Noise and Vibration Background and Modeling Data

NOISE BACKGROUND

Terminology and Noise Descriptors

The following are brief definitions of noise terminology:

- **Sound.** A vibratory disturbance that, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise**. Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB)**. A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals (20 µPa).
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ($1x10^{-6}$ in/sec).
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels which approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (Leq); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.
- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."
- **Day-Night Level (L_{dn} or DNL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10 PM to 7 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7 PM to 10 PM and 10 dB added to the A-weighted sound levels occurring during the period from 10 PM to 7 AM. For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as being equivalent in this assessment.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.
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Characteristics of Sound

Sound is a pressure wave transmitted through the air. When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). The standard unit of measurement of the loudness of sound is the decibel (dB). The human hearing system is not equally sensitive to sound at all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Because of the physical characteristics of noise transmission and noise perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Typical human hearing can detect changes of approximately 3 dBA or greater under normal conditions. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A change of 5 dBA or greater is typically noticeable to most people in an exterior environment and a change of 10 dBA is perceived as a doubling (or halving) of the noise.

Table 1. Change in Sound Pressure Level, dB

Change in Apparent Loudness	
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen, Engineering Noise Control, 1988.

Point and Line Sources

Noise may be generated from a point source, such as a piece of construction equipment, or from a line source, such as a road containing moving vehicles. Because noise spreads in an ever-widening pattern, the given amount of noise striking an object, such as an eardrum, is reduced with distance from the source. This is known as "spreading loss." The typical spreading loss for point source noise is 6 dBA per doubling of the distance from the noise source.

A line source of noise, such as vehicles proceeding down a roadway, would also be reduced with distance, but the rate of reduction is affected by of both distance and the type of terrain over which the noise passes. Hard sites, such as developed areas with paving, reduce noise at a rate of 3 dBA per doubling of the distance while soft sites, such as undeveloped areas, open space and vegetated areas reduce noise at a rate of 4.5 dBA per doubling of the distance.[1] These represent the extremes and most areas would actually contain a combination of hard and soft elements with the noise reduction placed somewhere in between these two factors. Unfortunately, the only way to actually determine the absolute amount of attenuation that an area provides is through field measurement under operating conditions with subsequent noise level measurements conducted at varying distances from a constant noise source.

Objects that block the line of sight attenuate the noise source if the receptor is located within the "shadow" of the blockage (such as behind a sound wall). If a receptor is located behind the wall, but has a view of the source, the wall would do little

[1] Surface type or ground cover is defined as the “hardness” or “softness” of the surrounding area. “Hard site environment” is areas with acoustically hard ground (e.g., pavement or water). Distance attenuation from a line source (i.e., roadway or railway) with a hard site environment is 3 dB per doubling of distance (dB/DD). “Soft site environment” is areas with acoustically soft ground (e.g., lawn or loose dirt or agricultural uses). Ground cover can affect the sound propagation rate by as much as an additional 1.5 dB/DD. (Note that this rate occurs only when both the noise source and the receiver are close to the ground and the terrain between the two is flat and soft.) As a result of this additional attenuation, the line-source sound levels decrease at a rate of 4.5 dB/DD at soft sites.

to reduce the noise. Additionally, a receptor located on the same side of the wall as the noise source may experience an increase in the perceived noise level, as the wall would reflect noise back to the receptor compounding the noise.

Noise Metrics

Several rating scales (or noise "metrics") exist to analyze adverse effects of noise, including traffic-generated noise, on a community. These scales include the equivalent noise level (L_{eq}), the community noise equivalent level (CNEL) and the day/night noise level (L_{dn}). L_{eq} is a measurement of the sound energy level averaged over a specified time period.

The CNEL noise metric is based on 24 hours of measurement. CNEL differs from L_{eq} in that it applies a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when quiet time and sleep disturbance is of particular concern). Noise occurring during the daytime period (7:00 AM to 7:00 PM) receives no penalty. Noise produced during the evening time period (7:00 to 10:00 PM) is penalized by 5 dB, while nighttime (10:00 PM to 7:00 AM) noise is penalized by 10 dB. The L_{dn} noise metric is similar to the CNEL metric except that the period from 7:00 to 10:00 PM receives no penalty. Both the CNEL and L_{dn} metrics yield approximately the same 24-hour value (within 1 dB) with the CNEL being the more restrictive (i.e., higher) of the two.[2]

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160 to 165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise is widespread and generally more concentrated in urban areas than in outlying, less-developed areas (see Table 2).

[2] Ldn and CNEL values rarely differ by more than 1 dB. As a matter of practice, Ldn and CNEL values are considered equivalent and are treated as such in this assessment.

Table 2. Common Sound Levels and Their Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations Relative to 70 dB
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing

Source: California Department of Transportation (Caltrans) 1998, October. Traffic Noise Analysis Protocol.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment, such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During the construction of a building, the operation of construction equipment could cause groundborne vibration. The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units to compress the range of numbers required to describe the vibration. All PPV and RMS velocity are in in/sec and all vibration levels in this study are in dB relative to 1 micro-inch per second (abbreviated as VdB). The threshold of perception is approximately 65 VdB. Typically groundborne vibration generated by manmade activities attenuates rapidly with distance from the source of the vibration. Manmade vibration problems are usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, demolition of structures generates the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at distances within 200 feet of the vibration sources. Heavy trucks can also generate groundborne vibrations that vary, depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, and heavy loads.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. Noise- and vibration-sensitive uses include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, guest lodging, libraries, religious institutions, hospitals, nursing homes, and passive recreation areas are generally more sensitive to noise than commercial and industrial land use.

Noise Regulations and Guidelines

Compliance with State and LAUSD noise requirements and guidelines is required for schools as described below.

Federal

United States Code of Regulations, Title 14, Part 150

The United States Code of Federal Regulations (CFR), Title 14 (Aeronautics and Space), Part 150, Airport Noise Compatibility Planning, has procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs.[3] It prescribes methods to determine exposure of individuals to noise from the operations of an airport and also identifies land uses that are normally compatible with various levels of exposure to noise. For schools, an L_{dn} exposure greater than 65 dBA is considered incompatible. Development of schools exposed to annual 65 dBA L_{dn} noise levels due to aircraft noise should be prohibited.[4]

[3] US Code of Regulations Title 14 (Aeronautics and Space), Part 150 – Airport Noise Compatibility Planning. . http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=611cdd3c85df7535fc6e7bc54891204b&r=PART&n=14y3.0.1.3.21.

[4] Note that footnotes to the compatibility table prohibiting school uses in incompatible noise environments state: "Where the community determines that residential or school uses much be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals…However, the use of NLR criteria will not eliminate outdoor noise problems."

State

California Code of Regulations, Title 5, Section 14040(q)

Under Title 5,[5] the California Department of Education (CDE) regulations require the school district to consider noise in the site selection process. As recommended by CDE guidance, if a school district is considering a potential school site near a freeway or other source of noise, it should hire an acoustical engineer to determine the level of sound that the site is exposed to and to assist in designing the school should that site be chosen.

California Code of Regulations, Title 24, Part 2

Current law states that every local agency enforcing building regulations, such as cities and counties, must adopt the provisions of the California Building Code (CBC) within 180 days of its publication. The publication date of the CBC is established by the California Building Standards Commission. The most recent building standard adopted by the legislature and used throughout the state is the 2013 version, often with local, more restrictive amendments that are based on local geographic, topographic, or climatic conditions.[5] The State of California's noise insulation standards are codified in the CBC. These noise standards are for new construction in California for the purposes of interior compatibility with exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential, schools, or hospitals, are near major transportation noises, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

California Code of Regulations, Title 21, Sub-chapter 6

The Airport Noise Standards establishes 65 dBA CNEL as the acceptable level of aircraft noise for persons living in the vicinity of airports. Title 21 applies to airports that have been designated "noise problem airports," which include LAX, Long Beach, and Bob Hope Airports. Noise-sensitive land uses in locations where the aircraft exterior noise level exceeds 65 dBA CNEL are generally incompatible, unless (1) an aviation easement for aircraft noise has been acquired by the airport proprietor or (2) the residence is a highrise apartment or condominium that has an interior CNEL of 45 dBA or less in all habitable rooms despite aircraft noise and has an air circulation or air conditioning system, as appropriate.

City of Los Angeles

Exterior

As specified in Sections 112.02 and 112.05 of the City of Los Angeles Municipal Code, noise attributable to mechanical equipment (such as heating, air conditioning, and ventilation equipment (HVAC) systems or any pumping, filtering, or heating equipment) cannot exceed the ambient noise level by more than 5 decibels. Ambient noise levels can be as-measured at the project site or established via Code-presumed levels. For the nearby residential neighborhood (Zone R1), the presumed ambient levels are 50 dBA (daytime, 7:00 AM to 10:00 PM) and 40 dBA (nighttime, 10:00 PM to 7:00 AM).

Further, power-equipment, including lawn mowers, backpack blowers, small lawn and garden tools, and riding tractors are restricted to no more than 65 dBA Leq at residential properties.

[5] Title 5. Education, Division 1. California Department of Education, Chapter 13. School Facilities and Equipment, Subchapter 1., School Housing, Article 2. School Sites, 14010. Standards for School Site Selection. http://government.westlaw.com/linkedslice/default.asp?SP=CCR-1000

Construction Activities

Section 41.40 of the Los Angeles Municipal Code prohibits construction or repair work between 9:00 PM and 7:00 AM the following morning, Monday through Friday; between 6:00 PM and 8:00 AM the following morning, Saturdays or federal holidays; and anytime on Sundays. Further, Section 112.05 specifies the maximum noise level from powered equipment[6] as 75 dBA at a distance of 50 feet from the source.[7]

LAUSD

LAUSD Standard Conditions of Approval (November 2015) for noise are described below.

Exterior

The LAUSD Standard Condition of Approval SC-N-1 deals with exterior campus noise. The trigger for compliance is: "Exterior noise levels are or would be greater than 70 dBA L_{10} or 67 dBA L_{eq}." The associated standard condition is: "The LAUSD shall include features such as sound walls, building configuration, and other design features in order to attenuate exterior noise levels on a school campus to less than 70 dBA L_{10} or 67 dBA L_{eq}."

Interior

The LAUSD Standard Condition of Approval SC-N-2 deals with interior campus noise. The trigger for compliance is: "Interior classroom noise levels would be greater than 55 dBA L_{10} or 45 dBA L_{eq}." The associated standard condition is:

> "The LAUSD shall analyze the acoustical environment of the school (such as traffic) and the characteristics of planned building components (such as heating, ventilation, and air conditioning [HVAC]), and design to achieve interior classroom noise levels of less than 55 dBA L_{10} or 45 dBA L_{eq} with maximum (unoccupied) reverberation times of 0.6 seconds. Noise reduction methods shall include, but are not limited to, sound walls, building and/or classroom insulation, HVAC modifications, double-paned windows, and other design features in order to achieve the noise standards.
>
> - The District should acknowledge the ANSI (American National Standards Institute) S12 standard as a District goal that may presently not be achievable in all cases.
>
> - Where economically feasible, new school design should achieve classroom acoustical quality consistent with the ANSI standard and in no event exceed the current CHPS (California High Performance Schools) standard of 45 dBA.
>
> - Where economically feasible, new HVAC (Heating, Ventilating, and Air Conditioning) installations should be designed to achieve the lowest possible noise level consistent with the ANSI standard. In no event should these installations exceed the current CHPS standard of 45 dBA.
>
> - To promote the development of lower noise emitting HVAC units, the District's purchase of new units should give preference to manufacturers producing the lowest noise level at the lowest cost.
>
> - Existing HVAC units operating in excess of 50 dBA should be modified."

Besides the 55 dBA L_{10} or 45 dBA L_{eq} interior sound environment triggers, the LAUSD Standard Conditions also point out a design goal of achieving these interior environments in classrooms with maximum, unoccupied reverberation times of 0.6 seconds.

[6] The specified equipment for this limitation includes: construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors, and pneumatic or other powered equipment.

[7] However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means that the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

NOISE SETTING

The project site—of approximately 2.1 acres—is at 12870 and 12908 Panama Street in the community of Del Rey in the City of Los Angeles (in Los Angeles County, California). The project site is about 700 feet (0.13 mile) north of the Marina Expressway[8] (500 feet north of the Marina Freeway off-ramp). The site is also approximately 0.8 mile east of the Marina Del Rey small-boat harbor, 0.6 miles from Jefferson Boulevard, and 1.5 miles from the I-405 freeway. The closest runway at Los Angeles International Airport (LAX) is 24R, which is approximately 2.4 miles to the southwest of the proposed campus. The site currently has a 17,400-square-foot, one-story industrial building; four accessory buildings; and several metal cargo containers and storage sheds that previously housed Teledyne Microelectronics Technologies administration offices. The main building was constructed in 1954 and the accessory building in 1962. Most of the remainder of the site is asphalt surface parking lot. A strip along Panama Street is landscaped with several trees, including palm trees; shrubs; ornamental plants; and grass. The entire site is surrounded by a chain-link fence, most of which is topped with barbed wire. There are four access gates—two on the south side of the building and two on the north.

The project site is in a transition zone between a residential neighborhood and industrial/commercial/office uses.[9] The site is bordered by a self-storage business and Culver Boulevard to the south; by Panama Street and detached single-family residences to the north; an electrical manufacturing company[10] to the east; and two vacant industrial buildings to the west. The nearest noise-sensitive receptors are the detached single-family residences to the north of the site; across Panama Street. There are also multi-family residential land uses on the east side of McConnell Avenue, south of Culver Boulevard.

The primary noise sources within the vicinity of the project site are traffic on the Marina Freeway (SR-90) and on Culver Boulevard. Secondary sources would include localized traffic flows on Panama Street, McConnell Avenue, Beethoven Street, and Alla Road; along with general residential activities, such as property maintenance, playing children, barking dogs, and the like. There are no aircraft facilities or rail lines in the immediate vicinity of the project site that would notably contribute to the community noise environment of the area.

Existing Noise Conditions

To document representative noise conditions, noise at and adjacent to the proposed school campus, noise monitoring was conducted by PlaceWorks staff on March 3rd and 4th of 2016; a Thursday and Friday. During the measurement survey, the noise environment was judged to be typical of weekday conditions for the area.

Long-term measurements were conducted from Thursday, March 3 to Friday, March 4, 2016 between approximately 11:45 AM as a start time and concluding nearly 26 hours later at 1:47 PM the following day. Short-term measurements were performed at three locations over 15 minute sampling durations at mid-day on Thursday March 3, 2016. The field work was conducted during normal work days. The general noise environment around the school site is a combination of local and distant roadway noise, general urban noise, chirping birds and barking dogs, rustling vegetation, distant aircraft over-flights, and various activities in the nearby neighborhood (e.g. people talking, music, etc.).

Noise monitoring was performed using Larson-Davis Model 814 integrating/logging Sound Level Meters. All measurement instruments conform to industry standards for Type I precision. The sound level meters were programmed to acquire noise levels with the "slow" time constant and the "A" weighting filter network. The meters were field calibrated immediately prior to the first set of readings. The calibration was rechecked immediately after the conclusion of the readings and no notable meter "drift" was noted (i.e. less than ½ dB deviation).

