5	52.4	79.0	78.0	76.0	76.0	73.0	70.0	60.0	57.0	53.0
	21	71.6	81.5	51.5	78.0	77.0	76.0	75.0	73.0	69.0	59.0	56.0	52.0
Night	22	72.4	101.4	50.7	78.0	77.0	76.0	75.0	71.0	66.0	54.0	53.0	51.0
	23	71.7	97.8	48.5	79.0	76.0	74.0	73.0	69.0	61.0	50.0	50.0	49.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

				Energy Average Leq	
Project Name: AutoNation	*JN:* 9831	*Day*	*Night*	*24-Hour CNEL*
Location: L4 - Located adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site.	*Analyst:* A. Wolfe	73.3	67.6	75.8
	Date: 6/8/2016			

Hourly Leq dBA Readings (unadjusted)



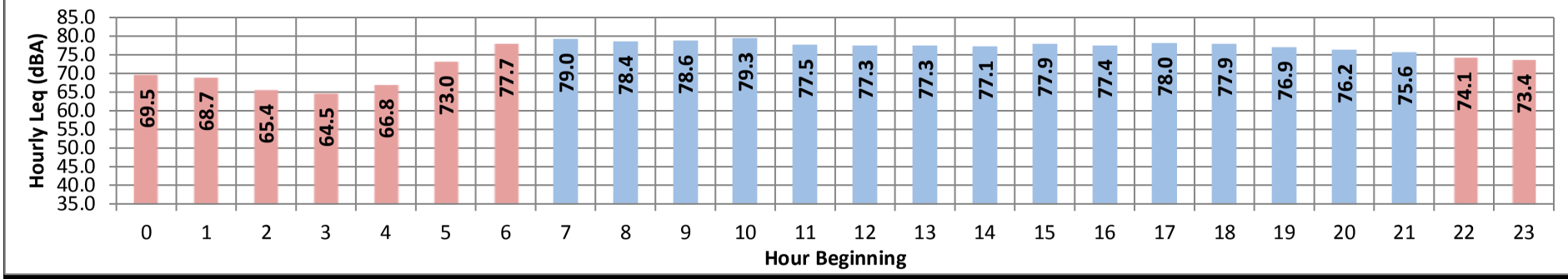
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	70.6	85.3	45.6	78.0	77.0	76.0	75.0	71.0	67.0	54.0	52.0	48.0
	Max	75.5	100.1	54.5	81.0	80.0	78.0	78.0	76.0	74.0	64.0	62.0	58.0
Energy Average:		73.3	Average:		79.9	78.2	76.8	76.1	73.7	70.7	61.2	57.8	53.1
Night	Min	59.5	81.8	40.5	73.0	70.0	65.0	61.0	47.0	42.0	41.0	41.0	41.0
	Max	73.0	94.5	45.9	80.0	79.0	78.0	77.0	74.0	69.0	54.0	51.0	48.0
Energy Average:		67.6	Average:		75.9	74.3	71.2	69.0	60.8	53.1	44.9	43.9	42.9
Hourly Summary													
Night	0	64.4	85.8	41.0	75.0	74.0	71.0	69.0	61.0	51.0	42.0	42.0	41.0
	1	63.7	87.8	40.7	74.0	73.0	70.0	67.0	58.0	48.0	42.0	41.0	41.0
	2	60.8	85.2	40.8	73.0	71.0	66.0	63.0	52.0	44.0	41.0	41.0	41.0
	3	59.5	81.8	40.8	73.0	70.0	65.0	61.0	47.0	42.0	41.0	41.0	41.0
	4	61.9	82.9	40.5	75.0	73.0	68.0	65.0	53.0	45.0	42.0	41.0	41.0
	5	68.4	90.0	42.7	78.0	76.0	75.0	73.0	67.0	58.0	45.0	44.0	43.0
	6	73.0	87.7	45.9	80.0	79.0	78.0	77.0	74.0	69.0	54.0	51.0	48.0
Day	7	74.9	87.6	54.5	81.0	80.0	78.0	78.0	76.0	74.0	64.0	61.0	58.0
	8	75.5	99.7	50.0	81.0	79.0	78.0	77.0	75.0	73.0	64.0	62.0	56.0
	9	74.7	98.7	49.9	81.0	79.0	78.0	77.0	75.0	72.0	63.0	59.0	54.0
	10	74.3	100.1	52.1	81.0	79.0	77.0	77.0	74.0	71.0	63.0	59.0	54.0
	11	73.0	92.4	48.6	79.0	78.0	77.0	76.0	74.0	71.0	63.0	58.0	54.0
	12	72.6	91.4	47.6	79.0	77.0	76.0	76.0	74.0	71.0	61.0	57.0	51.0
	13	72.5	85.3	49.5	80.0	78.0	76.0	76.0	73.0	71.0	62.0	58.0	53.0
	14	72.6	91.3	49.6	80.0	78.0	76.0	75.0	73.0	70.0	62.0	59.0	53.0
	15	73.4	94.1	49.3	81.0	78.0	77.0	76.0	74.0	71.0	60.0	56.0	51.0
	16	72.7	87.7	47.9	79.0	78.0	77.0	76.0	74.0	70.0	61.0	57.0	51.0
	17	73.4	92.8	52.4	81.0	79.0	77.0	76.0	74.0	71.0	62.0	60.0	57.0
	18	72.8	87.8	52.5	80.0	78.0	77.0	76.0	74.0	71.0	63.0	60.0	56.0
	19	72.0	89.7	45.6	79.0	78.0	76.0	75.0	73.0	69.0	59.0	55.0	48.0
	20	71.3	85.3	47.6	79.0	77.0	76.0	75.0	72.0	68.0	57.0	54.0	51.0
	21	70.6	85.3	47.1	78.0	77.0	76.0	75.0	71.0	67.0	54.0	52.0	49.0
Night	22	69.0	86.9	45.1	78.0	77.0	75.0	74.0	69.0	63.0	51.0	50.0	47.0
	23	69.0	94.5	42.6	77.0	76.0	73.0	72.0	66.0	58.0	46.0	44.0	43.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

