
IV.G. NOISE

ENVIRONMENTAL SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is commonly defined as unwanted sound. Sound can be characterized by a variety of parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure ratioed to an assumed zero sound level is called a decibel (dB).

Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter Scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting", written as dB(A). Any further reference to decibels in this discussion written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL). An interior CNEL of 45 dB(A) is mandated for multiple family dwellings in Title 24 of the California Code of Regulations, and is considered a desirable noise exposure for single family dwelling units as well. Since typical noise attenuation within residential structures is about 15-20 dB, an exterior noise exposure of 60-65 dB CNEL is generally the noise/ land use compatibility guideline for new residential dwellings in California.

In the Noise Element of the City of Los Angeles General Plan, a 60 dB CNEL exposure is considered the most desirable target for the exterior of noise sensitive land uses such as homes, schools, churches, libraries, etc. It is also recognized that such a level may not always be possible in areas of substantial traffic noise intrusion. Exposures up to 70 dB for noise-sensitive uses are considered conditionally acceptable if all measures to reduce such exposure have been taken. Noise levels above 70 dB CNEL are normally unacceptable except in unusual circumstances.

New noise-sensitive land uses are generally not approved for noise environments exceeding 65 dB CNEL unless the noise exposure of any usable exterior space can be mitigated to below 65 dB. In many older residential areas, especially near freeways, noise levels in excess of 65 dB CNEL are common.

Table IV.G-1 shows the noise/land use compatibility guideline for City of Los Angeles land uses. For project residences an exterior CNEL of 60 dB is optimum, and 70 dB is acceptable in any usable exterior areas (patios, decks, etc.).

Table IV.G-1
Community Noise Exposure CNEL

Land Use	Normally Acceptable ¹	Conditionally Acceptable ²	Normally Unacceptable ³	Clearly Unacceptable ⁴
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters	---	50 - 70	---	above 65
Sports Arena, Outdoor Spectator Sports	---	50 - 75	---	above 70
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	---	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	---
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	---

¹*Normally Acceptable:* Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

²*Conditionally Acceptable:* New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

³*Normally Unacceptable:* New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

⁴*Clearly Unacceptable:* New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health Services (DHS)

Existing noise levels around the proposed project site derive mainly from vehicular sources on the roadways in the area. Roadways near the site serve mainly low-density residential uses, while roadways below and to the south south-west are major arterial streets. They carry heavy traffic volumes, but are physically far removed from the project site. Existing on-site traffic noise levels were

calculated using the federal highway traffic noise prediction model (FHWA-RD-77-108). Local street traffic speeds were assumed to be 35 mph, with a 45 mph travel speed on Sunset Boulevard. The calculated traffic noise (dBA CNEL) at a 50-foot reference distance from the roadway centerline, and the resulting project site noise exposure, are listed in Table IV.G-2.

Table IV.G-2
Existing Noise Levels

Noise Location:	Reference Level @ 50'	On-Site
Tramonto Drive	57	46
Castellammare Drive	55	45
Sunset Boulevard	69	56

The project is sufficiently set back from any traffic noise generators as to experience levels considered within the "normally acceptable" range (50-60 dB CNEL) with a reasonable margin of safety. Existing on-site traffic is not considered an impediment to project implementation. Because noise is logarithmically proportional to traffic volumes, it would require a large (almost ten-fold) increase in traffic to create any need for on-site noise mitigation. Such increases are not anticipated in the project vicinity. Existing noise estimates suggest that future noise conditions will similarly not be a constraint upon the proposed project.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

CEQA Guidelines identify significant noise impacts as those that cause standards to be exceeded where they are currently met. An impact is also considered significant if it "substantially" worsens an existing unacceptable noise environment.

