NOISE IMPACT ANALYSIS

PROSPECT VILLA MIXED-USE PROJECT

CITY OF ROSEMEAD, CALIFORNIA

Prepared by:

Giroux & Associates
5319 University Drive, #26
Irvine, CA. 92612

Prepared for:

Phil Martin & Associates
Attn: Phil Martin
1809 E. Dyer Road, Suite 301
Santa Ana, CA 92705

Date:

October 12, 2021

Project No.: P21-036 N

PROJECT DESCRIPTION

The Project proposes development of a 0.95-acre parcel on the NE corner of Garvey Avenue and Prospect Avenue with a seven-story mixed-use structure consisting of 75 residential apartment dwelling units and 6,346 square feet of commercial floor area with 147 parking spaces available on levels 1-3.

There is an existing McDonalds restaurant to the west, across Prospect Avenue, approximately 150 feet from the nearest Project building facade. The McDonalds drive through lane is on the west side of the building, furthest away from the Project, with a separation distance of about 200 feet. Across Garvey Avenue to the south are commercial uses including a Seafood Restaurant. To the east are scattered small commercial and office uses and several residential uses which take access from Jackson Avenue. Residential uses are to the north. The closest residential uses have an approximate 10-feet distance from the shared property line. The Project has 8’ of open space to the north and at ground level a 33-foot distance separation to the shared property line. The Project distance to the property line becomes progressively larger with height as upper levels have an increased setback. The roof has a 68-foot setback to the common property line.

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.

The decibel (dBA) 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 "dBA" 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 pressure level that is exceeded over some fraction of a given observation period. Finally, 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 Ldn (day-night) or the Community Noise

Equivalent Level (CNEL). The CNEL metric has gradually replaced the Ldn factor, but the two descriptors are essentially identical.

CNEL-based standards are generally applied to transportation-related sources because local jurisdictions are pre-empted from exercising direct noise control over vehicles on public streets, aircraft, trains, etc. The City of Rosemead therefore regulates the noise exposure of the receiving property through land use controls.

For "stationary" noise sources, or noise sources emanating from private property, such as a parking structure, the City does have legal authority to establish noise performance standards designed to not adversely impact adjoining uses. These standards are typically articulated in the jurisdictional Municipal Code. These standards recognize the varying noise sensitivity of both transmitting and receiving land uses. The property line noise performance standards are normally structured according to land use and time-of-day.