				Energy Average Leq		24-Hour
Project Name:	AutoNation	*JN:*	9831	*Day*	*Night*	*CNEL*
Location:	L5 - Located adjacent to an existing 8-foot high wall for the Bayshore residential community south of the Project site.	*Analyst:*	A. Wolfe	77.7	72.3	80.5
		Date:	6/8/2016			

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	75.6	87.5	48.5	83.0	82.0	81.0	80.0	76.0	72.0	59.0	56.0	52.0
	Max	79.3	105.2	57.5	85.0	84.0	83.0	82.0	80.0	78.0	69.0	66.0	63.0
Energy Average:		77.7	Average:		83.7	82.7	81.7	80.8	78.3	75.3	66.7	63.5	58.1
Night	Min	64.5	84.8	42.9	78.0	76.0	70.0	66.0	52.0	47.0	43.0	43.0	43.0
	Max	77.7	97.4	50.2	85.0	84.0	83.0	82.0	79.0	74.0	58.0	55.0	52.0
Energy Average:		72.3	Average:		81.1	79.4	76.6	74.1	65.6	58.0	48.3	47.1	45.9
Hourly Summary													
Night	0	69.5	90.2	44.2	80.0	79.0	77.0	74.0	66.0	56.0	46.0	45.0	44.0
	1	68.7	88.6	43.4	80.0	78.0	75.0	73.0	63.0	53.0	45.0	44.0	44.0
	2	65.4	86.0	42.9	79.0	76.0	71.0	68.0	56.0	48.0	43.0	43.0	43.0
	3	64.5	84.8	42.9	78.0	76.0	70.0	66.0	52.0	47.0	44.0	44.0	43.0
	4	66.8	87.5	43.5	79.0	78.0	74.0	70.0	57.0	50.0	45.0	44.0	44.0
	5	73.0	91.4	45.7	83.0	81.0	80.0	78.0	72.0	63.0	50.0	49.0	47.0
	6	77.7	91.2	50.2	85.0	84.0	83.0	82.0	79.0	74.0	58.0	55.0	52.0
Day	7	79.0	88.9	55.4	84.0	84.0	83.0	82.0	80.0	78.0	67.0	64.0	60.0
	8	78.4	96.5	56.4	84.0	83.0	82.0	81.0	79.0	76.0	68.0	66.0	61.0
	9	78.6	99.2	53.8	84.0	83.0	82.0	82.0	79.0	76.0	68.0	64.0	58.0
	10	79.3	105.2	57.5	84.0	83.0	82.0	81.0	79.0	76.0	69.0	66.0	61.0
	11	77.5	93.3	55.8	83.0	83.0	81.0	81.0	78.0	76.0	69.0	66.0	61.0
	12	77.3	90.4	55.8	83.0	82.0	81.0	80.0	78.0	75.0	69.0	66.0	60.0
	13	77.3	89.7	54.5	83.0	82.0	81.0	80.0	78.0	76.0	69.0	66.0	60.0
	14	77.1	91.4	53.9	83.0	82.0	81.0	80.0	78.0	75.0	67.0	63.0	57.0
	15	77.9	96.1	53.1	84.0	83.0	82.0	81.0	79.0	76.0	68.0	64.0	57.0
	16	77.4	87.5	51.4	84.0	83.0	82.0	81.0	78.0	75.0	68.0	65.0	55.0
	17	78.0	94.3	57.2	84.0	83.0	82.0	81.0	79.0	76.0	68.0	66.0	63.0
	18	77.9	96.9	57.2	85.0	83.0	82.0	81.0	79.0	76.0	68.0	64.0	60.0
	19	76.9	90.1	48.7	84.0	83.0	82.0	81.0	78.0	74.0	63.0	59.0	52.0
	20	76.2	91.3	50.6	83.0	82.0	81.0	80.0	77.0	73.0	61.0	57.0	54.0
	21	75.6	88.9	48.5	83.0	82.0	81.0	80.0	76.0	72.0	59.0	56.0	52.0
Night	22	74.1	91.5	48.0	83.0	82.0	80.0	79.0	74.0	68.0	55.0	52.0	50.0
	23	73.4	97.4	45.3	83.0	81.0	79.0	77.0	71.0	63.0	49.0	48.0	46.0

URBAN CROSSROADS

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project | Project Name: AutoNation
Road Name: Newport Bl. | Job Number: 9831
Road Segment: n/o West Coast Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	980	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.04	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-19.28	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.23	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	62.8	61.1	55.0	63.6	64.2
Medium Trucks:	58.5	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	59.3	57.9	48.9	50.1	58.5	58.6
Vehicle Noise:	66.6	64.8	61.7	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	150	322
CNEL:	35	75	161	346

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project | Project Name: AutoNation
Road Name: Irvine Av. | Job Number: 9831
Road Segment: n/o 19th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,470	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.23	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-17.00	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.96	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.3	56.2	64.8	65.4
Medium Trucks:	59.9	58.4	52.1	50.5	59.0	59.2
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	67.9	66.2	62.9	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	324
CNEL:	35	75	161	347

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project | Project Name: AutoNation
Road Name: Dover Dr. | Job Number: 9831
Road Segment: n/o Westcliff Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	470	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	28.0	feet
Centerline Dist. to Observer:	28.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.23	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.47	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.42	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	60.4	59.0	50.0	51.2	59.6	59.7
Vehicle Noise:	67.6	65.9	62.7	58.0	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	77	166
CNEL:	18	38	82	178

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project | Project Name: AutoNation
Road Name: Dover Dr. | Job Number: 9831
Road Segment: s/o Westcliff Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,180	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.23	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.47	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.43	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.2	58.7	52.3	50.8	59.2	59.5
Heavy Trucks:	61.0	59.6	50.6	51.8	60.2	60.3
Vehicle Noise:	68.3	66.5	63.4	58.7	67.2	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	340
CNEL:	36	79	169	364

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,340 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.68	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.92	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.87	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	65.1	63.3	57.2	65.9	66.5
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	68.8	67.1	63.9	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	172	370
CNEL:	40	85	184	397

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,630 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.70	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.94	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.89	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	71.0	69.2	66.2	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	294	633
CNEL:	68	147	316	681

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,050 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.61	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.85	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.80	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	60.9	59.4	53.0	51.5	59.9	60.2
Heavy Trucks:	60.9	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	69.1	67.3	64.3	59.5	68.0	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	219	472
CNEL:	51	109	236	508

