NOISE IMPACT ANALYSIS

13811 VALLEY VIEW AVENUE
APN 8059-028-049

LA MIRADA, CALIFORNIA

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally considered to be unwanted sound. Sound is characterized by various 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. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

Loud or soft, noisy or quiet, high-and-low pitch are all qualitative terms used to describe sound. These terms are relative descriptions. The science of acoustics attempts to quantify the human perception of sound into a quantitative and measurable basis. Amplitude is the measure of the pressure exerted by sound waves. Amplitude may be so small as to be inaudible by humans, or so great as to be painful. Frequency refers to pitch or tone. The unit of measure is in cycles per second called “hertz”. Very low frequency bass tones and ultra-high frequency treble are difficult for humans to detect. Many noise generators in the ambient world are multi-spectral.

The decibel (dB) scale is used to quantify sound pressure levels. Although decibels are most commonly associated with sound, "dB" is a generic descriptor that is equal to ten times the logarithmic ratio of any physical parameter versus some reference quantity. For sound, the reference level is the faintest sound detectable by a young person with good auditory acuity.

Since the human ear is not equally sensitive to all sound frequencies within the entire auditory spectrum, human response is factored into sound descriptions by weighting sounds within the range of maximum human sensitivity more heavily in a process called “A-weighting,” written as dB(A). Any further reference in this discussion to decibels written as "dB" should be understood to be A-weighted.

Leq is a time-averaged sound level; a single-number value that expresses the time-varying sound level for the specified period as though it were a constant sound level with the same total sound energy as the time-varying level. Its unit is the decibel (dB). The most common averaging period for Leq is hourly.

Because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dBA increment be added to quiet time noise levels. The 24-hour noise descriptor with a specified evening and nocturnal penalty is called the Community Noise Equivalent Level (CNEL). CNEL’s are a weighted average of hourly Leq’s.

PLANNING STANDARDS

The City of La Mirada has established guidelines for acceptable community noise levels that are based upon the CNEL rating scale to insure that noise exposure is considered in any development. CNEL-based standards apply to noise sources whose noise generation is preempted from local control (such as from on-road vehicles, trains, airplanes, etc.) and are used to make land use decisions as to the suitability of a given site for its intended use. These CNEL-based standards are articulated in the Noise Element of the General Plan.

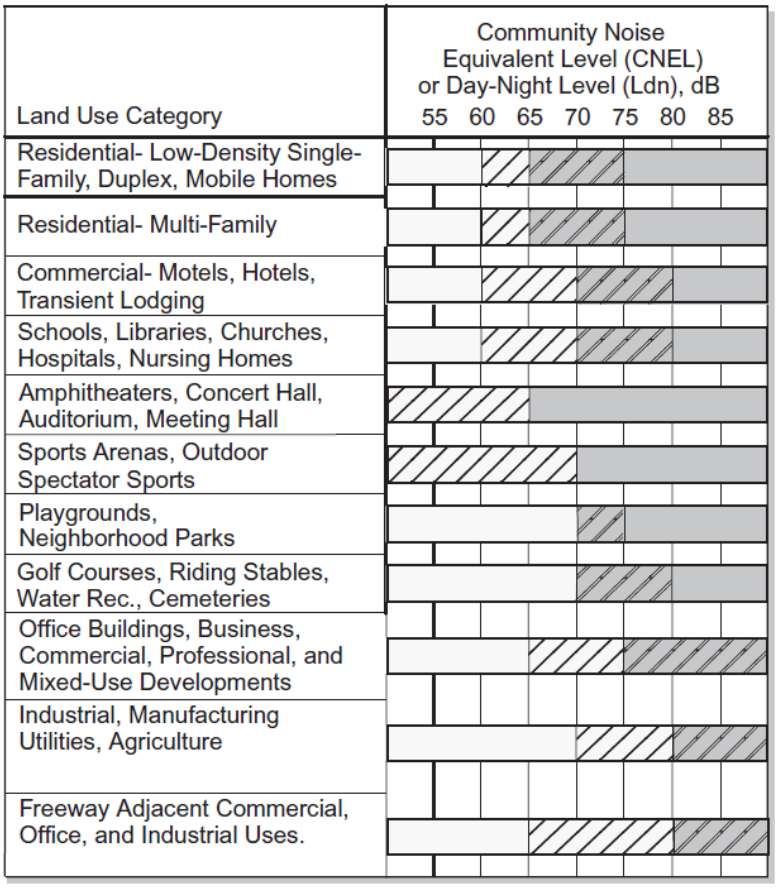
Figure 1 shows the noise compatibility guidelines for various uses. These guidelines would apply in usable outdoor space such as patios, yards, spas, etc. The guidelines indicate that an exterior noise level of 60 dB CNEL is considered to be a "normally acceptable" noise level for single family, duplex and mobile homes involving normal conventional construction, without any special noise insulation requirements. Exterior noise levels up to 65 dB CNEL are typically considered "conditionally acceptable", and residential construction should only occur after a detailed analysis of the noise reduction requirements is made and needed noise attenuation features are included in the project design. Exterior noise attenuation features include, but are not limited to, setbacks to place structures outside the conditionally acceptable noise contour, orienting structures so no windows open to the noise source, and /or installing noise barriers such as berms or solid walls.