This work effort included three short-term samples (of 15 minute duration) and two 24-hour, long-term noise readings. Meteorological conditions during the measurement periods were favorable and were noted to be representative of typical conditions for the season. Generally, conditions included clear skies, daytime temperatures of approximately 60 to 70

[8] East of Culver Boulevard, the Marina Expressway transitions into the Marina Freeway (both are identified as SR-90).

[9] For ease of understanding, when describing the orientation of the project site and proposed project; the long side along Panama Street (northwest side) is described as project north or north; the opposite long side (southeast side) is south; the short side (northeast) is east; the southwest side is west.

[10] Teledyne Reynolds, Inc., (a Teledyne Technologies Company) at 12820 Panama Street. They manufacture high-voltage interconnection products, cabling, and electronics interface systems. See http://www.teledynereynolds.com.

degrees Fahrenheit (°F), and less than 5-mile-per-hour winds. Noise measurement locations are described below and shown in Figure A, *Noise Measurement Locations* at the end of this Appendix.

Long-Term Location 1. Long-term noise monitoring Location 1 was located on the corner of the chain link fence in the center of the parking lot. The microphone was positioned approximately 130 feet from the centerline of Panama Street and 55 feet from the Teledyne office building. 24-hour noise readings commenced at 11:45 a.m. on Thursday, March 3, 2016, at which time the air temperature was 64°F and winds were 2 to 5 miles per hour (mph).

Immediate nearby land use to long-term Location 1 is primarily industrial, with single family residential homes located across Panama Street. The noise environment of this site was characterized primarily by construction at the adjacent property to the southwest, as well as distant traffic.

Short-Term Location 1. Short-term noise monitoring Location 1 was located at southern corner of the site, near the storage container. The microphone and sound meter were positioned approximately 150 feet from the centerline of Culver Boulevard. Fifteen minutes of noise measurements were taken beginning at 12:07 p.m. on Thursday, March 3, 2016, at which time the air temperature was 67°F and winds were 2 to 5 miles per hour.

The noise environment was dominated by construction on the property to the southwest, and traffic on Culver Boulevard and SR-90. Additional noise included conversations between workers, birds, a helicopter, and two general aviation aircraft.

Short-Term Location 2. Short-term noise monitoring Location 2 was located at the northern gate to the parking lot. The microphone and sound meter were positioned approximately 50 feet from the centerline of Panama Street. Fifteen minutes of noise measurements were taken beginning at 12:25 p.m. on Thursday, March 3, 2016, at which time the air temperature was 65°F and winds were 1 to 4 miles per hour.

The noise environment was dominated by construction at various locations, traffic on Culver Boulevard and Panama Street, and rustling trees and bushes. Additional noise included birds, two occasions of the gate opening, and one general aviation aircraft.

Short-Term Location 3. Short-term noise monitoring Location 3 was located near the center of the site. The microphone and sound meter were positioned approximately 180 feet from the centerline of Panama Street, 150 feet from the centerline of Culver Boulevard, and approximately 20 feet from the Teledyne office building. Fifteen minutes of noise measurements were taken beginning at 12:44 p.m. on Thursday, March 3, 2016, at which time the air temperature was 63°F and winds were 2 to 5 miles per hour.

The noise environment was dominated by workers on site moving materials nearby, traffic on Culver Boulevard and SR-90, and a delivery truck. Additional noise included light construction activity, and two general aviation aircraft.

Short-term Monitoring Results

During the ambient noise survey, daytime energy-average noise levels within the areas surrounding the project site, as measured during the short-term noise measurements, ranged from 52.4 to 68.9 dBA L_{eq}. In general, though, the noise environment during the sampling session was in the typical range of 54 to 62 dBA, with excursions in the mid- to upper-60's dBA. The highest levels during the short-term measurements were observed to be caused by passing trucks (on Panama Street). The short-term noise measurement locations are shown in Figure A and the readings are summarized in Table 3.

Table 3 Short-Term Noise Measurements Summary

Monitoring Location	Description	Lowest 1-min L_{eq}	Overall, 15-min L_{eq}	Highest 1-min L_{eq}
ST-1	Near SW corner of site	55.2	62.0	67.2
ST-2	Near gate at NE corner of site	52.4	55.5	58.9
ST-3	Near site center	54.1	60.3	68.9

Noise sampling conducted by PlaceWorks staff on Thursday, March 3, 2016, for a minimum of 15 minutes at each site with a Larson Davis 814 sound level meter.

Long-term Monitoring Results

Long-term noise measurement locations are also shown in Figure A and the results of the long-term noise monitoring are summarized in Table 4. The graphical depictions of the hourly noise level records for each long-term monitoring location are included in the Appendix F of this Draft EIR.

Table 4 Long-Term Noise Measurements Summary

Monitoring Location	Description	Noise Level (dBA CNEL)	Noisiest hour		Quietest hour	
			L_{eq}	Start Time	L_{eq}	Start Time
LT-1	Near proposed eastern campus buildings	57.2	59.0	2 PM	39.5	3 AM

Conducted from Thursday, March 3 to Friday, March 4, 2016 by PlaceWorks staff.

These results indicate that the noise levels on the proposed charter school campus (represented by location LT-1) were generally in the range of 45 to 60 dBA L_{eq} during the daytime hours (i.e., 7:00 AM to 6:00 PM) with sporadic maximums occurring throughout the day and as late as 10:00 PM. This is most probably due to large truck pass-bys along adjacent streets. After the end of the typical work day, noise levels notably decreased between 10:00 PM and the following 6:00 AM. The quietest period was between approximately 3:00 and 4:00 AM; as is very often seen in an urban/suburban setting that is primarily driven by vehicle flow noise.

Thresholds of Significance

The analysis of noise and vibration impacts considers project-related construction and operational phase noise and vibration, as defined by the City of Los Angeles, the Los Angeles Unified School District (LAUSD), the State of California, and the Federal Transit Administration (FTA). The proposed project would have a significant adverse noise impact if the project would result in any of the following:

Noise

- Background noise levels at classrooms greater than 45 dBA CNEL, per California Building Code (Title 24, Part2). Similarly, per the LAUSD standard conditions of approval (2015) SC-N-2, classroom spaces should achieve interior noise levels of no more than 45 dBA L_{eq}, no more than 55 dBA L_{10}, and no greater than 0.6 seconds for reverberation time (in furnished, but unoccupied spaces).

- Exterior noise levels on the school campus, are greater than 70 dBA L_{10} or 67 dBA L_{eq} (per the LAUSD standard condition of approval SC-N-1).

- A minimum 3 dB change in noise levels is necessary for human hearing to discern a change. Thus, for a substantial increase in ambient noise levels, the project would increase the ambient noise levels by 3 dB or more and ambient noise levels under with-project conditions must exceed 60 dBA CNEL at residential land uses. Similarly, per the LAUSD standard conditions of approval (2015) SC-N-3, project-generated traffic noise increases of more than 3 dB (in the CNEL metric) would call for an acoustical analysis to identify feasible measures to reduce such traffic noise increases at noise-sensitive land uses.

- Expose existing uses to school operations noise levels that exceed the permissible exterior noise standards. As specified in Sections 112.02 and 112.05 of the City of Los Angeles Municipal Code, noise attributable to school-related mechanical equipment (such as heating, air conditioning, and ventilation equipment (HVAC) systems or any pumping, filtering, or heating equipment) to exceed the ambient noise level by more than 5 decibels. Ambient noise levels can be as-measured at the project site or established via Code-presumed levels. For the nearby residential neighborhood (Zone R1), the presumed ambient levels are 50 dBA (daytime, 7:00 AM to 10:00 PM) and 40 dBA (nighttime, 10:00 PM to 7:00 AM). Further, power-equipment, including lawn mowers, backpack blowers, small lawn and garden tools, and riding tractors are restricted to no more than 65 dBA L_{eq} at residential properties.

- Construction activities are conducted within prohibited times or days. Section 41.40 of the Los Angeles Municipal Code prohibits construction or repair work between 9:00 PM and 7:00 AM, Monday through Friday; between 6:00 PM and 8:00 AM, Saturdays or federal holidays; and anytime on Sundays. Further, Section 112.05 specifies the maximum noise level from powered equipment[11] as 75 dBA at a distance of 50 feet from the source.[12]

Groundborne Vibration

- Project-related construction activities would generate vibration that are strong enough to cause vibration-induced architectural damage to the nearest buildings (which are commercial and light industrial) based on the FTA Noise and Vibration Impact Guidelines (FTA 2006), which is 0.5 peak particle velocity (PPV) in inches per second (in/sec) for reinforced concrete, steel buildings without plaster. For residential structures (which fall in the category of non-engineered timber and masonry buildings), the FTA criterion is 0.2 PPV (in/sec). Similarly, per the LAUSD standard conditions of approval (2015) SC-N-6 and SC-N-7, demolition or construction blasting is to be minimized, where feasible. If residential uses or fragile structures are involved, the use of impact tools should be avoided. Also, alternative, less-vibration-intensive deconstruction methods shall be considered. Lastly, when pile driving activities are required within 150 feet of a structure, a detailed vibration assessment shall be provided by an acoustical engineer to analyze potential impacts related to vibration to nearby structures and to determine feasible mitigation measures to eliminate potential risk of architectural damage.

- Project-related construction activities would exceed the FTA's vibration annoyance criteria of 90 VdB (vibration decibel)[13] at non-sensitive uses such as workshops, light industrial, and commercial uses or exceed 78 VdB at residential uses during the daytime. .

NOISE ANALYSIS

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.

Less Than Significant Impact. There are two established noise standards established for construction noise: Los Angeles Municipal Code Section 41.40 that limits allowable periods for construction activities and LAUSD Standard Condition of Approval SC-N-9 that has controls to limit construction noise. Compliance with construction noise standards is mandatory. Therefore, conflicts with construction noise standards would be less than significant. Nonetheless, it is expected that elevated noise levels would occur during construction of the proposed project. Elevated ambient noise conditions and potential construction noise level impacts are fully analyzed under item d), and construction vibration impacts are fully analyzed under item b).

Long-term operational noise would occur from project-related traffic and stationary noise sources. Traffic noise would be from increased vehicle flows on nearby roadways and stationary noise sources would include outdoor activities, vehicles idling during student drop-off and pick-up times, school buzzers or bells, landscaping equipment, and heating, ventilation, and air conditioning (HVAC) units. These traffic-related and stationary-related sources are discussed in the following sub-sections.

[11] The specified equipment for this limitation includes: construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors, and pneumatic or other powered equipment.

[12] However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means that the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

[13] In the U.S., the standard reference velocity is 1 micro-inch per second (1x10-6 in/sec).

Mobile-Source Noise

The proposed project would construct a charter school with 19 classrooms for 532 kindergarten through 8th grade students. The new school would generate 1,320 vehicular trips per day on the local circulation network.[14] The traffic impact analysis conservatively assumed that the project-generated trips represented new traffic, even though all the trips would be shifted from the two existing schools, therefore project-related traffic has been overestimated.

A minimum 3 dB change in noise levels is necessary for human hearing to discern a change. Thus, for a significant impact, the proposed project would need to increase the ambient noise levels by 3 dB or more and ambient noise levels in the project area would need to exceed 60 dBA CNEL[15] at single-family residential land uses.[16] A project-induced increase of 5 dB, regardless of ambient noise levels, would be considered a significant impact. Table 5 shows the cumulative increase in traffic noise on each roadway segment for project buildout year conditions and full operation of the school.

Table 10 shows the cumulative increase in traffic noise on each roadway segment for project buildout year conditions and full operation of the school.

Table 5 Project-Related Traffic Noise, Year 2020 Conditions

Roadway	Segment	CNEL at 50 feet (dBA)			
		Existing Condition	2020 No Project	2020 With Project	Project Increase at Buildout
Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	63.1	63.3	63.4	0.1
Glencoe Ave.	Maxella Ave. to Mindanao Way	63.1	63.3	63.4	0.1
Glencoe Ave.	Mindanao Way to Alla Rd.	63.1	63.3	63.4	0.1
Mindanao Way	Glencoe Ave. to Alla Rd.	64.6	64.8	64.8	0.0
Short Ave.	Alla Rd. to Beethoven St.	64.6	64.8	64.8	0.0
Short Ave.	Beethoven St. to Centinela Ave.	64.3	64.4	64.5	0.1
Alla Rd.	Short Ave. to Glencoe Ave.	64.3	64.4	64.5	0.1
Alla Rd.	Glencoe Ave. to Panama St.	67.0	67.1	67.2	0.1
Alla Rd.	Panama St. to Marina Expwy	67.3	67.5	67.6	0.1
Beethoven St.	Short Ave. to Panama St.	52.1	52.3	53.3	0.1
Panama St.	Alla Rd. to Beethoven St.	53.8	54.0	55.9	1.9
Panama St.	Beethoven St. to McConnell Ave.	52.1	52.3	53.0	0.7
Little Culver Blvd.	McConnell Ave. to Centinela Ave.	52.1	52.3	52.9	0.6
Centinela Ave.	Short Ave. to Little Culver Blvd.	71.4	71.6	71.6	0.0
Centinela Ave.	Little Culver Blvd. to Culver Blvd.	71.4	71.6	71.6	0.0
Culver Blvd.	Marina Expressway to Centinela Ave.	69.8	69.9	70.0	0.1
Marina Expressway, West Bound	Culver Blvd. to Alla Rd.	71.3	71.5	71.5	0.0

[14] Garland Associates. April 2016. Traffic Impact Analysis for Ocean Charter School, 12870 Panama Street – Los Angeles (Del Rey).

[15] Community Noise Equivalent Level (CNEL). The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7 PM to 10 PM and 10 dB added from 10 PM to 7 AM.

[16] 60 dBA CNEL is the upper limit for the Los Angeles noise compatibility category of 'normally acceptable' for single-family residential land uses. The noise levels for the 'conditionally acceptable' compatibility category range from 55 to 70 dBA CNEL.

As shown, the project-related contributions to cumulative traffic noise would range from 0.0 to 1.9 dB. The project's contribution to cumulative traffic noise would be less than less than 3 dB and is therefore less than significant.

Stationary-Source Noise

Operation of the proposed project would generate noise from the use of stationary equipment, primarily HVAC systems. Other noise sources that are considered stationary include vehicles idling during student drop-off and pick-up times, students during outdoor activities, school buzzers or bells, and landscaping equipment.

Vehicle-related sounds during student drop-off and pick-up times (such as braking, car doors closing, honking, and idling engines) temporarily raise the localized ambient noise along the school frontage, but such events would last less than 30 minutes and would only occur twice a day during the school year. Therefore, student drop-off and pick-up activities would not significantly raise the community noise levels.

School staff parking would be in a subterranean garage with the access off of Panama Street; thus, noise associated with on-site parking would be negligible because it would be shielded from the community.