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,020 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.77	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-18.01	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.97	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	56.9	55.4	49.1	47.5	56.0	56.2
Heavy Trucks:	58.8	57.4	48.3	49.6	58.0	58.1
Vehicle Noise:	64.9	63.2	59.8	55.4	63.9	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	205
CNEL:	22	47	102	219

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	850 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.57	0.38	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	75.75	-18.80	0.41	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-22.76	0.41	-1.20	*-5.41*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	56.2	54.6	48.3	46.7	55.2	55.4
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	64.2	62.4	59.0	54.6	63.1	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	181
CNEL:	19	42	90	194

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,330 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.71	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-17.95	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-21.91	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.4	56.3	64.9	65.6
Medium Trucks:	59.8	58.3	51.9	50.4	58.9	59.1
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	67.9	66.1	63.0	58.3	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	85	183	395
CNEL:	42	91	197	424

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,600 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.71	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-14.53	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.48	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	236	509
CNEL:	55	117	253	545

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,580 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.68	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-14.56	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.52	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	69.5	67.8	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	507
CNEL:	54	117	252	543

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,230 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	72.0 feet
Centerline Dist. to Observer:	72.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.65	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	77.72	-13.59	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.54	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	63.7	62.3	53.2	54.5	62.8	63.0
Vehicle Noise:	70.4	68.7	65.4	60.8	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	141	303	653
CNEL:	70	151	325	699

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,860 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	72.0 feet
Centerline Dist. to Observer:	72.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.16	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	81.00	-15.08	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.04	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	66.9	60.8	69.5	70.1
Medium Trucks:	64.1	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	64.6	63.1	54.1	55.4	63.7	63.8
Vehicle Noise:	72.3	70.5	67.5	62.7	71.2	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	404	870
CNEL:	93	201	434	935

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,050 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.71	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-16.53	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.49	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	70.9	69.2	66.1	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	135	292	628
CNEL:	67	145	313	675

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.68	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.92	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.87	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.4	59.9	53.5	52.0	60.5	60.7
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.5	67.8	64.7	59.9	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	236	508
CNEL:	55	118	253	546

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project | Project Name: AutoNation
Road Name: East Coast Hwy. | Job Number: 9831
Road Segment: e/o MacArthur Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,550 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.04	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-16.19	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-20.15	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	62.6	60.9	54.8	63.4	64.0
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	66.8	65.0	61.6	57.2	65.7	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	126	271
CNEL:	29	62	134	289

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project | Project Name: AutoNation
Road Name: Newport Bl. | Job Number: 9831
Road Segment: n/o West Coast Hwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	990 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.99	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-19.23	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.19	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.4	58.0	48.9	50.2	58.5	58.7
Vehicle Noise:	66.6	64.9	61.7	57.0	65.6	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	151	325
CNEL:	35	75	162	348

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project | Project Name: AutoNation
Road Name: Irvine Av. | Job Number: 9831
Road Segment: n/o 19th St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,470 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.23	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-17.00	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.96	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.3	56.2	64.8	65.4
Medium Trucks:	59.9	58.4	52.1	50.5	59.0	59.2
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	67.9	66.2	62.9	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	324
CNEL:	35	75	161	347

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project | Project Name: AutoNation
Road Name: Dover Dr. | Job Number: 9831
Road Segment: n/o Westcliff Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	470 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	28.0 feet
Centerline Dist. to Observer:	28.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.23	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.47	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.42	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	60.4	59.0	50.0	51.2	59.6	59.7
Vehicle Noise:	67.6	65.9	62.7	58.0	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	77	166
CNEL:	18	38	82	178

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Dover Dr.
Road Segment: s/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,190 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.20	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.43	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.39	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.8	56.7	65.4	66.0
Medium Trucks:	60.2	58.7	52.4	50.8	59.3	59.5
Heavy Trucks:	61.1	59.6	50.6	51.9	60.2	60.3
Vehicle Noise:	68.3	66.5	63.4	58.7	67.3	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	159	342
CNEL:	37	79	170	366

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,340 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.68	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.92	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.87	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	65.1	63.3	57.2	65.9	66.5
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	68.8	67.1	63.9	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	172	370
CNEL:	40	85	184	397

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,640 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.67	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.91	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.87	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	62.8	61.3	54.9	53.4	61.9	62.1
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	71.0	69.2	66.3	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	635
CNEL:	68	147	317	683

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,060 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.57	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.81	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.76	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	60.9	59.4	53.0	51.5	60.0	60.2
Heavy Trucks:	60.9	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	69.1	67.3	64.4	59.5	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	475
CNEL:	51	110	237	511

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,020	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.77	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-18.01	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.97	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	56.9	55.4	49.1	47.5	56.0	56.2
Heavy Trucks:	58.8	57.4	48.3	49.6	58.0	58.1
Vehicle Noise:	64.9	63.2	59.8	55.4	63.9	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	205
CNEL:	22	47	102	219

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	850	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.57	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-18.80	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-22.76	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	56.2	54.6	48.3	46.7	55.2	55.4
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	64.2	62.4	59.0	54.6	63.1	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	181
CNEL:	19	42	90	194

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,340	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.68	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-17.92	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.87	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	64.2	62.4	56.4	65.0	65.6
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.7	59.3	50.2	51.5	59.8	60.0
Vehicle Noise:	67.9	66.2	63.0	58.3	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	184	397
CNEL:	43	92	198	426

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,600	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.71	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.53	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.48	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	236	509
CNEL:	55	117	253	545

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,590	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	2.69	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-14.54	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.50	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	51	109	236	508
CNEL:	54	117	252	544

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,240	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	3.67	-0.59	-1.20	*-4.72*	0.000	0.000
Medium Trucks:	77.72	-13.57	-0.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-17.53	-0.57	-1.20	*-5.26*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	62.4	60.9	54.5	53.0	61.4	61.6
Heavy Trucks:	63.7	62.3	53.2	54.5	62.8	63.0
Vehicle Noise:	70.4	68.7	65.4	60.8	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	65	141	304	654
CNEL:	70	151	325	701

