NOISE STUDY

City View Townhomes
Residential Development
San Diego CA

City Project No.: PRJ-1123397

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GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for nighttime noise. Typically, LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F, S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts to and from the proposed residential project. The proposed City View Townhomes Residential Development is located on an approximate 5.5-acre project site in the City of San Diego CA. The site is located adjacent to Interstate 15 to the east, west of Bernardo Center Drive, and north along Bernardo Plaza Court in the Rancho Bernardo Community Plan Area of the City of San Diego. The City View Townhomes Residential project seeks a Community Plan Amendment (CPA) and rezone that would allow up to 160 multi-family residential uses. The Proposed Project is the development of 3-story multi-family townhomes consisting of 122 units.

Construction Noise Levels

Community Plan Amendment Project

Construction of the Community Plan Amendment must meet the City's Noise Ordinance (City of San Diego Municipal Code 59.5.0404). Therefore, construction noise will be less than significant.

Proposed Project

During the site preparation and grading the equipment will be spread out over the project site from distances near the occupied property to distances of more than 100-feet. Based upon the calculations of the noise levels when construction equipment is located near the property line the average noise levels are anticipated not to exceed the 75 dBA 12-hour standard and no impacts will occur and no mitigation measures are required.

Construction Vibration

The nearest vibration-sensitive uses are the existing commercial uses located 100 feet or more from the proposed construction. The average vibration levels that would be experienced at the nearest vibration sensitive land uses from temporary construction activities. The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). Project construction activities would result in PPV levels below the FTA's criteria for vibration induced structural damage. Therefore, Project construction activities would not result in vibration induced structural damage to commercial buildings near the demolition and construction areas. The FTA criterion for infrequent vibration induced annoyance is 83 Vibration Velocity (VdB) for the commercial uses. Construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby commercial uses. Therefore, vibration impacts would be less than significant.

Onsite Transportation Related Noise Levels

Community Plan Amendment Project

CEQA does not require any analysis for the environment onto the project site. The Community Plan Amendment Project will be designed to conform to the City's Noise Element requiring noise levels to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas without attenuation measures. Therefore, noise will be less than significant.

Proposed Project

The results of this analysis indicate that future vehicle noise from Interstate 15 and Rancho Bernardo Road is the principal source of community noise that could impact the site. The Project is proposing ground floor patios and upper floor balconies to provide the private use area. Based upon the findings, the outdoor use areas were determined to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas without attenuation measures.

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL.

Standard building construction will provide a noise reduction of approximately 10-15 dBA with a windows open condition (Source: Federal Highway Administration Highway Traffic Noise Analysis and Abatement Policy and Guidance). An interior noise level reduction of 21-26 dBA CNEL is needed for the proposed residential units located along the western and northern property lines and a noise level reduction of 19-22 dBA CNEL is needed for the residential units set further back. Based on the preliminary architectural plans, to meet the 45 dBA CNEL interior noise standard, a minimum STC 33-35 rated dual pane windows and mechanical ventilation would be needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units along the western and northern property line. A minimum STC 30-33 rated assemblies and mechanical ventilation would be needed to achieve the interior noise reductions for the second row of residential units set further back. The remainder units would require a minimum STC 28. Once the final architectural plans are prepared, the proposed project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

Offsite Project Related Transportation Noise Levels

Community Plan Amendment Project

The project will not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, off-site traffic noise will be less than significant.

Proposed Project

The project will not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Operational Noise Levels

Community Plan Amendment Project

A review of the Community Plan Amendment indicates that noise sources such as the pad mounted mechanical ventilation systems (HVAC) are the primary source of stationary noise. Noise levels generated by the operations of the Community Plan Amendment must meet the City's noise level thresholds at the nearest property lines (City of San Diego Municipal Code 59.5.0404). Therefore, operational noise will be less than significant.

Proposed Project

Based upon the property line noise levels determined, none of the proposed noise sources directly or cumulatively exceeds the most restrictive nighttime property line standards at the shared property lines. Therefore, the proposed developments related operational noise levels comply with the noise standards at the property lines. All other property lines are located further from the proposed HVAC units and the resulting noise levels would also be below the property line thresholds. No Impacts are anticipated and no mitigation is required.

1.0 PROJECT INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine noise impacts, if any, to the Project from off-site sources (i.e. traffic along Interstate 15). Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to reduce impacts to below a level of significance.

1.2 Project Location

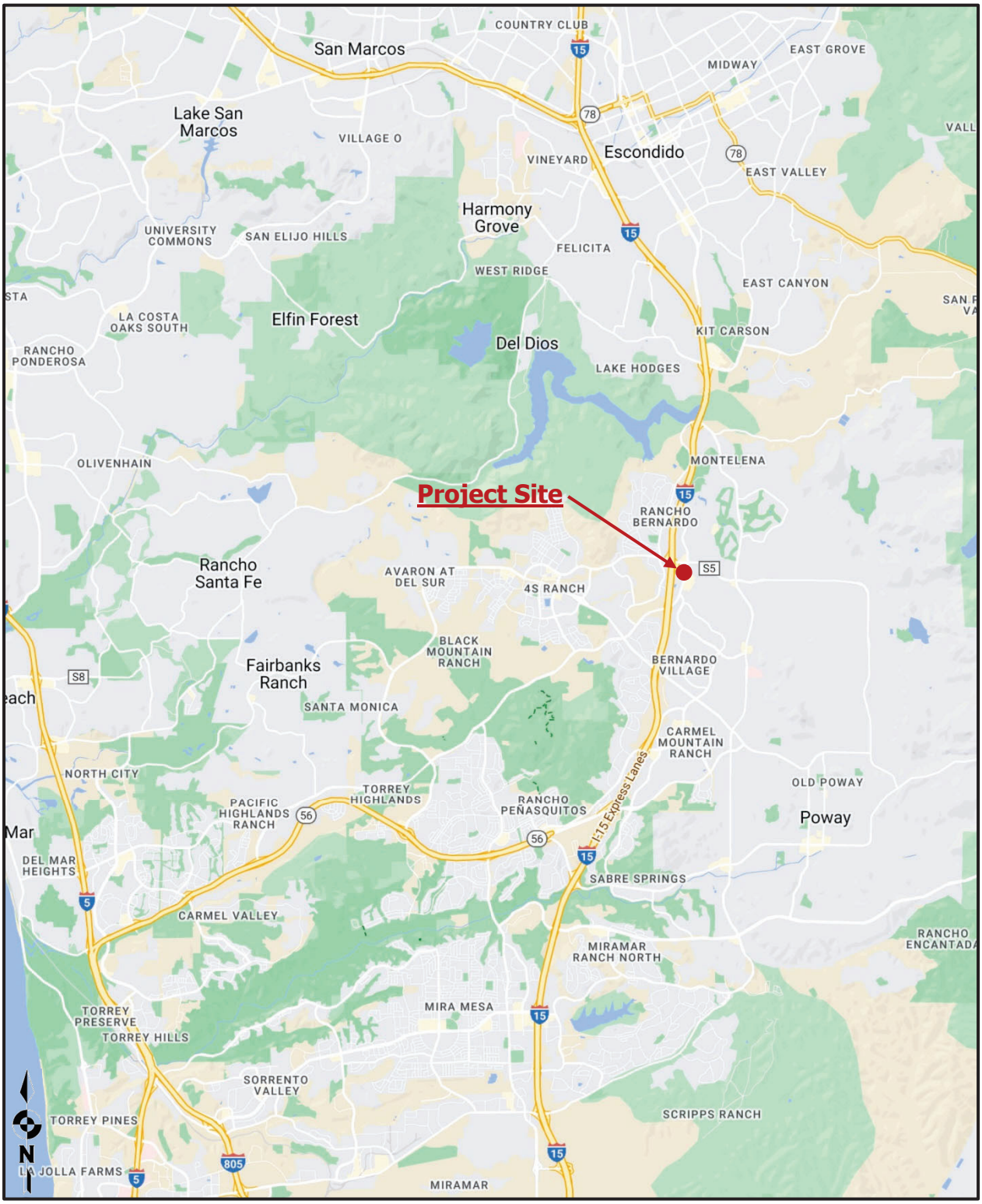
The proposed Development is located on a 5.5-acre site (APN 274-781-14-00) within the Rancho Bernardo Community Planning area in the City of San Diego CA. The site is located adjacent to Interstate 15 to the east, west of Bernardo Center Drive, and north along Bernardo Plaza Court in the Rancho Bernardo Community Plan Area of the City of San Diego. Access to the site area is from Bernardo Plaza Court. A general development vicinity map is shown in Figure 1-A of this report.