Appendix G of the California CEQA Guidelines identifies four (non-airplane) tests of impact significance. These tests are as follows:

- 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.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Section 112.05 of the Los Angeles Building Code specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or powered hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet from construction and industrial machinery is prohibited. However, the above noise limitation does not apply where compliance is technically infeasible (Section 112.05, Los Angeles Municipal Code). Technically infeasible means that the above noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment. An inability to reduce construction equipment noise exposure to 75 dBA or less at any off-site, noise-sensitive use would be considered a significant temporary noise impact.

The L.A. "CEQA Threshold Guidelines" (1998) have been established that quantify the construction activity noise limits that would be considered a normally significant impact as follows for construction activities within 500 feet of a home, school, church, etc.

<u>Increase</u>	<u>Duration</u>
≥ 10 dB	More than one day
≥ 5 dB	10 days in a three-month period
> 5 dB	9 P.M. to 7 A.M. (Mon.-Fri.) before 8 A.M. or after 6 P.M. (Sat.) at any time (Sun.)

Project Impacts

Demolition/Construction Noise Impacts

Demolition or construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used which changes during the course of the project. Construction noise tends to occur in discrete phases dominated initially by demolition and/or earth-moving sources and later for finish construction. As shown in Figure IV.G-1, heavy equipment noise can exceed 90 dB(A) and averages about 85 dB(A) at 50 feet from the source when the equipment is operating at typical loads. Most heavy equipment operates with varying load cycles over any extended period of time. The upper end of the noise generation range shown in Figure IV.G-1 thus represents short-term effects, while the longer term averages are most representative of the lower end of the indicated noise curves.

Figure IV.G-1 Typical Construction Equipment Noise Generation Levels

Construction noise exposure can be further worsened when several pieces of equipment operate in close proximity. Because of the logarithmic nature of decibel addition, two equally loud pieces of equipment will be +3 dB louder than either one individually. Three simultaneous sources are +5 dB louder than any single source. Thus, while average operational equipment noise levels are perhaps 5 dB less than at peak power, simultaneous equipment operation can still yield an apparent noise strength equal to any individual source at peak noise output. Whereas the average heavy equipment reference noise level is 85 dB(A), short-term levels from either peak power or from several pieces operating in close proximity can be as high as 90 dB(A).

Point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance.¹ The loudest construction activities would thus require almost 280 feet of distance between the source and a nearby receiver to reduce the peak 90 dB(A) source strength to the generally acceptable 75 dB exterior exposure level specified in Section 112.05 of the City Building Code. Complex terrain around the project site may intermittently shield some nearby receivers from direct line of sight noise propagation such that the construction equipment noise "envelope" may be considerably smaller than 280 feet in many areas. If hillside echo effects are involved, the zone of impact might exceed 280 feet for brief periods of time. Echo effects tend to occur infrequently unless the work area is within a hard-surfaced, parabolic bowl, which is not the case at the project site.

During heavy equipment operations in close proximity to the project site boundary, the distance buffer needed to reduce the maximum equipment noise to the 75 dBA ordinance limit may not exist. The 75 dBA equipment noise threshold specified in Section 112.05 of the Los Angeles Building Code may be intermittently exceeded. A possible violation of the ordinance requires an evaluation of technical feasibility of using alternate equipment or construction methods. It also requires that all feasible noise reduction measures be implemented. Candidate measures for meeting this requirement are provided below.

When construction such as excavation, pouring concrete or similarly noisy activities occur during the three-year window of heavy construction, they may occur for many days in a month. The "10 day per 3 month" significance threshold would apply. This threshold would allow for a +5 dB increase above ambient noise levels before a significant impact would occur. Baseline noise levels in yards surrounding the project site are estimated to be 45 dB (LEQ). A noise level of 50 dB LEQ or more would constitute a potentially significant noise impact. For purposes of analysis, an 85 dB (LEQ)

