NOISE ASSESSMENT

Ascend Specific Plan
City of San Marcos, CA

Prepared for:

City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Prepared By:

Ldn Consulting, Inc.
23811 Washington Ave, C110-333
Murrieta, California 92562
760-473-1253

June 24, 2026

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GLOSSARY OF COMMON TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 micropascal (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 decibel (dB) is added to all the readings that occur between 10 PM and 7 PM. 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 Ascend Specific Plan development, which proposes the development of 147 residential units with the option of up to 160 residential units on a 16.12-acre project site. The project is generally located south of State Route 78 (SR-78), east of S. Rancho Santa Fe Road, and north of San Elijo Road. More specifically, the project is located north of Melrose Drive at the northern terminus of Diamond Street.

Construction Noise

The grading equipment will be spread out over the project site from distances near the occupied property lines to distances of 500 feet or more away. Based upon the site plan the majority of the grading operations, on average from the center of the construction activities, will occur more than 200 feet from the property lines. At an average distance of 200 feet from the center of the construction activities to the nearest property line, noise levels will comply with the 75 dBA Leq standard over 8 hours at the property lines. Therefore, less than significant impacts are anticipated and no mitigation is required during construction of the proposed Project. Additionally, all equipment shall be properly fitted with mufflers and all staging and maintenance shall be conducted as far away from the existing residence as possible.

Additionally, the project may require blasting which would also require the need for a rock drill. Rock drilling and blasting will occur on an as-needed basis on site. In the event that the rock drill is staged within 160 feet of any occupied noise sensitive land use, it is recommended that a specific noise mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by an acoustical engineer. A mitigation plan shall be developed that may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height may be needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the noise threshold. The mitigation plan can also incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier if one is necessary.

The rock crushing equipment will be located in the central portion of the site near proposed Driveway 'C', over 400 feet from the nearest multi-family residential property line to the west and over 1,000 feet from the multi-family residential property line to the south. The noise levels are anticipated to be below the City's 65 dBA Leq standard at the property lines without mitigation.

Noise measurements of the rock crusher shall be conducted once the final crusher type and location are determined to ensure compliance with the City's thresholds. If noise levels are found

to be above the established thresholds of 60 dBA at any existing single-family residential use, 65 dBA for any multi-family use, or 70 dBA at a commercial use, then additional mitigation in the form of higher barriers, sound absorbing materials or operational limits on the crusher's usage will need to be incorporated.

Construction Vibration

Project construction activities would result in peak particle velocity (PPV) levels below the Federal Transportation Administration's (FTA) criteria for vibration induced structural damage. Therefore, Project construction activities would not result in vibration induced structural damage to residential buildings near the construction areas. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential 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.

Blasting Vibration

Blasting for construction projects typically results in a root mean square (RMS) vibration velocity of about 100 VdB at 50 feet from the blast based on FTA findings. This is equivalent to a peak particle velocity of about 0.4 inch per second. As discussed above, the nearest distance between an existing residential property line and the blasting activity was assumed to be 200 feet. Given attenuation of vibration velocities with distance, the RMS vibration velocity and peak particle velocity at the nearest existing residence would be about 82 VdB and 0.05 inch per second, respectively. Based on the construction vibration damage criteria published by the FTA, the threshold vibration levels for damage to "Non-engineered timber and masonry buildings" are 94 VdB and 0.20 inch per second.

Therefore, the effect of the blasting activity on nearby residential structures will not be significant. On the other hand, the human annoyance criterion of 80 VdB would be slightly exceeded when blasting occurred within about 250 feet of existing residences. If blasting is required within 250 feet of existing residences, the potential annoyance may not be completely avoided but can be minimized by following the City's blasting procedures.

Onsite Transportation Noise

The results of this analysis indicate that future vehicle noise from Melrose Drive is the principal source of noise that would impact the site. Based on the analysis, the outdoor use areas were found to be below the City's 65 dBA CNEL threshold without noise control measures. Therefore, no impacts are anticipated and no mitigation is required.

Additionally, a final noise assessment is required prior to the issuance of the first building permit since the building facades are above 60 dBA CNEL. This final report would identify the interior noise

requirements based upon architectural and building plans. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods and providing a closed window condition requiring a means of mechanical ventilation (e.g., air conditioning) and upgraded windows for all sensitive rooms (e.g., bedrooms and living spaces).

Offsite Transportation Noise

The Project does not create a noise increase of more than 3 dBA CNEL on any of the analyzed roadway segments. Therefore, the Project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Operational Noise

Based on noise levels and the distances to the property lines, the noise levels from the proposed pickleball court and HVAC would be considered less than significant at the surrounding property lines and at the multi-family residences to the west and south are in compliance with the City of San Marcos Municipal Code Sections 10.24.

1.0 PROJECT INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine potential noise impacts (if any) created from the proposed construction and operation and to determine potential noise impacts (if any) to the site generated from offsite sources. Should impacts be determined, the intent of this study would be to recommend suitable measures to bring those impacts to a level that would meet local requirements.

1.2 Project Location

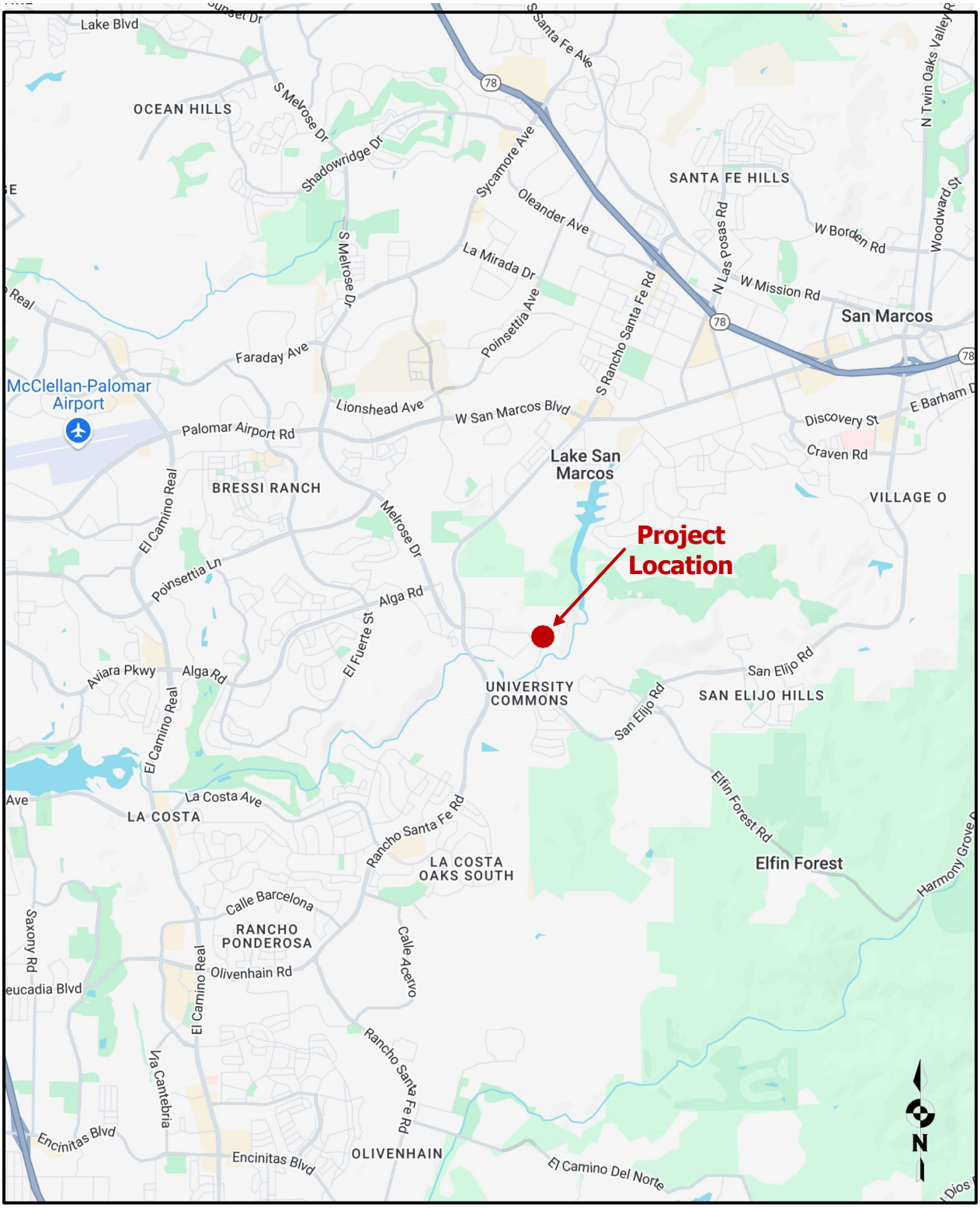
The 16.12-acre project site (Assessor Parcel Numbers (APN) 223-341-17) is generally located south of State Route 78 (SR-78), east of S. Rancho Santa Fe Road, and north of San Elijo Road in the City of San Marcos. More specifically, the project is located north of Melrose Drive at the northern terminus of Diamond Street. A project vicinity map and location map are shown in Figure 1-A. The existing site is mostly vacant with an existing San Diego Gas & Electric (SDG&E) utility tower on the project site associated with a 150-foot-wide SDG&E easement in the southwestern portion of the site.