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,880	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	2.19	-0.59	-1.20	*-4.72*	0.000	0.000
Medium Trucks:	81.00	-15.05	-0.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-19.01	-0.57	-1.20	*-5.26*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.6	68.7	66.9	60.9	69.5	70.1
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	64.6	63.2	54.1	55.4	63.7	63.9
Vehicle Noise:	72.3	70.5	67.5	62.7	71.3	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	87	188	406	874
CNEL:	94	202	436	939

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,050	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.71	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-16.53	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-20.49	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	70.9	69.2	66.1	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	63	135	292	628
CNEL:	67	145	313	675

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.65	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.89	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.84	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.1	66.8	67.4
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	61.9	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.6	67.8	64.8	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	237	510
CNEL:	55	118	254	548

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: East Coast Hwy.
Road Segment: e/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,550	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.04	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-16.19	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-20.15	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	62.6	60.9	54.8	63.4	64.0
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	66.8	65.0	61.6	57.2	65.7	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	126	271
CNEL:	29	62	134	289

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Newport Bl.
Road Segment: n/o West Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,060	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.70	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-18.94	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-22.89	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	58.8	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	59.7	58.3	49.2	50.5	58.8	59.0
Vehicle Noise:	66.9	65.2	62.0	57.3	65.9	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	340
CNEL:	36	79	169	364

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Irvine Av.
Road Segment: n/o 19th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,540	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.44	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-16.80	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.76	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	64.2	62.5	56.4	65.0	65.6
Medium Trucks:	60.1	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.4	60.0	51.0	52.2	60.6	60.7
Vehicle Noise:	68.1	66.4	63.1	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	72	155	334
CNEL:	36	77	166	358

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Dover Dr.
Road Segment: n/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	490 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	28.0 feet
Centerline Dist. to Observer:	28.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.05	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.29	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.24	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.3	56.2	64.8	65.4
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.6	59.2	50.1	51.4	59.7	59.9
Vehicle Noise:	67.8	66.0	62.9	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	85	183

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Dover Dr.
Road Segment: s/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,230 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.05	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.29	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.25	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	60.4	58.9	52.5	51.0	59.4	59.6
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	68.4	66.7	63.5	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	81	174	375

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,420 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.43	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.67	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.62	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	61.0	59.5	53.1	51.6	60.0	60.3
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.1	67.3	64.2	59.5	68.0	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	83	178	384
CNEL:	41	89	191	412

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,780 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.32	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.56	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.51	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.0	68.7	69.3
Medium Trucks:	63.2	61.7	55.3	53.8	62.2	62.4
Heavy Trucks:	63.2	61.8	52.7	54.0	62.3	62.5
Vehicle Noise:	71.3	69.6	66.6	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	311	671
CNEL:	72	155	335	722

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,090	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.45	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.69	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.64	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.0	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	61.1	59.6	50.6	51.9	60.2	60.3
Vehicle Noise:	69.2	67.5	64.5	59.6	68.2	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	225	484
CNEL:	52	112	242	520

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,070	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.57	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-17.80	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.76	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.9	61.0	59.3	53.2	61.8	62.4
Medium Trucks:	57.2	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	59.0	57.6	48.6	49.8	58.2	58.3
Vehicle Noise:	65.2	63.4	60.0	55.6	64.1	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	211
CNEL:	23	49	105	226

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	910	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.27	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-18.51	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-22.46	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	56.5	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	58.3	56.9	47.9	49.1	57.5	57.6
Vehicle Noise:	64.4	62.7	59.3	54.9	63.4	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	190
CNEL:	20	44	94	203

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,480	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.25	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-17.49	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.44	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.6
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	68.4	66.6	63.5	58.8	67.3	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	91	197	424
CNEL:	46	98	211	455

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,740	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.94	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.30	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.26	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.7	67.3
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	63.1	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.8	68.0	64.8	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	245	527
CNEL:	56	122	262	565

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,820	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.06	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.18	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.13	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	61.9	60.4	54.0	52.4	60.9	61.1
Heavy Trucks:	63.2	61.8	52.7	54.0	62.3	62.5
Vehicle Noise:	69.9	68.2	64.9	60.3	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	538
CNEL:	58	124	267	576

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,520	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.03	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	77.72	-13.21	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.17	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.1	59.0	67.6	68.3
Medium Trucks:	62.7	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	64.1	62.6	53.6	54.8	63.2	63.3
Vehicle Noise:	70.8	69.0	65.7	61.2	69.7	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	321	691
CNEL:	74	160	344	740

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,080	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.48	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	81.00	-14.76	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.72	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

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

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	197	424	914
CNEL:	98	212	456	982

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,200	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.02	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-16.22	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.18	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.9	59.8	68.4	69.0
Medium Trucks:	63.1	61.6	55.2	53.7	62.1	62.4
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	71.2	69.5	66.4	61.6	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	658
CNEL:	71	152	328	707

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,570	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.45	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.69	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.64	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	62.1	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	69.8	68.0	65.0	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	526
CNEL:	56	122	262	565

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: e/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,610	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.21	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-16.03	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-19.99	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	58.9	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	60.8	59.4	50.3	51.6	59.9	60.1
Vehicle Noise:	66.9	65.2	61.8	57.4	65.9	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	129	278
CNEL:	30	64	138	297

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Newport Bl.
Road Segment: n/o West Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,070	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.66	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-18.90	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-22.85	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.2
Heavy Trucks:	59.7	58.3	49.3	50.5	58.9	59.0
Vehicle Noise:	66.9	65.2	62.0	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	159	342
CNEL:	37	79	170	367

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Irvine Av.
Road Segment: n/o 19th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,550 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.46	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-16.77	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.73	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	60.2	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.5	60.0	51.0	52.3	60.6	60.7
Vehicle Noise:	68.2	66.4	63.2	58.6	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	72	156	336
CNEL:	36	77	167	360

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Dover Dr.
Road Segment: n/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	28.0 feet
Centerline Dist. to Observer:	28.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.96	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.20	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.16	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.7	59.3	50.2	51.5	59.8	60.0
Vehicle Noise:	67.9	66.1	63.0	58.3	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	173
CNEL:	19	40	86	185

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Dover Dr.
Road Segment: s/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,230 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.05	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.29	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.25	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	60.4	58.9	52.5	51.0	59.4	59.6
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	68.4	66.7	63.5	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	81	174	375

