# NOISE ASSESSMENT

## Sunrise Assisted Living Facility Development
## City of San Marcos

**Prepared for:**

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# TABLE OF CONTENTS


TABLE OF CONTENTS ..... II

LIST OF FIGURES ..... III

LIST OF TABLES ..... III

ATTACHMENTS ..... III

GLOSSARY OF COMMON TERMS ..... IV

EXECUTIVE SUMMARY ..... V

1.0 PROJECT INTRODUCTION ..... 1

1.1 Purpose of this Study ..... 1
1.2 Project Description ..... 1
1.3 Project Location ..... 2

2.0 FUNDAMENTALS ..... 5

2.1 Acoustical Fundamentals ..... 5
2.2 Vibration Fundamentals ..... 6

3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS ..... 8

3.1 Construction Noise ..... 8
3.2 Vibration Standards ..... 8
3.3 Transportation Noise Standards ..... 10
3.4 Operational Noise Standards ..... 13
Emergency Sirens ..... 13

4.0 CONSTRUCTION NOISE AND VIBRATION ..... 15

4.1 Construction Noise Prediction Methodology ..... 15
4.2 Grading Activities Noise Findings and Mitigation ..... 15
4.3 Construction Vibration Findings and Mitigation ..... 17

5.0 TRANSPORTATION NOISE ..... 19

5.1 Existing Noise Environment Onsite ..... 19
5.2 Future Onsite Noise Prediction ..... 21
5.3 Onsite Noise Findings and Mitigation ..... 23
5.4 Project Related Offsite Transportation Noise ..... 23

6.0 OPERATIONAL NOISE ..... 25

7.0 REFERENCES ..... 29

# LIST OF FIGURES

FIGURE 1-A: PROPOSED PROJECT SITE DEVELOPMENT PLAN ..... 3
FIGURE 1-B: PROJECT VICINITY MAP ..... 3
FIGURE 5-A: AMBIENT MONITORING LOCATIONS ..... 20
FIGURE 5-B: MODELED RECEPTOR LOCATIONS ..... 22
FIGURE 6-1: LOCATIONS OF PROPOSED HVAC UNITS ..... 26

# LIST OF TABLES

TABLE 2-1: HUMAN REACTION TO TYPICAL VIBRATION LEVELS ..... 7
TABLE 3-1: GROUNDBORNE VIBRATION AND NOISE IMPACT CRITERIA (HUMAN ANNOYANCE) ..... 9
TABLE 3-2: GROUNDBORNE VIBRATION IMPACT CRITERIA (STRUCTURAL DAMAGE) ..... 9
TABLE 3-3: NOISE COMPATIBILITY GUIDELINES ..... 11
TABLE 3-4: NOISE STANDARDS ..... 12
TABLE 3-5: SOUND LEVEL LIMITS ..... 14
TABLE 4-1: CONSTRUCTION NOISE LEVELS ..... 16
TABLE 4-2: VIBRATION LEVELS FROM CONSTRUCTION ACTIVITIES ..... 17
TABLE 5-1: MEASURED AMBIENT NOISE LEVELS ..... 19
TABLE 5-2: FUTURE TRAFFIC PARAMETERS ..... 21
TABLE 5-3: FUTURE EXTERIOR NOISE LEVELS ..... 23
TABLE 6-1: PROJECT HVAC NOISE LEVELS (NEAREST PROPERTY LINE) ..... 27

# ATTACHMENTS

FUTURE EXTERIOR NOISE MODEL INPUT AND OUTPUT FILES ..... 30

## GLOSSARY OF COMMON 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 and vibration impacts to and from the proposed Sunrise Assisted Living Facility Project (Project). The project applicant is requesting approval of a Site Development Plan (SDP23-0002) to construct a two-story, 93,375 square foot (s.f.) assisted living and memory care facility consisting of 92 units above 25,100 s.f. of below grade parking. The CEQA document is analyzing 97 units and up to 129 beds to provide flexibility for the project applicant to respond to changing market conditions. The project includes physical improvements including driveway, grading and landscaping within a small portion of a lot located in the City of Carlsbad. The project would include a single phase of construction. Grading includes approximately 410 cubic yards (cy) of cut and 24,700 cy of fill, for a net import of 24,290 cy.