Additionally, under Sections 112.02 and 112.05 of the City of Los Angeles Municipal Code, noise attributable to school-related mechanical equipment (such as HVAC systems or any pumping, filtering, or heating equipment) should not exceed the ambient noise level by more than 5 decibels. Power equipment, including lawn mowers, backpack blowers, small lawn and garden tools, and riding tractors, are restricted to no more than 65 dBA L_{eq} at residential properties.[17]

LAUSD Standard Condition of Approval SC-N-2 also has restrictions on HVAC noise to limit potential noise impacts. Under the City of Los Angeles Municipal Code Sections 112.02 and 112.05, the presumed (i.e., unmeasured) ambient environment is set as 50 dBA during the daytime and 40 dBA during the nighttime;[18] however, the actual measured data finds that the ambient noise surrounding the project site is 55.5 dBA L_{eq} during the daytime and 47 dBA L_{eq} during the nighttime.[19] Thus, the City's 5 decibel increase threshold for ambient-plus-project noise, the noise limits would be approximately 61 dBA during the daytime and 52 dBA during the nighttime.

The proposed project would be constructed in an area surrounded by commercial, office, manufacturing, and industrial uses on the south side of Panama Street, and single-family residential on the north side of Panama Street. The nearest residential receptors would be at least 100 feet from roof- mounted HVAC equipment on the northernmost school building. Distance attenuation plus barrier effects from the school building rooflines would reduce HVAC equipment noise emissions by approximately 30 to 40 dB. Based on the size of the buildings, a noise rating of 85 dBA at 3 feet is considered as a reasonable estimate for a standard industrial HVAC system. Thus, HVAC equipment would likely be in the range of 45 to 55 dBA at nearby residential receptors. This is below the existing daytime ambient and below the ambient-plus-project daytime limit under the City Municipal Code. The school is not expected to be in use between 10:00 PM and 7:00 AM, so significant nighttime noise would not occur. The ambient conditions are not expected to notably change due to the introduction of mechanical equipment sources at the proposed campus. Similarly, the use of powered landscaping equipment (such as lawn mowers, backpack blowers, and trimmers) would not be notably different than existing conditions.

The operation of the school would include the use of buzzers or bells to signal the beginning and ending of classes. Bells would not sound before or after school hours. Noise generated by the buzzers or bells would occur a few times for a short periods (less than 5 seconds) and only during the daytime hours. The speakers for bells would be directed toward the center of campus and away from residential areas. Buzzers or bells would not substantially elevate average daytime noise levels.

The school outdoor areas would be at the center of the campus and surrounded by buildings; therefore, noise from children outdoors during physical education or play time would not be significant. Because the operation of the school would not

[17] Equivalent Continuous Noise Level (Leq); also called the Energy-Equivalent Noise Level. The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the Leq metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

[18] Daytime is defined as 7:00 AM to 10:00 PM; nighttime is defined as 10:00 PM to 7:00 AM per the City of Los Angeles Municipal Code.

[19] Ambient noise measurements were conducted from Thursday, March 3 to Friday, March 4, 2016 by PlaceWorks staff. See Appendix I for additional details.

include major sources of stationary noise that would significantly raise the area's noise levels, impacts would be less than significant.

Noise Compatibility

The State of California's noise insulation standards are codified in the California Building Code. These noise standards are for new construction for the purposes of interior compatibility with exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive uses[20] are near major transportation noises, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For school classrooms, the acceptable interior noise limit for new construction is 45 dBA CNEL.

LAUSD Standard Conditions of Approval SC-N-1 and SC-N-2 require exterior noise levels of less than 70 dBA L_{10} or 67 dBA L_{eq}, and interior classroom spaces should achieve noise levels of no more than 45 dBA L_{eq}, no more than 55 dBA L_{10}, and no greater than 0.6 seconds for reverberation time (in furnished but unoccupied spaces).[21]

The site is also within the City of Los Angeles zone ZI-2427 Freeway Adjacent Advisory Notice for Sensitive Uses, which requires the city to send a "Freeway Adjacent Advisory Notice" to Ocean Charter Schools.

The primary noise sources in the vicinity of the project site are Culver Boulevard, Marina Expressway, and Panama Street. In addition, background noise from traffic on Alla Road, McConnell Avenue, and Little Culver Boulevard would be audible but negligible at the project site due to distance, shielding from intervening structures, and/or low traffic volumes and speeds.

According to the noise field survey, the existing daytime noise levels at the site are 57.2 dBA CNEL. Thus, noise levels would not exceed the state's exterior threshold of 60 dBA CNEL—and trigger a mandated acoustical study (aimed at examining the exterior-to-interior acoustical properties)—or the state's 45 dBA CNEL interior threshold. Additionally, as shown in Table 5 the exterior environment along Panama Street during the in-session daytime hours are below the LAUSD 70 dBA L_{10} or 67 dBA L_{eq} thresholds. School buildings would meet LAUSD's standard for interior reverberation time (i.e., reflective sound buildup inside the classrooms). Thus, exterior and interior noise compatibility criteria would be met, and impacts would be less than significant.

For project-related mobile noise sources, stationary noise sources, and noise compatibility issues, impacts would be less than significant.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Less Than Significant Impact.

Operations Vibration
Typically, the types land uses that result in vibration impacts are industrial businesses that use heavy machinery or railroads where passing trains generate perceptible levels of vibration. The proposed project is a charter school, and there would be no significant vibration-generating sources during operation; therefore, no impacts would occur.

Construction Vibration
Construction activities can generate varying degrees of ground vibration, depending on the construction procedures, the equipment used, and the proximity to vibration-sensitive uses. Operation of construction equipment generates vibrations

[20] Noise-sensitive land uses and noise sensitive receptors are land uses where quiet environments are necessary for enjoyment and public health and safety. Examples are residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes.

[21] Statistical Sound Level (Ln). The sound level that is exceeded "n" percent of time during a given sample period. For example, the L50 level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L10 level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L90 is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings near a construction site varies depending on soil type, ground strata, and receptor building construction. The generation of vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight damage at the highest levels. Ground vibrations from construction activities rarely reach levels that can damage structures, but can achieve levels in buildings close to a construction site that are perceptible.[22] Table 6 lists vibration levels for different types of construction equipment.

Table 6 Construction Equipment Vibration Levels

Equipment	Approximate RMS[1] Velocity at 25 feet (VdB)	Approximate PPV at 25 feet (in/sec)
Pile Driver, Impact (Upper Range)	112	1.518
Pile Driver, Impact (Typical)	104	0.644
Pile Driver, Sonic (Upper Range)	105	0.734
Pile Driver, Sonic (Typical)	93	0.170
Vibratory Roller	94	0.210
Large Bulldozer	87	0.089
Crane-Mounted Auger Drill	87	0.089
Loaded Trucks	86	0.076
Jackhammer	79	0.035
Small Bulldozer	58	0.003

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, May 2006.
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second and a crest factor of 4.

Construction vibration effects are typically assessed in terms of either architectural damage or annoyance to nearby people. Construction equipment such as jackhammers, high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) could generate vibration in the immediate vicinity.

Typical construction equipment rarely exceeds vibration levels that are perceptible.[23] Groundborne vibration is rarely annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers. For annoyance, vibration is typically noticed nearby when objects in a building generate noise from rattling windows or picture frames; impacts are based on the distance to the nearest building.[24]

Construction Vibration-Induced Annoyance

The threshold at which construction vibration becomes annoying is 78 VdB for residents, 84 VdB for office workers, and 90 VdB for workshop or industrial workers.[25] Human annoyance occurs when vibration rises significantly above the threshold of human perception for extended periods of time. Vibration-related construction activities would occur in the daytime when people are least sensitive to vibration levels.

[22] Federal Transit Administration (FTA). 2006, May. Transit Noise and Vibration Impact Assessment. U.S. Department of Transportation (DoT). FTA-VA-90-1003-06.
[23] As measured at a distance of 25 feet from an individual piece of equipment perceptible vibration would be 0.1 peak particle velocity (PPV) in inches per second. Architectural damage at typical building structures may occur at 0.2 to 0.5 PPV in inches per second.
[24] Federal Transit Administration (FTA). 2006, May. Transit Noise and Vibration Impact Assessment. United States Department of Transportation. FTA-VA-90-1003-06.
[25] Federal Transit Administration (FTA). 2006, May. *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation. FTA-VA-90-1003-06.

Table 7 shows the vibration levels from typical construction equipment at adjacent receptors. As shown, vibration from construction activities is not anticipated to be perceptible at the nearest off-site receptors.

Table 7 Construction Equipment Vibration Annoyance

Equipment	Vibration Annoyance Threshold		
	Residential to the North (172 Feet)[1] [78 VdB][2]	Industrial to the East (220 Feet)[1] [84 VdB][2]	Storage to the South (120 Feet)[1] [90 VdB][2]
Vibratory Roller	77	75	80
Hydraulic Excavators	75	73	78
Graders	75	73	78
Front-end Loaders	77	75	80
Large bulldozer[3]	70	68	73
Small bulldozer3	41	39	44
Jackhammer	62	60	65
Loaded trucks	69	67	72

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, May 2006.
Note: Values do not exceed FTA annoyance thresholds.
[1] Construction activities are typically distributed throughout the project site and would only occur for a limited duration when vibration producing equipment is operating in close proximity to receptors. Therefore, distances to the nearest receptors are measured from the center of the construction site to represent the average vibration level.
[2] Residences have a daytime residential threshold of 78 VdB; industrial buildings have a "office" threshold of 84 VdB; the storage facility has a "workshop" threshold of 90 VdB (because of the lack of occupancy during any given day).
[3] A large bulldozer is above an operating weight of 85,000 pounds (represented by a Caterpillar D8-class or larger); medium bulldozer has an operating weight range of 25,000 to 60,000 pounds (such as a Caterpillar D6- or D7-class); and a small bulldozer has an operating weight range of 15,000 to 20,000 pounds (such as a Caterpillar D3-, D4-, or D5-class).

Vibration-intensive equipment identified in the table may be operating at or near the project boundary and, thus, would be as close as five feet from the adjacent east building. All these pieces of heavy equipment would approach or exceed the thresholds for human annoyance while temporarily in proximity to receptors (i.e., less than approximately 40 feet). As heavy construction equipment moves around the project site, average vibration levels at the nearest structures would diminish with increasing distance between structures and the equipment and would generally not be perceptible.

As required by the City of Los Angeles Municipal Code Section 41.40, construction activities would not occur outside of the allowable hours of 7:00 AM to 9:00 PM Monday through Friday or 8:00 AM and 6:00 PM on Saturdays. No construction activities would occur on Sundays or federal holidays. Additionally implementation of LAUSD Standard Condition of Approval SC-N-9 adds further restrictions to construction operations. Annoyance vibration impacts would be less than significant.

Construction Vibration-Induced Architectural Damage

The threshold for risk of architectural damage is 0.2 peak particle velocity (PPV) in inches per second for nonengineered timber and masonry buildings; 0.3 PPV for engineered concrete and masonry buildings; and 0.5 PPV for reinforced concrete, steel, or timber buildings. Ground vibration from typical construction activities rarely reach levels that can damage structures.[26]

The nearest off-site structures are single-family residences to the north, industrial to the east, and a storage facility to the south. Table 8 shows the vibration levels from construction equipment at adjacent buildings.

[26] Federal Transit Administration (FTA). 2006, May. *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation. FTA-VA-90-1003-06.

Table 8 Construction Equipment Vibration Damage

Equipment	Vibration Damage Threshold		
	Residential to the North (80 Feet)[1] [0.2 PPV][2]	Industrial to the East (15 Feet)[1,3] [0.5 PPV][2]	Storage to the South (20 Feet)[1,3] [0.3 PPV][2]
Vibratory Roller	0.037	~0.2	~0.2
Hydraulic Excavators	0.028	~0.2	~0.2
Graders	0.028	~0.2	~0.2
Front-end Loaders	0.037	~0.2	~0.2
Large bulldozer	0.016	~0.2	~0.1
Small bulldozer	0.001	~0.2	~0.005
Jackhammer	0.006	~0.2	~0.05
Loaded trucks	0.013	~0.2	~0.1

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

Note: Values do not exceed the FTA threshold. All distances are approximate and are measured from location of heavy or vibration-intensive construction equipment to receptor building. Excavation, building construction, and the use of heavy or vibration-intensive construction, such as vibratory rollers or large bulldozers, would not occur within 15 feet of an adjacent building.

~ = approximately

[1] For architectural damage, the maximum vibration levels at the closest foreseeable distance to construction activities are typically applied to this type of evaluation (since damage only needs one occurrence of excessive groundborne energy).

[2] Residences have a nonengineered timber and masonry building threshold of 0.2 PPV; industrial buildings have a reinforced concrete, steel, or timber threshold of 0.5 PPV; the storage facility has a engineered concrete and masonry threshold of 0.3 PPV.

[3] Note that the use of the FTA calculation formulae at distances less than 25 feet should generally be avoided because the underlying premises and methodologies become increasingly less applicable with decreasing distance to equipment or process source.

As shown construction equipment larger than a jackhammer or small bulldozer may cause architectural damage to the industrial building to the east, due to the very close proximity to project construction activities.

As part of the project, implementation of LAUSD Standard Condition of Approval SC-N-6 requires the use of less-vibration-intensive equipment when working next to existing buildings. Alternatives that shall be considered include mechanical methods using hydraulic crushers or deconstruction techniques. Additionally, although the building to the east is not considered historic, because it is an operating business, SC-N-8 would be applied to reduce the possibility of architectural damage, specifically, alternative construction methods. Additionally, implementation of inspection and reporting on the current foundation and structural condition of the existing building to document damage and repairs is required. Therefore, with implementation of these standard conditions, impacts from vibration-induced architectural damage at off-site structures would be less than significant.

Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Less Than Significant Impact. As described in section a) above, increases in operational noise levels related to the proposed project would not substantially increase the existing noise environment. Therefore, permanent noise impacts would be less than significant.

Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Less Than Significant Impact. Noise generated during construction is based on the type of equipment used, the location of the equipment relative to sensitive receptors, amount of equipment operating at the same time, and the timing and duration of the noise-generating activities. Sensitivity to noise is based on the location of the equipment relative to sensitive receptors, time of day, and the duration of the noise-generating activities. Two types of short-term noise could occur during construction: (1) mobile-source noise from the transport of workers, material deliveries, and debris/soil hauling and (2) onsite noise from use of construction equipment. Demolition and construction activities are anticipated to last approximately 13 months.

Construction Vehicles

The transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. The primary regional access route for construction vehicles to the project site would be Centinela Avenue, Culver Boulevard, Lincoln Boulevard, and Marina Expressway. The majority of the land uses in the vicinity of the project site along routes used for construction vehicles are commercial and industrial and are not considered noise-sensitive uses. Local access would be via Alla Road and Panama Street. The nearest residential area along roadways is north of the site along Panama Street between Alla Road and McConnell Avenue. It is anticipated that construction-related activities would generate, as a worst-case during the most active phase of construction, a total of 69 construction trips per day.[27] The existing roadway volumes along the segment of Panama Street near the project site are from 1,000 to 1,500 ADT. Thus, the number of construction-related trips would result in negligible increases when compared to the level of noise currently generated on the roadways.[28] While individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA (L_{max}) at 50 feet from the vehicle, these occurrences would be infrequent and primarily during nonpeak traffic periods. Therefore, noise impacts from construction-related traffic would be less than significant.