An interior CNEL of 45 dB is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, Section T25-28) for multiple family dwellings and hotel and motel rooms. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms in residential use, included single-family dwelling units. Since normal noise attenuation within residential structures with closed windows is 20-30 dB, an exterior noise exposure of 65-75 dB CNEL allows the interior standard to be met without any specialized structural attenuation (dual paned windows, etc.), but with closed windows and fresh air supply systems or air conditioning in order to maintain a comfortable living environment.

Noise standards applicable to those sources not preempted from local control (i.e., not from traffic on public streets, airplanes, trains, etc.) are contained in Section 9.04 of the La Mirada Municipal Code. Section 9.04.010 of the Code, based upon the definition of nuisance in the State Health and Safety Code, defines noise nuisance as follows:

- 9.04.010 (b)(4) No construction activities making "unnecessary" noise from 8 p.m. to 7 a.m. the next day, and all day on Sunday.

Figure 1 Noise Compatibility Guidelines
(La Mirada General Plan)



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable

Specific land use is satisfactory, based on the assumption that any building is of normal conventional construc-tion, without any special

Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of noise reduction require-ments is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems

Normally Unacceptable

New construction or development should generally be discour-aged. If new construc-tion or development does proceed, a de-tailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Clearly Unacceptable

New construction or development should generally not be undertaken.

BASELINE NOISE LEVELS

A noise study was conducted by Giroux & Associates on Friday, June 7, 2019. Three short term noise readings were made along in the project vicinity. The measurement results are shown below and the location of the monitors is shown on Figure 1.

Short-Term Noise Measurements (dB[A])

Start Time	Location	Leq	Lmax	Lmin
14:00	In front of site by sidewalk screening fence 50' to VV CL	68.6	77.7	46.2
14:20	Center of site 200' to VV CL	59.1	67.5	32.5
14:40	Bora Dr by VV 80' to VV CL	69.2	84.6	52.1
15:00	West on Bora Dr 25' to Bora CL	57.2	66.1	30.1

VV=Valley View
CL= centerline

Meter 1 was located in on the eastern site perimeter at the project property line. This approximates the noise loading that the units closest to Valley View Avenue will experience. Monitoring experience has shown that 24-hour weighted CNELs are typically 2-3 dB higher than mid-afternoon Leq readings. With a Leq of 68.6 the expected CNEL would range from 70-71 dBA.

Meter 2 was placed farther back from Valley View Avenue more interior to the site to approximate noise in the site center. It was placed approximately 200 feet from the Valley View centerline. The observed leq was 59.1 dBA which would translate to a CNEL of less than 65 dBA.

Meter 3 was placed on Bora Drive approximately 80 feet to the Valley View centerline and 25 feet from the Bora Drive centerline. This meter picked up noise from Valley View Avenue as well as pass-by vehicles on Bora Drive and the observed Leq was slightly higher than Meter 1 which only captured noise from Valley View.

Meter 4 was a short run just to see how fast noise decayed as one travels farther from Valley View Avenue. As shown, the traffic noise decays quickly with setback as well as the noise shielding offered from intervening structures.

Figure 2 Noise Meter Location

NOISE IMPACTS

NOISE SIGNIFICANCE CRITERIA

Noise impacts are considered significant if they result in:

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

b. Generation of excessive groundborne vibration or groundborne noise levels.

c. Excessive noise exposure for people residing or working in the project area if the is project is located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

STANDARDS OF SIGNIFICANCE

Noise impacts are considered significant if they expose persons to levels in excess of standards established in local general plans or noise ordinances. The exterior noise standard for the City of La Mirada residential uses is 65 dBA CNEL in usable recreational space such as backyards, decks, patios, etc. If required, attenuation through setback and project perimeter barriers is anticipated to be used to reduce traffic noise to the 65 dBA CNEL goal. An inability to achieve this goal through the application of reasonably available mitigation measures would be considered a significant impact.