NOISE COMPATIBILITY GUIDELINES

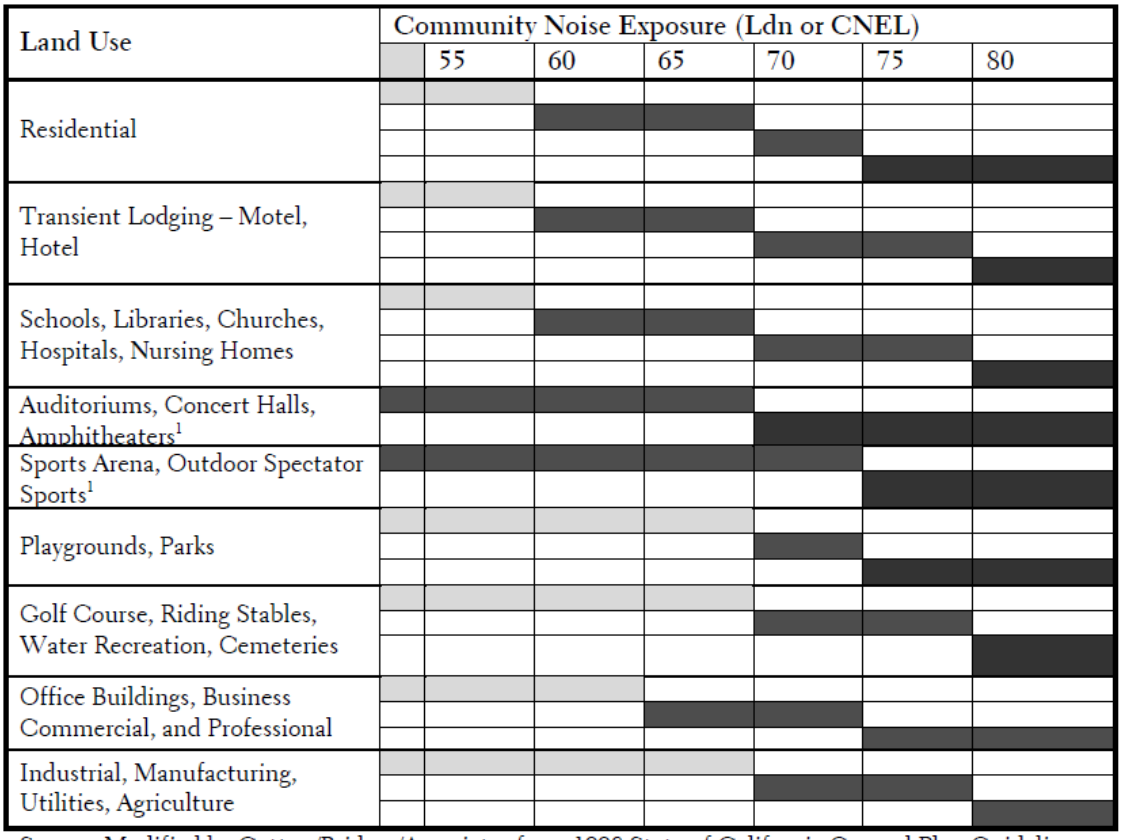
The City of Rosemead considers noise compatibility standards in evaluating land use projects. A proposed land use must be shown to be compatible with the ambient noise environment, particularly for noise sources over which direct City control is preempted by other agencies. Such sources include vehicle traffic on public streets, aircraft or trains. Since the City cannot regulate the noise level from the source, it exercises its land use decision authority to ensure that noise/land use incompatibility is minimized.

Table 1 shows the noise/land use compatibility guideline for the City of Rosemead, as contained in the Noise Element of the General Plan. The City of Rosemead considers noise exposures for residential/transient lodging use to be "normally acceptable" if the maximum exterior noise level is 60 dBA CNEL or less. Exterior residential noise levels of up to 70 dBA CNEL are allowed if a noise analysis is conducted to identify possible noise reduction measures. Noise levels above 70 dBA CNEL are considered normally unacceptable except in unusual circumstances for residences. These standards apply to outdoor recreational use at backyards, patios or balconies.

Because retail/commercial/office uses are not occupied on a 24-hour basis, the exterior noise exposure standard for less sensitive land uses is generally less stringent. Unless commercial projects include noise-sensitive uses such as outdoor dining, noise exposure is generally not considered a commercial facility siting constraint for typical project area noise exposures.

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 25-30A dB, an exterior noise exposure of 70-75 dBA 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.

Figure 1
City of Rosemead Noise Compatibility Guidelines



Source: Modified by Cotton/Bridges/Associates from 1998 State of California General Plan Guidelines.

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.

Conditionally Acceptable: New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.

Normally Unacceptable: New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.

Clearly Unacceptable: New construction or development clearly should not be undertaken.

NOISE STANDARDS

For noise generated on one property affecting an adjacent use, the City of Rosemead limits the amount of noise crossing the boundary between the two uses. There are residential uses abutting the site to the north and to the east. The noise standards described below must be met at these uses.

For regulated on-site sources of noise generation, the Rosemead noise ordinance prescribes limits that are considered an acceptable exposure for residential uses in proximity to regulated noise sources. The L_{50} metric used in the Rosemead noise ordinance is the level exceeded for 50% of the measurement period of thirty minutes in an hour. One-half of all readings may exceed this average standard with larger excursions from the average allowed for progressively shorter periods. The larger the deviation, the shorter the allowed duration up to a never-to-exceed 20 dB increase above the 50^{th} percentile standard. Nighttime noise levels limits are reduced by 5 dB to reflect the increased sensitivity to noise occurring during that time period.