The project site is located within the Questhaven/La Costa Meadows neighborhood, northeast of the intersection of Melrose Drive and Diamond Street. The site is bounded by permanent open space and a citrus grove (located in the County of San Diego and designated as permanent open space) to the north, designated open space managed by the Center for Natural Lands Management to the northeast, east and southeast, industrial development to the southwest, and multi-family residential development associated with the Larkspur Heights/Calico Hills neighborhood to the northwest. The project site is approximately three miles south of State Route (SR) 78.

1.3 Project Description and Purpose

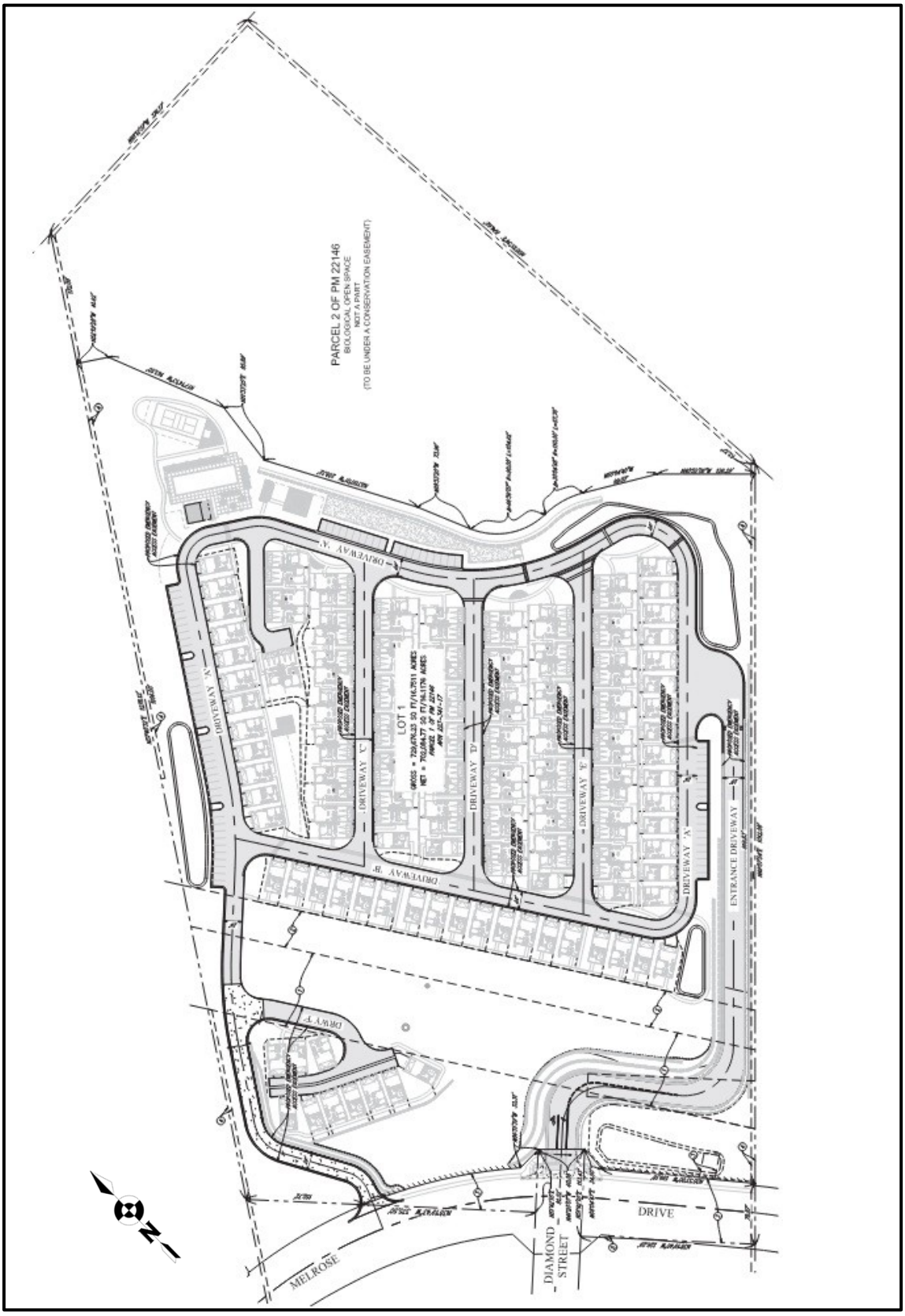
The project applicant is requesting approval of a Specific Plan (SP25-0003), General Plan Amendment (GPA25-0004), Rezone (R25-0003), Tentative Subdivision Map (TSM25-0004), Multi-Family Site Development Plan (MFSDP25-0003) and Conditional Use Permit (CUP25-0003). The Specific Plan allows for up to 160 residential units and the proposed Tentative Map and Site Plan present 147 residential units. Per the conceptual site plan, there would be 59 detached townhome residential units and 44 attached townhomes with two residential units each. It should be noted that this analysis is based on 160 residential units (up to 59 detached townhome units and up to 101 attached townhomes units). The project would provide a common recreational area that includes a pool and pickle ball courts. The project development plan is shown in Figure 1-B of this report.

Figure 1-A: Project Vicinity Map



Source: (Google, 2025)

Figure 1-B: Residential Development Details



Source: (Excel Engineering, 2026)

2.0 FUNDAMENTALS

2.1 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 or penalties for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 AM and 10 PM and an addition of 10 decibels to sound levels at nighttime hours between 10 PM and 7 AM These additions are made to account for the increased sensitivity during the evening and nighttime hours when sounds appear louder.

A vehicle's noise level is from a combination of the noise produced by the 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 radiant 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. On the other hand, 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, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.2 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 2-1 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 2-1: 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, 2020 (Caltrans, 2020).

3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS

3.1 Construction Noise

The City of San Marcos Municipal Code (Section 17.08.080) (City of San Marcos Municipal Code, 2019) addresses the limits of grading, extraction and construction activities between 7:00 AM and 6:00 PM Monday through Friday, 8:00 AM and 5:00 PM Saturdays, and no grading, extraction or construction is allowed on Sundays or City holidays. The Municipal code does not set noise limits on construction activities. Commonly, the City has utilized Section 36.409 of the County of San Diego's Noise Ordinance noise limit of 75 dBA Leq (8-hour) for other projects.