Construction Noise

Grading will be required for the proposed Project. The grading equipment will be spread out over the project site from distances near the occupied property lines to distances of 350 feet or more away. Based upon the site plan the majority of the construction activities, on average, will occur 175 feet from the property lines. At an average distance of 175 feet from 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 should be properly fitted with mufflers and all staging and maintenance should be conducted as far away for the existing uses as possible.

Construction Vibration

The nearest vibration-sensitive uses is the Prestige Preschool located 65 feet or more from the proposed construction. The average vibration levels that would be experienced at the nearest vibration sensitive land uses to the east 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 buildings near the demolition and construction areas. The FTA criterion for infrequent vibration induced annoyance is 83 Vibration Velocity (VdB) for institutional 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.

No blasting or pile driving is anticipated to be used during the construction operations. Therefore, no impulsive noise sources or associated vibration generating impacts are expected.

Onsite Transportation Noise

The outdoor areas, which include the interior courtyards, were modeled to determine if shielding/mitigation is required to reduce the noise levels below the City's 60 dBA CNEL threshold. Based on the future traffic volumes, the proposed outdoor use area will comply with the City of San Marcos Noise standards of 60 dBA CNEL without mitigation.

The building facades were found to be above 60 dBA CNEL and an interior noise assessment is required prior to the issuance of the 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 to meet the City's established interior noise limit of 45 dBA CNEL.

Offsite Transportation Noise

The Project does not create a direct and cumulative 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.

Operational Noise

Based on noise levels, the distances to the property lines and the proposed parapet walls, the noise levels from the proposed roof-mounted HVAC would be considered less than significant at the nearest sensitive property line to the west. Therefore, the operational noise levels are in compliance with the City of San Marcos and City of Carlsbad Municipal Codes.

# 1.0 PROJECT INTRODUCTION

## 1.1 Purpose of this Study

The purpose of this Noise study is to determine potential noise impacts created from the proposed construction operations and to determine potential noise impacts to the site generated from offsite sources. Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

## 1.2 Project Description

The project applicant is requesting approval of a Site Development Plan (SDP23-0002) to construct a two-story, 93,375 square foot (s.f.) assisted living and memory care facility consisting of 92 units above 25,100 s.f. of below grade parking. The CEQA document is analyzing 97 units and up to 129 beds to provide flexibility for the project applicant to respond to changing market conditions. The project includes physical improvements including driveway, grading and landscaping within a small portion of a lot located in the City of Carlsbad. The project would include a single phase of construction. Grading includes approximately 410 cubic yards (cy) of cut and 24,700 cy of fill, for a net import of 24,290 cy. The majority of the project site (2.18 acres) is within the City of San Marcos and the western most edge of the project site (0.27 acres) is within the City of Carlsbad.