The City's L_{50} noise standard for residential uses is 60 dB during the day (7 a.m. – 10 p.m.), and 45 dB at night (10 p.m. – 7 a.m.). For commercial uses the L_{50} standard is 65 dB during the day (7 a.m. – 10 p.m.), and 60 dB at night (10 p.m. – 7 a.m.). These noise standards for residential and commercial uses are shown in Table 1. In the event that the ambient noise level exceeds any of the noise standards, the standards shall be increased to reflect the ambient noise level.

In accordance with Section 8.36.030 of the Municipal Code, noise associated with construction related activities is restricted between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Table 1
ROSEMEAD NOISE ORDINANCE LIMITS
(Exterior Noise Level not to be Exceeded)

	Residential Use		**Commercial Use**	
Maximum Allowable Duration of Exceedance	**7 AM to 10 PM (Daytime)**	**10 PM to 7 AM (Nighttime)**	**7 AM to 10 PM (Daytime)**	**10 PM to 7 AM (Nighttime)**
30 minutes/Hour (L50)	60 dB	45 dB	65 dB	60 dB
15 minutes/Hour (L25)	65 dB	50 dB	70 dB	65 dB
5 minutes/Hour (L8)	70 dB	55 dB	75 dB	70 dB
1 minute/Hour (L1)	75 dB	60 dB	80 dB	75 dB
Never (Lmax)	80 dB	65 dB	85 dB	80 dB

Source: Municipal Code Section 8.36.060

BASELINE NOISE LEVELS

Short term on-site noise measurements were made to document baseline levels in the Project area. These help to serve as a basis for projecting future noise exposure from the project upon the surrounding community and noise from the community on the project. Noise measurements were conducted on Wednesday, September 29, 2021, at approximately 1:15-1:45 p.m., at the two locations indicated below.

Measured Noise Levels (dBA)

Site No.	Location	Leq	Lmax	Lmin
1	50-feet to Prospect Ave centerline	60	66	49
2	60-feet to Garvey Ave centerline	64	67	56

Monitoring experience shows that 24-hour weighted CNELs can be reasonably well estimated from mid-day noise readings. CNELs are approximately equal to Leq plus 2-3 dBA (Caltrans Technical Noise Supplement, 2009).

This would indicate a CNEL along the Prospect Avenue frontage of approximately 63 dBA CNEL and 67 dBA CNEL along the Garvey Avenue frontage.

The City of Rosemead considers CNELS of up to 70 dBA to be conditionally acceptable for residential use with the requirement of a noise analysis. Noise levels of up to 75 dB CNEL are considered to be conditionally acceptable for commercial use. However, unless commercial projects include noise-sensitive uses such as outdoor dining, exterior noise exposure is generally not considered a commercial facility siting constraint.

Figure 2
Noise Meter Locations

NOISE IMPACTS

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

Three characteristic noise sources are typically identified with land use intensification such as that proposed for the development of the proposed mixed-use project. Construction activities, especially heavy equipment, will create short-term noise increases near the site. Such impacts would be important for any nearby noise-sensitive receptors, such as existing residential uses. Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are generally analyzed both to ensure that the project does not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting on the project. Finally, the project analysis examines operational noise on adjacent receptors. There are no airports within proximity to the project.

The term "substantial increase" is not defined by any responsible agency. The limits of perceptibility by ambient grade instrumentation (sound meters) or by humans in a laboratory environment is around 1.5 dB. Under ambient conditions, people generally do not perceive that noise has clearly changed until there is a 3 dB difference. A threshold of 3 dB is commonly used to define "substantial increase." An increase of +3 dBA CNEL in traffic noise would be consistent a significant impact.

CONSTRUCTION NOISE IMPACTS

The project site is located at the northeast corner of Garvey Avenue and Prospect Avenue in the City of Rosemead. The site is currently vacant.