1.3 Project Description

The parcel is currently developed as a business center and consists of a multi-structured office building with parking and landscaping with an estimated size of 75,000 square feet of commercial office space and is referred to in this report as "Existing Development". The Proposed Project seeks a Community Plan Amendment (CPA) and rezone to change the land use designation from Special Commercial (CC-2-3) to Medium Density Residential (RM-2-5). The CPA and rezone would allow up to 160 multi-family residential units and is referred to in this report as "CPA Buildout". The proposed Project includes the development of 122 all electric multi-family residential units and is referred to as "Project". Also, since the CPA Buildout is based on allowable units rather than a site-specific plan, no development plans have been prepared.

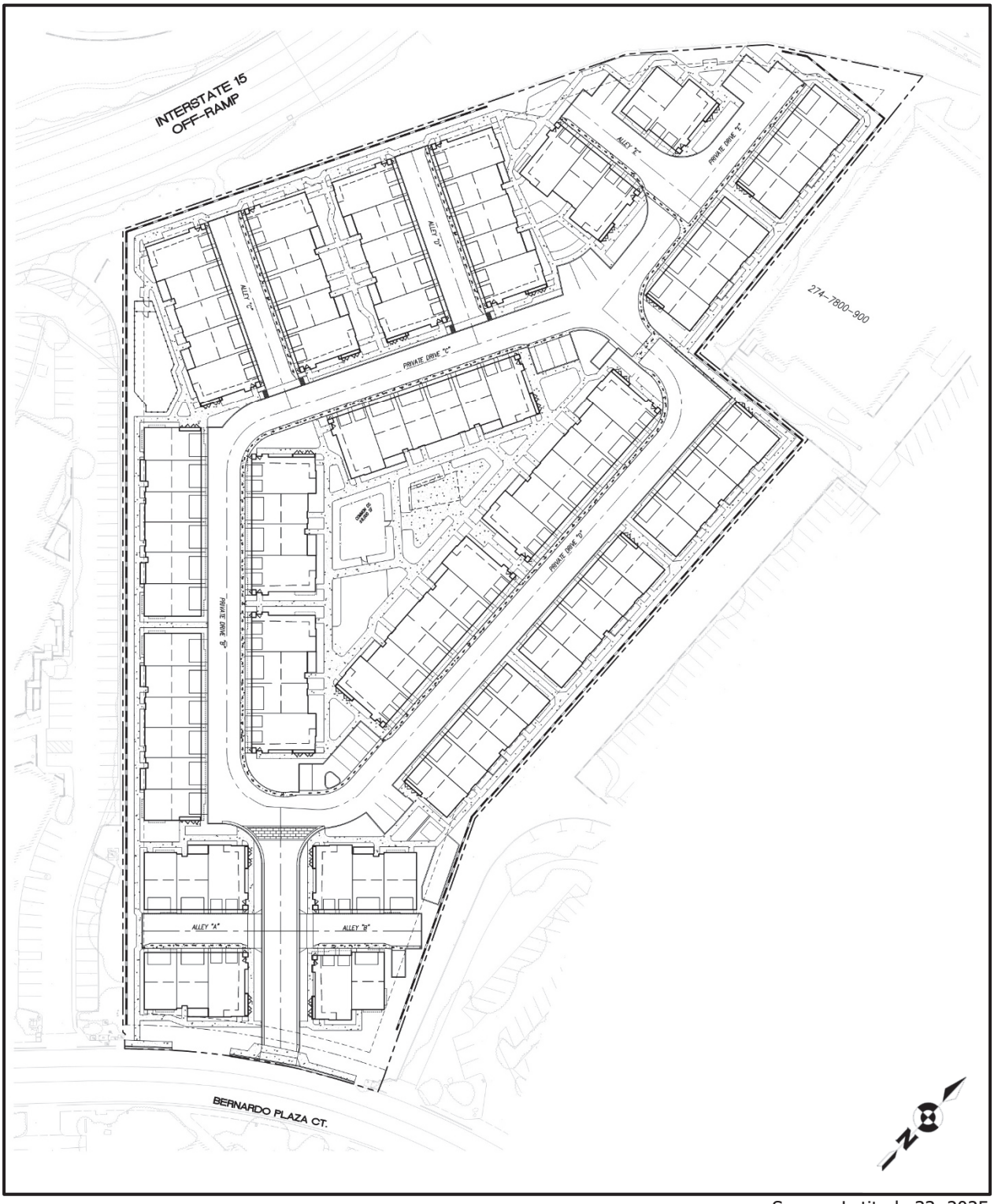
The proposed CPA Buildout and Project would demolish all existing structures within the existing development and then construct the homes. The Project site plan is shown in Figure 1-B.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 2025

Figure 1-B: Project Site Plan



Source: Latitude 33, 2025

2.0 REGULATORY FRAMEWORK

2.1 State of California

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix." The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services.

2.2 Municipal Code

Construction Noise

Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

Operational Noise

The generation of noise from certain types of land uses could cause potential land use incompatibility. A project which would generate noise levels at the property line which exceed Section 59.5.0401 of the City's Municipal Code is considered potentially significant, as identified in Table 2-1 on the following page.

Section 59.5.0401 of the Noise Ordinance sets a more restrictive operational exterior noise limit for multi-family residential uses of 55 dBA Leq for daytime hours of 7 a.m. to 7 p.m., 50 dBA Leq during the noise sensitive nighttime hours of 7 p.m. to 10 p.m., and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m. For commercial zoned property the City Noise Ordinance applies an operational property line noise limit of 60 dBA Leq for daytime and nighttime hours of 7 a.m. to 10 p.m. and 55 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m.

The sound level limit at a location on a property line boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Project components will only operate during the daytime hours but a few may operate during nighttime or early morning hours and therefore the most conservative approach is to apply the nighttime standard at the property lines. Therefore, operations would need to meet a worst-case nighttime standard of 52.5 dBA Leq (arithmetic mean between 45 dBA for residential and 60 dBA for commercial).

Table 2-1: Sound Level Limits in Decibels (dBA)

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

Source: City of San Diego Noise Ordinance Section 59.5.0401

2.3 Vibration

The City of San Diego has not yet adopted vibration criteria. The United States Department of Transportation Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria will be used. The human reaction to various levels of vibration is highly subjective. The upper end of the range shown for the threshold of perception, or roughly 65 VdB, may be considered annoying by some people. Vibration below 65 VdB may also cause secondary audible effects, such as a slight rattling of doors, suspended ceilings/fixtures, windows, and dishes, any of which may result in additional annoyance. Table 2-2 shows the FTA groundborne vibration and noise impact criteria for human annoyance.

Table 2-2: Groundborne Vibration and Noise Impact Criteria (Human Annoyance)

	Groundborne Vibration Impact Levels (VdB re 1 microinch/second)			Groundborne Noise Impact Levels (dB re 20 micropascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: US Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* June 2006.

[1] "Frequent Events" are defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[2] "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day. Most commuter truck lines have this many operations.

[3] "Infrequent Events" are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[5] Vibration-sensitive equipment is not sensitive to groundborne noise.

In addition to the vibration annoyance standards presented above, the FTA also applies the following standards for construction vibration damage. As shown in Table 2-3, structural damage is possible for typical residential construction when the peak particle velocity (PPV) exceeds 0.2 inch per second (in/sec). This criterion is the threshold at which there is a risk of damage to normal dwellings. In the context of this analysis, the noise and vibration impacts associated with the construction operations and blasting operations will be conditioned to comply with the thresholds stated above. The potential noise and vibration impacts are analyzed separately below.

Table 2-3: Groundborne Vibration Impact Criteria (Structural Damage)

Building Category	PPV (in/sec)	VdB
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: US Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* June 2006.
Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

3.0 APPLICABLE STANDARDS

3.1 Onsite Transportation Noise (Land Use Compatibility)

The City uses the Land Use - Noise Compatibility Guidelines as shown on Table NE-3 in the Noise Element of the General Plan (provided as Table 3-1 below) for evaluating land use noise compatibility when reviewing proposed land use development projects. A "compatible" land use indicates that standard construction methods will attenuate exterior noise to an acceptable indoor noise level and people can carry out outdoor activities with minimal noise interference. Evaluation of land use that falls into the "conditionally compatible" noise environment should have an acoustical study prepared. The acoustical study should include, with consideration of the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with speech, sleep, or other activities characteristic of the land use. For land uses indicated as "conditionally compatible", structures must be capable of attenuating exterior noise to the indoor noise level as shown in Table 3-1. For land uses indicated as "incompatible", new construction should generally not be undertaken.

3.2 Offsite Transportation Noise

In accordance with CEQA, a project should not have a noticeable adverse impact on the surrounding environment. Noise level changes greater than 3 dBA, or a doubling of the acoustic energy, are often identified as audible and considered potentially significant, while changes less than 1 dBA are not discernible. For the purposes for this analysis, a direct and cumulative roadway noise impact would be considered significant if the project increases noise levels at a noise sensitive land use 3 dBA CNEL and if the noise level increases above an unacceptable noise level per the City's General Plan.