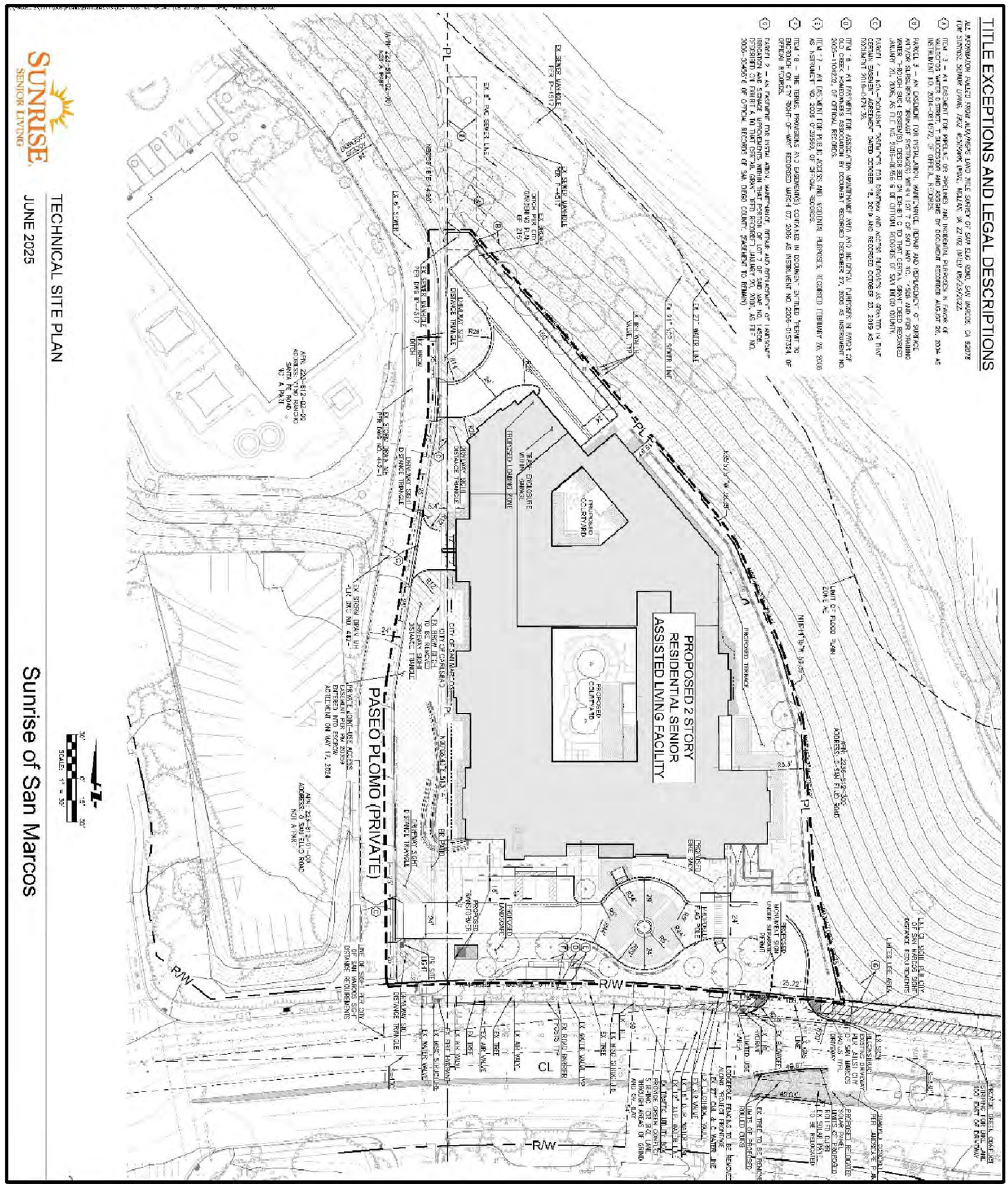
For the San Marcos portion, the General Plan Lan Use Designation of the site is Specific Plan Area (SPA) and is associated with the University Commons Specific Plan (UCSP). The project site is located within Planning Area 4 of the UCSP and it is zoned Senior Residential. The proposed use is permitted within the Senior Residential Zone by Directors Permit (DP) and requires a Site Development Plan review. The project applicant is requesting approval of a Site Development Plan Modification to SDP18-0001. The proposed building would be within the portion of the project site within the City of San Marcos jurisdiction.

The Carlsbad portion of the project site has a General Plan land use designation of Community Facility (CF). The site is zoned Planned Community (P-C) and is located within the Villages of La Costa (MP 98-01) Master Plan within the La Costa Oaks Neighborhood. Within the Carlsbad General Plan the CF designation is intended to provide community-serving facilities, such as childcare centers, places of worship, and youth and senior centers. Within the Carlsbad portion of the project plans, proposed improvements include grading and retaining walls to accommodate three access driveways to the project site, as well as landscaping. These improvements are ancillary to the proposed senior residential facility building, which would wholly be constructed within the San Marcos portion of the project site. The project applicant is requesting a Minor Hillside Development Permit and a Minor Habitat Management Plan Permit from the City of Carlsbad.