For this analysis, a noise impact is considered potentially significant if construction activities extended beyond ordinance time limits for construction or construction-related noise levels exceed the ordinance noise level standards unless technically infeasible to do so. Construction noise levels will vary at any given receptor and are dependent on the construction phase, equipment type, duration of use, distance between the noise source and receptor, and the presence or absence of barriers between the noise source and receptor.

The City of Rosemead limits construction activities to the hours of 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. For a numerical noise standard, the 65 dBA Leq for stationary noise was

increased by the maximum allowable 20 dBA noise level for a not to exceed noise level of 85 dBA at any residential property line.

The exact construction schedule for the proposed development is not known at this time. Construction activities proposed for similar projects typically include grading, construction of the building shells, interior finishing, paving and landscaping. Construction equipment such as bulldozers, backhoes, loaders, and assorted other hand tools and professional grade equipment would likely be used

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. 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 2 shows a probable construction fleet provides the associated noise levels at a reference distance of 50 feet. The table identifies highest (L_{max}) 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 L_{eq}. The table is organized by construction activity and equipment associated with each activity

Table 2
Construction Equipment Noise Levels

Phase Name	Equipment	Usage Factor[1]	Measured Noise @ 50 feet (dBA)	Cumulative Noise @ 50 feet (dBA)
Grading	Dozer	40%	82	78
	Grader	40%	85	81
	Loader/Backhoe	37%	78	74
Building Construction	Forklift	20%	75	68
	Loader/Backhoe	37%	78	74
	Crane	16%	81	73
	Welder	46%	74	71
Paving	Paver	50%	77	74
	Paving Equip	40%	76	72
	Roller	38%	80	76
	Loader/Backhoe	37%	78	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

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):

$$Leq = Lmax\ @\ 50' - 20 \log (D/50') + 10\log (U.F\%/100) - I.L.(bar)$$

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

Typical hourly average construction generated noise levels are about 68 dBA to 81 dBA Leq measured at a distance of 50 feet from the site. Construction generated noise levels drop off or increase at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain often results in lower construction noise levels at distant receptors. 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. 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.

Table 3 adjusts the expected maximal construction noise level from a reference distance of 50 feet to the actual distance separation unique to the nearest receptor at 10-feet from the common property line. There is a planned 6-foot masonry wall along the north and east perimeters. The calculations show a 4 dBA credit for the wall. While grading and paving activities will take place adjacent to the property line, because of the Project setback construction of the physical building will have a greater distance separation to the off-site receptors.

Table 3
Construction Noise Exposure at Adjoining Receptor (dBA Leq)

Phase Name	Equipment	Noise at Closest Sensitive Use
Grading	Dozer	88
	Grader	79
	Loader/Backhoe	70
Building Construction	Forklift	66
	Loader/Backhoe	72
	Crane	71
	Welder	69
Paving	Paver	84
	Paving Equip	68
	Roller	72
	Loader/Backhoe	70

Only the dozer could exceed the adopted 85 dBA Leq significance threshold if it operated directly at the shared property line. Therefore, the following measure is recommended:

- Any dozer shall not operate closer than 25 feet to the northern property line.

In addition, given the proximity of adjacent residential uses, the following recommended measures are recommended:

- All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices (e.g., engine shields).
- Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment), to the maximum extent feasible.

- If feasible, electric hook-ups shall be provided to avoid the use of generators. If electric service is determined to be infeasible for the site, only whisper-quiet generators shall be used (i.e., inverter generators capable of providing variable load.
- Use electric air compressors and similar power tools rather than diesel equipment, where feasible.
- Locate staging area, generators and stationary construction equipment as far from the adjacent residential structures as feasible.
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.
- Post a sign in a readily visible location at the project site that indicates the dates and duration of construction activities, as well as provide a telephone number where residents can enquire about the construction process and register complaints to an assigned construction noise disturbance coordinator

With inclusion of these measures, construction noise impacts from the project would be reduced to less than significant level.