Table 3-1: Land Use - Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	65	70	75	
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising & Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					
Single Dwelling Units; Mobile Homes		45			
Multiple Dwelling Units; **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3. For uses affected by motor vehicle traffic noise, refer to Policy NE-B.10.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Professional Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					50
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					50
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					50
Research & Development				50	50

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
45,50	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas , including residential habitable areas, commercial work/shopping areas, and office areas associated with industrial uses.. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

Source: City of San Diego Noise Element (2024)

4.0 FUNDAMENTALS

4.1 Acoustical Fundamentals

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs, and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24-hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is a combination of the noise produced by a vehicle's engine, exhaust, and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds, and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore, the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt, and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas, and vegetation. Alternately, fixed/point sources radiate outward uniformly as it travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of

distance.

The most effective noise reduction methods consist of controlling the noise at the source and blocking the noise transmission with barriers. Any or all of these methods may be required to reduce noise levels to an acceptable level. To be effective, a noise barrier must have enough mass to prevent significant noise transmission through it and high enough and long enough to shield the receiver from the noise source. A safe minimum surface weight for a noise barrier is 3.5 pounds/square foot (equivalent to 3/4-inch plywood), and the barrier must be carefully constructed so that there are no cracks or openings.

Barriers constructed of wood or as a wooden fence must have minimum design considerations as follows: the boards must be ¾ inch thick and free of any gaps or knot holes. The design must also incorporate either overlapping the boards at least 1 inch or utilizing a tongue-and-grove design for this to be achieved.

4.2 Vibration Fundamentals

Vibration is a trembling or oscillating motion of the ground. Like noise, vibration is transmitted in waves, but in this case through the ground or solid objects. Unlike noise, vibration is typically felt rather than heard. Vibration can be either natural as in the form of earthquakes, volcanic eruptions; or manmade as from explosions, heavy machinery, or trains. Both natural and manmade vibration may be continuous, such as from operating machinery; or infrequent, as from an explosion.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized in three ways: displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position and for the purposes of soil displacement is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches per second or millimeters per second. Particle acceleration is the rate of change in velocity with respect to time and is measured in inches per second or millimeters per second. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration. Table 4-1 shows the human reaction to various levels of peak particle velocity.

Vibrations also vary in frequency and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occurring around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, it is less common, to measure traffic frequencies above 30 Hz.

Propagation of ground-borne vibrations is complicated and difficult to predict because of the endless variations in the soil through which the waves travel. There are three main types of

vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by dropping an object into water. P-waves, or compression waves, are waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and special voids. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

Table 4-1: Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage
Source: Caltrans, Division of Environmental Analysis, *Transportation Related Earthborne Vibration, Caltrans Experiences*, Technical Advisory, Vibration, TAV-02-01-R9601, 2002.		

5.0 EXISTING NOISE ENVIRONMENT

5.1 Existing Noise Environment Onsite

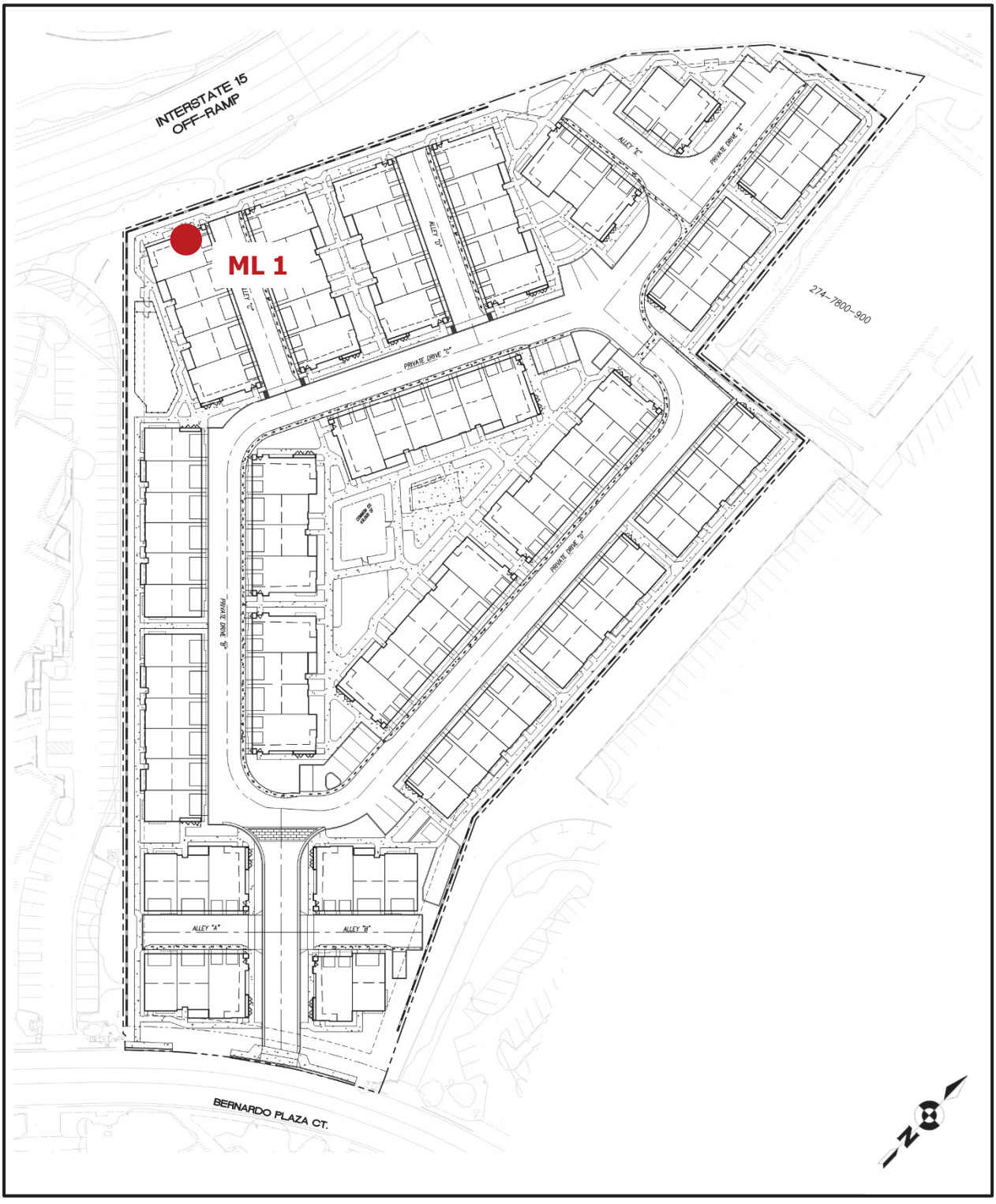
Noise measurements were taken March 7, 2024, in the mid-day hours using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

Monitoring location 1 (M1) was located at the western property line to determine the worst-case noise level from Interstate 15. The noise monitoring location is provided graphically in Figure 5-1 on the following page. The results of the noise level measurement are presented in Table 5-1. The noise measurement was monitored for a time period of 10 minutes during typical traffic conditions. The existing noise levels in the project area consisted primarily of traffic Interstate 15. The ambient Leq noise level measured in the area of the project during the mid-day hours was found to be 67.6 dBA Leq based on the separation from Interstate 15. The statistical indicators Lmax, Lmin, L10, L50 and L90, are given for the monitoring location. As can be seen from the L90 data, 90% of the time the noise level is approximately 65.1 dBA from adjacent Interstate 15.

Table 5-1: Measured Ambient Noise Levels

Measurement Identification	Description	Time	Noise Levels (dBA)					
			Leq	Lmax	Lmin	L10	L50	L90
M1	Western Property Line	12:50-1:00 p.m.	67.6	74.5	61.6	69.6	67.2	65.1
Source: Ldn Consulting, Inc. March 7, 2024								

Figure 5-1: Ambient Noise Monitoring Locations



6.0 POTENTIAL IMPACTS

6.1 Construction Noise Levels

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders, and scrapers and demolition which can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours. Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor and reduced to 63 dBA at 200 feet from the source.

Using a point-source noise prediction model, calculations of the expected construction noise levels were completed. The essential model input data for these performance equations include the source levels of the equipment, source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day (also referred to as the duty-cycle), and any transmission loss from topography or barriers.