Impacts may also be significant if they create either a substantial permanent or temporary increase. The term "substantial" is not quantified in CEQA guidelines. In most environmental analyses, "substantial" is taken to mean a level that is clearly perceptible to humans. In practice, this is at least a +3 dB increase. Some agencies, such as Caltrans, require substantial increases to be +10 dB or more if noise standards are not exceeded by the increase. For purposes of this analysis, a +3 dB increase is considered a substantial increase. The following noise impacts due to project-related traffic would be considered significant:

1. If construction activities were to audibly intrude into adjacent sensitive uses.

2. If project traffic noise were to cause an increase by a perceptible amount (+3 dB CNEL) or expose receivers to levels exceeding city compatibility noise standards.

3. If future build-out noise levels were to expose La Mirada sensitive receivers to levels exceeding compatibility standards of 65 dB CNEL exterior at any outdoor uses or 45 dB CNEL interior noise levels in any habitable space.

SENSITIVE USES

The only sensitive uses in proximity to the site are along the northern perimeter. These older single-story, single family residences take access from Bora Drive and their rear yards face the project. One of the homes rear yard setback is very close to the shared property line (5-feet) while all others have a 20-foot rear yard setback. The project will have a parking and a drive aisle along the shared property line. There is approximately 50 feet comprised of paved surfaces separating the closest on-site structure and the closest off-site receptor. Only paving activities will occur immediately adjacent any sensitive use and the closest structure is 50 feet from the property line. There is a planned 6-foot CMU wall at the project property line. Metal trellises will extend 3-feet above the wall for a total height of 9-feet.

CONSTRUCTION NOISE SIGNIFICANCE

The La Mirada Noise Ordinance regulates construction noise by a prohibition against making "unnecessary" noise from construction during noise-sensitive weekday hours and all day on Sundays.

CONSTRUCTION NOISE IMPACTS

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated by large, earth-moving equipment sources for demolition and grading. During construction and paving, equipment is generally less noisy.

The closest sensitive uses to the project site are the single level residences to the north. There are planned 6-foot high CMU walls along the shared property line.

In 2006, the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model that includes a national database of construction equipment reference noise emissions levels. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power during a construction phase. The usage factor is a key input variable that is used to calculate the average Leq noise levels.

Table 3 identifies highest (Lmax) noise levels associated with each type of equipment identified for use, then adjusts this noise level for distance to the closest sensitive receptor and the extent of equipment usage (usage factor), which is represented as Leq. The table is organized by construction activity and equipment associated with each activity

Quantitatively, the primary noise prediction equation is expressed as follows for the hourly average noise level (Leq) at distance D between the source and receiver (dBA):

Leq = Lmax @ 50' – 20 log (D/50') + 10log (U.F%/100) – I.L.(bar)
Where:

Lmax @ 50' is the published reference noise level at 50 feet
U.F.% is the usage factor for full power operation per hour
I.L.(bar) is the insertion loss for intervening barriers

For the proposed project, CalEEMod predicts the construction fleet would include equipment as shown in Table 1. Table 1 describes the noise level for each piece of equipment at a reference 50-foot distance.

Table 1
Construction Equipment Noise Levels

Phase Name and Duration	Equipment	Usage Factor[1]	Noise @ 50 feet (dB)[2]	Hourly Noise Level @ 50 feet (dB))
Demolition	Concrete Saw	20%	90	83
	Dozer	40%	85	82
	Loader/Backhoe	37%	78	74
Grading	Grader	40%	85	81
	Dozer	40%	85	82
	Loader/Backhoe	37%	78	74
Construction	Crane	16%	81	73
	Loader/Backhoe	37%	78	74
	Welders	46%	74	71
	Generator Set	50%	81	78
	Forklift	20%	75	69
Paving	Paver	50%	77	74
	Mixer	40%	79	75
	Paving Equipment	40%	76	72
	Loader/Backhoe	37%	78	74
	Roller	20%	80	74

Source: FHWA's Roadway Construction Noise Model, 2006

1. Estimates the fraction of time each piece of equipment is operating at full power during a construction operation
2. The Lmax values presented are the actual measured values summarized in the Roadway Noise Model User Guide (FHWA 2006) unless the actual is unavailable in which case the equipment specifications were used.