CONSTRUCTION ACTIVITY VIBRATION

Construction activities generate ground-borne vibration when heavy equipment travels over unpaved surfaces or when it is engaged in soil movement. The effects of ground-borne vibration include discernible 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.

A 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 as follows in Table 4:

Table 4
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. As shown in Table 5**,** according to Caltrans and the FTA, 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. Older, typically historical residential structures have a 0.3 in/sec threshold. Below this level there is virtually no risk of building damage.

Table 5
FTA and Caltrans Guideline Vibration Damage Potential Threshold Criteria

Building Type	PPV (in/sec)
FTA Criteria	
Reinforced concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12
Caltrans Criteria	
Modern industrial/commercial buildings	0.5
New residential structures	0.5
Older residential structures	0.3
Historic old buildings	0.25
Fragile Buildings	0.1
Extremely fragile ruins, ancient monuments	0.08

To be conservative, the damage threshold of 0.3 in/sec for older residential structures was used in this analysis. The predicted vibration levels generated by construction equipment anticipated for use are shown below in Table 6.

Table 6
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 40 ft (in/sec)	PPV at 50 ft (in/sec)
Large Bulldozer	0.352	0.191	0.089	0.044	0.031
Loaded trucks	0.300	0.163	0.076	0.037	0.027
Jackhammer	0.138	0.075	0.035	0.017	0.012
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 residence adjacent to the project is 10 feet from the shared property line. As seen in Table 6, the predicted vibration levels generated by construction equipment such as a large bulldozer could be slightly above levels that could create structural damage of older residential structures (i.e., 0.3 in/sec) if a dozer were to operate at the property line.

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 15-25 feet of the nearest off-site residential structures.

Since a dozer noise can exceed the adopted construction noise levels, it is already recommended that dozers operate no closer than 25 feet to the northern property line. Construction activity vibration impacts are judged as less-than-significant with this limitation.

OFF-SITE PROJECT-RELATED VEHICULAR NOISE IMPACTS

The current project traffic analysis did not provide vehicular counts for the area roadways. However, traffic counts for Garvey Avenue were available from the KOA Corporation Traffic Impact Analysis for the Garvey Avenue Specific Plan EIR, Rosemead, dated May 2016.

The 2016 analysis did not provide traffic counts for Prospect Avenue. The closest count was at Jackson and Garvey, one block east of the project. Therefore, project impacts were only evaluated for Garvey Avenue as shown in Table 7. Noise impacts are calculated at a distance of 50-feet from the roadway centerline. The analysis is conservative as it overlays all 657 project related trips along Garvey Avenue, east and west of the site since the trip distribution profiles were not available. In reality, probably half of project related traffic would travel east on Garvey and half would travel west.

Table 7
Traffic and Associated Noise Levels for Existing and Future Time Frames

Time Frame	Daily Number of Vehicles*		Estimated Noise Level (dBA CNEL)	
	Garvey East of Site	Garvey West of Site	Garvey East of Site	Garvey West of Site
Existing No Project	20,100	19,130	68.2	68.0
Existing With Project	20,757	20,757	68.3	68.3
Future No Project	19,890	18,940	68.2	67.9
Future With Project	20,547	19,597	68.3	68.1

Future With Specific Plan Buildout	29,450	27,490	69.9	69.6

*Estimated to be 10 x PM peak hourly ADT

Table 8
Traffic Noise Impact Comparison

Scenario Evaluated	Garvey E of Site	Garvey W of Site
Existing With Project vs Existing No Project	+0.1 dBA	+0.3 dBA
Future With Project vs Future No Project	+0.1 dBA	+0.2 dBA
Future With Project vs Future W Specific Plan	-1.6 dBA	-1.5 dBA

Project implementation in either the opening year or future time frame does little to change the traffic noise environment. As shown in Table 8, the proposed project would have a maximal impact of +0.3 dBA when overlaid with existing and future times for Garvey Avenue east and west of Prospect Avenue. These increases are much less than the +3 dBA significance threshold. In addition, the proposed project would provide for a net noise level of -1.6 dBA as compared to traffic expected to be generated by the Specific Plan.