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,420 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.43	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.67	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.62	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	61.0	59.5	53.1	51.6	60.0	60.3
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.1	67.3	64.2	59.5	68.0	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	83	178	384
CNEL:	41	89	191	412

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,790	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.29	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.53	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.49	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	63.2	61.7	55.3	53.8	62.2	62.5
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	71.4	69.6	66.6	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	673
CNEL:	72	156	336	724

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,090	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.45	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.69	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.64	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.0	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	61.1	59.6	50.6	51.9	60.2	60.3
Vehicle Noise:	69.2	67.5	64.5	59.6	68.2	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	225	484
CNEL:	52	112	242	520

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,070	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.57	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-17.80	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.76	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.9	61.0	59.3	53.2	61.8	62.4
Medium Trucks:	57.2	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	59.0	57.6	48.6	49.8	58.2	58.3
Vehicle Noise:	65.2	63.4	60.0	55.6	64.1	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	211
CNEL:	23	49	105	226

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	910	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-1.27	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-18.51	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-22.46	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	56.5	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	58.3	56.9	47.9	49.1	57.5	57.6
Vehicle Noise:	64.4	62.7	59.3	54.9	63.4	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	190
CNEL:	20	44	94	203

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,490	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.22	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-17.46	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.41	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.9	56.8	65.4	66.0
Medium Trucks:	60.3	58.8	52.4	50.9	59.4	59.6
Heavy Trucks:	61.2	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	68.4	66.6	63.5	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	92	198	426
CNEL:	46	99	212	457

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,740	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.94	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.30	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.26	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.7	67.3
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	63.1	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.8	68.0	64.8	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	245	527
CNEL:	56	122	262	565

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,830	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.08	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.16	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.12	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	63.2	61.8	52.7	54.0	62.3	62.5
Vehicle Noise:	69.9	68.2	64.9	60.3	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	539
CNEL:	58	124	268	577

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,540	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.05	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	77.72	-13.19	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.14	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.8	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.3
Vehicle Noise:	70.8	69.1	65.8	61.2	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	150	322	694
CNEL:	74	160	345	743

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,090	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.49	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	81.00	-14.75	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.70	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.9	69.0	67.2	61.2	69.8	70.4
Medium Trucks:	64.5	63.0	56.6	55.1	63.5	63.8
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.6	70.8	67.8	63.0	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	197	425	916
CNEL:	98	212	457	984

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,220	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.05	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-16.18	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.14	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.8	68.5	69.1
Medium Trucks:	63.1	61.6	55.3	53.7	62.2	62.4
Heavy Trucks:	63.6	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	71.3	69.5	66.5	61.7	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	143	307	662
CNEL:	71	153	330	712

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,570	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.45	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.69	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.64	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	62.1	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	69.8	68.0	65.0	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	526
CNEL:	56	122	262	565

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: TPO 2019 With Project
Road Name: East Coast Hwy.
Road Segment: e/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,620	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.24	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-16.00	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-19.96	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	62.8	61.1	55.0	63.6	64.2
Medium Trucks:	59.0	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	67.0	65.2	61.8	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	129	279
CNEL:	30	64	138	298

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Newport Bl.
Road Segment: n/o West Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,070 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.66	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-18.90	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-22.85	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.2
Heavy Trucks:	59.7	58.3	49.3	50.5	58.9	59.0
Vehicle Noise:	66.9	65.2	62.0	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	159	342
CNEL:	37	79	170	367

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Irvine Av.
Road Segment: n/o 19th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,540 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.44	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-16.80	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.76	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	64.2	62.5	56.4	65.0	65.6
Medium Trucks:	60.1	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.4	60.0	51.0	52.2	60.6	60.7
Vehicle Noise:	68.1	66.4	63.1	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	72	155	334
CNEL:	36	77	166	358

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Dover Dr.
Road Segment: n/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	490 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	28.0 feet
Centerline Dist. to Observer:	28.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-5.05	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.29	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.24	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.3	56.2	64.8	65.4
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.6	59.2	50.1	51.4	59.7	59.9
Vehicle Noise:	67.8	66.0	62.9	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	85	183

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Dover Dr.
Road Segment: s/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,260 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.95	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.19	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.14	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	61.3	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.5	66.8	63.6	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	165	355
CNEL:	38	82	177	381

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,440 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.37	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.61	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.56	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.1	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	69.1	67.4	64.2	59.5	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	180	388
CNEL:	42	90	193	416

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,940 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.06	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.18	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.14	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.5	60.4	69.0	69.6
Medium Trucks:	63.5	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	63.6	62.2	53.1	54.4	62.7	62.8
Vehicle Noise:	71.7	70.0	67.0	62.1	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	153	330	711
CNEL:	76	165	355	764

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,210 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.99	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.23	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.19	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	61.5	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	69.7	67.9	64.9	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	241	519
CNEL:	56	120	259	558

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,180 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.14	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-17.38	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.33	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.3	61.4	59.7	53.6	62.2	62.9
Medium Trucks:	57.6	56.1	49.7	48.2	56.6	56.9
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	65.6	63.9	60.4	56.0	64.6	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	226
CNEL:	24	52	112	241

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,020	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	52.0	feet
Centerline Dist. to Observer:	52.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.77	0.38	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	75.75	-18.01	0.41	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-21.97	0.41	-1.20	*-5.41*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	56.9	55.4	49.1	47.5	56.0	56.2
Heavy Trucks:	58.8	57.4	48.3	49.6	58.0	58.1
Vehicle Noise:	64.9	63.2	59.8	55.4	63.9	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	205
CNEL:	22	47	102	219

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,690	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.33	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-16.91	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.87	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	60.9	59.3	53.0	51.4	59.9	60.1
Heavy Trucks:	61.7	60.3	51.2	52.5	60.9	61.0
Vehicle Noise:	68.9	67.2	64.0	59.4	67.9	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	215	464
CNEL:	50	107	231	497

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,920	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.21	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-14.02	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-17.98	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	63.3	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.0	68.3	65.0	60.5	69.0	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	255	550
CNEL:	59	127	273	589

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,980	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.30	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-13.94	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-17.89	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	70.1	68.4	65.1	60.6	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	558
CNEL:	60	129	277	597