Additionally, Section 17.32.180 addresses grading operation hours of work. Permits and plans issued pursuant to this Chapter shall include provisions that the Permittee, their agent, contractor(s) and employees, shall not conduct any Grading, excavation or other related forms of earth movement during any times or days other than listed herein:

a) Grading, excavation, blasting, other related movement of earth and/or materials, equipment warm-up, repair, and other noise activities are hereby restricted to the hours of 7:00 a.m. to 4:30 p.m., Monday through Friday.

b) Grading, excavation, blasting, or other related movement of earth are hereby forbidden at any time on Saturdays, Sundays, and City Holidays.

c) The Administrative Authority may authorize Grading at other hours and on other days in cases of urgent necessity or in the interest of public health and safety.

Section 10.24.020 addresses the erection or demolition of buildings, stating that excluding owner resident additions or remodeling, and the grading and excavation of land including the use of blasting, the start up and use of heavy equipment such as dump trucks and graders and the use of jack hammers except on week days Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays 8:00 a.m. to 5:00 p.m. The City Manager may waive any or all of the provisions of this subsection in cases of urgent necessity, or in the interest of public health and safety. The provisions of this subsection may also be waived or modified pursuant to a Conditional Use Permit or other development entitlement processed and issued in accordance with the applicable City requirements and procedures.

3.2 Blasting and Vibration Standards

The City of San Marcos Section 17.60.06 of the City's Municipal Code states that all blasting operations within the City of San Marcos are prohibited unless a Certificate of Authorization is first obtained from the San Marcos Building Director and an Operations Permit issued by the Fire Chief. Additional relevant sections of the City's Code for Blasting are provided below:

- The general contractor or property owner/developer shall give reasonable notice in writing at the time of issuance of a building permit, grading permit or encroachment license to all residences or businesses within 600 feet of any potential blast location. The notice shall be in a form approved by the Building Director. Any resident or business receiving such notice may request of the Building Director that a notice of impending blasting be given by the blaster at the time of the 12 hour advance notice given to the Building Director. The general contractor or property owner/developer shall make all reasonable efforts to contact any and all parties requesting the second notice.

- The blaster shall file a written certification with the Building Director certifying that the general notice required by Section 17.60.060(b) has been given. The certificate shall include addresses and date(s) of notification. A copy shall be retained on file at the Building Division.

- Inspections of all structures within 300 feet of the blast site shall be made before blasting operations. The persons inspecting shall obtain the permission of the building owner to conduct an inspection. The inspections shall be done by a registered structural engineer employed by the blaster or project contractor. The inspection shall be only for the purpose of determining the existence of any visible or reasonably recognizable pre-existing defects or damages in any structure. Inspection refusal shall be at the discretion of the property owner.

- Blasting shall only be permitted between the hours of 9:00 AM and 4:00 PM during any weekday, Monday through Friday, exclusive of City recognized holidays unless special circumstances warrant another time or day and special approval is granted by the Building Director and Fire Chief.

The City of San Marcos has not yet adopted vibration criteria for construction. 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 3-1 shows the FTA groundborne vibration and noise impact criteria for human annoyance.

Table 3-1: 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: United States Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* 2018 (FTA, 2018).

[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. Table 3-2, 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 3-2: 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: United States Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* 2018 (FTA, 2018).

Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

3.3 Transportation Noise Standards

The City's General Plan Chapter 7 Noise Element uses the Noise Compatibility Guidelines listed in Table 7-3 of the General Plan Noise Element (provided below as Table 3-3) to determine the compatibility of land use when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments (City of San Marcos General Plan, 2012). For example, a commercial project would be evaluated differently than a residential project.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table 7-4 of the General Plan Noise Element (provided below as Table 3-4). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

Table 3-3: Noise Compatibility Guidelines

Table 7-3
Noise and Land Use Compatibility Guidelines for Transportation-related Noise

	Land Use Category	Exterior Noise Level (CNEL) 55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior/age-restricted housing						
B	Residential—multifamily residences, mixed use (residential/commercial)						
C	Lodging—hotels, motels						
D[2]	Schools, churches, hospitals, residential care facility, child care facilities						
E[2]	Passive recreational parks, nature preserves, contemplative spaces, cemeteries						
F[2]	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation						
G[2]	Office/professional, government, medical/dental, commercial, retail, laboratories						
H[2]	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair						

Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved

Conditionally Acceptable - New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table 7-4, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate County decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.

Unacceptable - New construction or development shall not be undertaken.

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Table 3-4: Noise Standards

Table 7-4
Noise Standards[1]

1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA Leq (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in by the City, or an equivalent one-hour noise standard.

(1) Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table 3.11-6, Noise Compatibility Guidelines.
Note: "Category(ies)" discussed in this table refer to lettered Land Use Category(ies) in Table 7-3 of this Element.

3.4 Operational Noise Standards

The City noise regulations that apply to the Project are found in Chapter 20.300 Site Planning and General Development Standards of the City Municipal Code. These regulations aim to prohibit unnecessary, excessive, and annoying noises from all sources, as certain noise levels are detrimental to the health and welfare of individuals. The standards of this section and of Chapter 10.24 Noise of the Municipal Code apply to all land uses in all Zones unless otherwise specified. No person shall create or allow the creation of exterior noise that causes the noise level to exceed the noise standards established by Table 20.300-4 (provided in Table 3-5 on the following page).

The City Ordinance limits noise generation in multi-family zones to 65 dB Leq (one-hour average) between the hours of 7 AM and 10 PM and 55 dB Leq between the hours of 10 PM and 7 AM as measured at the project property line as shown below in Table 3-5.

Table 3-5: Sound Level Limits

Zone	Allowable Noise Level (dBA Leq) Measured from the Property Line
Single-Family Residential (A, R-1, R-2) [1, 2]	
7 AM to 10 PM (daytime)	60
10 PM to 7 AM (overnight)	50
Multifamily Residential (R-3) [1, 2]	
7 AM to 10 PM (daytime)	65
10 PM to 7 AM (overnight)	55
Commercial (C, O-P, SR) [3]	
7 AM to 10 PM (daytime)	65
10 PM to 7 AM (overnight)	55
Industrial	
7 AM to 10 PM (daytime)	65
10 PM to 7 AM (overnight)	60

1. For single-family detached dwelling units, the "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
2. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
3. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.

The site is bounded by permanent open space and a citrus grove (located in the County of San Diego and designated as permanent open space) to the north, designated open space managed by the Center for Natural Lands Management to the northeast, east and southeast, light industrial development to the southwest, and multi-family residential development associated with the Larkspur Heights/Calico Hills neighborhood to the northwest. The nearest multi-family residential uses are located to the west and south. Therefore, the City Ordinance limits of 65 dBA hourly noise standard during the daytime hours between 7 AM and 10 PM, a 55 dBA standard during the nighttime hours between 10 PM and 7 AM would apply at the property lines to the west and on the opposite side of Melrose Drive.

4.0 CONSTRUCTION NOISE

4.1 Construction Noise Prediction Methodology

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction and demolition equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading and demolition 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.

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 impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative 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. The equipment needed for the most intensive grading activities would consist of a medium sized rubber tire tractor/backhoe, a large bulldozer, a medium sized front loader, a water truck, and a small to medium sized paver/blade. Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst case noise levels from the construction equipment for site preparation would occur during the grading operations.

The potential noise sensitive uses are located adjacent to or near the property lines. The affected land uses include the existing multi-family residences to the west and south. Existing ambient noise levels were determined to be 60.8 dBA CNEL without construction noise as identified in Section 5.1 of this report.