Project traffic noise increases are less-than-significant.

SITE OPERATIONAL NOISE

The project driveway is located on Prospect Avenue to the north of the site, adjacent to existing residential uses. The drive aisle is approximately 33-feet wide. After entering the drive aisle, to enter the parking structure vehicles, turn right into one of two parking structure entries. There will be a 6-foot CMU wall at the property line to the north.

The traffic analysis predicts that in the peak AM or PM hour there will be 42 vehicular entries or exits. The noise level associated with 42 vehicles is 46.3 dBA Leq. The CMU wall would provide approximately -4 dBA of noise attenuation for a net noise level of 42.3 dBA Leq. Since most of the traffic is associated with the commercial uses and not on-site residential uses, a peak hour would only occur during daytime operating hours.

The City of Rosemead Noise Ordinance limits noise from a private property adjacent to a residential use to not exceed 60 dBA Leq at the property line. Therefore, the project peak hourly traffic entering or leaving the site would not exceed the noise standards. Additionally, the observed noise level on Prospect Avenue by the site in the afternoon was 60 dBA Leq. Therefore, it is likely that project traffic will not be audible over background noise levels. Project related impacts on adjacent uses are considered less-than-significant.

ON-SITE TRAFFIC NOISE

Along the Garvey Avenue frontage, the first story will be commercial use only. Residential units on upper levels are somewhat recessed and have a greater setback distance to traffic. Using traffic volumes provided in the Garvey Avenue Specific Plan as well as observed noise levels, traffic noise along Garvey Avenue is expected to be less than 70 dBA CNEL at 50 feet from the centerline, even with the project. Minimal project setback on lower levels is 55-feet from the Garvey Avenue centerline. Setback increases with height for the residential levels. It is not anticipated that residential balconies would observe exterior traffic noise levels of above 70 dBA CNEL. Much recreational space would be comprised of common open space along the northern perimeter, the courtyard above the parking levels, the lounge, and other amenities.

CONCLUSIONS

Short-term construction noise intrusion shall be mitigated by compliance with the City of Rosemead Noise Ordinance. The allowed hours of construction are from 7 a.m. to 8 p.m. Monday through Saturday. However, given the proximity of adjacent residential uses, the following measures are recommended. With inclusion of these measures, construction noise impacts from the project would be reduced to less than significant level.

- Any dozer shall not operate closer than 25 feet to the northern property line.
- All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices (e.g., engine shields).
- Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment), to the maximum extent feasible.
- If feasible, electric hook-ups shall be provided to avoid the use of generators. If electric service is determined to be infeasible for the site, only whisper-quiet generators shall be used (i.e., inverter generators capable of providing variable load.
- Use electric air compressors and similar power tools rather than diesel equipment, where feasible.
- Locate staging area, generators and stationary construction equipment as far from the adjacent residential structures as feasible.
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.
- Post a sign in a readily visible location at the project site that indicates the dates and duration of construction activities, as well as provide a telephone number where residents can enquire about the construction process and register complaints to an assigned construction noise disturbance coordinator

There are residences to the north of the site with only a 10-foot setback to the shared property line. If a large bulldozer were to operate directly at the property line it could cause damage using the threshold for older buildings. Although the homes to the north are likely more robust, in the abundance of

caution, to ensure adequate vibration protection a dozer would have to be at least 15 feet from the property line. However, since construction noise protection requires a 25-foot distance separation the following mitigation measure is recommended:

- Only small bulldozers shall be permitted to operate within 25 feet of the nearest residences

Project-related off-site traffic noise changes on existing streets are less than significant. Project related traffic impacts are much less than those that would be generated from implementation of the Specific Plan.

The project will not exceed the City of Rosemead noise standards at any residential property line.