As discussed, only grading and paving activities will occur immediately adjacent to the off-site sensitive uses to the north. The nearest structure will have a minimal 50-foot distance separation. The proposed 6-foot property line wall would assist in blocking construction noise. A -6 dBA credit was taken for the walls.

At these setback distances, the noise levels shown in Table 3 would likely be observed:

Table 2
Maximum Construction Noise Equipment Levels at Off-Site Sensitive Uses (dBA Leq)

Phase Name and Duration	Equipment	Adjusted for Distance Separation	Noise Reduction for Wall	Expected Max Noise Level
Demolition 50-foot separation	Concrete Saw	83	-6	77
	Dozer	82	-6	76
	Loader/Backhoe	74	-6	68
Grading Can occur at property line	Grader	97	-6	91
	Dozer	98	-6	92
	Loader/Backhoe	90	-6	84
Construction 50-foot separation	Crane	79	-6	73
	Loader/Backhoe	80	-6	74
	Welders	77	-6	71
	Generator Set	84	-6	78
	Forklift	75	-6	69
Paving Can occur at property line	Paver	90	-6	84
	Mixer	91	-6	85
	Paving Equipment	88	-6	82
	Loader/Backhoe	90	-6	84
	Roller	90	-6	84

Interior noise levels would be approximately 25-30 dBA lower assuming closed windows. Since the homes are older and may not have dual paned windows a 25 dBA reduction was assumed. This would mean that adjacent residences could experience an interior noise level of 44-67 dBA during construction activities. As discussed, all but one of the homes has a 20-foot rear yard setback which would provide additional attenuation.

For indoor noise environments, the highest noise level that permits relaxed conversation with 100 percent intelligibility throughout the room is 45 dBA. Speech interference is considered to be highly intrusive when normal conversation is precluded at 3 feet, which occurs when ambient noise levels substantially exceed 60 dBA. An interior noise level of 44-67 dBA at indoor locations would maintain a barely acceptable interior noise environment with closed dual windows. In some cases, this noise reduction could be maintained only on a temporary basis, since it requires that windows remain closed at all times assuming homes have air conditioning.

The potential for construction-related noise to adversely affect nearby residential receptors would depend on the location and proximity of construction activities to these receptors. Most construction equipment will be located at a much greater setback than the worst-case examples provided in Table 2.

Construction noise is exempt from numerical noise standards from 7 a.m. to 8 p.m. Monday through Friday and 9 a.m. through 8 p.m. on Saturdays with no construction allowed on Sundays and any legal holiday.

CONSTRUCTION ACTIVITY VIBRATION

Ground-borne vibration occurs when heavy equipment travels over unpaved surfaces or when it is engaged in soil movement. The effects of ground-borne vibration include discernable movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Vibration related problems generally occur due to resonances in the structural components of a building because structures amplify groundborne vibration. Within the "soft" sedimentary surfaces of much of Southern California, ground vibration is quickly damped out. Groundborne vibration is almost never annoying to people who are outdoors (FTA 2006).

Groundborne vibrations from construction activities rarely reach levels that can damage structures. Because vibration is typically not an issue, very few jurisdictions have adopted vibration significance thresholds. Vibration thresholds have been adopted for major public works construction projects, but these relate mostly to structural protection (cracking foundations or stucco) rather than to human annoyance.

The vibration descriptor commonly used to determine structural damage is the peak particle velocity (ppv) which is defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in in/sec. The range of such vibration is shown in Table 3:

Table 3
Human Response To Transient Vibration

Average Human Response	ppv (in/sec)
Severe	2.00
Strongly perceptible	0.90
Distinctly perceptible	0.24
Barely perceptible	0.03

Source: Caltrans Transportation and Construction Vibration Guidance Manual, 2013.

Over the years, numerous vibration criteria and standards have been suggested by researchers, organizations, and governmental agencies. There are no Caltrans or Federal Highway Administration standards for vibration.

According to Caltrans, the threshold for structural vibration damage for modern structures is 0.5 in/sec for intermittent sources, which include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. The American Association of State Highway and Transportation Officials (AASHTO) (1990) identifies maximum vibration levels for preventing damage to structures from intermittent construction or maintenance activities for residential buildings in good repair with gypsum board walls to be 0.4–0.5 in/sec. The damage threshold criterion of 0.2 in/sec is appropriate for fragile buildings. For the purpose of this analysis because area residences can be older, the 0.2 in/sec damage threshold for older fragile buildings is used as the evaluation criteria. Below this level there is virtually no risk of building damage. Table 4 shows the predicted vibration levels generated by construction equipment at varying distances.