6.1.1 Potential Noise Impact Identification

The proposed CPA Buildout and Project would demolish all existing structures and then grade the site. Not all the equipment will operate continuously, the equipment will be utilized on an as-needed basis depending on the demolition activities are required. As an example: a saw will be used to weaken some of the structural components of the structure and then the excavator would be utilized to demo that section of the structure. The excavator or a loader will then be used to place the debris into the haul trucks. Noise levels from the demolition activities can reach short-term peak noise levels in excess of 90 dBA but will decay rapidly. This is due to the fact that once the equipment knocks down a portion of the building the debris needs to be removed, sorted and

inspected. Based on empirical data gathered during the monitoring of a similar project, the worst-case hourly noise level was found to be up to 81 dBA Leq at an average distance of 25 feet for demolition activities (Source: Aztec Court Noise Monitoring – San Diego, Ldn Consulting, 2012). At an average distance of 50 feet, the noise level from the demolition activities would be roughly 75 dBA. Given this, the noise levels will comply with the average 75 dBA threshold at the property lines. Therefore, demolition noise will be less than significant.

Community Plan Amendment

Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst-case noise levels from the construction equipment operations would occur during the base operations (grading phase). The anticipated grading of the Community Plan Amendment Project will occur in a single phase, with the entire site prepared for building construction. Construction must meet the City's Noise Ordinance (City of San Diego Municipal Code 59.5.0404). Therefore, construction noise will be less than significant.

Proposed Project

The noise levels utilized in this analysis for the grading are shown in Table 6-1. The construction equipment would be moving near the property lines to distances as far as 300-feet away or more. Therefore, the average distance during construction would be 100-feet. As can be seen in Table 6-1, with the equipment working closely together the cumulative noise levels would be 72.0 dBA at the nearest property line located 100 feet from the construction activities over a 12-hour period. Therefore, the construction activities would be expected to comply with the City's 75 dBA Leq 12-hour standard at the property lines and no impacts are anticipated.

Table 6-1: Grading and Site Preparation Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)*	Duty Cycle (Hours/Day)	12 Hour Noise Level @ Property Line (dBA)
Grader	1	73	6	71.8
Backhoe	1	72	6	70.8
Roller Compactor	1	74	4	71.0
Water Truck	1	70	4	67.0
			Cumulative Levels @ 50 Feet (dBA)	76.5
			Average Distance To Property Line	100
			Noise Reduction Due To Distance	-6.0
			NEAREST PROPERTY LINE NOISE LEVEL	**70.5**
*Source: U.S. Environmental Protection Agency (U.S. EPA) and Empirical Data				

6.1.2 Construction Noise Conclusions

Construction of the CPA Buildout must meet the City's Noise Ordinance (City of San Diego Municipal Code 59.5.0404). Therefore, construction noise will be less than significant.

During the site preparation and grading the equipment will be spread out over the project site from distances near the occupied property to distances of more than 100-feet. Based upon the calculations of the noise levels when construction equipment is located near the property line the average noise levels are anticipated not to exceed the 75 dBA 12-hour standard and no impacts will occur and no mitigation measures are required.

6.2 Transportation Noise Levels

6.2.1 Onsite Transportation Related Noise Levels

Community Plan Amendment

CEQA does not require any analysis for the environment onto the project site. The CPA Buildout will be designed to conform to the City's Noise Element requiring noise levels to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas per the RM-2-5 zoning. Therefore, noise will be less than significant.

Proposed Project

To determine the future noise environment and impact potentials the Caltrans Sound32 noise model was utilized. The critical model input parameters, to determine the projected traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions (hard or soft) and the peak hour traffic volume.

Table 6-2 presents the roadway parameters used in the analysis including the average daily traffic volumes, vehicle speeds and the hourly traffic flow distribution (vehicle mix) for the future Buildout 2035 conditions provided by SANDAG Traffic Prediction Model. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks and heavy trucks for input into the Sound32 Model. The traffic noise model utilizes a traffic mix per Caltrans 2021 Annual Average Daily Truck Traffic for Interstate 15. The modeled observer locations of the outdoor usable areas and building facades of the proposed project are presented in Figure 6-1 on the following page.

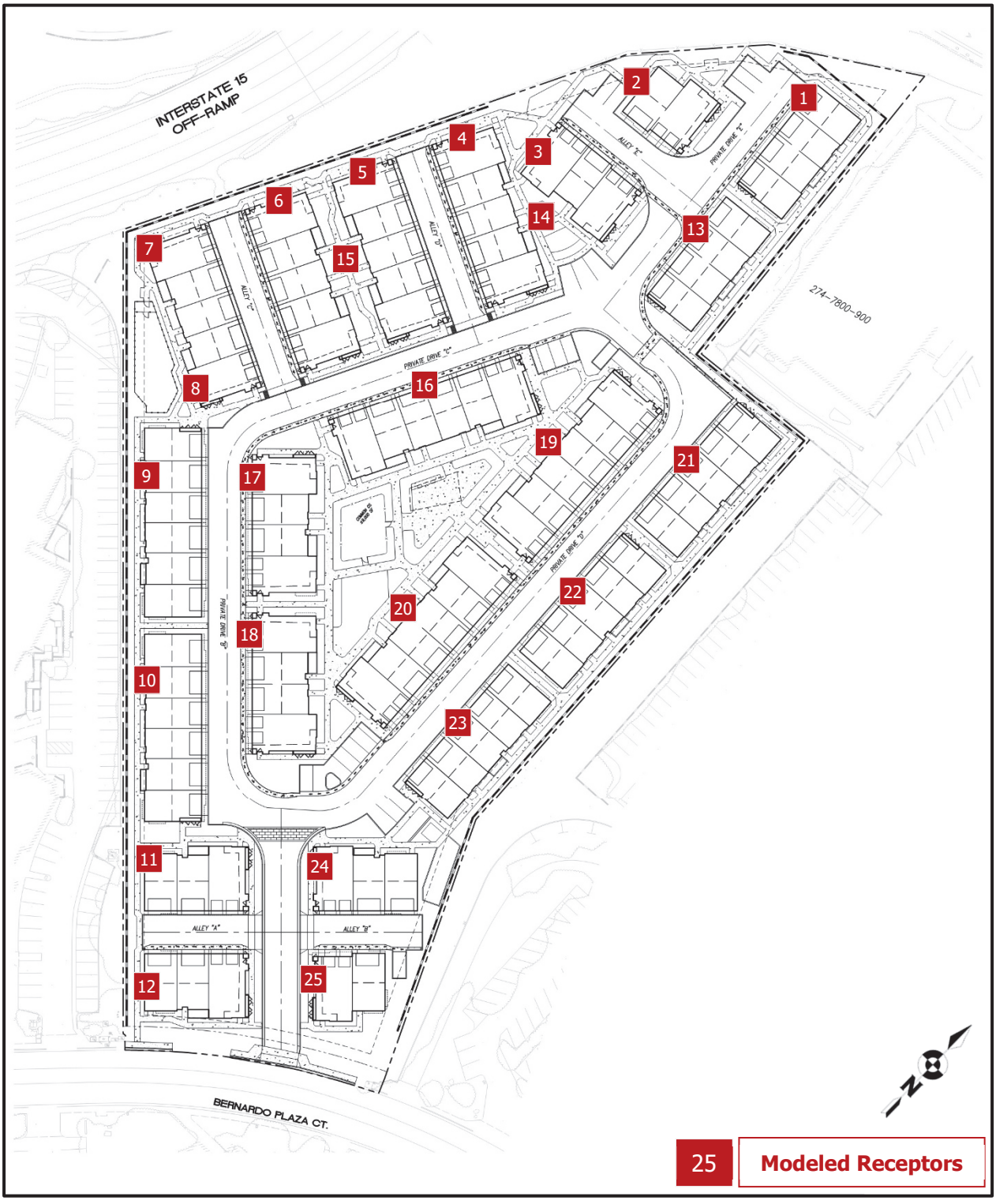
Table 6-2: Traffic Parameters

Source	Average Daily Traffic (ADT)[1]	Peak Hour Volume [2]	Vehicle Speeds (MPH)	Vehicle Mix %		
				Auto	Medium Trucks	Heavy Trucks
I-15 Northbound	103,000	10,300	65	92.90[3]	3.46	3.64
I-15 Southbound	116,600	11,660	65	92.90[3]	3.46	3.64
I-15 Northbound HOV	21,200	2,120	65	100	0	0
I-15 Southbound HOV	16,000	1,600	65	100	0	0
Off-Ramp	8,900	890	30	95[4]	3	2
Rancho Bernardo Road	35,600	3,560	40	95[4]	3	2

[1] Source: SANDAG Series ABM2+/2021 RP, Forecast Year 2035
[2] 10% of the ADT
[3] Source: Caltrans 2021 Annual Average Daily Truck Traffic
[4] Source: Typical mix found on City roadways

The required coordinate information necessary for the traffic noise prediction model input was taken from the preliminary site plans provided by Latitude 33, 2025. To predict the future noise levels, the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the receptor areas. The traffic was broken into lane segments for the main lanes and HOV lanes based on the ultimate Buildout configuration and the roadway segments were extended beyond the observer locations.