4.2 Grading Activities Noise Findings

The grading activities would consist of earthwork activities for mass grading, the preparation of internal roadways, the finished pads, and water quality basins. The equipment would be spread out over the project site from distances near the occupied property lines to distances of 500 feet or more

away. Based upon the site plan the majority of the grading operations, on average from the center of the construction activities, would occur more than 200 feet from the property lines. This means that most of the time the average distance from all the equipment to the nearest property line is 200 feet.

As can be seen in Table 4-1, at an average distance of 200 feet from the center of the construction activities to the nearest property line would result in a noise attenuation of 12.0 dBA without shielding. This results in a property line noise level of 71.9 dBA. Given this, the noise levels will comply with the 75 dBA Leq standard at the property lines. Therefore, the construction noise impacts would be considered less than significant and no mitigation is required during construction of the proposed Project. Additionally, all equipment shall be properly fitted with mufflers and all staging and maintenance shall be conducted as far away from the existing residences as possible. Because the rock drill and rock crusher will work independently of the construction equipment, additional analysis for each of them is provided below.

Table 4-1: Construction Noise Levels

Equipment Type	Quantity Used	Noise Level @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Tractor/Backhoe	2	72	75.0
Dozer D9 Cat	3	74	78.8
Excavator	2	72	75.0
Haul Trucks	2	75	78.0
Water Trucks	1	70	70.0
Scrappers	2	72	75.0
		Cumulative Level	83.9
		Distance to Sensitive Use	200
		Noise Reduction due to Distance	-12.0
		Property Line Noise Level	**71.9**

4.3 Rock Drill Noise Findings

Areas of the project site that require deeper cuts and where the native material is not easily rippable (graded) may require blasting and the use of a rock drill. Although blasting activities would only cause instantaneous noise that would be considered annoying, the associated use of a rock drill would potentially create more constant noise that could exceed the City's noise threshold. The rock drill would be moved around the site on an as needed basis dependent upon the site characteristics.

The use of a rock drill would occur independently of all other proposed equipment. The drilling and blasting activities would occur in one area then the grading equipment would relocate or remove the debris. To determine the worst-case noise levels from the drilling operations the noise level from the rock drill would be 85.0 dBA at 50 feet (Federal Highway Administration, 2006); (Ontario Ministry of Labour, 2016). Utilizing a 6 dBA reduction per doubling of distance, at an average distance of 160 feet from any property line, the noise levels will comply with the 75 dBA standard as shown in Table 4-2.

Table 4-2: Construction Noise Levels from Rock Drill

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Noise Level @ 50 Feet (dBA)
Rock Drill	1	85	8	85.0
			Noise Reduction Needed to Comply	-10.0
			Distance Required to Reduce Noise Levels (feet)	160
			NEAREST PROPERTY LINE NOISE LEVEL	**74.9**

Rock drilling and blasting will occur on an as-needed basis on site. The exact location is unknown at this time. In the event that the rock drill is staged within 160 feet of any occupied noise sensitive land use, it is recommended that a specific noise mitigation plan based upon the location of the construction equipment, topography, and construction schedule be identified by an acoustical engineer. A mitigation plan shall be developed that may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height may be needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the noise threshold. The mitigation plan can also incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier if one is necessary.

Blasting may be required during the project grading and site preparation activities and would only cause instantaneous noise that would be considered annoying. The project would comply with all provisions identified in the City's Municipal Code Section 17.60.06 as it relates to blasting and blasting shall only be permitted between the hours of 9:00 AM and 4:00 PM during any weekday.

4.4 Rock Crushing Noise Findings

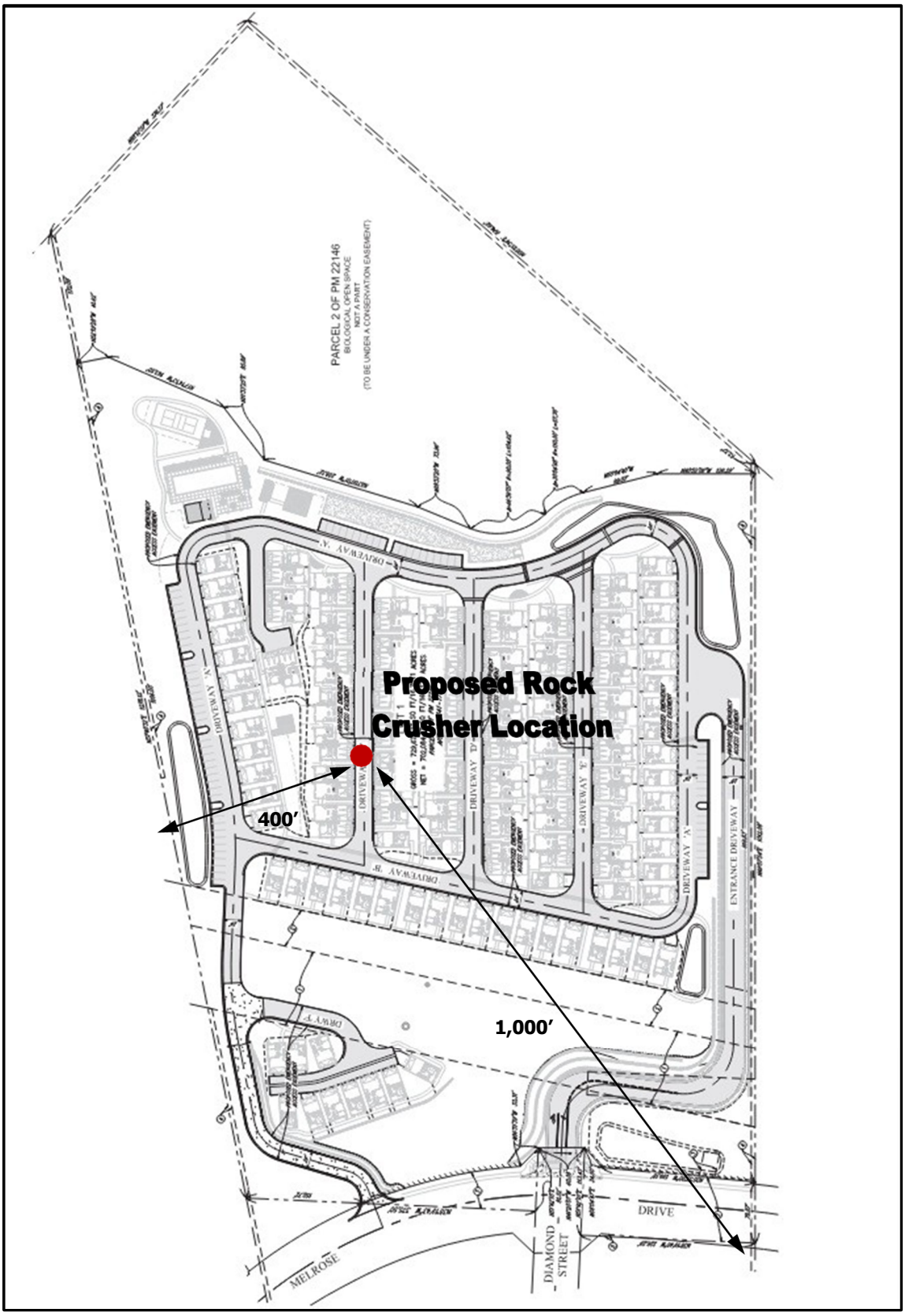
The project's requested approvals include a Conditional Use Permit (CUP25-0001), which would allow for the use of a temporary rock crusher. This section examines the potential noise source impacts associated with the operation of the proposed temporary rock crushing facility. Rock crushing will occur between the hours of 7:00 AM and 4:00 PM. The rock crushing equipment will be located in the central portion of the site near proposed Driveway 'C', over 400 feet from the nearest residential property line to the west and over 1,000 feet from the residential property line to the south shown in Figure 4-A on the following page. Based on empirical data collected at the existing Mission 316 residential development from a similar rock crusher, noise levels ranged between 70-72 dBA at 100 feet (Ldn, 2021). A worst-case noise level of 72 dBA at 100 feet will be utilized for the analysis.