¹ *The City of L.A. CEQA Thresholds Guide references drop-off rates of 3 dBA over acoustically hard surfaces, and 4.5 dBA over irregular soft ground. These rates apply to line sources (roadways), but not to spherically spreading point radiators such as individual pieces of construction equipment. The 6 dB distance doubling factor is a standard assumption in noise propagation theory for isolated point sources of sound waves.*

reference noise level was assumed during daytime construction. The distance of the 50 dB LEQ contour, assuming various line-of-sight conditions, is as follows:

Clear line-of-sight	-	2,800 feet from source
Moderately terrain-obstructed	-	890 feet from source
Heavily terrain - obstructed	-	280 feet from source

Even if there is a substantial obstruction to direct line-of-sight noise propagation, the quiet background conditions create a very large noise impact "footprint" during construction. Even with intervening barriers and other noise protection features, reduction of construction noise levels to 50 dB or less in the closest residential rear yards is not feasible. Construction activities will have a significant, unmitigable noise impact during parts of the three-year construction cycle. Because not every construction day will necessarily entail heavy equipment operations, the actual number of days of a potentially significant impact is a small fraction of the total construction period.

In later phases of finish construction of the project, equipment such as generators, compressors, saws, etc., are seen in Figure IV.G-1 to be 10 dB quieter than the earth movers. Humans perceive 10 dB changes to be an apparent halving of noise levels. The physical barrier created by partially completed on-site facilities will further break up line-of-sight propagation. Whereas peak noise impacts will be clearly audible within a radius of several hundred feet during demolition and major earthworks, lesser intensity noise during finish construction would be intrusive only at those homes in the very closest proximity to the activity itself.

In addition to the noise performance standard, the City Noise Ordinance regulates allowable hours of construction activity. To abate potential construction noise impacts, especially in very close proximity to any adjacent noise-sensitive development, the City of Los Angeles Noise Ordinance (Municipal Code Ordinance No. 144,331) limits the hours of allowable construction activities and prohibits loud, unnecessary and unusual construction noise within 500 feet of any residential zone. The ordinance states as follows:

Section 112.03 Construction Noise

- (a) *Between the hours of 9 P.M. and 7 A.M. of the following day, noise due to construction or repair work of any kind upon, or excavation for any building or structure shall be regulated or prohibited as provided by Sec. 11.40 of this code.*
- (b) *After 7 A.M. and prior to 9 P.M. of any day, in any residence zone of the City or within 500 feet thereof, no person shall perform any construction or repair work on any building or structure, or perform any excavation work, which work entails the use of any power driven hoist, scraper or shovel, pneumatic hammer,*

pile driver or other construction type device in such manner that the noise created thereby is loud, unnecessary and unusual and substantially exceeds the noise customarily and necessarily attendant to the reasonable and efficient performance of such work.

As additional protection for residences adjacent to any major construction site, the City of Los Angeles typically further limits construction activities from 7 A.M. to 6 P.M. instead of the 9 P.M. stop time allowed by Section 112.03(a).

Enforcement of the ordinance provides a reasonable measure of protection for adjacent residents in those localized instances where major earthworks occur within the 500 foot ordinance limit zone. Noise ordinance limits delay the allowable construction time to 8 A.M. on Saturdays. Similarly, the ordinance prohibits the arrival of construction trucks (cement mixers, steel, wood or other building materials) to the same time limits within 500 feet of any homes. Compliance with the Ordinance will thus limit the hours of potentially loud noise generation to hours when many people are away at work. The lack of a suitable distance buffer will, however, create a temporarily significant noise impact to those residents who are at home during normal workdays.

In addition to on-site equipment noise generation, truck traffic to/from the site would affect the off-site noise environment. Heaviest truck traffic will occur for four to six months during landslide repair and slope stabilization. Peak truck activity and associated noise generation would occur during soil export. Truck noise along project haul routes was calculated using the California vehicle noise curves (Calveno) in the federal highway traffic noise prediction model (FHWA-RD-77-108). The calculation was made for trucks using the proposed haul route that proceeds northward on Tramonto Drive, east on Los Lions Drive, south on Sunset Blvd., eastward along PCH, and to the Santa Monica Freeway.