Figure 6-1: Modeled Receptor Locations



The Buildout analysis was modeled utilizing the roadway parameters described above and shown in Table 6-1 for the future conditions. Sensitive outdoor observers were located in the ground floor private patios, the second-floor balconies, and upper floor building facades. The modeling results are quantitatively shown in Table 6-3 below. Additionally, the Proposed Project is proposing a 6-foot noise barrier facing Interstate 15 as a project design feature. The modeling results include noise levels with and without shielding.

Based upon the findings, the outdoor use areas were determined to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas without attenuation measures. The units above the City's noise thresholds are shown in Figure 6-2 and represent less than 15% of the 122 total units. The modeling is provided in ***Attachment A***.

Table 6-3: Future Residential Exterior Noise Levels

Receptor Number	Unshielded Ground Floor Patio Noise Levels (dBA CNEL)	Shielded Ground Floor Patio Noise Levels (dBA CNEL)	Second Level Building Facade Noise Levels (dBA CNEL)	Third Level Building Facade Noise Levels (dBA CNEL)
1	68	68	71	71
2	68	68	70	70
3	67	67	70	70
4	68	65	71	71
5	67	63	70	71
6	68	61	71	72
7	63	61	70	72
8	66	65	69	69
9	62	61	69	70
10	64	64	66	69
11	65	65	67	68
12	65	65	68	68
13	56	56	59	60
14	62	62	64	64
15	63	63	65	66
16	56	56	59	60
17	57	57	57	60
18	56	56	58	59
19	55	55	58	59
20	55	55	58	59
21	55	55	58	58
22	55	55	58	58
23	55	55	58	58
24	55	55	58	58
25	54	54	57	57
Interior Noise Study required if noise level is above 60 dBA CNEL per City Guidelines.				

Figure 6-2: Units Above City Noise Threshold

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL as shown above in Table 3-1.

Standard building construction will provide a noise reduction of approximately 10-15 dBA with a windows open condition (Source: Federal Highway Administration Highway Traffic Noise Analysis and Abatement Policy and Guidance). An interior noise level reduction of 21-27 dBA CNEL is needed for the proposed residential units located along the western and northern property lines and a noise level reduction of 19-22 dBA CNEL is needed for the residential units set further back. Based on the preliminary architectural plans, to meet the 45 dBA CNEL interior noise standard, a minimum STC 33-35 rated dual pane windows and mechanical ventilation would be needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units along the western and northern property line. A minimum STC 30-33 rated assemblies and mechanical ventilation would be needed to achieve the interior noise reductions for the second row of residential units set further back. The remainder units would require a minimum STC 28. Once the final architectural plans are prepared, the Proposed Project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

6.2.2 Offsite Project Related Transportation Noise Levels

To determine if direct or cumulative off-site noise level increases associated with the development of the proposed project would create noise impacts, the traffic volumes for the existing conditions were compared with the traffic volume increase of existing plus project.

Community Plan Amendment

The CPA Buildout would include up to 160 multi-family residential units for a total of 960 daily trip ends (ADTs) and AM peak hour volume of 77 trips and PM peak hour volume of 86 trips (*Linscott, Law, and Greenspan, 2025*). The existing average daily traffic (ADT) volumes on the area roadways are more than several thousand ADT. Typically, it requires a project to double (or add 100%) the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. Therefore, off-site traffic noise will be less than significant.

Proposed Project

The Proposed Project is estimated to only generate 732 daily trips with AM peak hour volume of 59 trips and 66 PM peak hour volume trips (*LLG, 2025*). Therefore, no direct or cumulative impacts are anticipated.

6.2.3 Transportation Noise Conclusions

Community Plan Amendment

CEQA does not require any analysis for the environment onto the project site. The CPA Buildout will be designed to conform to the City's Noise Element requiring noise levels to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas without attenuation measures. Therefore, noise will be less than significant.

The project will not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, off-site traffic noise will be less than significant.

Proposed Project

The results of this analysis indicate that future vehicle noise from Interstate 15 and Rancho Bernardo Road is the principal source of community noise that could impact the site. The Proposed Project is proposing ground floor patios and upper floor balconies to provide the private use area. Based upon the findings, the outdoor use areas were determined to be below the City's 65 dBA CNEL Noise compatibility threshold at a minimum of 75% of the private use areas without attenuation measures.

The City of San Diego as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above the normally compatible noise level in order to ensure that acceptable interior noise levels can be achieved. The City of San Diego's Noise Compatibility Guidelines require interior noise levels in residential structures to be reduced to 45 dBA CNEL.

Standard building construction will provide a noise reduction of approximately 10-15 dBA with a windows open condition (Source: Federal Highway Administration Highway Traffic Noise Analysis and Abatement Policy and Guidance). An interior noise level reduction of 21-26 dBA CNEL is needed for the proposed residential units located along the western and northern property lines and a noise level reduction of 19-22 dBA CNEL is needed for the residential units set further back.

Based on the preliminary architectural plans, to meet the 45 dBA CNEL interior noise standard, a minimum STC 33-35 rated dual pane windows and mechanical ventilation would be needed to achieve the necessary interior noise reductions to meet the City's standard for the residential units along the western and northern property line. A minimum STC 30-33 rated assemblies and mechanical ventilation would be needed to achieve the interior noise reductions for the second row of residential units set further back. The remainder units would require a minimum STC 28. Once the final architectural plans are prepared, the Proposed Project site will require an interior noise study be prepared prior to the issuance of building permits to determine the detailed components to reduce interior noise to 45 dBA CNEL.

The Proposed Project will not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the Proposed Project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

6.3 Vibration

The nearest vibration-sensitive uses are the existing commercial uses located 100 feet or more from the nearest proposed construction. Table 6-4 lists the average vibration levels that would be experienced at the nearest vibration sensitive land uses from the temporary construction activities.

Table 6-4: Vibration Levels from Construction Activities

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS Velocity at 25 Feet (in/sec)	Approximate Velocity Level at 100 Feet (VdB)	Approximate RMS Velocity at 100 Feet (in/sec)
Small bulldozer	58	0.003	39.9	0.0111
Jackhammer	79	0.035	60.9	0.0044
Loaded trucks	86	0.076	67.9	0.0095
Large bulldozer	87	0.089	68.9	0.0004
		FTA Criteria	83	0.2
		Significant Impact?	**No**	**No**

[1] PPV at Distance D = PPVref x $(25/D)^{1.5}$

The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). Proposed Project

construction activities would result in PPV levels below the FTA's criteria for vibration induced structural damage. Therefore, Proposed Project construction activities would not result in vibration induced structural damage to commercial buildings near the demolition and construction areas. The FTA criterion for infrequent vibration induced annoyance is 83 Vibration Velocity (VdB) for commercial uses. Construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby residential uses. Therefore, vibration impacts would be less than significant for both the CPA and proposed Project.

6.4 Operational Noise

Community Plan Amendment Project

A review of the CPA Buildout indicates that noise sources such as the pad mounted mechanical ventilation systems (HVAC) are the primary source of stationary noise. Noise levels generated by the operations of the CPA Buildout must meet the City's noise level thresholds at the nearest property lines (City of San Diego Municipal Code 59.5.0404). Therefore, operational noise will be less than significant.

Proposed Project

This section examines the potential operational noise source levels associated with the development and operation of the Proposed Project. Noise from a fixed or point source drops off at a rate of 6 dBA for each doubling of distance. Which means a noise level of 70 dBA at 5 feet would be 64 dBA at 10 feet and 58 dBA at 20 feet. A review of the Proposed Project indicates that noise sources such as the pad mounted mechanical ventilation systems (HVAC) are the primary source of stationary noise. The project anticipates installing Carrier CA15NA (Series, 24-A) or equivalent HVAC units with a reference noise level of 71 dBA at 3-feet (Source: Carrier).

The Proposed Project is adjacent to existing retail and commercial uses, therefore, would be required to meet the 52.5 dBA threshold during the nighttime hours from 10:00 p.m. to 7:00 a.m. (arithmetic mean between 45 dBA for residential and 60 dBA for commercial). The HVAC units are located a minimum of 20 feet from the property lines and will be shielded by proposed retaining walls that will break the line of sight to the HVAC units. To determine the noise level reductions from the retaining walls, the Fresnel Barrier Reduction Calculations based on distance, source height, receiver elevation and the top of barrier were modeled. The adjacent receptor was located 5 feet behind the retaining wall. It was determined from the Fresnel Barrier Reduction Calculations that the retaining wall would provide a minimum 13.1 dBA reduction.