As can be seen in Table 4-3, the anticipated noise levels at the multi-family residential property line to the west would be below the City's 75 dBA Leq construction noise standard without mitigation. In the past, the City of San Marcos has applied the operational noise standards (see Table 3-5) to rock crushing activities when operating on a longer-term basis. The rock crushing equipment would be in compliance with the City's 65 dBA Leq operational noise standard at the nearest multi-family residential property line without mitigation. Therefore, no impacts are anticipated and no mitigation is required.

Table 4-3: Rock Crushing Noise Levels (Residential Receptors)

Equipment Type	Quantity Used	Source @ 100 Feet (dBA)	Duty Cycle (hrs/day)	Cumulative Noise Level @ 100 Feet (dBA)
Thunderbird Hazemag #CP300	1	72	8	72.0
			Distance to Sensitive Use	400
			Noise Reduction due to Distance	-12.0
			Property Line Noise Level	**60**

Figure 4-A: Proposed Rock Crusher Location



4.5 Construction Vibration Findings and Mitigation

The nearest vibration-sensitive uses are the existing multi-family homes to the west located 200 feet or more from the edge of the proposed construction. Table 4-4 lists the average vibration levels that would be experienced at the nearest vibration sensitive land uses from the 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, as shown in Table 4-4. Therefore, project construction activities would not result in vibration induced structural damage to residential buildings near the construction areas. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses. Construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby residential uses located 200 feet or more at the property line. Therefore, vibration impacts would be less than significant.

Table 4-4: Vibration Levels from Construction Activities (Residential Receptors)

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate PPV Level at 25 Feet (in/sec)	Approximate Velocity Level at 200 Feet (VdB)	Approximate PPV Level at 200 Feet (in/sec)
Small bulldozer	58	0.003	30.9	0.0221
Jackhammer	79	0.035	51.9	0.0015
Loaded trucks	86	0.076	58.9	0.0034
Large bulldozer	87	0.089	59.5	0.0039
		FTA Criteria	80	0.2
		Significant Impact?	**No**	**No**

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

4.6 Blasting Vibration Findings

Blasting for construction projects typically results in an RMS vibration velocity of about 100 VdB at 50 feet from the blast based on FTA findings. This is equivalent to a peak particle velocity of about 0.4 inch per second. As discussed above, the nearest distance between an existing residential property line and the blasting activity was assumed to be 200 feet. Given attenuation of vibration velocities with distance, the RMS vibration velocity and peak particle velocity at the nearest existing residences would be about 82 VdB and 0.05 inch per second, respectively. Based on the construction vibration damage criteria published by the FTA, the threshold vibration levels

for damage to "Non-engineered timber and masonry buildings" are 94 VdB and 0.20 inch per second. Therefore, the effect of the blasting activity on nearby residential structures will not be significant. On the other hand, the human annoyance criterion of 80 VdB would be slightly exceeded when blasting occurred within about 250 feet of existing residences. If blasting is required within 250 feet of existing residences, the potential annoyance may not be completely avoided. However, it can be minimized by following the City's blasting procedures as stated above in Section 3.2 by providing proper notice.

4.7 Construction Noise and Vibration Conclusions

The grading equipment will be spread out over the project site from distances near the occupied property lines to distances of 500 feet or more away. Based upon the site plan the majority of the grading operations, on average from the center of the construction activities, will occur more than 200 feet from the property lines. At an average distance of 200 feet from the center of the construction activities to the nearest property line, noise levels will comply with the 75 dBA Leq standard over 8 hours at the property lines. Therefore, no impacts are anticipated and no mitigation is required during construction of the proposed Project. Additionally, all equipment shall be properly fitted with mufflers and all staging and maintenance shall be conducted as far away from the existing residence as possible.

Additionally, the project may require blasting which would also require the need for a rock drill. Rock drilling and blasting will occur on an as-needed basis on site. In the event that the rock drill is staged within 160 feet of any occupied noise sensitive land use, it is recommended that a specific noise mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by an acoustical engineer. A mitigation plan shall be developed that may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height may be needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the noise threshold. The mitigation plan can also incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier if one is necessary.

The rock crushing equipment will be located in the central portion of the site near proposed Driveway 'C', over 400 feet from the nearest multi-family residences to the west and over 1,000 feet from the multi-family residences to the south. The noise levels are anticipated to be below the City's 65 dBA Leq standard at the property lines without mitigation.

Noise measurements of the rock crusher shall be conducted once the final crusher type and location are determined to ensure compliance with the City's thresholds. If noise levels are found

to be above the established thresholds of 60 dBA at any existing single-family residential use, 65 dBA for any multi-family use, or 70 dBA at a commercial use, then additional mitigation in the form of higher barriers, sound absorbing materials or operational limits on the crushers usage will need to be incorporated.

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 residential buildings near the construction areas. The FTA criterion for infrequent vibration induced annoyance is 80 VdB for residential 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.

The human annoyance criterion of 80 VdB would be slightly exceeded if blasting occurred within about 250 feet of existing residences. If blasting is required within 250 feet of existing residences, the potential annoyance may not be completely avoided. However, it can be minimized by following the City's blasting procedures as stated above in Section 3.2 by providing proper notice.

5.0 TRANSPORTATION NOISE

5.1 Existing Noise Environment Onsite

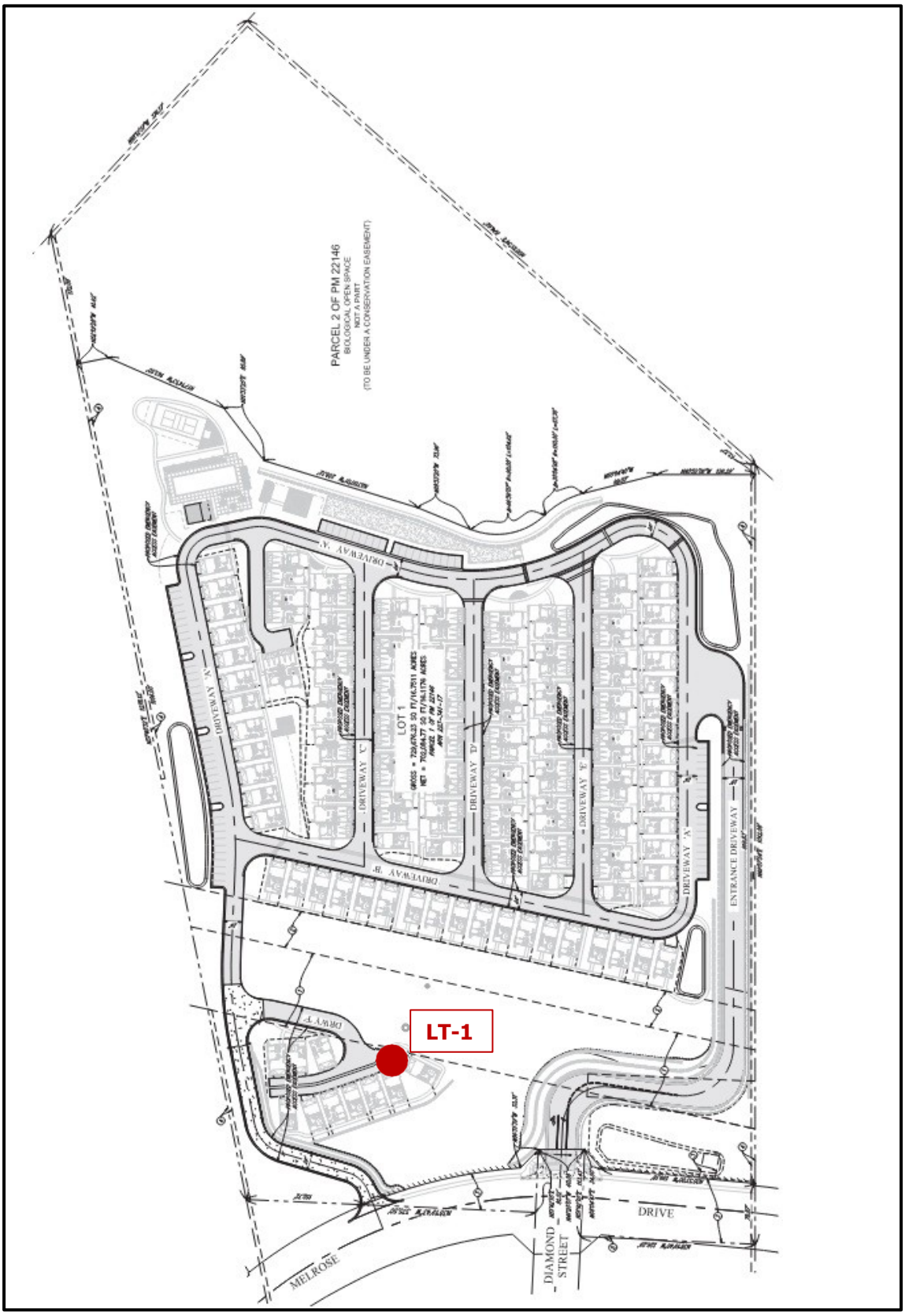
Long-term 24-hour measurements were taken at the project site in an area with relatively flat terrain and no obstruction from trees or structures. The noise measurements were recorded from Thursday October 9th to Friday October 10th, 2025 between approximately 11:00 AM and 11:00 AM the following day. The noise measurements were taken using Larson-Davis Spark Model 706 Type 2 precision sound level meters, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meters and microphones were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meters were calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 150.