Table 4
Estimated Vibration Levels During Project Construction

Equipment	PPV at 10 ft (in/sec)	PPV at 15 ft (in/sec)	PPV at 25 ft (in/sec)	PPV at 50 ft (in/sec)	PPV at 100 ft (in/sec)
Large Bulldozer	0.352	0.191	0.089	0.031	0.011
Loaded trucks	0.300	0.163	0.076	0.027	0.010
Jackhammer	0.138	0.075	0.035	0.012	0.004
Small Bulldozer	0.012	0.006	0.003	0.001	<0.001

Source: FHWA Transit Noise and Vibration Impact Assessment

The calculation to determine PPV at a given distance is:

PPVdistance = PPVref*(25/D)^1.5

Where:

PPVdistance = the peak particle velocity in inches/second of the equipment adjusted for distance,

PPVref = the reference vibration level in inches/second at 25 feet, and

D = the distance from the equipment to the receiver.

The closest sensitive use adjacent to the project boundary has only a 5-foot rear yard setback but is 55-feet from the closest building facade. At distances less than 15 feet, the predicted vibration levels generated by a large bulldozer could be above levels that could create structural damage in fragile buildings (i.e., 0.2 in/sec). All other adjacent uses have at least a 20-foot setback and would not have the same concerns.

Large bulldozers will not likely operate directly at the shared property line. Regardless, any fine grading at the property line should be performed with small bulldozers which are seen above to have much less vibration potential. Therefore, to ensure adequate vibration protection the following mitigation measure is recommended:

- Only small bulldozers shall be permitted to operate within 15 feet of the nearest off-site residential structures.

Construction activity vibration impacts are judged as less-than-significant with this limitation.

VEHICULAR NOISE IMPACTS

Long-term noise concerns from the residential uses at the project site can be derived from vehicular operations on project area roadways. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108). The model calculates the Leq noise level for a reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Table 5 summarizes the 24-hour CNEL level at 50 feet from the roadway centerline along area roadway segments. The noise calculations utilize data from the project traffic analysis, prepared by the traffic consultant for this project. Two traffic years were evaluated; existing conditions ("with project" and "without project"), and opening year 2021, ("with project" and "without project").

As shown in Table 5, project implementation in the existing and opening year timeframe does little to change the overall traffic noise environment. Because the area is mostly built out, addition of project traffic to area roadways does little to the traffic noise environment. The project area will experience limited traffic volume changes and the amount of traffic generated by the proposed project is diluted by significant background traffic volumes. The largest increase attributed to project implementation is along DeAlca Drive and Bora Drive. Both roadways currently carry very little traffic and therefore the project impact is more pronounced. Nevertheless, this noise increase is only+0.2 dBA to +0.3 dBA CNEL both of which are well below the +3 dBA CNEL significance threshold. In addition, the "with project" noise level at 50 feet from the roadway centerline is less than 65 dBA CNEL even in the "2021 with project" scenario. This is well below the recommended residential compatibility threshold of 65 dBA CNEL. The next largest project related traffic noise impact is +0.1 dBA CNEL, but most segments will not see any appreciable noise difference. Therefore, project related noise increases are much less than either the +3 dBA significance threshold or the recommended noise compatibility threshold and therefore project traffic impact is less than significant.

Table 5
Traffic Noise Impact Analysis
(dBA CNEL at 50 feet from centerline)

Segment		Existing No Project	Existing With Project	2021 No Project	2021 With Project
Valley View	N of Imperial	69.9	69.9	70.0	70.0
	Imperial-Adoree	71.2	71.2	71.3	71.3
	AdoreeE-AdoreeW	71.2	71.2	71.3	71.3
	Adoree W to Foster	71.1	71.1	71.2	71.2
	Foster-Bora	71.3	71.3	71.4	71.4
	S of Bora	71.3	71.4	71.4	71.5
	N of De Alcala	71.3	71.4	71.4	71.5
	De Alcala-Rosecrans	71.1	71.1	71.3	71.4
	S of Rosecrans	70.7	70.7	70.9	70.9
Foster Rd/	E of Valley View	60.0	60.0	60.0	60.0

	W of Valley View	62.7	62.7	62.8	62.9
Rosecrans/	E of Valley View	70.1	70.1	70.3	70.3
	W of Valley View	69.5	69.5	69.6	69.6
Bora Dr/	W of Valley View	60.0	60.3	60.0	60.3
De Alcala Dr	E of Valley View	56.6	56.9	56.6	56.9

The project site itself will be potentially impacted by traffic along Valley View Avenue. As seen in Table 5, the "future with project" traffic noise level along Valley View Avenue adjacent to the project site is 71 dBA CNEL at 50 feet from the roadway centerline. This matches the observed noise measurement as well.