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,710	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.25	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	77.72	-12.98	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-16.94	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	63.0	61.5	55.1	53.5	62.0	62.2
Heavy Trucks:	64.3	62.9	53.8	55.1	63.4	63.6
Vehicle Noise:	71.0	69.3	66.0	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	154	332	716
CNEL:	77	165	356	767

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,260	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.72	-0.59	-1.20	-4.72	0.000	0.000
Medium Trucks:	81.00	-14.51	-0.57	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.47	-0.57	-1.20	-5.26	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.1	69.2	67.5	61.4	70.0	70.6
Medium Trucks:	64.7	63.2	56.8	55.3	63.8	64.0
Heavy Trucks:	65.1	63.7	54.7	55.9	64.3	64.4
Vehicle Noise:	72.8	71.1	68.0	63.3	71.8	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	205	441	949
CNEL:	102	220	473	1,020

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,450	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.48	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-15.76	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.71	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.8
Heavy Trucks:	64.0	62.6	53.5	54.8	63.1	63.3
Vehicle Noise:	71.7	69.9	66.9	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	152	328	707
CNEL:	76	164	353	760

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,920	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.42	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-16.81	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.77	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.3	59.2	67.8	68.4
Medium Trucks:	62.5	61.0	54.6	53.1	61.6	61.8
Heavy Trucks:	62.9	61.5	52.5	53.7	62.1	62.2
Vehicle Noise:	70.6	68.9	65.8	61.0	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	279	601
CNEL:	65	139	300	646

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 Without Project
Road Name: East Coast Hwy.
Road Segment: e/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,940 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	2.02	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-15.22	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-19.18	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	67.7	66.0	62.6	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	146	314
CNEL:	34	72	156	336

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Newport Bl.
Road Segment: n/o West Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,080 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.62	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-18.86	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-22.81	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.5	55.4	64.0	64.7
Medium Trucks:	58.9	57.4	51.0	49.5	58.0	58.2
Heavy Trucks:	59.8	58.3	49.3	50.6	58.9	59.0
Vehicle Noise:	67.0	65.2	62.1	57.4	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	160	344
CNEL:	37	79	171	369

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Irvine Av.
Road Segment: n/o 19th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,550 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.46	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	77.72	-16.77	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.73	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	60.2	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.5	60.0	51.0	52.3	60.6	60.7
Vehicle Noise:	68.2	66.4	63.2	58.6	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	72	156	336
CNEL:	36	77	167	360

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Dover Dr.
Road Segment: n/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	28.0 feet
Centerline Dist. to Observer:	28.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	27.803
Medium Trucks:	27.483
Heavy Trucks:	27.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.96	3.72	-1.20	-4.46	0.000	0.000
Medium Trucks:	79.45	-22.20	3.80	-1.20	-4.86	0.000	0.000
Heavy Trucks:	84.25	-26.16	3.79	-1.20	-5.83	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.7	59.3	50.2	51.5	59.8	60.0
Vehicle Noise:	67.9	66.1	63.0	58.3	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	173
CNEL:	19	40	86	185

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Dover Dr.
Road Segment: s/o Westcliff Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,260 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.95	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-18.19	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.14	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	61.3	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.5	66.8	63.6	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	165	355
CNEL:	38	82	177	381

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Dover Dr.
Road Segment: s/o 16th St.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,450 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.34	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.58	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.53	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.1	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	69.1	67.4	64.3	59.6	68.1	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	181	390
CNEL:	42	90	194	418

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Jamboree Rd.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,950 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.08	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-17.16	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.12	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.4	69.1	69.7
Medium Trucks:	63.6	62.1	55.7	54.1	62.6	62.8
Heavy Trucks:	63.6	62.2	53.1	54.4	62.7	62.9
Vehicle Noise:	71.7	70.0	67.0	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	154	331	713
CNEL:	77	165	356	767

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: MacArthur Bl.
Road Segment: n/o East Coast Hwy.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,220 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.96	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	82.40	-19.20	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.15	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	61.5	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	61.6	60.1	51.1	52.4	60.7	60.8
Vehicle Noise:	69.7	67.9	65.0	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	242	522
CNEL:	56	121	260	561

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: 17th St.
Road Segment: w/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,180 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.14	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-17.38	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.33	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.3	61.4	59.7	53.6	62.2	62.9
Medium Trucks:	57.6	56.1	49.7	48.2	56.6	56.9
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	65.6	63.9	60.4	56.0	64.6	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	226
CNEL:	24	52	112	241

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: Westcliff Dr.
Road Segment: e/o Irvine Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-0.73	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-17.97	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-21.93	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	60.9	59.1	53.0	61.7	62.3
Medium Trucks:	57.0	55.5	49.1	47.6	56.0	56.3
Heavy Trucks:	58.8	57.4	48.4	49.6	58.0	58.1
Vehicle Noise:	65.0	63.3	59.8	55.4	64.0	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	44	96	206
CNEL:	22	47	102	220

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: West Coast Hwy.
Road Segment: w/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,690 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.33	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.91	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.87	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	60.9	59.3	53.0	51.4	59.9	60.1
Heavy Trucks:	61.7	60.3	51.2	52.5	60.9	61.0
Vehicle Noise:	68.9	67.2	64.0	59.4	67.9	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	215	464
CNEL:	50	107	231	497

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Newport Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,920 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.21	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	77.72	-14.02	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.98	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	63.3	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.0	68.3	65.0	60.5	69.0	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	255	550
CNEL:	59	127	273	589

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Tustin Av.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,990	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.32	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	77.72	-13.92	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-17.88	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	62.1	60.6	54.2	52.7	61.2	61.4
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	70.1	68.4	65.1	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	60	129	278	599

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Dover Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,720	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.27	-0.59	-1.20	*-4.72*	0.000	0.000
Medium Trucks:	77.72	-12.97	-0.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-16.93	-0.57	-1.20	*-5.26*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.2
Heavy Trucks:	64.3	62.9	53.8	55.1	63.4	63.6
Vehicle Noise:	71.0	69.3	66.0	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	333	717
CNEL:	77	165	357	768