Table 5-1 provides the hourly noise levels along with the average and CNEL values. The noise measurement locations were determined based on site access and noise impact potential. Long-term monitoring location 1 (LT-1) was located near the southwestern property line approximately 200 feet away from Melrose Drive. The noise monitoring locations are provided graphically in Figure 5-1.

Table 5-1: Long-Term Noise Level Summary

Time	LT-1 (Leq)	LT-1 (CNEL)
11:00 AM	61.1	61.1
12:00 PM	58.0	58.0
1:00 PM	59.2	59.2
2:00 PM	59.9	59.9
3:00 PM	61.2	61.2
4:00 PM	60.6	60.6
5:00 PM	60.9	60.9
6:00 PM	58.6	58.6
7:00 PM	58.5	63.5
8:00 PM	55.3	60.3
9:00 PM	56.2	61.2
10:00 PM	51.2	61.2
11:00 PM	48.1	58.1
12:00 AM	43.6	53.6
1:00 AM	43.5	53.5
2:00 AM	43.4	53.4
3:00 AM	47.1	57.1
4:00 AM	49.4	59.4
5:00 AM	53.5	63.5
6:00 AM	57.2	67.2
7:00 AM	62.8	62.8
8:00 AM	61.9	61.9
9:00 AM	58.2	58.2
10:00 AM	58.2	58.2
Overall	**58.1**	**60.8**

Figure 5-A: Ambient Monitoring Location



5.2 Future Onsite Roadway Noise

To determine the future noise environment and impact potentials the roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling. Table 5-2 presents the roadway parameters used in the analysis including the peak traffic volumes, vehicle speeds and the hourly traffic flow distribution (vehicle mix). The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks and heavy trucks for input into the FHWA Model. The Buildout conditions include the Horizon Year plus Project traffic volumes as shown in Table 5-2 (Linscott, Law & Greenspan Engineers, 2026).

Table 5-2: Future Traffic Parameters

Roadway	Average Daily Traffic (ADT)[1]	Peak Hour Volumes[1]	Modeled Speeds (MPH)	Vehicle Mix %[2]		
				Auto	Medium Trucks	Heavy Trucks
Melrose Drive	15,100[1]	1,510	45	95	3	2

[1] Source: (Linscott, Law & Greenspan Engineers, 2026)
[2] Typical City vehicle mix

A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighing these equivalent noise levels and summing them gives the CNEL for the traffic projections. The results of the specific noise modeling are provided in Figure 5-B.

It was determined that the noise levels from Melrose Drive would be below 65 dBA CNEL at the ground floor areas. Noise levels at the upper floor building facades and balconies were found to be above 65 dBA. However, the balconies are recessed into the buildings which would provide 1 to 3 dBA of reduction. Therefore, the proposed project would comply with the City's exterior noise level goal of 65 dBA CNEL for the residential uses without additional mitigation. It should be noted that the site is elevated over 40 feet above the roadways, which would provide additional shielding. To be conservative, no reductions due to the intervening topography were taken into account.

Figure 5-B: Future Exterior Noise Levels

Traffic Volumes, Mix and Speeds			
	Autos	Med. Trucks	Heavy Trucks
Mix Ratio by Percent	95.0	3.0	2.0
Propagation Rule	Soft		

Roadway	ADT	Speed MPH	CNEL @ 50 Feet	60 CNEL (Feet)
Melrose Drive	15,100	45	71.2	279

Noise Reduction due to Distance				
	Distance	Reduction	Ground Floor Noise Level	Upper Level Façade
Melrose Drive	150	-7.16	64.0	66.4

5.3 Project Related Offsite Transportation Noise

The off-site Project related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found.

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 radiant 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. Hard site conditions, to be conservative, were used to develop the noise contours and analyze noise impacts along all roadway segments. The future traffic noise model utilizes a typical, conservative vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for all analyzed roadway segments. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks and heavy trucks for input into the FHWA Model.

Community noise level changes greater than 3 dBA are often identified as audible and considered

potential significant, while changes less than 1 dBA will not be discernible to local residents. In the range of 1 to 3 dBA, residents who are very sensitive to noise may perceive a slight change. There is no scientific evidence available to support the use of 3 dBA as the significance threshold. Community noise exposures are typically over a long time period rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely greater than 1 dBA and 3 dBA appears to be appropriate for most people. For the purposes for this analysis a direct and cumulative roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if the project increases noise levels above an unacceptable noise level per the City's General Plan in the area adjacent to the roadway segment.

Direct Noise Impacts

To determine if direct off-site noise level increases associated with the development of the Project will create noise impacts, the noise levels for the existing conditions were compared with the noise level increase from the Project. Utilizing the Project's traffic assessment (Linscott, Law & Greenspan Engineers, 2026) noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the project.

Existing Plus Project: Current day noise conditions plus the completion of the project.

Existing vs. Existing Plus Project: Comparison of the direct project related noise level increases in the vicinity of the project site.