Vehicle noise/land use compatibility is expressed in terms of the community noise equivalent level, or CNEL. CNELs are a weighted 24-hour factor where nocturnal traffic activity is penalized ten-fold. Haul trucks will not be allowed on-site until after 7 A.M. such that all haul traffic will have only a daytime impact. CNELs due to haul traffic will be much lower than the hourly average noise level when the late afternoon, evening and nocturnal periods of zero construction traffic are averaged in with the daytime haul hours. Dirt hauling noise levels are summarized in Table IV.G-3.

The City of Los Angeles CEQA Threshold Guidelines specify that that a noise increase of five dB or greater for ten days in a three-month period would be a significant impact. As shown in Table IV.G-3, if soil hauling activity exceeds 70 loads per day (10/hour), a significant noise impact may result along Tramonto Drive because the noise level would increase by five dB. If soil hauling activities exceed 112 loads per day (16/hour), truck noise impacts would be significant along both Tramonto Drive and Los

Liones Drive. Because the excavation phase of the proposed project may involve up to 128 truck loads per day, noise impacts from soil truck hauling activities are considered to be significant.

Table IV.G-3
Truck Haul Noise Levels (dBA CNEL)
(at 50 feet from the centerline)

Location:	No Hauling	With Hauling (60 loads per day)	With Hauling (75 loads per day)	With Hauling (90 loads per day)	With Hauling (100 loads per day)	With Hauling (120 loads per day)	With Hauling (250 loads per day)
Tramonto Drive ¹	57	61	62	62	62	62	66
Los Liones Drive ¹	59	62	62	63	63	64	66
Sunset Boulevard ¹	69	69	70	70	70	70	70
PCH (east of Sunset)	75	75	75	75	75	75	75

¹ = including +3 dB noise penalty for uphill traffic.

Source: FHWA-RD-77-108

Operational Traffic Noise Impacts

Long term noise concerns from the increased development intensity of the project site relative to the City of Los Angeles CEQA threshold significance criteria derive primarily on mobile source emissions on the roadways assessing the site. These concerns were addressed using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) which calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers. Because the project will create traffic volume changes on multiple roadways, generic runs for one roadway source were made and noise levels on other nearby roadways were calculated based on a logarithmic volume ratio adjustment to the reference volume noise level.

Nine identified roadway links were selected for analysis. Table IV.G-4 summarizes the calculated CNEL at 50' from the roadway centerline for three traffic scenarios (existing, near-term future with related cumulative development, and near-term future with cumulative growth plus the proposed project) on the nine links analyzed. These scenarios incorporate the chronic changes in traffic volumes and any associated noise increases. Temporary noise impacts due to construction truck traffic were analyzed separately.

Table IV.G-4
Project Traffic Noise Impact Analysis
(CNEL @ 50' in dB[A] from Roadway Centerline)

	2002	2005	
	Existing	No Project	With Project
Tramonto Drive: South of Los Liones	57	57	58
Los Liones Drive: West of Tramonto	53	56	56
East of Tramonto	58	59	60
Sunset Boulevard: North of Los Liones	69	69	69
Los Liones – Castellammare	69	69	69
Castellammare - P.C.H.	69	69	69
Castellammare Drive: West of Sunset	55	56	56
P.C.H.: West of Sunset	75	75	75
East of Sunset	75	75	75

Source: FHWA-RD-77-108 (Calveno Mod.)

A 60 dB CNEL noise exposure is considered "normally acceptable" for residential use. All area buildout traffic noise projections in Table IV.G-4 are less than 60 dB CNEL at 50 feet from the roadway centerline for residential streets (i.e. Tramonto Drive, Castellammare Drive, and Los Liones Drive). Traffic noise levels at any usable outdoor space in backyards of surrounding homes will be less than the 60 dB CNEL standard with a large margin of safety because the home shields the use from the street.