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: West Coast Hwy.
Road Segment: e/o Bayside Dr.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,280	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	72.0	feet
Centerline Dist. to Observer:	72.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.75	-0.59	-1.20	*-4.72*	0.000	0.000
Medium Trucks:	81.00	-14.49	-0.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.44	-0.57	-1.20	*-5.26*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	65.2	63.7	54.7	56.0	64.3	64.4
Vehicle Noise:	72.9	71.1	68.1	63.3	71.8	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	205	442	953
CNEL:	102	221	475	1,024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: East Coast Hwy.
Road Segment: e/o Jamboree Rd.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,460	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.50	-0.50	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-15.74	-0.48	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-19.69	-0.48	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	64.0	62.6	53.5	54.8	63.1	63.3
Vehicle Noise:	71.7	70.0	66.9	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	153	329	709
CNEL:	76	164	354	762

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: East Coast Hwy.
Road Segment: w/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,940 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	53.151
Medium Trucks:	52.984
Heavy Trucks:	53.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.47	-0.50	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-16.77	-0.48	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.72	-0.48	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	62.6	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	63.0	61.5	52.5	53.8	62.1	62.2
Vehicle Noise:	70.7	68.9	65.9	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	130	281	606
CNEL:	65	140	302	651

Wednesday, June 08, 2016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Cumulative 2019 With Project
Road Name: East Coast Hwy.
Road Segment: e/o MacArthur Bl.
Project Name: AutoNation
Job Number: 9831

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,950 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.400
Medium Trucks:	46.209
Heavy Trucks:	46.228

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	2.04	0.38	-1.20	-4.66	0.000	0.000
Medium Trucks:	75.75	-15.20	0.41	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-19.15	0.41	-1.20	-5.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	59.8	58.3	51.9	50.3	58.8	59.0
Heavy Trucks:	61.6	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	67.8	66.0	62.6	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	146	316
CNEL:	34	73	156	337

Wednesday, June 08, 2016

APPENDIX 9.1:

CADNAA NOISE MODEL DATA

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09831 - AutoNation

CadnaA Noise Prediction Model
09831-23 post review.cna
Date:
14.06.16
Analyst:
A.Wolfe

Receiver Noise Levels

Name	Level Lr	Height
	Day	
	(dBA)	(m)
R1	52.2	1.52
R2	57.5	1.52
R3	58.0	1.52
R4	51.8	1.52
R5	49.4	1.52
R6	55.6	1.52
R7	50.4	1.52
R8	45.6	1.52

Point Source(s)

Name	Lw / Li		Operating Time	Freq.	Height
	Type	Value	Day		
			(min)	(Hz)	(m)
Service Bay 01	Lw	103.6	750.00	500	2.44
Service Bay 02	Lw	103.6	750.00	500	2.44
Service Bay 03	Lw	103.6	750.00	500	2.44
Service Bay 04	Lw	103.6	750.00	500	2.44
Service Bay 05	Lw	103.6	750.00	500	2.44
Service Bay 06	Lw	103.6	750.00	500	2.44
Service Bay 07	Lw	103.6	750.00	500	2.44
Service Bay 08	Lw	103.6	750.00	500	2.44
Service Bay 09	Lw	103.6	750.00	500	2.44
Service Bay 10	Lw	103.6	750.00	500	2.44
Service Bay 11	Lw	103.6	750.00	500	2.44
Pressure Washing	Lw	97.2	375.00	500	1.52
Pressure Washing	Lw	97.2	375.00	500	1.52
Car Horn	Lw	107.3	375.00	500	1.22
Car Horn	Lw	107.3	375.00	500	1.22
Car Alarm	Lw	114.2	63.00	500	1.22
Car Alarm	Lw	114.2	63.00	500	1.22

Vertical Area Source(s)

Name	Lw / Li		Operating Time	Freq.
	Type	Value	Day	
			(min)	(Hz)
High Speed Roll-Up Door	Lw	78.5	375.00	500
Roll-Up Door 1	Lw	78.5	375.00	500
Roll-Up Door 2	Lw	78.5	375.00	500
Roll-Up Door 3	Lw	78.5	375.00	500
Roll-Up Door 4	Lw	78.5	375.00	500
Louver Auto Lift West 1	Li	101	488.00	500
Louver Auto Lift East 1	Li	101	488.00	500
Louver Mech Room 1 East 1	Li	101	488.00	500
Louver Mech Room 1 West 1	Li	101	488.00	500
Louver Mech Room 1 West 2	Li	101	488.00	500
Louver Mech Room 1 East 2	Li	101	488.00	500
Louver Mech Room 2 South 1	Li	101	488.00	500
Louver Mech Room 2 South 1	Li	101	488.00	500
Louver Mech Room 3 West 1	Li	101	488.00	500
Louver Mech Room 3 East 1	Li	101	488.00	500
Louver Mech Room 3 South 1	Li	101	488.00	500
Louver HVAC Room East 1	Li	101	488.00	500
Louver HVAC Room South 1	Li	101	488.00	500

Area Source(s)

Name	Lw / Li		Operating Time	Freq.
	Type	Value	Day	
			(min)	(Hz)
Service Entrance	Lw	95.5	750.00	500
Car Transport Deliveries	Lw	112.4	250.00	500
Employee Parking 1	Lw	95.5	750.00	500

Name	Lw / Li		Operating Time	Freq.
	Type	Value	Day	
			(min)	(Hz)
Employee Parking 2	Lw	95.5	750.00	500
Employee Parking 3	Lw	95.5	750.00	500
Service Parking 3	Lw	95.5	750.00	500
Inventory Parking 1	Lw	95.5	750.00	500
Employee & Inventory Parking 1	Lw	95.5	750.00	500
Employee & Inventory Parking 2	Lw	95.5	750.00	500
Service Parking 4	Lw	95.5	750.00	500
Service Parking 1	Lw	95.5	750.00	500
Customer Parking Area	Lw	95.5	750.00	500
Service Parking 2	Lw	95.5	750.00	500
Employee Parking 4	Lw	95.5	750.00	500