Construction Equipment

Each stage of construction involves the use of different kinds of construction equipment and therefore has its own distinct noise characteristics. Noise levels from construction activities are dominated by the loudest piece of equipment and generally occur during the site preparation and grading phase, when bulldozers, backhoes, and graders are used. Table 9 shows the average noise levels from individual pieces of construction equipment.

[27] The 69 trips per day comprise total worker plus vendor plus haul trucks during the grading construction phase, which is the construction phase that would generate the highest number of trips. A total of 2,977 haul trips divided by the 43-day duration yields an average of 69 trips per day. This estimate was based on data provided by OCS and on the methodology used in the air quality assessment for calculating construction-related trips.

[28] The 69 additional trips compared to the existing 1,000 is less than a 7 percent increase. This would result in a negligible noise increase of less than 0.3 dB.

Table 9 Average Construction Equipment Noise Levels

Type of Equipment	Average Measured Sound Levels (dBA at 50 feet)
Pile Driver, Impact	101
Pile Driver, Sonic	96
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Crane, Mobile	83
Crane, Derrick	88
Loader, Large	85
Loader, Front-End	79
Paver	89
Scraper	89
Jack Hammers	88
Pneumatic Tools	85
Pumps	76
Dozer, Small	80
Dozer, Large	86
Hydraulic Backhoe	85
Hydraulic Excavators	82
Graders	85
Air Compressors	81
Trucks	91

Source: Bolt, Beranek and Newman, 1971; FTA, 2006.[29]

Construction Noise

According to Section 41.40 of the Los Angeles Municipal Code, construction or repair work is allowed between 7:00 AM and 9:00 PM, Monday through Friday, and between 9:00 AM and 6:00 PM on Saturdays. No construction work is to be conducted on Sundays or federal holidays. Further, Section 112.05 specifies the maximum noise level from powered equipment[30] as 75 dBA at a distance of 50 feet from the source.[31] Therefore, a significant impact would occur if 1) construction were to occur outside of the allowable hours or 2) such activities generated more than the allowable noise with no attempt to reduce that noise. Table 10 shows the maximum operational noise levels of heavy construction equipment.

[29] Bolt, Beranek & Newman (BBN); Noise Control for Buildings and Manufacturing Plants, 1987; Federal Transit Administration (FTA). 2006, May. Transit Noise and Vibration Impact Assessment. U.S. Department of Transportation (DoT). FTA-VA-90-1003-06.

[30] The specified equipment for this limitation includes: construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors, and pneumatic or other powered equipment.

[31] However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means that the noise limitation cannot be met despite the use of mufflers, shields, sound barriers, and/or any other noise reduction device or techniques during the operation of equipment.

Table 10 Maximum Heavy Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 ft.)	Suggested Maximum Sound Levels for Analysis (dBA at 50 ft.)
Jack Hammers	75–88	82
Pneumatic Tools	78–88	85
Pumps	74–84	80
Dozers	77–90	85
Pile Driver, Impact	95–110	105
Pile Driver, Sonic	90-105	100
Scrapers	83–91	87
Haul Trucks	83–94	88
Cranes	79–86	82
Portable Generators	71–87	80
Rollers	75–82	80
Tractors	77–82	80
Front-End Loaders	77–90	86
Hydraulic Backhoe	81–90	86
Hydraulic Excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Source: Bolt, Beranek & Newman; Noise Control for Buildings and Manufacturing Plants, 1987.

Construction equipment typically moves around on the project site and under variable power levels. Noise from construction equipment decreases by 6 to 7.5 dB with each doubling of distance between the source and receptor.[32] For example, the noise levels from a bulldozer that generates 85 dBA at 50 feet would measure 79 dBA at 100 feet, 73 dBA at 200 feet, 67 dBA at 400 feet, and 61 dBA at 800 feet (conservatively using a 6 dB per doubling of distance attenuation factor). Also, noise levels are typically reduced from this value due to usage factors[33] as well as the barrier effects provided by the physical structures once erected.

Commercial, industrial, and storage facilities are not considered sensitive receptors. The nearest off-site sensitive receptors are residences approximately 80 feet to the north (across Panama Street). At this distance, the energy-average construction noise levels would be expected to average 85 dBA L_{eq} at the homes directly across from the construction work. Maximum concentrated construction noise levels could be 4 dB higher, or 89 dBA L_{max}, at the homes across Panama Street. Thus, construction activity would be expected to exceed the noise ordinance's limit of 75 dBA at all adjacent properties that have line-of-sight to the construction activities.

Compliance with Section 41.40 of the Los Angeles Municipal Code would limit construction activities to the least noise sensitive portions of the day for the sensitive receptors. Implementation of LAUSD Standard Condition of Approval SC-AQ-2 requires well-running equipment, and SC-N-9 requires source controls (time constraints, equipment location and type restrictions, etc.), path controls (noise barriers), and/or receptor controls (notification and noise complaint process) to reduce noise impacts.

[32] As sound energy travels outward from the source, spreading loss accounts for a 6 dB decrease in noise level. Soft ground and atmospheric absorption effects can add another decrement of 1.5 dB (for a total of 7.5 dB per distance doubling).

[33] Usage factor is the percentage of time during the workday that the equipment is operating at full power (on which the reference noise ratings for typical average and typical maximum noise emissions are based).

A significant construction noise impact would occur if 1) construction were to occur outside of the allowable hours or 2) such activities generated more than the allowable noise with no attempt to reduce that noise. With implementation of Section 41.40 of the Los Angeles Municipal Code and LAUSD SC-N-9, the project construction would occur within the permitted time. Additionally, LAUSD SC-AQ-2 that equipment be well tuned and SC-N-9 requires the implementation of construction noise reduction methods. With these time restrictions and noise level reduction methods, construction noise impacts would be less than significant.

Airport Land Use Plan

No Impact. The nearest public airport is Los Angeles International Airport (LAX). The closest runway at LAX is 24R, which approximately 2.4 miles to the southwest of the site. The next closest public aircraft facility is Santa Monica Airport at approximately 2.6 miles to the north of the project site. The proposed campus is outside the 65 dBA CNEL noise exposure contours for both of these airports. Thus, project development would not expose people working onsite to excessive noise levels related to operation of any public aircraft facilities.

Private Airstrip

No Impact. There are no private airstrips within 10 miles of the project site.[34] While, there are many private heliports within approximately 5 miles, the two-story buildings and school development would not cause hazards to people on-site from helicopters approaching or departing a heliports. There closest private heliports to the project site are:

- Ritz-Carlton Hotel Company Heliport (CA79) at 1.3 miles to the west
- Playa Vista 2 Heliport (7CL6) at 1.2 miles to the east
- Hughes Corporate Heliport (CL71) at 1.3 miles to the south

While operations at these private aircraft facilities may, at times, be audible at the site, the relatively limited and sporadic use of these heliports for corporate travel or medical emergencies, coupled with the distances between them and the project site, would result in negligible amounts of noise at the campus. Therefore, development of the project would not expose people onsite to excessive noise levels from helicopters approaching or departing these heliport facilities, and no impact would occur.

[34] Airnav.com. 2016, January 28. Airport Information. http://www.airnav.com/airports/.

References

Beranek, Leo. *Noise and Vibration Control*. Revised Edition. Institute of Noise Control Engineering. Washington, D.C. 1988.

Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice*. 4th ed. New York: Spon Press.

Bolt, Beranek & Newman (BBN); *Noise Control for Buildings and Manufacturing Plants*, 1987.

California Department of Transportation (Caltrans). 2006, *Traffic Noise Analysis Protocol.*

California Department of Transportation (Caltrans). 2009, November. *Technical Noise Supplement ("TeNS").* Prepared by ICF International.

California Department of Transportation (Caltrans), Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office. 2004, June. *Transportation- and Construction-Induced Vibration Guidance Manual.* Prepared by ICF International.

California Department of Transportation (Caltrans), Division of Environmental Analysis. 2002, February. *Transportation Related Earthborne Vibration (Caltrans Experiences).* Technical Advisory, Vibration. TAV-02-01-R9601. Prepared by Rudy Hendricks.

Federal Highway Administration (FHWA). 1978, December. *Federal Highway Traffic Noise Prediction Model.* U.S. Department of Transportation (DoT) Report No. FHWA-RD77-108.

Federal Transit Administration (FTA). 2006, May. *Transit Noise and Vibration Impact Assessment*. U.S. Department of Transportation (DoT). FTA-VA-90-1003-06.

Governor's Office of Planning and Research. 2003, October. *State of California General Plan Guidelines*.

Harris, Cyril M. *Handbook of Acoustical Measurements and Noise Control*, Third Edition. Acoustical Society of America. Woodbury, NY. 1998.

Society of Automotive Engineers, Inc. (SAE). 1971, October. *House Noise – Reduction Measurements for Use in Studies of Aircraft Flyover Noise*. AIR 1081.

Thalheimer, E., 2000, *Construction Noise Control Program and Mitigation Strategy at the Central Artery/Tunnel Project.* Institute of Noise Control Engineering.

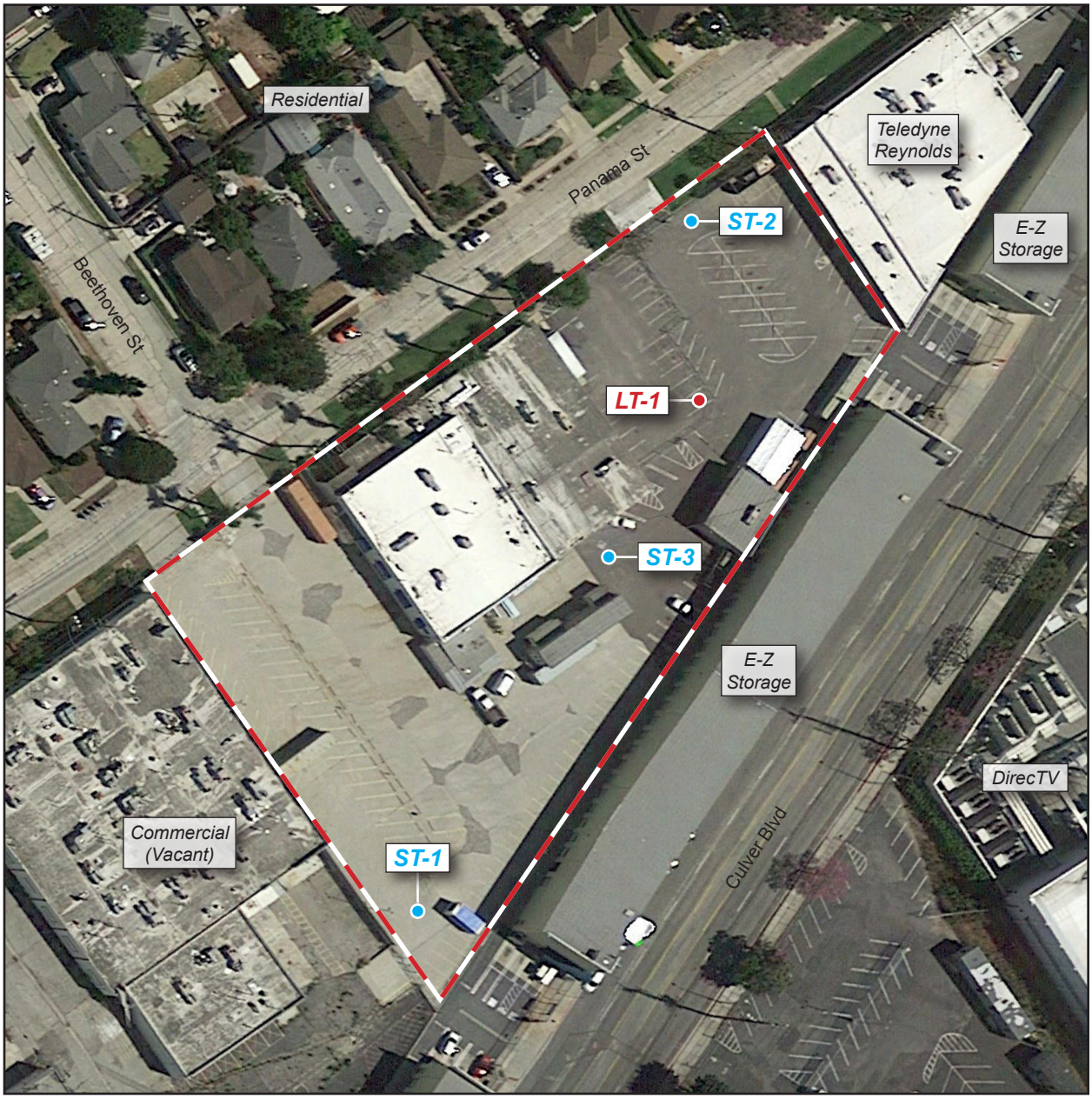
U.S. Department of Housing and Urban Development (HUD). 1985, March. *Noise Guidebook: A Reference Document for Implementing the Department of Housing and Urban Development's Noise Policy.*

U.S. Environmental Protection Agency (EPA). 1978, November. *Protective Noise Levels*. EPA 550/9-79-100. (Condensed version of 1971 and 1974 documents.)

———. 1974, March. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Washington, D.C.: U.S. EPA Office of Noise Abatement and Control

———. 1971, December. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Prepared by Bolt Beranek and Newman (Cambridge, MA) for the U.S. EPA Office of Noise Abatement and Control. Washington, D.C.