The noise levels and reference distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 5-3 for the Existing Scenario and in Table 5-4 for the Existing Plus Project Scenario. Note that the values given do not take into account the effect of any noise barriers or topography that may affect ambient noise levels. Table 5-5 presents the comparison of the Existing Year with and without Project related noise levels. The overall roadway segment noise levels will increase from 0.0 to 0.2 dBA CNEL with the development of the Project. The Project does not create a direct noise increase of more than 3 dBA CNEL on any roadway segment. Therefore, the Project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Table 5-3: Existing Noise Levels

Roadway	Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Melrose Drive	Alga Rd to S Rancho Santa Fe Rd	26,359	35	71.3	283
	S Rancho Santa Fe Rd to Boulderidge Dr	10,747	35	67.4	156
	Boulderidge Dr to Diamond St	11,132	35	67.6	159
	Diamond St to San Elijo Rd	11,979	35	67.9	167
S Rancho Santa Fe Road	Redwing St to Boulderidge Dr	29,421	45	74.1	435
	Boulderidge Dr to Melrose Dr	26,898	45	73.7	410
	Melrose Dr to La Costa Meadows Dr	30,147	55	76.2	600
	La Costa Meadows Dr to San Elijo Rd	29,943	55	76.2	598
	San Elijo Rd to Avenida Soledad	42,769	55	77.7	758
San Elijo Road	S Rancho Santa Fe Rd to Melrose Dr	21,788	45	72.8	356
	Melrose Dr to Fallsview Rd	28,018	45	73.9	421

[1] Source: Project Traffic study prepared by LLG 2026

Table 5-4: Existing + Project Noise Levels

Roadway	Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Melrose Drive	Alga Rd to S Rancho Santa Fe Rd	26,779	35	71.4	286
	S Rancho Santa Fe Rd to Boulderidge Dr	11,237	35	67.6	160
	Boulderidge Dr to Diamond St	11,692	35	67.8	165
	Diamond St to San Elijo Rd	12,679	35	68.1	174
S Rancho Santa Fe Road	Redwing St to Boulderidge Dr	29,561	45	74.1	436
	Boulderidge Dr to Melrose Dr	26,968	45	73.7	410
	Melrose Dr to La Costa Meadows Dr	30,147	55	76.2	600
	La Costa Meadows Dr to San Elijo Rd	30,083	55	76.2	600
	San Elijo Rd to Avenida Soledad	43,089	55	77.7	762
San Elijo Road	S Rancho Santa Fe Rd to Melrose Dr	21,968	45	72.8	358
	Melrose Dr to Fallsview Rd	28,508	45	74.0	426

[1] Source: Project Traffic study prepared by LLG 2026

Table 5-5: Existing vs. Existing + Project Noise Levels

Roadway	Roadway Segment	Existing Noise Level @50-Feet (dBA CNEL)	Existing Plus Project Noise Level @50-Feet (dBA CNEL)	Project Related Noise Level Increase (dBA CNEL)
Melrose Drive	Alga Rd to S Rancho Santa Fe Rd	71.3	71.4	0.1
	S Rancho Santa Fe Rd to Boulderidge Dr	67.4	67.6	0.2
	Boulderidge Dr to Diamond St	67.6	67.8	0.2
	Diamond St to San Elijo Rd	67.9	68.1	0.2
S Rancho Santa Fe Road	Redwing St to Boulderidge Dr	74.1	74.1	0.0
	Boulderidge Dr to Melrose Dr	73.7	73.7	0.0
	Melrose Dr to La Costa Meadows Dr	76.2	76.2	0.0
	La Costa Meadows Dr to San Elijo Rd	76.2	76.2	0.0
	San Elijo Rd to Avenida Soledad	77.7	77.7	0.0
San Elijo Road	S Rancho Santa Fe Rd to Melrose Dr	72.8	72.8	0.0
	Melrose Dr to Fallsview Rd	73.9	74.0	0.1

Cumulative Noise Impacts

To determine if cumulative off-site noise level increases associated with the development of the Project and other planned or permitted projects in the vicinity will create noise impacts, the noise levels for the near-term Project Buildout and other planned and permitted projects were compared with the existing conditions. Utilizing the Project's traffic assessment (Linscott, Law & Greenspan Engineers, 2026) noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the project.

Existing Plus Cumulative Projects Plus Project: Current day noise conditions plus the completion of the project and the completion of other permitted, planned projects or approved ambient growth factors.

Existing vs. Existing Plus Cumulative Plus Project: Comparison of the existing noise levels and the related noise level increases from the combination of the project and all other planned or permitted projects in the vicinity of the site.

The existing noise levels and reference distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 5-3 above for the Existing Scenario. The near-term cumulative noise conditions are provided in Table 5-6. No noise barriers or topography that may affect noise levels were incorporated in the calculations.

Table 5-7 presents the comparison of the Existing Year and the Near-Term Cumulative noise levels. The overall roadway segment noise levels will increase 0.3 to 0.5 dBA CNEL with the development of the Project and proposed cumulative projects. The cumulative noise increase is less than 3 dBA CNEL on any roadway segment.

Table 5-6: Existing + Project + Cumulative Noise Levels

Roadway	Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Melrose Drive	Alga Rd to S Rancho Santa Fe Rd	28,361	35	71.6	297
	S Rancho Santa Fe Rd to Boulderidge Dr	11,882	35	67.8	166
	Boulderidge Dr to Diamond St	12,360	35	68.0	171
	Diamond St to San Elijo Rd	13,398	35	68.4	180
S Rancho Santa Fe Road	Redwing St to Boulderidge Dr	31,326	45	74.4	453
	Boulderidge Dr to Melrose Dr	28,582	45	74.0	426
	Melrose Dr to La Costa Meadows Dr	31,956	55	76.4	624
	La Costa Meadows Dr to San Elijo Rd	31,880	55	76.4	623
	San Elijo Rd to Avenida Soledad	45,655	55	78.0	792
San Elijo Road	S Rancho Santa Fe Rd to Melrose Dr	23,275	45	73.1	372
	Melrose Dr to Fallsview Rd	30,189	45	74.2	442

[1] Source: Project Traffic study prepared by LLG 2026

Table 5-7: Existing vs. Existing + Project + Cumulative Noise Levels

Roadway	Roadway Segment	Existing Noise Level @50-Feet (dBA CNEL)	Existing Plus Project Plus Cumulative Noise Level @50-Feet (dBA CNEL)	Project Related Noise Level Increase (dBA CNEL)
Melrose Drive	Alga Rd to S Rancho Santa Fe Rd	71.3	71.6	0.3
	S Rancho Santa Fe Rd to Boulderidge Dr	67.4	67.8	0.4
	Boulderidge Dr to Diamond St	67.6	68.0	0.5
	Diamond St to San Elijo Rd	67.9	68.4	0.5
S Rancho Santa Fe Road	Redwing St to Boulderidge Dr	74.1	74.4	0.3
	Boulderidge Dr to Melrose Dr	73.7	74.0	0.3
	Melrose Dr to La Costa Meadows Dr	76.2	76.4	0.3
	La Costa Meadows Dr to San Elijo Rd	76.2	76.4	0.3
	San Elijo Rd to Avenida Soledad	77.7	78.0	0.3
San Elijo Road	S Rancho Santa Fe Rd to Melrose Dr	72.8	73.1	0.3
	Melrose Dr to Fallsview Rd	73.9	74.2	0.3

5.4 Transportation Noise Conclusions

The results of this analysis indicate that future vehicle noise from Melrose Drive is the principal source of noise that would impact the site. Based on the analysis, the outdoor use areas were found to be below the City's 65 dBA CNEL threshold for the residential uses without noise control measures. Therefore, no impacts are anticipated and no mitigation is required.

A final noise assessment is required prior to the issuance of the first building permit since the building facades are above 60 dBA CNEL. This final report would identify the interior noise requirements based upon architectural and building plans. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods and providing a closed window condition requiring a means of mechanical ventilation (e.g., air conditioning) and upgraded windows for all sensitive rooms (e.g., bedrooms and living spaces).

The Project does not create a noise increase of more than 3 dBA CNEL on any of the analyzed roadway segments. Therefore, the Project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

6.0 OPERATIONAL NOISE

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 public park and mechanical ventilation system (HVAC) are the primary source of stationary noise.

Given the proximity to the existing multi-family residences to the west and the proposed residences to the west, the City Ordinance limits of 65 dBA hourly noise standard during the daytime hours between 7 AM and 10 PM and a 55 dBA standard during the nighttime hours between 10 PM and 7 AM would apply at the shared property line. The HVAC units may operate during the nighttime hours, therefore the nighttime threshold of 55 dBA would apply.