The typical locations of the proposed HVAC units are shown in Figure 6-3. Up to four HVAC units may be clustered together with the proposed buildings separating them and would create the worst-case cumulative noise level. The remainder of the units are separated by at least 60 feet. This separation of 60 feet would result in a 20 dBA difference between two separate HVAC clusters and would not cumulatively increase the noise levels. Therefore, the worst-case combined noise from the HVAC would occur from four units.

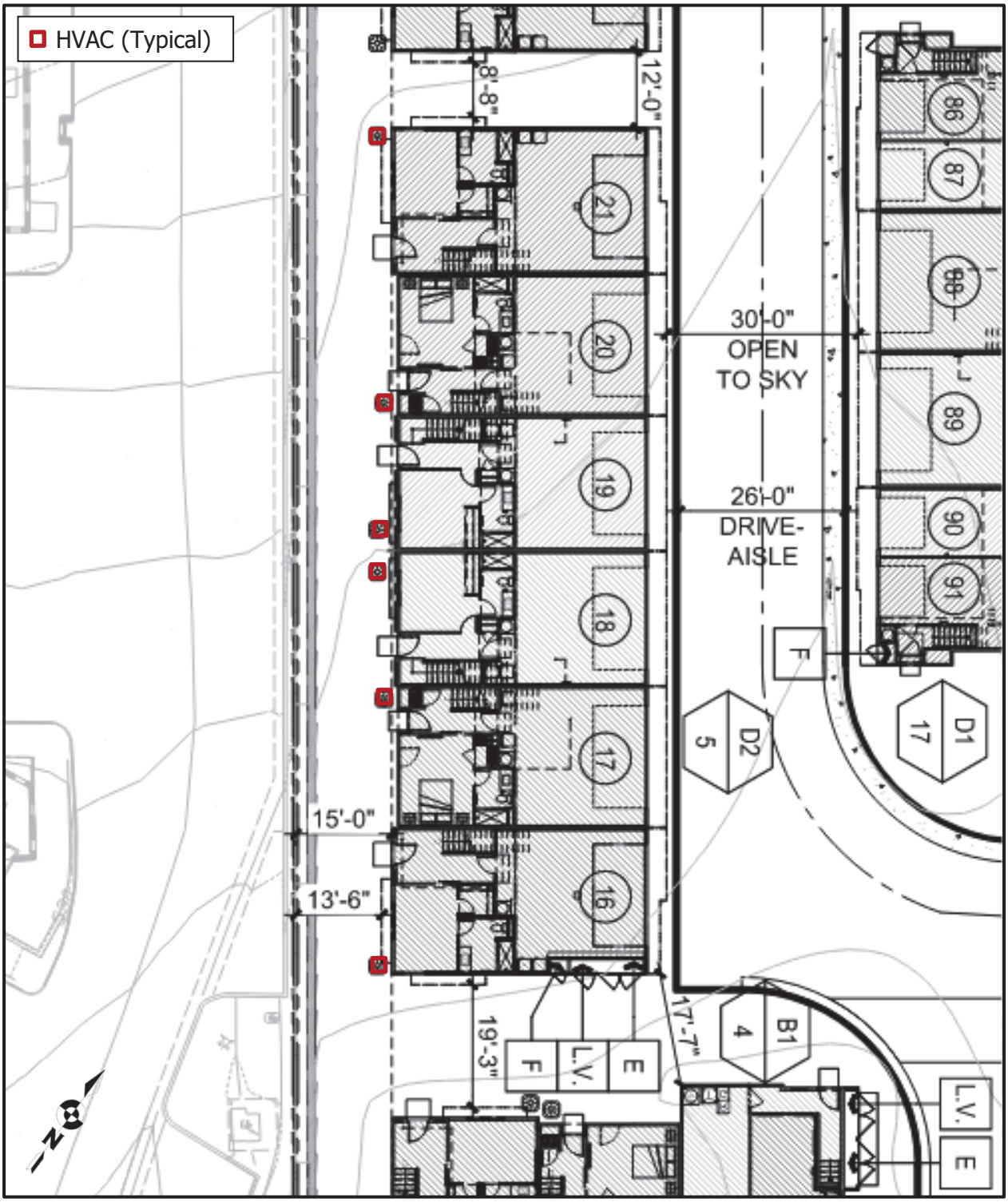
Utilizing a 6 dBA decrease per doubling of distance, noise levels at the nearest property line as described above were calculated for the HVAC. The noise levels associated with the HVAC will be limited by the buildings that will shield them both visually and acoustically. The HVAC units are located a minimum of 20 feet from the nearest property lines. The noise level reductions due to distance and the building for the nearest property line is provided in Table 6-5 below.

Table 6-5: Proposed Project HVAC Noise Levels (Nearest Property Line)

Hourly Reference Noise Level (dBA)	Noise Source Reference Distance (Feet)	Noise Reduction Due to Distance (dBA)	Noise Reduction Due to Barriers (dBA)	Noise Level at Property Line (dBA)	Quantity	Property Line Cumulative Noise Level (dBA)*
71.0	3.0	-16.5	-13.1	41.4	4	**47.4**
*Complies with the nighttime Noise Standard of 52.5 dBA.						

Based upon the property line noise levels determined above none of the proposed noise sources directly or cumulatively exceeds the most restrictive nighttime property line standards at the shared property lines. Therefore, the proposed developments related operational noise levels comply with the noise standards at the property lines. All other property lines are located further from the proposed HVAC units and the resulting noise levels would also be below the property line thresholds. No Impacts are anticipated and no mitigation is required.

Figure 6-3: Locations of Proposed HVAC Units



ATTACHMENT A

FUTURE NOISE MODEL INPUT AND
OUTPUT FILES

City View Ground Level Unshielded
T-PEAK HOUR TRAFFIC CONDITIONS, 1
9569 , 65 , 356 , 65 , 375 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 2
10832 , 65 , 403 , 65 , 424 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 3
2120 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 4
1600 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 5
846 , 40 , 27 , 40 , 18 , 40
T-PEAK HOUR TRAFFIC CONDITIONS, 6
3382 , 40 , 107 , 40 , 71 , 40
L-I-15 North Main, 1
N,304,155,582,
N,336,482,580,
N,377,877,576,
N,394,1079,574,
N,413,1455,570,
N,414,1636,568,
N,418,2098,566,
L-I-15 South Main, 2
N,111,173,582,
N,143,502,580,
N,184,895,576,
N,200,1092,574,
N,219,1461,570,
N,220,1637,568,
N,224,2099,566,
L-I-15 North HOV, 3
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N,324,1084,574,
N,343,1457,570,
N,344,1636,568,
N,348,2098,566,
L-I-15 South HOV, 4
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N,257,888,576,
N,274,1087,574,
N,293,1459,570,
N,294,1637,568,
N,298,2098,566,
L-Off-Ramp, 5
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N,870,1527,520,
N,890,1637,516,
L-Rancho Bernardo, 6
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B-I-15 EOP East, 1 , 2 , 0 ,0
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409,874,576,576,
426,1077,574,574,
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450,2097,566,566,

B-HOV K-Rail, 2 , 2 , 0 ,0
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296,486,580,583,
337,880,576,579,
354,1082,574,577,
373,1456,570,573,
374,1636,568,571,
378,2098,566,569,
B-Off-Ramp EOP, 3 , 2 , 0 ,0
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461,748,566,566,
532,893,562,562,
625,1034,554,554,
696,1111,545,545,
968,1438,520,520,
1087,1527,517,517,
1153,1549,505,505,
1226,1568,500,500,
1694,1591,480,480,
B-PL Wall, 4 , 2 , 0 ,0
1024,730,524,524,
1007,760,525,525,
759,1180,539.2,539.2,
808,1236,534,534,
900,1345,526,526,
936,1388,523.2,523.2,
R, 1 , 65 ,10
1124,1511,518,R1
R, 2 , 65 ,10
1024,1452,519,R2
R, 3 , 65 ,10
991,1406,519,R3
R, 4 , 65 ,10
931,1362,524,R4
R, 5 , 65 ,10
881,1303,524,R5
R, 6 , 65 ,10
838,1251,528,R6
R, 7 , 65 ,10
791,1197,528,R7
R, 8 , 65 ,10
847,1119,525,R8
R, 9 , 65 ,10
840,1068,525,R9
R, 10 , 65 ,10
949,886,523,R10
R, 11 , 65 ,10
992,811,524,R11
R, 12 , 65 ,10
1027,752,524,R12
R, 13 , 65 ,10
1105,1370,518,R13
R, 14 , 65 ,10
1003,1345,519,R14
R, 15 , 65 ,10
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R, 16 , 65 ,10
997,1193,526,R16
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R, 18 , 65 ,10
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R, 20 , 65 ,10
1069,1053,524,R20
R, 21 , 65 ,10
1183,1251,518,R21
R, 22 , 65 ,10
1159,1124,522,R22
R, 23 , 65 ,10
1135,997,525,R23