Figure A - Noise Measurement Locations



Site Boundary

ST-1 Short-Term Noise Measurement Locations

LT-1 Long-Term Noise Measurement Locations

0 100
Scale (Feet)

Base Map Source: Google Earth Pro, 2016

PlaceWorks

Memory	Location	Date	Start Time	Duration	Leq	Max	L1.67	L8.33	L25	L50	L90	L99	Min
Short-term Record 6	ST-1	3-Mar-16	12:07:02	0:15:00	62.0	74.2	70.8	66.1	62.3	58.0	54.4	52.2	51.2
Short-term Record 7	ST-2	3-Mar-16	12:25:47	0:15:00	55.5	69.5	62.1	57.7	55.6	53.9	52.1	51.0	50.2
Short-term Record 8	ST-3	3-Mar-16	12:44:22	0:15:00	60.3	74.9	69.6	64.8	57.8	55.1	53.2	51.5	51.4

ST-1

Rec #	Date	Time	Leq
1	3-Mar-16	12:07:02	Run
2	3-Mar-16	12:07:02	55.6
3	3-Mar-16	12:08:02	55.2
4	3-Mar-16	12:09:02	56.0
5	3-Mar-16	12:10:02	56.6
6	3-Mar-16	12:11:02	57.6
7	3-Mar-16	12:12:02	55.9
8	3-Mar-16	12:13:02	61.2
9	3-Mar-16	12:14:02	59.2
10	3-Mar-16	12:15:02	57.9
11	3-Mar-16	12:16:02	59.2
12	3-Mar-16	12:17:02	67.2
13	3-Mar-16	12:18:02	60.1
14	3-Mar-16	12:19:02	66.0
15	3-Mar-16	12:20:02	67.2
16	3-Mar-16	12:21:02	63.6
17	3-Mar-16	12:22:02	57.8
18	3-Mar-16	12:23:02	Stop
		min >>	55.2
		max >>	67.2

ST-2

Rec #	Date	Time	Leq
1	3-Mar-16	12:25:47	Run
2	3-Mar-16	12:25:47	56.2
3	3-Mar-16	12:26:47	53.4
4	3-Mar-16	12:27:47	53.6
5	3-Mar-16	12:28:47	58.9
6	3-Mar-16	12:29:47	53.1
7	3-Mar-16	12:30:47	52.4
8	3-Mar-16	12:31:47	53.9
9	3-Mar-16	12:32:47	55.1
10	3-Mar-16	12:33:47	57.8
11	3-Mar-16	12:34:47	54.5
12	3-Mar-16	12:35:47	52.6
13	3-Mar-16	12:36:47	57.9
14	3-Mar-16	12:37:47	55.7
15	3-Mar-16	12:38:47	54.9
16	3-Mar-16	12:39:47	55.7
17	3-Mar-16	12:40:47	52.9
18	3-Mar-16	12:41:47	Stop
		min >>	52.4
		max >>	58.9

ST-3

Rec #	Date	Time	Leq		MIN	MAX
1	3-Mar-16	12:44:23	Run			
2	3-Mar-16	12:44:23	58.1	>>>	55.6	58.1
3	3-Mar-16	12:45:23	55.7	>>>	53.4	55.7
4	3-Mar-16	12:46:23	61.8	>>>	53.6	61.8
5	3-Mar-16	12:47:23	55.0	>>>	55.0	58.9
6	3-Mar-16	12:48:23	54.1	>>>	53.1	57.6
7	3-Mar-16	12:49:23	54.5	>>>	52.4	55.9
8	3-Mar-16	12:50:23	57.8	>>>	53.9	61.2
9	3-Mar-16	12:51:23	61.1	>>>	55.1	61.1
10	3-Mar-16	12:52:23	54.6	>>>	54.6	57.9
11	3-Mar-16	12:53:23	55.2	>>>	54.5	59.2
12	3-Mar-16	12:54:23	56.5	>>>	52.6	67.2
13	3-Mar-16	12:55:23	56.0	>>>	56.0	60.1
14	3-Mar-16	12:56:23	56.2	>>>	55.7	66.0
15	3-Mar-16	12:57:23	60.8	>>>	54.9	67.2
16	3-Mar-16	12:58:23	68.9	>>>	55.7	68.9
17	3-Mar-16	12:59:23	67.8	>>>	52.9	67.8
18	3-Mar-16	13:00:23	Stop			
		min >>	54.1		52.4	55.7
		max >>	68.9		56.0	68.9

Location: **Ocean Charter - Panama Street Site**
Note 1: **Long-term 1**
Note 2:

Rec #	Date	Time	Duration	Leq	SEL	Min	Max	Peak-1	Peak-2	Overld	L1.67	L8.33	L25.00	L50.00	L90.00	L99.00
1	3-Mar-16	11:44:49	0:15:10	62.8	92.4	49.4	82.3	103.8	104.2	0.0	70.9	66.5	61.3	58.6	52.7	50.3
2	3-Mar-16	12:00:00	1:00:00	58.8	94.3	49.1	82.1	107.5	100.3	0.0	69.9	59.7	55.8	53.7	51.3	50.1
3	3-Mar-16	13:00:00	1:00:00	57.1	92.7	50.2	66.6	94.9	88.6	0.0	62.2	60.1	57.9	56.0	53.2	51.6
4	3-Mar-16	14:00:00	1:00:00	59.0	94.6	52.9	75.4	107.8	92.7	0.0	63.9	61.5	59.5	57.3	55.3	54.2
5	3-Mar-16	15:00:00	1:00:00	57.5	93.1	50.0	84.3	106.7	101.3	0.0	60.4	58.6	57.0	54.9	52.2	50.6
6	3-Mar-16	16:00:00	1:00:00	54.4	90.0	49.2	68.8	94.9	89.9	0.0	59.7	57.1	54.9	53.3	50.9	49.6
7	3-Mar-16	17:00:00	1:00:00	54.6	90.2	49.9	66.2	90.4	81.0	0.0	60.0	56.4	54.7	53.7	52.2	50.6
8	3-Mar-16	18:00:00	1:00:00	53.7	89.3	49.3	66.2	91.6	89.3	0.0	59.6	55.6	53.9	52.8	51.3	50.2
9	3-Mar-16	19:00:00	1:00:00	52.9	88.5	46.5	67.8	91.2	77.8	0.0	58.1	55.0	53.5	52.2	49.7	47.7
10	3-Mar-16	20:00:00	1:00:00	52.9	88.5	43.3	73.5	93.2	89.6	0.0	56.4	54.3	52.7	51.4	48.2	45.5
11	3-Mar-16	21:00:00	1:00:00	52.6	88.2	43.1	74.7	92.4	88.0	0.0	57.3	54.9	53.3	51.8	47.1	44.5
12	3-Mar-16	22:00:00	1:00:00	54.8	90.4	46.9	80.6	100.1	99.1	0.0	58.3	54.6	53.3	52.2	49.9	48.3
13	3-Mar-16	23:00:00	1:00:00	49.2	84.8	39.5	72.8	86.9	85.1	0.0	55.0	50.7	48.5	46.6	42.7	40.5
14	4-Mar-16	0:00:00	1:00:00	43.9	79.5	38.7	58.0	89.0	74.5	0.0	49.9	46.8	44.0	42.3	40.4	39.2
15	4-Mar-16	1:00:00	1:00:00	42.8	78.4	38.4	53.1	91.0	73.6	0.0	48.4	45.4	43.1	41.7	39.9	39.1
16	4-Mar-16	2:00:00	1:00:00	41.7	77.3	37.3	58.4	88.0	86.2	0.0	48.5	44.6	41.5	39.8	38.3	37.3
17	4-Mar-16	3:00:00	1:00:00	39.5	75.0	36.9	49.5	88.2	69.8	0.0	43.9	40.8	39.7	39.1	37.7	37.1
18	4-Mar-16	4:00:00	1:00:00	42.4	78.0	39.3	58.6	103.9	80.6	0.0	47.7	44.6	42.4	41.4	40.1	39.3
19	4-Mar-16	5:00:00	1:00:00	43.7	79.3	40.1	56.4	98.4	77.3	0.0	48.5	46.0	44.0	42.7	41.2	40.2
20	4-Mar-16	6:00:00	1:00:00	49.1	84.7	42.1	64.3	112.1	82.5	0.0	54.9	52.0	49.8	47.9	44.1	42.4
21	4-Mar-16	7:00:00	1:00:00	55.6	91.2	44.9	81.5	110.3	95.2	0.0	62.5	55.0	52.6	50.7	48.0	46.1
22	4-Mar-16	8:00:00	1:00:00	52.3	87.9	46.5	69.9	103.5	92.4	0.0	57.4	54.5	52.8	51.5	49.3	47.6
23	4-Mar-16	9:00:00	1:00:00	51.3	86.9	45.3	68.0	100.0	85.7	0.0	56.0	53.2	51.6	50.5	48.6	47.1
24	4-Mar-16	10:00:00	1:00:00	50.6	86.2	44.9	67.7	95.7	86.1	0.0	55.8	53.4	50.9	49.5	47.1	45.7
25	4-Mar-16	11:00:00	1:00:00	58.3	93.9	41.1	86.3	108.1	107.6	0.0	65.2	60.1	53.9	50.7	46.5	43.7
26	4-Mar-16	12:00:00	1:00:00	54.6	90.2	46.1	73.5	98.1	94.2	0.0	60.7	56.6	54.7	53.3	50.9	48.5
27	4-Mar-16	13:00:00	0:47:11	58.0	92.5	49.7	79.1	112.0	108.2	0.0	66.5	58.4	55.8	54.1	52.1	50.7

DAILY TRAFFIC VOLUMES
OCEAN CHARTER SCHOOL – DEL REY

ID	Street Name	Segment	lanes	speed (mph)	grade	Daily Traffic Volumes				
						Existing (2016)	Year 2020	Project Traffic	Existing + Project	2020 + Project
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	4D	30	0%	7000	7300	130	7130	7430
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	4D	30	0%	7000	7300	160	7160	7460
3	Glencoe Ave.	Mindanao Way to Alla Rd.	4D	30	0%	7000	7300	130	7130	7430
4	Mindanao Way	Glencoe Ave. to Alla Rd.	4D	30	0%	10000	10400	50	10050	10450
5	Short Ave.	Alla Rd. to Beethoven St.	4D	30	0%	10000	10400	10	10010	10410
6	Short Ave.	Beethoven St. to Centinela Ave.	2U	30	0%	11000	11400	120	11120	11520
7	Alla Rd.	Short Ave. to Glencoe Ave.	3D	35	0%	7000	7300	130	7130	7430
8	Alla Rd.	Glencoe Ave. to Panama St.	3D	35	0%	13000	13500	260	13260	13760
9	Alla Rd.	Panama St. to Marina Expwy	3D	35	0%	14000	14600	590	14590	15190
10	Beethoven St.	Short Ave. to Panama St.	2U	25	0%	1000	1040	270	1270	1310
11	Panama St.	Alla Rd. to Beethoven St.	2U	25	0%	1500	1560	850	2350	2410
12	Panama St.	Beethoven St. to McConnell Ave.	2U	25	0%	1000	1040	200	1200	1240
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	2U	25	0%	1000	1040	170	1170	1210
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	4D	35	0%	33000	34300	30	33030	34330
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	4D	35	0%	33000	34300	140	33140	34440
16	Culver Blvd.	Marina Expy to Centinela Ave.	4U	40	0%	18000	18700	140	18140	18840
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	2U	40	0%	28000	29100	590	28590	29690

source: Garland Associates, 2016

LAUSD - Ocean Charter School (Del Rey area on Panama St.)

EXISTING without PROJECT

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)	
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7000	30	48	Soft	4D	0%	1
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7000	30	48	Soft	4D	0%	2
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7000	30	48	Soft	4D	0%	3
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10000	30	48	Soft	4D	0%	4
5	Short Ave.	Alla Rd. to Beethoven St.	10000	30	48	Soft	4D	0%	5
6	Short Ave.	Beethoven St. to Centinela Ave.	11000	30	12	Soft	2U	0%	6
7	Alla Rd.	Short Ave. to Glencoe Ave.	7000	35	36	Soft	4U	0%	7
8	Alla Rd.	Glencoe Ave. to Panama St.	13000	35	36	Soft	4U	0%	8
9	Alla Rd.	Panama St. to Marina Expwy	14000	35	36	Soft	4U	0%	9
10	Beethoven St.	Short Ave. to Panama St.	1000	25	12	Soft	2U	0%	10
11	Panama St.	Alla Rd. to Beethoven St.	1500	25	12	Soft	2U	0%	11
12	Panama St.	Beethoven St. to McConnell Ave.	1000	25	12	Soft	2U	0%	12
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1000	25	12	Soft	2U	0%	13
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	33000	35	48	Soft	4D	0%	14
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	33000	35	48	Soft	4D	0%	15
16	Culver Blvd.	Marina Expy to Centinela Ave.	18000	40	36	Soft	4U	0%	16
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	28000	40	12	Soft	2U	0%	17
18									18
19									19
20									20
21									21
22									22
23									23
24									24
25									25
26									26
27									27
28									28
29									29
30									30

ANALYST
RAM

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6	75.55%		
13.6	13.96%		
10.22	10.49%		

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tra
Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

LAUSD - Ocean Charter School (Del Rey area on Panama St.)
EXISTING without PROJECT CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	DAILY TRAFIC VOLUMES	NOISE LEVEL AT 50 FT. (dBA CNEL)	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7,000	63.1	17	37	80
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7,000	63.1	17	37	80
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7,000	63.1	17	37	80
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10,000	64.6	22	47	102
5	Short Ave.	Alla Rd. to Beethoven St.	10,000	64.6	22	47	102
6	Short Ave.	Beethoven St. to Centinela Ave.	11,000	64.3	21	45	96
7	Alla Rd.	Short Ave. to Glencoe Ave.	7,000	64.3	21	45	96
8	Alla Rd.	Glencoe Ave. to Panama St.	13,000	67.0	31	67	145
9	Alla Rd.	Panama St. to Marina Expwy	14,000	67.3	33	71	153
10	Beethoven St.	Short Ave. to Panama St.	1,000	52.1	3	7	15
11	Panama St.	Alla Rd. to Beethoven St.	1,500	53.8	4	9	19
12	Panama St.	Beethoven St. to McConnell Ave.	1,000	52.1	3	7	15
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1,000	52.1	3	7	15
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	33,000	71.4	62	134	288
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	33,000	71.4	62	134	288
16	Culver Blvd.	Marina Expy to Centinela Ave.	18,000	69.8	48	104	224
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	28,000	71.3	61	131	283
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: EXISTING without PROJECT
Roadway: Maxella Ave.
Segment: Lincoln Blvd. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	429	8	3	317	6	2	79	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-21.0	-24.9	-5.1	-22.3	-26.3	-11.1	-28.3	-32.3
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.5	52.9	54.6	58.2	51.6	53.3	52.2	45.5	47.2
VEHICULAR NOISE	DAY=	61.4	Leq	EVENING=	60.1	Leq	NIGHT=	54.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.5**
CNEL= 63.1

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**34**	**73**
	CNEL:	**17**	**37**	**80**

Scenario: EXISTING without PROJECT
Roadway: Glencoe Ave.
Segment: Maxella Ave. to Mindanao Way

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	429	8	3	317	6	2	79	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-21.0	-24.9	-5.1	-22.3	-26.3	-11.1	-28.3	-32.3
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.5	52.9	54.6	58.2	51.6	53.3	52.2	45.5	47.2
VEHICULAR NOISE	DAY=	61.4	Leq	EVENING=	60.1	Leq	NIGHT=	54.1	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**62.5**
					CNEL=	**63.1**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**16**	**34**	**73**
			CNEL:	**17**	**37**	**80**

Scenario: EXISTING without PROJECT
Roadway: Glencoe Ave.
Segment: Mindanao Way to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	429	8	3	317	6	2	79	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-21.0	-24.9	-5.1	-22.3	-26.3	-11.1	-28.3	-32.3
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.5	52.9	54.6	58.2	51.6	53.3	52.2	45.5	47.2
VEHICULAR NOISE	DAY=	61.4	Leq	EVENING=	60.1	Leq	NIGHT=	54.1	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**62.5**
					CNEL=	**63.1**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**16**	**34**	**73**
			CNEL:	**17**	**37**	**80**

Scenario: EXISTING without PROJECT
Roadway: Mindanao Way
Segment: Glencoe Ave. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	613	12	5	453	9	3	114	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.2	-19.4	-23.4	-3.5	-20.8	-24.7	-9.5	-26.8	-30.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	54.4	56.1	59.7	53.1	54.8	53.7	47.1	48.8
VEHICULAR NOISE	DAY=	62.9	Leq	EVENING=	61.6	Leq	NIGHT=	55.6	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.0**
					CNEL=	**64.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**20**	**43**	**93**
			CNEL:	**22**	**47**	**102**