HVAC

Mechanical ventilation units (HVAC) will be installed at the proposed residential units. The project anticipates installing Carrier CA15NA (Series, 24-A) or equivalent HVAC units with a reference noise level of 75 dBA at 3-feet (Source: Carrier). The HVAC units will cycle on and off throughout the day. Typically, HVAC units run for approximately 20 minutes each operating cycle to provide the necessary heating or cooling. It is anticipated that the HVAC units will operate twice in any given hour or run for 40 minutes in any given hour. Noise levels drop 3 decibels each time the duration of the source is reduced in half. Therefore, hourly HVAC noise level over a 40-minute period would be reduced approximately 2 decibels to 73 dBA based on operational time. To predict the property line noise level, a reference noise level of 73 dBA at 3-feet was used to represent the HVAC units.

The HVAC units are located over 200 feet from any property line and will be shielded by the proposed homes. Two HVAC units may be located near each other 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 80 feet and the proposed buildings would shield them. This separation of 80 feet would result in a 20 dBA difference between two separate HVAC units and would not cumulatively increase the noise levels. Therefore, the worst-case combined noise from the HVAC would occur from two 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 HVAC units are located a minimum of 200 feet from the multi-family residences to the west. The noise level reductions due to distance for the nearest property line are provided in Table 6-1.

Table 6-1: Project HVAC Noise Levels (HVAC)

Distance to Nearest Observer Location (Feet)	Hourly Reference Noise Level (dBA)	Noise Source Reference Distance (Feet)	Noise Reduction Due to Distance (dBA)	Noise Level at Property Line (dBA)	Quantity	Property Line Cumulative Noise Level (dBA)*
200	73.0	3.0	-36.5	36.5	2	**39.5**
*Complies with the nighttime Noise Standard of 55 dBA.						

The noise levels from the proposed HVAC would be considered less than significant at the surrounding property lines and are in compliance with the City of San Marcos Municipal Code Sections 10.24.

Pickleball Court

The applicant proposes to include a pickleball court at the northwest corner of the project. Noise measurements were taken at the existing pickleball court at the Cypress Village residential community in Irvine, CA by Ldn Consulting, Inc. on April 22, 2026. Based on empirical data collected at the existing pickleball court, the noise level at the court was found to be approximately 65 dBA at 20-feet. The measurement included four players playing at various levels of intensity appropriate for a community-based court.

At a distance of over 700-feet to the nearest existing residential property line to the southwest, noise levels would be reduced to 34 dBA or lower. Additionally, the pickleball court would be located approximately 182 feet from the nearest proposed on-site residence. Noise levels at this distance would be reduced to approximately 46 dBA. The hours of operation of the proposed pickleball court would be restricted to the daytime hours of 7 AM to 10 PM. The noise levels from the proposed pickleball activities were determined to be below the City's 65 dBA daytime threshold. Therefore, noise levels would be considered less than significant at the nearest residential property line to the southwest and at the nearest proposed on-site residences; and would be in compliance with the City of San Marcos Municipal Code Sections 10.24.

7.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSION

Construction Noise

The grading equipment will be spread out over the project site from distances near the occupied property lines to distances of 500 feet or more away. Based upon the site plan the majority of the grading operations, on average from the center of the construction activities, will occur more than 200 feet from the property lines. At an average distance of 200 feet from the center of the construction activities to the nearest property line, noise levels will comply with the 75 dBA Leq standard over 8 hours at the property lines. Therefore, less than significant impacts are anticipated and no mitigation is required during construction of the proposed Project. Additionally, all equipment shall be properly fitted with mufflers and all staging and maintenance shall be conducted as far away from the existing residence as possible.

Additionally, the project may require blasting which would also require the need for a rock drill. Rock drilling and blasting will occur on an as-needed basis on site. In the event that the rock drill is staged within 160 feet of any occupied noise sensitive land use, it is recommended that a specific noise mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by an acoustical engineer. A mitigation plan shall be developed that may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height may be needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the noise threshold. The mitigation plan can also incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier if one is necessary.

Rock Crusher Noise

The rock crushing equipment will be located in the central portion of the site near proposed Driveway 'C', over 400 feet from the nearest residential property line to the west and over 1,000 feet from the residential property line to the south. The noise levels are anticipated to be below the City's 65 dBA Leq standard at the property lines without mitigation. Noise measurements of the rock crusher shall be conducted once the final crusher type and location are determined to ensure compliance with the City's thresholds. If noise levels are found to be above the established thresholds of 60 dBA at any existing single-family residential use, 65 dBA for any multi-family use, or 70 dBA at a commercial use, then additional mitigation in the form of higher barriers, sound absorbing materials or operational limits on the crushers usage will need to be incorporated.

Construction Vibration

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 residential buildings near the construction areas. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential 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.

Blasting Vibration

Blasting for construction projects typically results in an RMS vibration velocity of about 100 VdB at 50 feet from the blast based on FTA findings. This is equivalent to a peak particle velocity of about 0.4 inch per second. Given attenuation of vibration velocities with distance, the RMS vibration velocity and peak particle velocity at the nearest existing residence would be about 82 VdB and 0.05 inch per second, respectively. Based on the construction vibration damage criteria published by the FTA, the threshold vibration levels for damage to "Non-engineered timber and masonry buildings" are 94 VdB and 0.20 inch per second.

Therefore, the vibration effect of the blasting activity on nearby residential structures will not be significant. On the other hand, the human annoyance criterion of 80 VdB would be slightly exceeded when blasting occurred within about 250 feet of existing residences. If blasting is required within 250 feet of existing residences, the potential annoyance may not be completely avoided, however, it can be minimized by following the City's blasting procedures.

Onsite Transportation Noise

The results of this analysis indicate that future vehicle noise from Melrose Drive is the principal source of noise that would impact the site. Based on the analysis, the outdoor use areas were found to be below the City's 65 dBA CNEL threshold for multi-family residential uses without noise control measures. Therefore, no impacts are anticipated and no mitigation is required.

Additionally, a final noise assessment is required prior to the issuance of the first building permit since the building facades are above 60 dBA CNEL. This final report would identify the interior noise requirements based upon architectural and building plans. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods and providing a closed window condition requiring a means of mechanical ventilation (e.g., air conditioning) and upgraded windows for all sensitive rooms (e.g., bedrooms and living spaces).

Offsite Transportation Noise

The Project does not create a noise increase of more than 3 dBA CNEL on any of the analyzed roadway segments. Therefore, the Project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Operational Noise

Based on noise levels and the distances to the property lines, the noise levels from the proposed pickleball court and HVAC would be considered less than significant at the surrounding property lines and at the multi-family residences to the west and south and would be in compliance with the City of San Marcos Municipal Code Sections 10.24.

8.0 REFERENCES

Caltrans. (2020). *Transportation Related Earthborne Vibration, Caltrans Experiences.* Retrieved from https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

City of San Marcos General Plan. (2012). *Noise Element of the General Plan.*

City of San Marcos Municipal Code. (2019). *City of San Marcos Municipal Code.*

Excel Engineering. (2026). *Tentative Map for Ascend Specific Plan.*

Federal Highway Administration. (2006). *Highway Construction Noise Handbook.*

FHWA. (1978). *Highway Traffic Noise Prediction Model. FHWA-RD-77-108.*

FTA. (2018). *Transit Noise and Vibration Impact Assessment.* Retrieved from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Google. (2025). Retrieved from maps.google.com

Linscott, Law & Greenspan Engineers. (2026). *Ascend Specific Plan Local Transportation Analysis.*

Ontario Ministry of Labour. (2016). *Training, and Skills Development.*