R, 24 , 65 ,10
1092,875,522,R24
R, 25 , 65 ,10
1131,808,519,R25
D, 4.5
ALL,ALL
K,-3
5 ,8,9,10,11,12
K,-9.9
6 ,8,9,10,11,12
K,-5
ALL,14,15
K,-9.9
ALL,13,16,17,18,19,20,21,22,23,24,25
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
City View Ground Level Unshielded

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R1	65.	10.	67.8
2	R2	65.	10.	67.5
3	R3	65.	10.	67.4
4	R4	65.	10.	68.0
5	R5	65.	10.	66.6
6	R6	65.	10.	67.7
7	R7	65.	10.	62.8
8	R8	65.	10.	65.6
9	R9	65.	10.	62.1
10	R10	65.	10.	63.8
11	R11	65.	10.	65.0
12	R12	65.	10.	64.7
13	R13	65.	10.	56.0
14	R14	65.	10.	62.0
15	R15	65.	10.	63.0
16	R16	65.	10.	56.3
17	R17	65.	10.	57.2
18	R18	65.	10.	55.8
19	R19	65.	10.	55.4
20	R20	65.	10.	55.3
21	R21	65.	10.	55.3
22	R22	65.	10.	55.4
23	R23	65.	10.	55.4
24	R24	65.	10.	54.7
25	R25	65.	10.	54.2

City View Ground Level Shielded
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 9569 , 65 , 356 , 65 , 375 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 10832 , 65 , 403 , 65 , 424 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 3
 2120 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 4
 1600 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 5
 846 , 40 , 27 , 40 , 18 , 40
T-PEAK HOUR TRAFFIC CONDITIONS, 6
 3382 , 40 , 107 , 40 , 71 , 40
L-I-15 North Main, 1
N,304,155,582,
N,336,482,580,
N,377,877,576,
N,394,1079,574,
N,413,1455,570,
N,414,1636,568,
N,418,2098,566,
L-I-15 South Main, 2
N,111,173,582,
N,143,502,580,
N,184,895,576,
N,200,1092,574,
N,219,1461,570,
N,220,1637,568,
N,224,2099,566,
L-I-15 North HOV, 3
N,235,161,582,
N,267,489,580,
N,307,883,576,
N,324,1084,574,
N,343,1457,570,
N,344,1636,568,
N,348,2098,566,
L-I-15 South HOV, 4
N,185,166,582,
N,217,494,580,
N,257,888,576,
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N,294,1637,568,
N,298,2098,566,
L-Off-Ramp, 5
N,395,530,572,
N,445,783,566,
N,488,906,560,
N,555,1026,554,
N,658,1142,544,
N,774,1288,532,
N,838,1410,525,
N,870,1527,520,
N,890,1637,516,
L-Rancho Bernardo, 6
N,480,1693,538,
N,663,1656,530,
N,890,1637,520,
N,1168,1637,500,
N,1469,1635,482,
N,1648,1635,474,
N,1788,1635,470,
N,2101,1636,470,
B-I-15 EOP East, 1 , 2 , 0 ,0
336,152,582,582,
368,479,580,580,
409,874,576,576,
426,1077,574,574,
445,1454,570,570,
446,1635,568,568,
450,2097,566,566,

B-HOV K-Rail, 2 , 2 , 0 ,0
264,158,582,585,
296,486,580,583,
337,880,576,579,
354,1082,574,577,
373,1456,570,573,
374,1636,568,571,
378,2098,566,569,
B-Off-Ramp EOP, 3 , 2 , 0 ,0
418,530,572,572,
461,748,566,566,
532,893,562,562,
625,1034,554,554,
696,1111,545,545,
968,1438,520,520,
1087,1527,517,517,
1153,1549,505,505,
1226,1568,500,500,
1694,1591,480,480,
B-PL Wall, 4 , 2 , 0 ,0
1024,730,524,524,
1007,760,525,525,
759,1180,539.2,539.2,
759,1180,539.2,545.2,
808,1236,534,540,
900,1345,526,532,
936,1388,523.2,529.2,
R, 1 , 65 ,10
1124,1511,518,R1
R, 2 , 65 ,10
1024,1452,519,R2
R, 3 , 65 ,10
991,1406,519,R3
R, 4 , 65 ,10
931,1362,524,R4
R, 5 , 65 ,10
881,1303,524,R5
R, 6 , 65 ,10
838,1251,528,R6
R, 7 , 65 ,10
791,1197,528,R7
R, 8 , 65 ,10
847,1119,525,R8
R, 9 , 65 ,10
840,1068,525,R9
R, 10 , 65 ,10
949,886,523,R10
R, 11 , 65 ,10
992,811,524,R11
R, 12 , 65 ,10
1027,752,524,R12
R, 13 , 65 ,10
1105,1370,518,R13
R, 14 , 65 ,10
1003,1345,519,R14
R, 15 , 65 ,10
898,1248,528,R15
R, 16 , 65 ,10
997,1193,526,R16
R, 17 , 65 ,10
916,1091,525,R17
R, 18 , 65 ,10
972,996,524,R18
R, 19 , 65 ,10
1097,1204,519,R19
R, 20 , 65 ,10
1069,1053,524,R20
R, 21 , 65 ,10
1183,1251,518,R21
R, 22 , 65 ,10
1159,1124,522,R22
R, 23 , 65 ,10

1135,997,525,R23
R, 24 , 65 ,10
1092,875,522,R24
R, 25 , 65 ,10
1131,808,519,R25
D, 4.5
ALL,ALL
K,-3
5 ,8,9,10,11,12
K,-9.9
6 ,8,9,10,11,12
K,-5
ALL,14,15
K,-9.9
ALL,13,16,17,18,19,20,21,22,23,24,25
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
City View Ground Level Shielded

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R1	65.	10.	68.8
2	R2	65.	10.	67.5
3	R3	65.	10.	67.3
4	R4	65.	10.	65.1
5	R5	65.	10.	62.8
6	R6	65.	10.	63.4
7	R7	65.	10.	60.8
8	R8	65.	10.	64.7
9	R9	65.	10.	61.3
10	R10	65.	10.	63.8
11	R11	65.	10.	65.0
12	R12	65.	10.	64.7
13	R13	65.	10.	56.0
14	R14	65.	10.	61.9
15	R15	65.	10.	62.5
16	R16	65.	10.	56.2
17	R17	65.	10.	57.1
18	R18	65.	10.	55.7
19	R19	65.	10.	55.3
20	R20	65.	10.	55.3
21	R21	65.	10.	55.3
22	R22	65.	10.	55.3
23	R23	65.	10.	55.3
24	R24	65.	10.	54.7
25	R25	65.	10.	54.1

City View Second Level Facade
T-PEAK HOUR TRAFFIC CONDITIONS, 1
9569 , 65 , 356 , 65 , 375 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 2
10832 , 65 , 403 , 65 , 424 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 3
2120 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 4
1600 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 5
846 , 40 , 27 , 40 , 18 , 40
T-PEAK HOUR TRAFFIC CONDITIONS, 6
3382 , 40 , 107 , 40 , 71 , 40
L-I-15 North Main, 1
N,304,155,582,
N,336,482,580,
N,377,877,576,
N,394,1079,574,
N,413,1455,570,
N,414,1636,568,
N,418,2098,566,
L-I-15 South Main, 2
N,111,173,582,
N,143,502,580,
N,184,895,576,
N,200,1092,574,
N,219,1461,570,
N,220,1637,568,
N,224,2099,566,
L-I-15 North HOV, 3
N,235,161,582,
N,267,489,580,
N,307,883,576,
N,324,1084,574,
N,343,1457,570,
N,344,1636,568,
N,348,2098,566,
L-I-15 South HOV, 4
N,185,166,582,
N,217,494,580,
N,257,888,576,
N,274,1087,574,
N,293,1459,570,
N,294,1637,568,
N,298,2098,566,
L-Off-Ramp, 5
N,395,530,572,
N,445,783,566,
N,488,906,560,
N,555,1026,554,
N,658,1142,544,
N,774,1288,532,
N,838,1410,525,
N,870,1527,520,
N,890,1637,516,
L-Rancho Bernardo, 6
N,480,1693,538,
N,663,1656,530,
N,890,1637,520,
N,1168,1637,500,
N,1469,1635,482,
N,1648,1635,474,
N,1788,1635,470,
N,2101,1636,470,
B-I-15 EOP East, 1 , 2 , 0 ,0
336,152,582,582,
368,479,580,580,
409,874,576,576,
426,1077,574,574,
445,1454,570,570,
446,1635,568,568,
450,2097,566,566,