Scenario: EXISTING without PROJECT
Roadway: Short Ave.
Segment: Alla Rd. to Beethoven St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	613	12	5	453	9	3	114	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.2	-19.4	-23.4	-3.5	-20.8	-24.7	-9.5	-26.8	-30.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	54.4	56.1	59.7	53.1	54.8	53.7	47.1	48.8
VEHICULAR NOISE	DAY=	62.9	Leq	EVENING=	61.6	Leq	NIGHT=	55.6	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.0**
					CNEL=	**64.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**20**	**43**	**93**
			CNEL:	**22**	**47**	**102**

Scenario: EXISTING without PROJECT
Roadway: Short Ave.
Segment: Beethoven St. to Centinela Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	11,000
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	675	13	5	499	9	4	125	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-1.8	-19.0	-23.0	-3.1	-20.3	-24.3	-9.1	-26.3	-30.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.7	54.0	55.7	59.4	52.7	54.4	53.3	46.7	48.4
VEHICULAR NOISE	DAY=	62.5	Leq	EVENING=	61.2	Leq	NIGHT=	55.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.6**
CNEL= 64.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**41**	**87**
	CNEL:	**21**	**45**	**96**

Scenario: EXISTING without PROJECT
Roadway: Alla Rd.
Segment: Short Ave. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,000
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	429	8	3	317	6	2	79	2	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-4.4	-21.7	-25.6	-5.7	-23.0	-26.9	-11.7	-29.0	-32.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.0	53.5	54.8	59.7	52.2	53.5	53.7	46.2	47.5
VEHICULAR NOISE	DAY=	62.5	Leq	EVENING=	61.2	Leq	NIGHT=	55.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.6**
CNEL= 64.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**41**	**87**
	CNEL:	**21**	**45**	**96**

Scenario: EXISTING without PROJECT
Roadway: Alla Rd.
Segment: Glencoe Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	13,000
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	797	15	6	589	11	4	148	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.7	-19.0	-22.9	-3.0	-20.3	-24.2	-9.1	-26.3	-30.2
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.7	56.2	57.5	62.4	54.9	56.2	56.4	48.9	50.1
VEHICULAR NOISE	DAY=	65.2	Leq	EVENING=	63.9	Leq	NIGHT=	57.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.3**
CNEL= 67.0

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**28**	**61**	**132**
	CNEL:	**31**	**67**	**145**

Scenario: EXISTING without PROJECT
Roadway: Alla Rd.
Segment: Panama St. to Marina Expwy

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	14,000
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	859	16	7	635	12	5	159	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.4	-18.6	-22.6	-2.7	-20.0	-23.9	-8.7	-26.0	-29.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.0	56.5	57.8	62.7	55.2	56.5	56.7	49.2	50.5
VEHICULAR NOISE	DAY=	65.6	Leq	EVENING=	64.2	Leq	NIGHT=	58.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.6**
CNEL= 67.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**30**	**64**	**139**
	CNEL:	**33**	**71**	**153**

Scenario: EXISTING without PROJECT
Roadway: Beethoven St.
Segment: Short Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,000
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	61	1	0	45	1	0	11	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.4	-28.6	-32.6	-12.7	-30.0	-33.9	-18.7	-36.0	-39.9
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.0	42.4	44.6	46.7	41.1	43.3	40.6	35.1	37.3
VEHICULAR NOISE	DAY=	50.4	Leq	EVENING=	49.1	Leq	NIGHT=	43.0	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.5**
					CNEL=	**52.1**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**3**	**6**	**13**
			CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Panama St.
Segment: Alla Rd. to Beethoven St.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,500
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	92	2	1	68	1	1	17	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-9.6	-26.9	-30.8	-11.0	-28.2	-32.2	-17.0	-34.2	-38.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	49.7	44.1	46.3	48.4	42.8	45.0	42.4	36.8	39.0
VEHICULAR NOISE	DAY=	52.1	Leq	EVENING=	50.8	Leq	NIGHT=	44.8	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**53.2**
			CNEL=	**53.8**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**4**	**8**	**18**
	CNEL:	**4**	**9**	**19**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Panama St.
Segment: Beethoven St. to McConnell Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,000
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	61	1	0	45	1	0	11	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.4	-28.6	-32.6	-12.7	-30.0	-33.9	-18.7	-36.0	-39.9
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.0	42.4	44.6	46.7	41.1	43.3	40.6	35.1	37.3
VEHICULAR NOISE	DAY=	50.4	Leq	EVENING=	49.1	Leq	NIGHT=	43.0	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.5**
			CNEL=	**52.1**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**6**	**13**
	CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Little Culver Blvd.
Segment: McConnell Ave. to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,000
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	61	1	0	45	1	0	11	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.4	-28.6	-32.6	-12.7	-30.0	-33.9	-18.7	-36.0	-39.9
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.0	42.4	44.6	46.7	41.1	43.3	40.6	35.1	37.3
VEHICULAR NOISE	DAY=	50.4	Leq	EVENING=	49.1	Leq	NIGHT=	43.0	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.5**
			CNEL=	**52.1**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**6**	**13**
	CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Centinela Ave.
Segment: Short Ave. to Little Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	33,000
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2024	38	15	1496	28	11	375	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-14.9	-18.9	1.0	-16.2	-20.2	-5.0	-22.2	-26.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	60.7	61.9	66.9	59.3	60.6	60.8	53.3	54.6
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.8** **CNEL= 71.4**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**56**	**121**	**261**
	CNEL:	**62**	**134**	**288**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Centinela Ave.
Segment: Little Culver Blvd. to Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	33,000
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2024	38	15	1496	28	11	375	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-14.9	-18.9	1.0	-16.2	-20.2	-5.0	-22.2	-26.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	60.7	61.9	66.9	59.3	60.6	60.8	53.3	54.6
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.8** **CNEL= 71.4**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**56**	**121**	**261**
	CNEL:	**62**	**134**	**288**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Culver Blvd.
Segment: Marina Expy to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	18,000
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1104	21	8	816	15	6	204	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.9	-18.1	-22.1	-2.2	-19.4	-23.4	-8.2	-25.5	-29.4
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	66.8	58.5	59.4	65.5	57.2	58.1	59.5	51.2	52.1
VEHICULAR NOISE	DAY=	68.1	Leq	EVENING=	66.7	Leq	NIGHT=	60.7	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 69.1**, **CNEL= 69.8**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**44**	**94**	**204**
	CNEL:	**48**	**104**	**224**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING without PROJECT
Roadway: Marina Expy, WB
Segment: Culver Blvd. to Alla Rd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	28,000
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1717	32	13	1269	24	10	318	6	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.0	-16.2	-20.2	-0.3	-17.5	-21.5	-6.3	-23.5	-27.5
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.3	60.0	60.9	67.0	58.7	59.6	61.0	52.7	53.6
VEHICULAR NOISE	DAY=	69.6	Leq	EVENING=	68.3	Leq	NIGHT=	62.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.7** **CNEL= 71.3**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**55**	**119**	**257**
	CNEL:	**61**	**131**	**283**

LAUSD - Ocean Charter School (Del Rey area on Panama St.)

EXISTING + PROJECT (E + P)

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)	
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7130	30	48	Soft	4D	0%	1
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7160	30	48	Soft	4D	0%	2
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7130	30	48	Soft	4D	0%	3
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10050	30	48	Soft	4D	0%	4
5	Short Ave.	Alla Rd. to Beethoven St.	10010	30	48	Soft	4D	0%	5
6	Short Ave.	Beethoven St. to Centinela Ave.	11120	30	12	Soft	2U	0%	6
7	Alla Rd.	Short Ave. to Glencoe Ave.	7130	35	36	Soft	4U	0%	7
8	Alla Rd.	Glencoe Ave. to Panama St.	13260	35	36	Soft	4U	0%	8
9	Alla Rd.	Panama St. to Marina Expwy	14590	35	36	Soft	4U	0%	9
10	Beethoven St.	Short Ave. to Panama St.	1270	25	12	Soft	2U	0%	10
11	Panama St.	Alla Rd. to Beethoven St.	2350	25	12	Soft	2U	0%	11
12	Panama St.	Beethoven St. to McConnell Ave.	1200	25	12	Soft	2U	0%	12
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1170	25	12	Soft	2U	0%	13
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	33030	35	48	Soft	4D	0%	14
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	33140	35	48	Soft	4D	0%	15
16	Culver Blvd.	Marina Expy to Centinela Ave.	18140	40	36	Soft	4U	0%	16
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	28590	40	12	Soft	2U	0%	17
18									18
19									19
20									20
21									21
22									22
23									23
24									24
25									25
26									26
27									27
28									28
29									29
30									30

ANALYST
RAM

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

			73.6	75.55%
			13.6	13.96%
			10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tra
Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

LAUSD - Ocean Charter School (Del Rey area on Panama St.)
EXISTING + PROJECT (E + P) CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	DAILY TRAFIC VOLUMES	NOISE LEVEL AT 50 FT. (dBA CNEL)	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7,130	63.2	18	38	81
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7,160	63.2	18	38	82
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7,130	63.2	18	38	81
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10,050	64.7	22	48	102
5	Short Ave.	Alla Rd. to Beethoven St.	10,010	64.7	22	47	102
6	Short Ave.	Beethoven St. to Centinela Ave.	11,120	64.3	21	45	97
7	Alla Rd.	Short Ave. to Glencoe Ave.	7,130	64.3	21	45	97
8	Alla Rd.	Glencoe Ave. to Panama St.	13,260	67.0	32	68	147
9	Alla Rd.	Panama St. to Marina Expwy	14,590	67.5	34	73	157
10	Beethoven St.	Short Ave. to Panama St.	1,270	53.1	4	8	17
11	Panama St.	Alla Rd. to Beethoven St.	2,350	55.8	6	12	26
12	Panama St.	Beethoven St. to McConnell Ave.	1,200	52.9	4	8	17
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1,170	52.8	4	8	16
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	33,030	71.4	62	134	288
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	33,140	71.4	62	134	288
16	Culver Blvd.	Marina Expy to Centinela Ave.	18,140	69.8	49	105	225
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	28,590	71.4	62	133	287
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: EXISTING + PROJECT (E + P)
Roadway: Maxella Ave.
Segment: Lincoln Blvd. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,130
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	437	8	3	323	6	2	81	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-20.9	-24.9	-5.0	-22.2	-26.2	-11.0	-28.2	-32.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.6	53.0	54.6	58.3	51.6	53.3	52.3	45.6	47.3
VEHICULAR NOISE	DAY=	61.5	Leq	EVENING=	60.1	Leq	NIGHT=	54.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.6**
CNEL= 63.2

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**34**	**74**
	CNEL:	**18**	**38**	**81**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Glencoe Ave.
Segment: Maxella Ave. to Mindanao Way

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,160
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	439	8	3	325	6	2	81	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-20.9	-24.8	-5.0	-22.2	-26.2	-11.0	-28.2	-32.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.6	53.0	54.7	58.3	51.7	53.4	52.3	45.6	47.3
VEHICULAR NOISE	DAY=	61.5	Leq	EVENING=	60.2	Leq	NIGHT=	54.2	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**62.6**
					CNEL=	**63.2**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**16**	**34**	**74**
			CNEL:	**18**	**38**	**82**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Glencoe Ave.
Segment: Mindanao Way to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,130
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	437	8	3	323	6	2	81	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.7	-20.9	-24.9	-5.0	-22.2	-26.2	-11.0	-28.2	-32.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.6	53.0	54.6	58.3	51.6	53.3	52.3	45.6	47.3
VEHICULAR NOISE	DAY=	61.5	Leq	EVENING=	60.1	Leq	NIGHT=	54.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.6**
CNEL= 63.2

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**34**	**74**
	CNEL:	**18**	**38**	**81**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Mindanao Way
Segment: Glencoe Ave. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,050
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	616	12	5	456	9	3	114	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.2	-19.4	-23.4	-3.5	-20.7	-24.7	-9.5	-26.7	-30.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	54.4	56.1	59.8	53.1	54.8	53.8	47.1	48.8
VEHICULAR NOISE	DAY=	62.9	Leq	EVENING=	61.6	Leq	NIGHT=	55.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 64.0**
CNEL= 64.7

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**20**	**43**	**93**
	CNEL:	**22**	**48**	**102**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Short Ave.
Segment: Alla Rd. to Beethoven St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,010
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	614	12	5	454	9	3	114	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.2	-19.4	-23.4	-3.5	-20.7	-24.7	-9.5	-26.8	-30.7
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	54.4	56.1	59.8	53.1	54.8	53.7	47.1	48.8
VEHICULAR NOISE	DAY=	62.9	Leq	EVENING=	61.6	Leq	NIGHT=	55.6	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.0**
					CNEL=	**64.7**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**20**	**43**	**93**
			CNEL:	**22**	**47**	**102**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Short Ave.
Segment: Beethoven St. to Centinela Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	11,120
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	682	13	5	504	10	4	126	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-1.7	-19.0	-22.9	-3.1	-20.3	-24.2	-9.1	-26.3	-30.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.7	54.1	55.8	59.4	52.8	54.5	53.4	46.8	48.4
VEHICULAR NOISE	DAY=	62.6	Leq	EVENING=	61.3	Leq	NIGHT=	55.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.7**
CNEL= 64.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**41**	**88**
	CNEL:	**21**	**45**	**97**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Alla Rd.
Segment: Short Ave. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,130
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	437	8	3	323	6	2	81	2	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-4.3	-21.6	-25.5	-5.7	-22.9	-26.8	-11.7	-28.9	-32.9
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.1	53.6	54.9	59.8	52.3	53.5	53.8	46.3	47.5
VEHICULAR NOISE	DAY=	62.6	Leq	EVENING=	61.3	Leq	NIGHT=	55.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.7**
CNEL= 64.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**41**	**88**
	CNEL:	**21**	**45**	**97**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Alla Rd.
Segment: Glencoe Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	13,260
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	813	15	6	601	11	5	151	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.6	-18.9	-22.8	-3.0	-20.2	-24.2	-9.0	-26.2	-30.2
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.8	56.3	57.6	62.5	55.0	56.2	56.5	49.0	50.2
VEHICULAR NOISE	DAY=	65.3	Leq	EVENING=	64.0	Leq	NIGHT=	58.0	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**66.4**
					CNEL=	**67.0**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**29**	**62**	**134**
			CNEL:	**32**	**68**	**147**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Alla Rd.
Segment: Panama St. to Marina Expwy

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	14,590
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	895	17	7	661	12	5	166	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.2	-18.5	-22.4	-2.5	-19.8	-23.7	-8.6	-25.8	-29.7
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.2	56.7	58.0	62.9	55.4	56.7	56.9	49.4	50.6
VEHICULAR NOISE	DAY=	65.7	Leq	EVENING=	64.4	Leq	NIGHT=	58.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.8**
CNEL= 67.5

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**31**	**66**	**143**
	CNEL:	**34**	**73**	**157**

Scenario: EXISTING + PROJECT (E + P)
Roadway: Beethoven St.
Segment: Short Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,270
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	78	1	1	58	1	0	14	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.4	-27.6	-31.6	-11.7	-28.9	-32.9	-17.7	-34.9	-38.9
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	49.0	43.4	45.6	47.7	42.1	44.3	41.7	36.1	38.3
VEHICULAR NOISE	DAY=	51.4	Leq	EVENING=	50.1	Leq	NIGHT=	44.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 52.5**
CNEL= 53.1