A 1 dB increase in noise level is an almost imperceptible increase even under very quiet conditions, whereas a 3 dB increase becomes noticeable when the sound is superimposed upon typical exterior noise levels. For normally quiet conditions such as along project area residential streets, City CEQA thresholds consider noise changes of less than +5 dB CNEL to be not significant. The maximum noise increases (CNEL) from project implementation along each of the area streets compared to the cumulative growth no-project scenario is +1 dB CNEL. The maximum cumulative noise increase along Los Liones Drive is +3 dB, but noise levels will remain well below 60 dBA CNEL at the 50-foot reference distance along this street.

At +1 dB for a project-related traffic noise impact, such an increase will be undetectable even under laboratory conditions. A +3 dB cumulative noise impact will not exceed City of Los Angeles significance thresholds, nor will it create any noise exposure exceeding the most stringent City noise/land use compatibility guideline. The project is too limited in scope, and the Palisades are too

built out, to experience traffic noise changes that differ substantially from existing conditions. Operational traffic noise impacts are individually and cumulatively less than significant.

CUMULATIVE IMPACTS

Table II-1 (Related Projects) in Section II.B of the EIR lists several related projects in the vicinity of the project site, including proposed single-family dwelling units on Tramonto Drive, Paseo Miramar and Castellammare Drive, as well as a 21-unit condominium project directly below the project site on Castellammare Drive. It is possible that the demolition, grading and construction activities required of the proposed project could occur at the same time as the construction of some of the related projects in the project vicinity. This could result in increased noise construction impacts in the project area. Given that the proposed project would result in significant unavoidable construction noise impacts, cumulative noise impacts during construction are considered to be significant.

As mentioned previously, nine identified roadway links were selected for long-term mobile noise impact analysis. Table IV.G-4 summarizes the calculated CNEL at 50' from the roadway centerline for three traffic scenarios (existing, near-term future with related cumulative development, and near-term future with cumulative growth plus the proposed project) on the nine links analyzed. All area buildout traffic noise projections in Table IV.G-4 are less than 60 dB CNEL at 50 feet from the roadway centerline for residential streets.

The maximum noise increases (CNEL) from project implementation along each of the area streets compared to the cumulative growth no-project scenario is +1 dB CNEL. The maximum cumulative noise increase along Los Liones Drive is +3 dB, but noise levels will remain well below 60 dBA CNEL at the 50-foot reference distance along this street. Therefore, operational traffic noise impacts are individually and cumulatively less than significant.

MITIGATION MEASURES

The proposed project will have no significant operational noise impacts. The project site does not exceed 60 dBA CNEL which would trigger any possible noise mitigation requirements for meeting usable exterior space standards, or for achieving an interior level of 45 dBA CNEL. The State Building Code requires that shared walls and floor/ ceiling assemblies in multi-unit dwellings meet noise and impact transmission standards between adjacent or stacked units. Verification of structural compliance will be made at the plan check level.

On-site construction activities were shown to have a potentially significant temporary noise impact at the nearest neighbors due to heavy equipment operations. Dirt hauling noise impacts were also found to be significant.

Standard noise abatement conditions will be required by the City of Los Angeles as part of any grading/construction permits. These measures include:

1. The project shall comply with the City of Los Angeles Noise Ordinance No. 144,331 and 161,574, and any subsequent ordinances, which prohibit the emission or creation of noise beyond certain levels at adjacent uses unless technically infeasible.
2. Construction shall be restricted to the hours of 7:00 A.M. to 6:00 P.M. Monday through Friday, and 8:00 A.M. to 6:00 on Saturday.
3. The project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Because of close residential proximity, short-term construction and soil haul truck noise on a limited number of days will likely exceed adopted significance thresholds despite implementation of the above mitigation measures. Such impacts are considered temporary, however they cannot be mitigated to a less than significant level.