Source			Partial Level Day							
Name	M.	ID	R1	R2	R3	R4	R5	R6	R7	R8
Service Bay 01		Service Bay 1	38.6	33.2	24.5	26.9	29.9	34.5	28.1	24.3
Service Bay 02		Service Bay 1	38.4	33.6	36.2	25.2	30.5	34.6	28.3	24.1
Service Bay 03		Service Bay 1	38.0	33.5	35.5	25.6	30.6	34.6	28.5	23.6
Service Bay 04		Service Bay 1	37.4	44.1	34.2	23.9	30.5	34.5	26.4	22.3
Service Bay 05		Service Bay 1	37.2	37.7	25.0	21.7	30.4	34.5	25.5	20.2
Service Bay 06		Service Bay 1	39.5	34.0	23.9	20.7	30.2	34.4	24.0	20.0
Service Bay 07		Service Bay 1	34.1	35.8	26.2	25.8	22.8	29.6	26.3	21.1
Service Bay 08		Service Bay 1	34.1	37.2	26.8	23.0	23.1	29.3	27.5	21.6
Service Bay 09		Service Bay 1	31.4	49.7	32.8	34.7	22.6	32.6	32.9	27.6
Service Bay 10		Service Bay 1	39.5	49.2	35.2	37.2	23.3	37.0	31.4	27.8
Service Bay 11		Service Bay 1	38.9	33.2	26.3	27.2	24.4	34.5	28.1	26.8
Pressure Washing		Pressure Washing	28.0	22.4	17.6	18.3	31.8	24.7	13.3	9.5
Pressure Washing		Pressure Washing	27.1	23.4	20.5	18.4	31.6	38.6	28.4	24.2
Car Horn		Car Horn	33.4	40.9	38.3	39.9	23.1	29.2	27.9	27.7
Car Horn		Car Horn	43.7	50.1	46.4	45.8	25.3	29.9	35.7	23.4
Car Alarm		Car Alarm	31.0	44.3	42.7	32.7	38.3	36.8	36.0	31.7
Car Alarm		Car Alarm	32.4	39.2	34.0	31.2	30.7	42.0	46.0	36.7
Service Entrance		Service Entrance	34.0	35.5	31.1	25.5	21.9	26.4	23.0	18.7
Car Transport Deliveries		Car Transport Deliverie	42.3	37.2	33.6	34.2	47.6	54.2	44.9	41.4
Employee Parking 1		EmployeeParking1	35.5	38.1	34.0	32.0	32.5	39.2	29.1	25.7
Employee Parking 2		EmployeeParking2	39.6	37.3	33.7	32.9	31.6	36.3	30.1	28.3
Employee Parking 3		EmployeeParking3	38.5	42.4	39.5	34.1	30.7	36.6	33.0	28.2
Service Parking 3		Service \Parking3	38.7	44.0	45.0	39.4	20.5	26.9	27.6	19.8
Inventory Parking 1		Inventory Parking 1	27.8	40.2	39.1	29.4	31.0	31.6	30.9	25.3
Employee & Inventory Parking 1		Employee&InventoryPark1	26.7	39.3	48.0	38.1	25.2	32.1	30.7	29.1
Employee & Inventory Parking 2		Employee&InventoryPark2	34.5	45.1	53.6	42.9	17.8	24.9	27.6	24.3
Service Parking 4		ServiceParking4	27.7	36.8	38.6	35.8	28.8	32.0	30.5	26.0
Service Parking 1		ServiceParking1	30.1	36.3	29.1	28.9	28.6	33.5	29.6	27.3
Customer Parking Area		CustomerParkingArea	23.5	28.6	30.8	23.0	25.6	35.4	35.6	31.5
Service Parking 2		ServiceParking2	38.2	41.5	42.2	38.3	25.2	29.8	25.6	20.4
Employee Parking 4		EmployeeParking4	35.0	41.4	44.6	39.5	25.1	28.0	27.7	23.7
High Speed Roll-Up Door		High Speed Roll-Up Door	8.6	3.3	-3.2	-2.0	14.2	3.6	10.1	7.1
Roll-Up Door 1		Roll-Up Door 1	9.1	5.7	-7.3	-5.4	-3.3	9.3	-4.7	-8.4
Roll-Up Door 2		Roll-Up Door 2	24.9	19.3	7.5	10.2	1.3	21.6	15.1	11.5
Roll-Up Door 3		Roll-Up Door 3	6.9	22.7	1.9	-2.7	-0.6	8.4	6.8	0.1
Roll-Up Door 4		Roll-Up Door 4	15.1	19.8	16.9	16.9	10.7	16.5	16.0	8.8
Louver Auto Lift West 1		Louver_AutoLift_West1	23.8	19.0	11.1	9.8	22.6	19.8	13.2	8.3
Louver Auto Lift East 1		Louver_AutoLift_East1	39.0	34.9	25.1	29.0	16.1	38.4	33.1	30.8
Louver Mech Room 1 East 1		Louver_MechRoom1_East1	13.5	26.9	43.4	33.6	21.9	27.5	23.6	28.2
Louver Mech Room 1 West 1		Louver_MechRoom1_West 1	19.3	34.5	30.9	18.5	27.8	32.5	23.8	17.0
Louver Mech Room 1 West 2		Louver_MechRoom1_West2	27.6	38.7	32.3	25.4	28.1	32.8	25.5	17.5
Louver Mech Room 1 East 2		Louver_MechRoom1_East 2	19.8	28.8	46.0	39.4	22.0	20.3	25.2	29.5
Louver Mech Room 2 South 1		Louver_MechRoom2_S1	25.4	27.8	21.8	21.2	22.7	27.2	24.3	22.1
Louver Mech Room 2 South 1		Louver_MechRoom2_S1	24.8	35.5	23.4	23.5	23.8	27.3	25.3	22.4
Louver Mech Room 3 West 1		Louver_MechRoom3_W1	24.1	38.8	44.5	26.3	20.4	28.8	29.9	20.7
Louver Mech Room 3 East 1		Louver_MechRoom3_E1	21.5	34.0	34.1	38.3	19.0	28.0	28.7	30.1
Louver Mech Room 3 South 1		Louver_MechRoom3_S1	17.3	33.7	35.5	35.5	22.9	30.7	30.4	30.3
Louver HVAC Room East 1		Louver_HVACRoom_E1	21.9	35.3	41.4	32.8	17.7	25.7	25.6	25.8
Louver HVAC Room South 1		Louver_HVACRoom_S1	17.7	32.0	44.0	24.8	20.8	28.7	23.8	23.0

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