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**16**
	CNEL:	**4**	**8**	**17**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Panama St. Analyst: RAM
Segment: Alla Rd. to Beethoven St. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	2,350
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	144	3	1	107	2	1	27	1	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-7.7	-24.9	-28.9	-9.0	-26.2	-30.2	-15.0	-32.3	-36.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	51.7	46.1	48.3	50.4	44.8	47.0	44.4	38.8	41.0
VEHICULAR NOISE	DAY=	54.1	Leq	EVENING=	52.8	Leq	NIGHT=	46.7	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**55.2**
			CNEL=	**55.8**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**5**	**11**	**24**
	CNEL:	**6**	**12**	**26**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Panama St. Analyst: RAM
Segment: Beethoven St. to McConnell Ave. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,200
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	74	1	1	54	1	0	14	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.6	-27.9	-31.8	-11.9	-29.2	-33.1	-17.9	-35.2	-39.1
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.8	43.2	45.4	47.5	41.9	44.1	41.4	35.8	38.0
VEHICULAR NOISE	DAY=	51.2	Leq	EVENING=	49.8	Leq	NIGHT=	43.8	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**52.3**
			CNEL=	**52.9**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**15**
	CNEL:	**4**	**8**	**17**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Little Culver Blvd. Analyst: RAM
Segment: McConnell Ave. to Centinela Ave. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,170
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	72	1	1	53	1	0	13	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.7	-28.0	-31.9	-12.0	-29.3	-33.2	-18.1	-35.3	-39.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.7	43.1	45.3	47.3	41.8	43.9	41.3	35.7	37.9
VEHICULAR NOISE	DAY=	51.0	Leq	EVENING=	49.7	Leq	NIGHT=	43.7	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**52.1**
			CNEL=	**52.8**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**15**
	CNEL:	**4**	**8**	**16**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Centinela Ave. Analyst: RAM
Segment: Short Ave. to Little Culver Blvd. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	33,030
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2026	38	15	1497	28	11	375	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-14.9	-18.9	1.0	-16.2	-20.2	-5.0	-22.2	-26.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	60.7	61.9	66.9	59.3	60.6	60.9	53.3	54.6
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.8**
			CNEL=	**71.4**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**56**	**121**	**261**
	CNEL:	**62**	**134**	**288**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Centinela Ave. Analyst: RAM
Segment: Little Culver Blvd. to Culver Blvd. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	33,140
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2033	38	15	1502	28	11	376	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.3	-14.9	-18.9	1.0	-16.2	-20.2	-5.0	-22.2	-26.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	60.7	61.9	66.9	59.4	60.6	60.9	53.3	54.6
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.8**
			CNEL=	**71.4**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**56**	**122**	**262**
	CNEL:	**62**	**134**	**288**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P) Project: LAUSD - Ocean Charter Schoc
Roadway: Culver Blvd. Analyst: RAM
Segment: Marina Expy to Centinela Ave. Date: 06-Jun-16

ROADWAY INPUTS	
ADT	18,140
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1113	21	8	822	16	6	206	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.9	-18.1	-22.1	-2.2	-19.4	-23.4	-8.2	-25.4	-29.4
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	66.8	58.6	59.4	65.5	57.2	58.1	59.5	51.2	52.1
VEHICULAR NOISE	DAY=	68.1	Leq	EVENING=	66.8	Leq	NIGHT=	60.8	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**69.2**
			CNEL=	**69.8**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**44**	**95**	**205**
	CNEL:	**49**	**105**	**225**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING + PROJECT (E + P)
Roadway: Marina Expy, WB
Segment: Culver Blvd. to Alla Rd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	28,590
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1754	33	13	1296	24	10	325	6	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.1	-16.1	-20.1	-0.2	-17.4	-21.4	-6.2	-23.5	-27.4
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.4	60.1	61.0	67.1	58.8	59.7	61.1	52.8	53.7
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.3	Leq	NIGHT=	62.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.7** **CNEL= 71.4**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**56**	**121**	**260**
	CNEL:	**62**	**133**	**287**

LAUSD - Ocean Charter School (Del Rey area on Panama St.)

2020 without PROJECT

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)	
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7300	30	48	Soft	4D	0%	1
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7300	30	48	Soft	4D	0%	2
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7300	30	48	Soft	4D	0%	3
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10400	30	48	Soft	4D	0%	4
5	Short Ave.	Alla Rd. to Beethoven St.	10400	30	48	Soft	4D	0%	5
6	Short Ave.	Beethoven St. to Centinela Ave.	11400	30	12	Soft	2U	0%	6
7	Alla Rd.	Short Ave. to Glencoe Ave.	7300	35	36	Soft	4U	0%	7
8	Alla Rd.	Glencoe Ave. to Panama St.	13500	35	36	Soft	4U	0%	8
9	Alla Rd.	Panama St. to Marina Expwy	14600	35	36	Soft	4U	0%	9
10	Beethoven St.	Short Ave. to Panama St.	1040	25	12	Soft	2U	0%	10
11	Panama St.	Alla Rd. to Beethoven St.	1560	25	12	Soft	2U	0%	11
12	Panama St.	Beethoven St. to McConnell Ave.	1040	25	12	Soft	2U	0%	12
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1040	25	12	Soft	2U	0%	13
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	34300	35	48	Soft	4D	0%	14
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	34300	35	48	Soft	4D	0%	15
16	Culver Blvd.	Marina Expy to Centinela Ave.	18700	40	36	Soft	4U	0%	16
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	29100	40	12	Soft	2U	0%	17
18									18
19									19
20									20
21									21
22									22
23									23
24									24
25									25
26									26
27									27
28									28
29									29
30									30

ANALYST
RAM

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

73.6	75.55%		
13.6	13.96%		
10.22	10.49%		

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tra
Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

LAUSD - Ocean Charter School (Del Rey area on Panama St.)
2020 without PROJECT CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	DAILY TRAFIC VOLUMES	NOISE LEVEL AT 50 FT. (dBA CNEL)	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7,300	63.3	18	38	83
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7,300	63.3	18	38	83
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7,300	63.3	18	38	83
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10,400	64.8	23	49	105
5	Short Ave.	Alla Rd. to Beethoven St.	10,400	64.8	23	49	105
6	Short Ave.	Beethoven St. to Centinela Ave.	11,400	64.4	21	46	98
7	Alla Rd.	Short Ave. to Glencoe Ave.	7,300	64.4	21	46	99
8	Alla Rd.	Glencoe Ave. to Panama St.	13,500	67.1	32	69	149
9	Alla Rd.	Panama St. to Marina Expwy	14,600	67.5	34	73	157
10	Beethoven St.	Short Ave. to Panama St.	1,040	52.3	3	7	15
11	Panama St.	Alla Rd. to Beethoven St.	1,560	54.0	4	9	20
12	Panama St.	Beethoven St. to McConnell Ave.	1,040	52.3	3	7	15
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1,040	52.3	3	7	15
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	34,300	71.6	64	137	295
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	34,300	71.6	64	137	295
16	Culver Blvd.	Marina Expy to Centinela Ave.	18,700	69.9	50	107	230
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	29,100	71.5	62	135	290
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: 2020 without PROJECT
Roadway: Maxella Ave.
Segment: Lincoln Blvd. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,300
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	448	8	3	331	6	3	83	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.6	-20.8	-24.8	-4.9	-22.1	-26.1	-10.9	-28.1	-32.1
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.7	53.1	54.7	58.4	51.7	53.4	52.4	45.7	47.4
VEHICULAR NOISE	DAY=	61.6	Leq	EVENING=	60.2	Leq	NIGHT=	54.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.7**
CNEL= 63.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**35**	**75**
	CNEL:	**18**	**38**	**83**

Scenario: 2020 without PROJECT
Roadway: Glencoe Ave.
Segment: Maxella Ave. to Mindanao Way

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,300
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	448	8	3	331	6	3	83	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.6	-20.8	-24.8	-4.9	-22.1	-26.1	-10.9	-28.1	-32.1
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.7	53.1	54.7	58.4	51.7	53.4	52.4	45.7	47.4
VEHICULAR NOISE	DAY=	61.6	Leq	EVENING=	60.2	Leq	NIGHT=	54.2	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**62.7**
					CNEL=	**63.3**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**16**	**35**	**75**
			CNEL:	**18**	**38**	**83**

Scenario: 2020 without PROJECT
Roadway: Glencoe Ave.
Segment: Mindanao Way to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,300
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	448	8	3	331	6	3	83	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.6	-20.8	-24.8	-4.9	-22.1	-26.1	-10.9	-28.1	-32.1
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.7	53.1	54.7	58.4	51.7	53.4	52.4	45.7	47.4
VEHICULAR NOISE	DAY=	61.6	Leq	EVENING=	60.2	Leq	NIGHT=	54.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.7**
CNEL= 63.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**35**	**75**
	CNEL:	**18**	**38**	**83**

Scenario: 2020 without PROJECT
Roadway: Mindanao Way
Segment: Glencoe Ave. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,400
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	638	12	5	471	9	4	118	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.0	-19.3	-23.2	-3.3	-20.6	-24.5	-9.4	-26.6	-30.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.2	54.6	56.3	59.9	53.3	55.0	53.9	47.3	49.0
VEHICULAR NOISE	DAY=	63.1	Leq	EVENING=	61.8	Leq	NIGHT=	55.8	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.2**
					CNEL=	**64.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**21**	**44**	**95**
			CNEL:	**23**	**49**	**105**

Scenario: 2020 without PROJECT
Roadway: Short Ave.
Segment: Alla Rd. to Beethoven St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,400
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	638	12	5	471	9	4	118	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.0	-19.3	-23.2	-3.3	-20.6	-24.5	-9.4	-26.6	-30.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.2	54.6	56.3	59.9	53.3	55.0	53.9	47.3	49.0
VEHICULAR NOISE	DAY=	63.1	Leq	EVENING=	61.8	Leq	NIGHT=	55.8	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.2**
					CNEL=	**64.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**21**	**44**	**95**
			CNEL:	**23**	**49**	**105**

Scenario: 2020 without PROJECT
Roadway: Short Ave.
Segment: Beethoven St. to Centinela Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	11,400
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	699	13	5	517	10	4	129	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-1.6	-18.9	-22.8	-2.9	-20.2	-24.1	-9.0	-26.2	-30.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.8	54.2	55.9	59.5	52.9	54.6	53.5	46.9	48.6
VEHICULAR NOISE	DAY=	62.7	Leq	EVENING=	61.4	Leq	NIGHT=	55.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.8**
CNEL= 64.4

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**41**	**89**
	CNEL:	**21**	**46**	**98**

Scenario: 2020 without PROJECT
Roadway: Alla Rd.
Segment: Short Ave. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,300
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	448	8	3	331	6	3	83	2	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-4.2	-21.5	-25.4	-5.5	-22.8	-26.7	-11.6	-28.8	-32.8
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.2	53.7	55.0	59.9	52.4	53.6	53.9	46.4	47.6
VEHICULAR NOISE	DAY=	62.7	Leq	EVENING=	61.4	Leq	NIGHT=	55.4	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**63.8**
					CNEL=	**64.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**19**	**42**	**90**
			CNEL:	**21**	**46**	**99**

Scenario: 2020 without PROJECT
Roadway: Alla Rd.
Segment: Glencoe Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	13,500
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	828	16	6	612	12	5	153	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.6	-18.8	-22.8	-2.9	-20.1	-24.1	-8.9	-26.1	-30.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.9	56.4	57.6	62.6	55.1	56.3	56.6	49.0	50.3
VEHICULAR NOISE	DAY=	65.4	Leq	EVENING=	64.1	Leq	NIGHT=	58.1	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**66.5**
					CNEL=	**67.1**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**29**	**63**	**135**
			CNEL:	**32**	**69**	**149**

Scenario: 2020 without PROJECT
Roadway: Alla Rd.
Segment: Panama St. to Marina Expwy

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	14,600
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	895	17	7	662	13	5	166	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.2	-18.5	-22.4	-2.5	-19.8	-23.7	-8.6	-25.8	-29.7
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.2	56.7	58.0	62.9	55.4	56.7	56.9	49.4	50.6
VEHICULAR NOISE	DAY=	65.7	Leq	EVENING=	64.4	Leq	NIGHT=	58.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.8**
CNEL= 67.5

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**31**	**66**	**143**
	CNEL:	**34**	**73**	**157**

Scenario: 2020 without PROJECT
Roadway: Beethoven St.
Segment: Short Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,040
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	64	1	0	47	1	0	12	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.2	-28.5	-32.4	-12.6	-29.8	-33.7	-18.6	-35.8	-39.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.1	42.6	44.8	46.8	41.2	43.4	40.8	35.2	37.4
VEHICULAR NOISE	DAY=	50.5	Leq	EVENING=	49.2	Leq	NIGHT=	43.2	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.6**
					CNEL=	**52.3**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**3**	**6**	**14**
			CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Panama St.
Segment: Alla Rd. to Beethoven St.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,560
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	96	2	1	71	1	1	18	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-9.5	-26.7	-30.7	-10.8	-28.0	-32.0	-16.8	-34.0	-38.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	49.9	44.3	46.5	48.6	43.0	45.2	42.6	37.0	39.2
VEHICULAR NOISE	DAY=	52.3	Leq	EVENING=	51.0	Leq	NIGHT=	45.0	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**53.4**
			CNEL=	**54.0**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**4**	**8**	**18**
	CNEL:	**4**	**9**	**20**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Panama St.
Segment: Beethoven St. to McConnell Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,040
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	64	1	0	47	1	0	12	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.2	-28.5	-32.4	-12.6	-29.8	-33.7	-18.6	-35.8	-39.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.1	42.6	44.8	46.8	41.2	43.4	40.8	35.2	37.4
VEHICULAR NOISE	DAY=	50.5	Leq	EVENING=	49.2	Leq	NIGHT=	43.2	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.6**
			CNEL=	**52.3**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**6**	**14**
	CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Little Culver Blvd.
Segment: McConnell Ave. to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,040
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	64	1	0	47	1	0	12	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-11.2	-28.5	-32.4	-12.6	-29.8	-33.7	-18.6	-35.8	-39.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.1	42.6	44.8	46.8	41.2	43.4	40.8	35.2	37.4
VEHICULAR NOISE	DAY=	50.5	Leq	EVENING=	49.2	Leq	NIGHT=	43.2	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**51.6**
			CNEL=	**52.3**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**6**	**14**
	CNEL:	**3**	**7**	**15**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Centinela Ave.
Segment: Short Ave. to Little Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	34,300
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2104	40	16	1555	29	12	389	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.8	-22.1	-26.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.3	60.8	62.1	67.0	59.5	60.8	61.0	53.5	54.8
VEHICULAR NOISE	DAY=	69.8	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.9** **CNEL= 71.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**124**	**268**
	CNEL:	**64**	**137**	**295**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Centinela Ave.
Segment: Little Culver Blvd. to Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	34,300
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2104	40	16	1555	29	12	389	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.8	-22.1	-26.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.3	60.8	62.1	67.0	59.5	60.8	61.0	53.5	54.8
VEHICULAR NOISE	DAY=	69.8	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.9**, **CNEL= 71.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**124**	**268**
	CNEL:	**64**	**137**	**295**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Culver Blvd.
Segment: Marina Expy to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	18,700
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1147	22	9	848	16	6	212	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.7	-18.0	-21.9	-2.0	-19.3	-23.2	-8.1	-25.3	-29.3
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.0	58.7	59.6	65.7	57.4	58.3	59.7	51.4	52.3
VEHICULAR NOISE	DAY=	68.2	Leq	EVENING=	66.9	Leq	NIGHT=	60.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 69.3**, **CNEL= 69.9**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**45**	**97**	**209**
	CNEL:	**50**	**107**	**230**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 without PROJECT
Roadway: Marina Expy, WB
Segment: Culver Blvd. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	29,100
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1785	34	14	1319	25	10	330	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.2	-16.0	-20.0	-0.1	-17.4	-21.3	-6.1	-23.4	-27.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	60.2	61.1	67.2	58.9	59.8	61.2	52.9	53.8
VEHICULAR NOISE	DAY=	69.7	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.8**
			CNEL=	**71.5**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**57**	**122**	**263**
	CNEL:	**62**	**135**	**290**

LAUSD - Ocean Charter School (Del Rey area on Panama St.)