The project has a 13-foot setback from the Valley View Avenue ROW. The distance from the project property line to the center of Valley View Avenue is about 55 feet, for a total setback distance of 68 feet. This will afford -1 dBA of noise mitigation for a resultant noise loading at the closest project façade of 70 dBA CNEL.

At the ground level, units fronting Valley View Avenue have a small front patio. Without any mitigation, the noise level for a receiver standing in the patio would be around 70 dBA CNEL. A 5-foot noise wall wrapped around the patio would provide sufficient attenuation to reach the 65 dBA goal.

There are also balconies at the second level of units fronting Valley View Avenue. These units are recessed into the building and, for the most part they are enclosed on three sides. This will limit the field of view and provide -3 dBA of noise attenuation. The resultant noise level at receivers on the balconies would be around 67 dBA CNEL and would almost meet the recommended 65 dBA CNEL compatibility guidelines for recreational use. However, there is no mitigation measure that would reduce noise by -2 dBA. A plexi-glass shield on the balconies on the Valley View Avenue frontage would provide more than the -2 dBA but limit air flow. Approximately 86 percent of the projects recreational space is made up of common areas which would be noise protected by distance and by shielding offered by the buildings themselves.

The residences must also be able to achieve the 45 dB CNEL interior noise threshold. As discussed, the closest building façade is approximately 68 feet from the roadway centerline. The noise loading at the closest building façade will be as high as 70 dBA CNEL at build-out such that a -25 dBA noise reduction would be needed

For typical wood-framed construction with stucco and gypsum board wall assemblies, the exterior to interior noise level reduction is as follows:

Partly open windows – 12 dBA

Closed single-paned windows – 20 dBA

Closed dual-paned windows – 30 dBA

Use of dual-paned windows is required by the California Building Code (CBC) for energy conservation in new residential construction.

Interior standards will be met as long as residents have the option to close their windows. Where window closure is needed to shut out noise, supplemental ventilation is required by the CBC with some specified gradation of fresh air. Central air conditioning or a fresh air inlet on a whole house fan would meet this requirement.

AIRPORT NOISE EXPOSURE

There are no airports within proximity of the project site. Long Beach Airport, LAX and Orange County Airport are more than 10 miles away.

SUMMARY AND MITIGATION

Noise from temporary construction activities is exempt from noise ordinances as long as the construction activities are between the hours of 7 a.m. and 8 p.m., Monday through Saturday, with no activity on Sundays or federal holidays. In addition, the following construction practices are recommended:

- Stockpiling and staging activities must be located as far as practicable from dwellings.
- All mobile equipment shall have properly operating and maintained mufflers.

There is one residence to the north of the site with only a 5-foot rear yard setback. If a large bulldozer were to operate directly at the property line it could cause damage. Therefore, to ensure adequate vibration protection the following mitigation measure is recommended:

- Only small bulldozers shall be permitted to operate within 15 feet of the nearest residences

Project-related off-site traffic noise changes on existing streets are less than significant.

Traffic noise from Valley View Avenue could exceed City standards for outdoor recreational space fronting the roadway. For ground level units it is recommended that the front yard patio space be enclosed with a 5-foot solid wall to reduce noise levels to within the 65 dBA CNEL guideline.

Units fronting Valley View Avenue also have second story balconies. However, the balconies are recessed so that they are noise protected on three sides. Residual noise could still be 2 dBA over the recommended guideline. A plexi-glass shield around the balconies would provide the needed attenuation but would limit air flow and possibly be extreme for only 2 dBA CNEL of needed noise reduction.

Recreational space is also comprised of common outdoor space sited in the interior of the complex. These areas would be noise protected such that noise levels are expected to be well within the 65 dB CNEL contour.

Habitable interior space will be adequately noise protected to achieve 45 dB with only the ability to close windows at perimeter units adjacent to Valley View Avenue. Where window closure is needed for policy compliance, supplemental fresh air ventilation will be provided at rates specified in the California Building Code.