B-HOV K-Rail, 2 , 2 , 0 ,0
264,158,582,585,
296,486,580,583,
337,880,576,579,
354,1082,574,577,
373,1456,570,573,
374,1636,568,571,
378,2098,566,569,
B-Off-Ramp EOP, 3 , 2 , 0 ,0
418,530,572,572,
461,748,566,566,
532,893,562,562,
625,1034,554,554,
696,1111,545,545,
968,1438,520,520,
1087,1527,517,517,
1153,1549,505,505,
1226,1568,500,500,
1694,1591,480,480,
B-PL Wall, 4 , 2 , 0 ,0
1024,730,524,524,
1007,760,525,525,
759,1180,539.2,539.2,
808,1236,534,534,
900,1345,526,526,
936,1388,523.2,523.2,
R, 1 , 65 ,10
1124,1511,528.,R1
R, 2 , 65 ,10
1024,1452,529.,R2
R, 3 , 65 ,10
991,1406,529.,R3
R, 4 , 65 ,10
931,1362,534.,R4
R, 5 , 65 ,10
881,1303,534.,R5
R, 6 , 65 ,10
838,1251,538.,R6
R, 7 , 65 ,10
791,1197,538.,R7
R, 8 , 65 ,10
847,1119,535.,R8
R, 9 , 65 ,10
840,1068,535.,R9
R, 10 , 65 ,10
949,886,533.,R10
R, 11 , 65 ,10
992,811,534.,R11
R, 12 , 65 ,10
1027,752,534.,R12
R, 13 , 65 ,10
1105,1370,528.,R13
R, 14 , 65 ,10
1003,1345,529.,R14
R, 15 , 65 ,10
898,1248,538.,R15
R, 16 , 65 ,10
997,1193,536.,R16
R, 17 , 65 ,10
916,1091,535.,R17
R, 18 , 65 ,10
972,996,534.,R18
R, 19 , 65 ,10
1097,1204,529.,R19
R, 20 , 65 ,10
1069,1053,534.,R20
R, 21 , 65 ,10
1183,1251,528.,R21
R, 22 , 65 ,10
1159,1124,532.,R22
R, 23 , 65 ,10
1135,997,535.,R23

R, 24 , 65 ,10
1092,875,532.,R24
R, 25 , 65 ,10
1131,808,529.,R25
K,-3
5 ,8,9,10,11,12
K,-9.9
6 ,8,9,10,11,12
K,-5
ALL,14,15
K,-9.9
ALL,13,16,17,18,19,20,21,22,23,24,25
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
City View Second Level Facade

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R1	65.	10.	70.7
2	R2	65.	10.	70.3
3	R3	65.	10.	70.0
4	R4	65.	10.	70.5
5	R5	65.	10.	70.4
6	R6	65.	10.	71.0
7	R7	65.	10.	70.2
8	R8	65.	10.	68.7
9	R9	65.	10.	68.9
10	R10	65.	10.	66.1
11	R11	65.	10.	67.4
12	R12	65.	10.	67.5
13	R13	65.	10.	59.3
14	R14	65.	10.	64.2
15	R15	65.	10.	64.7
16	R16	65.	10.	59.3
17	R17	65.	10.	57.4
18	R18	65.	10.	57.8
19	R19	65.	10.	58.3
20	R20	65.	10.	58.2
21	R21	65.	10.	57.9
22	R22	65.	10.	57.8
23	R23	65.	10.	57.7
24	R24	65.	10.	57.6
25	R25	65.	10.	57.1

City View Third Level Facade
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 9569 , 65 , 356 , 65 , 375 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 10832 , 65 , 403 , 65 , 424 , 65
T-PEAK HOUR TRAFFIC CONDITIONS, 3
 2120 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 4
 1600 , 65 , 0 , 0 , 0 , 0
T-PEAK HOUR TRAFFIC CONDITIONS, 5
 846 , 40 , 27 , 40 , 18 , 40
T-PEAK HOUR TRAFFIC CONDITIONS, 6
 3382 , 40 , 107 , 40 , 71 , 40
L-I-15 North Main, 1
N,304,155,582,
N,336,482,580,
N,377,877,576,
N,394,1079,574,
N,413,1455,570,
N,414,1636,568,
N,418,2098,566,
L-I-15 South Main, 2
N,111,173,582,
N,143,502,580,
N,184,895,576,
N,200,1092,574,
N,219,1461,570,
N,220,1637,568,
N,224,2099,566,
L-I-15 North HOV, 3
N,235,161,582,
N,267,489,580,
N,307,883,576,
N,324,1084,574,
N,343,1457,570,
N,344,1636,568,
N,348,2098,566,
L-I-15 South HOV, 4
N,185,166,582,
N,217,494,580,
N,257,888,576,
N,274,1087,574,
N,293,1459,570,
N,294,1637,568,
N,298,2098,566,
L-Off-Ramp, 5
N,395,530,572,
N,445,783,566,
N,488,906,560,
N,555,1026,554,
N,658,1142,544,
N,774,1288,532,
N,838,1410,525,
N,870,1527,520,
N,890,1637,516,
L-Rancho Bernardo, 6
N,480,1693,538,
N,663,1656,530,
N,890,1637,520,
N,1168,1637,500,
N,1469,1635,482,
N,1648,1635,474,
N,1788,1635,470,
N,2101,1636,470,
B-I-15 EOP East, 1 , 2 , 0 ,0
336,152,582,582,
368,479,580,580,
409,874,576,576,
426,1077,574,574,
445,1454,570,570,
446,1635,568,568,
450,2097,566,566,

B-HOV K-Rail, 2 , 2 , 0 ,0
264,158,582,585,
296,486,580,583,
337,880,576,579,
354,1082,574,577,
373,1456,570,573,
374,1636,568,571,
378,2098,566,569,
B-Off-Ramp EOP, 3 , 2 , 0 ,0
418,530,572,572,
461,748,566,566,
532,893,562,562,
625,1034,554,554,
696,1111,545,545,
968,1438,520,520,
1087,1527,517,517,
1153,1549,505,505,
1226,1568,500,500,
1694,1591,480,480,
B-PL Wall, 4 , 2 , 0 ,0
1024,730,524,524,
1007,760,525,525,
759,1180,539.2,539.2,
808,1236,534,534,
900,1345,526,526,
936,1388,523.2,523.2,
R, 1 , 65 ,10
1124,1511,538.,R1
R, 2 , 65 ,10
1024,1452,539.,R2
R, 3 , 65 ,10
991,1406,539.,R3
R, 4 , 65 ,10
931,1362,544.,R4
R, 5 , 65 ,10
881,1303,544.,R5
R, 6 , 65 ,10
838,1251,548.,R6
R, 7 , 65 ,10
791,1197,548.,R7
R, 8 , 65 ,10
847,1119,545.,R8
R, 9 , 65 ,10
840,1068,545.,R9
R, 10 , 65 ,10
949,886,543.,R10
R, 11 , 65 ,10
992,811,544.,R11
R, 12 , 65 ,10
1027,752,544.,R12
R, 13 , 65 ,10
1105,1370,538.,R13
R, 14 , 65 ,10
1003,1345,539.,R14
R, 15 , 65 ,10
898,1248,548.,R15
R, 16 , 65 ,10
997,1193,546.,R16
R, 17 , 65 ,10
916,1091,545.,R17
R, 18 , 65 ,10
972,996,544.,R18
R, 19 , 65 ,10
1097,1204,539.,R19
R, 20 , 65 ,10
1069,1053,544.,R20
R, 21 , 65 ,10
1183,1251,538.,R21
R, 22 , 65 ,10
1159,1124,542.,R22
R, 23 , 65 ,10
1135,997,545.,R23

R, 24 , 65 ,10
1092,875,542.,R24
R, 25 , 65 ,10
1131,808,539.,R25
K,-3
5 ,8,9,10,11,12
K,-9.9
6 ,8,9,10,11,12
K,-5
ALL,14,15
K,-9.9
ALL,13,16,17,18,19,20,21,22,23,24,25
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
City View Third Level Facade

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R1	65.	10.	70.8
2	R2	65.	10.	70.2
3	R3	65.	10.	69.7
4	R4	65.	10.	71.3
5	R5	65.	10.	71.1
6	R6	65.	10.	71.5
7	R7	65.	10.	71.8
8	R8	65.	10.	69.3
9	R9	65.	10.	70.1
10	R10	65.	10.	68.8
11	R11	65.	10.	68.3
12	R12	65.	10.	67.9
13	R13	65.	10.	59.8
14	R14	65.	10.	64.0
15	R15	65.	10.	66.1
16	R16	65.	10.	59.8
17	R17	65.	10.	60.1
18	R18	65.	10.	59.3
19	R19	65.	10.	58.8
20	R20	65.	10.	58.7
21	R21	65.	10.	58.4
22	R22	65.	10.	58.2
23	R23	65.	10.	58.1
24	R24	65.	10.	58.0
25	R25	65.	10.	57.4