2020 + PROJECT

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)	
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7430	30	48	Soft	4D	0%	1
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7460	30	48	Soft	4D	0%	2
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7430	30	48	Soft	4D	0%	3
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10450	30	48	Soft	4D	0%	4
5	Short Ave.	Alla Rd. to Beethoven St.	10410	30	48	Soft	4D	0%	5
6	Short Ave.	Beethoven St. to Centinela Ave.	11520	30	12	Soft	2U	0%	6
7	Alla Rd.	Short Ave. to Glencoe Ave.	7430	35	36	Soft	4U	0%	7
8	Alla Rd.	Glencoe Ave. to Panama St.	13760	35	36	Soft	4U	0%	8
9	Alla Rd.	Panama St. to Marina Expwy	15190	35	36	Soft	4U	0%	9
10	Beethoven St.	Short Ave. to Panama St.	1310	25	12	Soft	2U	0%	10
11	Panama St.	Alla Rd. to Beethoven St.	2410	25	12	Soft	2U	0%	11
12	Panama St.	Beethoven St. to McConnell Ave.	1240	25	12	Soft	2U	0%	12
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1210	25	12	Soft	2U	0%	13
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	34330	35	48	Soft	4D	0%	14
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	34440	35	48	Soft	4D	0%	15
16	Culver Blvd.	Marina Expy to Centinela Ave.	18840	40	36	Soft	4U	0%	16
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	29690	40	12	Soft	2U	0%	17
18									18
19									19
20									20
21									21
22									22
23									23
24									24
25									25
26									26
27									27
28									28
29									29
30									30

ANALYST
RAM

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

			73.6	75.55%
			13.6	13.96%
			10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Tra
Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

LAUSD - Ocean Charter School (Del Rey area on Panama St.)
2020 + PROJECT CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

#	ROADWAY	SEGMENT	DAILY TRAFIC VOLUMES	NOISE LEVEL AT 50 FT. (dBA CNEL)	DISTANCE TO NOISE CONTOUR (FT.)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Maxella Ave.	Lincoln Blvd. to Glencoe Ave.	7,430	63.4	18	39	84
2	Glencoe Ave.	Maxella Ave. to Mindanao Way	7,460	63.4	18	39	84
3	Glencoe Ave.	Mindanao Way to Alla Rd.	7,430	63.4	18	39	84
4	Mindanao Way	Glencoe Ave. to Alla Rd.	10,450	64.8	23	49	105
5	Short Ave.	Alla Rd. to Beethoven St.	10,410	64.8	23	49	105
6	Short Ave.	Beethoven St. to Centinela Ave.	11,520	64.5	21	46	99
7	Alla Rd.	Short Ave. to Glencoe Ave.	7,430	64.5	22	46	100
8	Alla Rd.	Glencoe Ave. to Panama St.	13,760	67.2	33	70	151
9	Alla Rd.	Panama St. to Marina Expwy	15,190	67.6	35	75	161
10	Beethoven St.	Short Ave. to Panama St.	1,310	53.3	4	8	18
11	Panama St.	Alla Rd. to Beethoven St.	2,410	55.9	6	12	27
12	Panama St.	Beethoven St. to McConnell Ave.	1,240	53.0	4	8	17
13	Little Culver Blvd.	McConnell Ave. to Centinela Ave.	1,210	52.9	4	8	17
14	Centinela Ave.	Short Ave. to Little Culver Blvd.	34,330	71.6	64	137	295
15	Centinela Ave.	Little Culver Blvd. to Culver Blvd.	34,440	71.6	64	137	296
16	Culver Blvd.	Marina Expy to Centinela Ave.	18,840	70.0	50	107	231
17	Marina Expy, WB	Culver Blvd. to Alla Rd.	29,690	71.5	63	136	294
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: 2020 + PROJECT
Roadway: Maxella Ave.
Segment: Lincoln Blvd. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,430
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	456	9	3	337	6	3	84	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.5	-20.7	-24.7	-4.8	-22.0	-26.0	-10.8	-28.1	-32.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.8	53.1	54.8	58.5	51.8	53.5	52.4	45.8	47.5
VEHICULAR NOISE	DAY=	61.6	Leq	EVENING=	60.3	Leq	NIGHT=	54.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.7**
CNEL= 63.4

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**35**	**76**
	CNEL:	**18**	**39**	**84**

Scenario: 2020 + PROJECT
Roadway: Glencoe Ave.
Segment: Maxella Ave. to Mindanao Way

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,460
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	458	9	3	338	6	3	85	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.5	-20.7	-24.7	-4.8	-22.0	-26.0	-10.8	-28.0	-32.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.8	53.2	54.8	58.5	51.8	53.5	52.5	45.8	47.5
VEHICULAR NOISE	DAY=	61.7	Leq	EVENING=	60.3	Leq	NIGHT=	54.3	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**62.7**
					CNEL=	**63.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**16**	**35**	**76**
			CNEL:	**18**	**39**	**84**

Scenario: 2020 + PROJECT
Roadway: Glencoe Ave.
Segment: Mindanao Way to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,430
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	456	9	3	337	6	3	84	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-3.5	-20.7	-24.7	-4.8	-22.0	-26.0	-10.8	-28.1	-32.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	59.8	53.1	54.8	58.5	51.8	53.5	52.4	45.8	47.5
VEHICULAR NOISE	DAY=	61.6	Leq	EVENING=	60.3	Leq	NIGHT=	54.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.7**
CNEL= 63.4

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**35**	**76**
	CNEL:	**18**	**39**	**84**

Scenario: 2020 + PROJECT
Roadway: Mindanao Way
Segment: Glencoe Ave. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,450
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	641	12	5	474	9	4	119	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.0	-19.2	-23.2	-3.3	-20.6	-24.5	-9.3	-26.6	-30.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.3	54.6	56.3	59.9	53.3	55.0	53.9	47.3	49.0
VEHICULAR NOISE	DAY=	63.1	Leq	EVENING=	61.8	Leq	NIGHT=	55.8	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**64.2**
					CNEL=	**64.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**21**	**44**	**95**
			CNEL:	**23**	**49**	**105**

Scenario: 2020 + PROJECT
Roadway: Short Ave.
Segment: Alla Rd. to Beethoven St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	10,410
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	638	12	5	472	9	4	118	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-2.0	-19.3	-23.2	-3.3	-20.6	-24.5	-9.4	-26.6	-30.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.2	54.6	56.3	59.9	53.3	55.0	53.9	47.3	49.0
VEHICULAR NOISE	DAY=	63.1	Leq	EVENING=	61.8	Leq	NIGHT=	55.8	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 64.2**
CNEL= 64.8

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**21**	**44**	**95**
	CNEL:	**23**	**49**	**105**

Scenario: 2020 + PROJECT
Roadway: Short Ave.
Segment: Beethoven St. to Centinela Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	11,520
SPEED (mph)	30
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	707	13	5	522	10	4	131	2	1
Speed in MPH	30	30	30	30	30	30	30	30	30
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	62.5	73.1	78.8	62.5	73.1	78.8	62.5	73.1	78.8
ADJUSTMENTS									
Flow	-1.6	-18.8	-22.8	-2.9	-20.1	-24.1	-8.9	-26.1	-30.1
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.9	54.2	55.9	59.6	52.9	54.6	53.5	46.9	48.6
VEHICULAR NOISE	DAY=	62.7	Leq	EVENING=	61.4	Leq	NIGHT=	55.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.8**
CNEL= 64.5

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**42**	**90**
	CNEL:	**21**	**46**	**99**

Scenario: 2020 + PROJECT
Roadway: Alla Rd.
Segment: Short Ave. to Glencoe Ave.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	7,430
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	456	9	3	337	6	3	84	2	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-4.2	-21.4	-25.4	-5.5	-22.7	-26.7	-11.5	-28.7	-32.7
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.3	53.8	55.0	60.0	52.5	53.7	54.0	46.5	47.7
VEHICULAR NOISE	DAY=	62.8	Leq	EVENING=	61.5	Leq	NIGHT=	55.5	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**63.9**
					CNEL=	**64.5**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**20**	**42**	**91**
			CNEL:	**22**	**46**	**100**

Scenario: 2020 + PROJECT
Roadway: Alla Rd.
Segment: Glencoe Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	13,760
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	844	16	6	624	12	5	156	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.5	-18.7	-22.7	-2.8	-20.0	-24.0	-8.8	-26.0	-30.0
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.0	56.5	57.7	62.7	55.1	56.4	56.6	49.1	50.4
VEHICULAR NOISE	DAY=	65.5	Leq	EVENING=	64.2	Leq	NIGHT=	58.2	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**66.6**
					CNEL=	**67.2**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**30**	**64**	**137**
			CNEL:	**33**	**70**	**151**

Scenario: 2020 + PROJECT
Roadway: Alla Rd.
Segment: Panama St. to Marina Expwy

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	15,190
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	932	18	7	689	13	5	172	3	1
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	-1.1	-18.3	-22.2	-2.4	-19.6	-23.6	-8.4	-25.6	-29.6
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.4	56.9	58.1	63.1	55.6	56.8	57.1	49.6	50.8
VEHICULAR NOISE	DAY=	65.9	Leq	EVENING=	64.6	Leq	NIGHT=	58.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 67.0**
CNEL= 67.6

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**32**	**68**	**146**
	CNEL:	**35**	**75**	**161**

Scenario: 2020 + PROJECT
Roadway: Beethoven St.
Segment: Short Ave. to Panama St.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,310
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	80	2	1	59	1	0	15	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.2	-27.5	-31.4	-11.5	-28.8	-32.7	-17.6	-34.8	-38.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	49.1	43.6	45.8	47.8	42.2	44.4	41.8	36.2	38.4
VEHICULAR NOISE	DAY=	51.5	Leq	EVENING=	50.2	Leq	NIGHT=	44.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 52.6**
CNEL= 53.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**16**
	CNEL:	**4**	**8**	**18**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Panama St.
Segment: Alla Rd. to Beethoven St.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	2,410
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	148	3	1	109	2	1	27	1	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-7.6	-24.8	-28.8	-8.9	-26.1	-30.1	-14.9	-32.2	-36.1
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	51.8	46.2	48.4	50.5	44.9	47.1	44.5	38.9	41.1
VEHICULAR NOISE	DAY=	54.2	Leq	EVENING=	52.9	Leq	NIGHT=	46.9	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**55.3**
			CNEL=	**55.9**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**5**	**11**	**24**
	CNEL:	**6**	**12**	**27**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Panama St.
Segment: Beethoven St. to McConnell Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,240
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	76	1	1	56	1	0	14	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.5	-27.7	-31.7	-11.8	-29.0	-33.0	-17.8	-35.0	-39.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.9	43.3	45.5	47.6	42.0	44.2	41.6	36.0	38.2
VEHICULAR NOISE	DAY=	51.3	Leq	EVENING=	50.0	Leq	NIGHT=	44.0	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**52.4**
			CNEL=	**53.0**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**16**
	CNEL:	**4**	**8**	**17**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Little Culver Blvd.
Segment: McConnell Ave. to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	1,210
SPEED (mph)	25
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	74	1	1	55	1	0	14	0	0
Speed in MPH	25	25	25	25	25	25	25	25	25
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	59.4	71.1	77.2	59.4	71.1	77.2	59.4	71.1	77.2
ADJUSTMENTS									
Flow	-10.6	-27.8	-31.8	-11.9	-29.1	-33.1	-17.9	-35.1	-39.1
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	48.8	43.2	45.4	47.5	41.9	44.1	41.5	35.9	38.1
VEHICULAR NOISE	DAY=	51.2	Leq	EVENING=	49.9	Leq	NIGHT=	43.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 52.3**
CNEL= 52.9

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**3**	**7**	**15**
	CNEL:	**4**	**8**	**17**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Centinela Ave.
Segment: Short Ave. to Little Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	34,330
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2106	40	16	1556	29	12	390	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.8	-18.7	1.2	-16.1	-20.0	-4.8	-22.1	-26.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.3	60.8	62.1	67.0	59.5	60.8	61.0	53.5	54.8
VEHICULAR NOISE	DAY=	69.8	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.9**
			CNEL=	**71.6**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**125**	**268**
	CNEL:	**64**	**137**	**295**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Centinela Ave.
Segment: Little Culver Blvd. to Culver Blvd.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	34,440
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2112	40	16	1561	29	12	391	7	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.5	-14.7	-18.7	1.2	-16.1	-20.0	-4.8	-22.1	-26.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.4	60.8	62.1	67.0	59.5	60.8	61.0	53.5	54.8
VEHICULAR NOISE	DAY=	69.9	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.0** **CNEL= 71.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**125**	**269**
	CNEL:	**64**	**137**	**296**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Culver Blvd.
Segment: Marina Expy to Centinela Ave.
Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	18,840
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1156	22	9	854	16	6	214	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.7	-17.9	-21.9	-2.0	-19.2	-23.2	-8.0	-25.3	-29.2
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.0	58.7	59.6	65.7	57.4	58.3	59.7	51.4	52.3
VEHICULAR NOISE	DAY=	68.2	Leq	EVENING=	66.9	Leq	NIGHT=	60.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 69.3**, **CNEL= 70.0**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**45**	**97**	**210**
	CNEL:	**50**	**107**	**231**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2020 + PROJECT
Roadway: Marina Expy, WB
Segment: Culver Blvd. to Alla Rd.

Project: LAUSD - Ocean Charter Schoc
Analyst: RAM
Date: 06-Jun-16

ROADWAY INPUTS	
ADT	29,690
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1821	34	14	1346	25	10	337	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.3	-16.0	-19.9	0.0	-17.3	-21.2	-6.0	-23.3	-27.2
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	60.3	61.2	67.3	59.0	59.9	61.3	53.0	53.9
VEHICULAR NOISE	DAY=	69.8	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.9** **CNEL= 71.5**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**124**	**267**
	CNEL:	**63**	**136**	**294**