## 1.3 Project Location

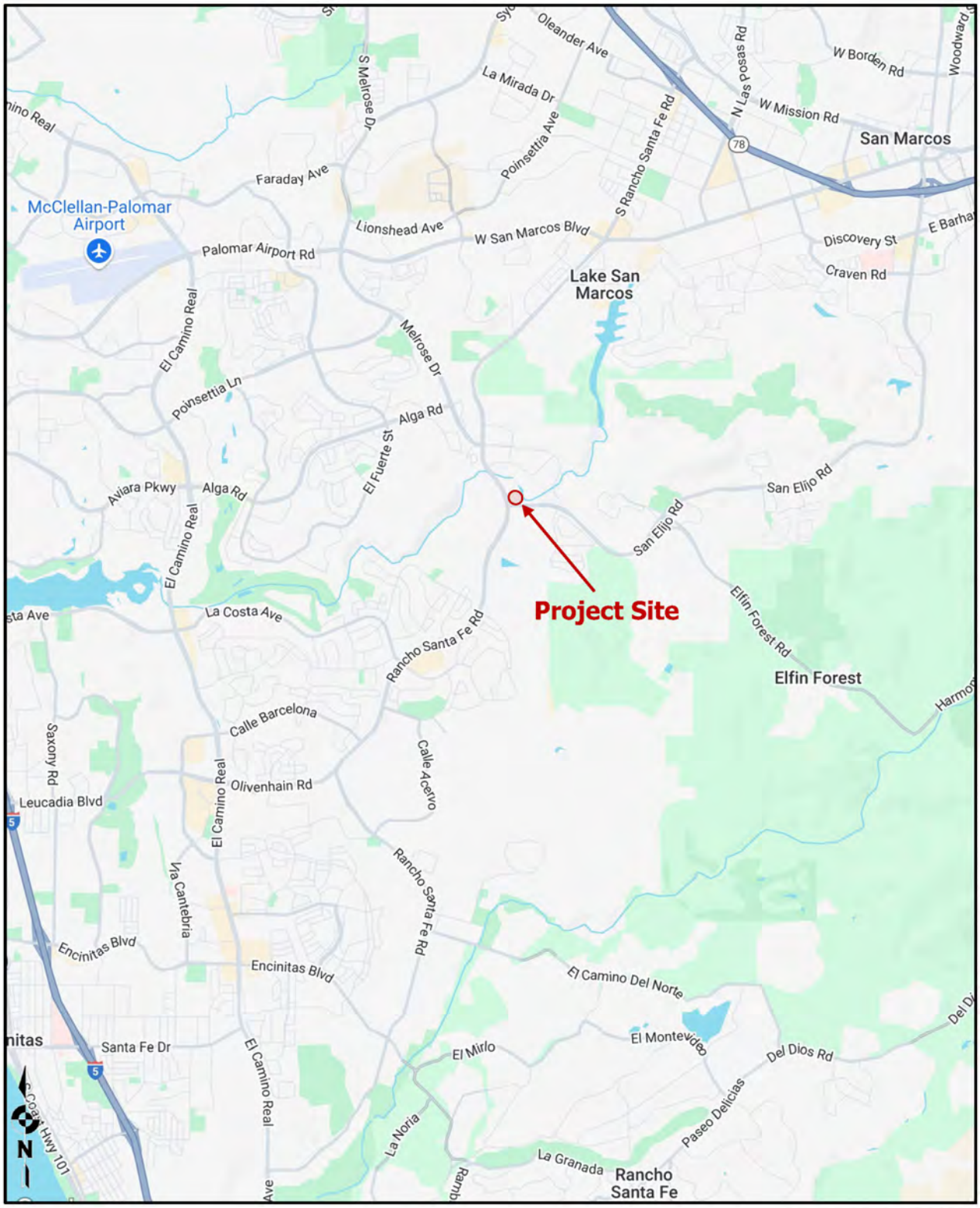
The Project site is located on the northeast corner of San Elijo Road and Paseo Plomo. The Project site is bounded by Paseo Plomo, Prestige Preschool and a recreational vehicle parking lot to the west, and San Elijo Road and Solaire Apartments to the south. Circulation for the proposed project would involve one access point on San Elijo Road and three access points on Paseo Plomo. A project vicinity map and location map are shown in Figure 1-B.

# Figure 1-A: Proposed Project Site Development Plan




Source: (Fuscoe Engineering, 2025)

## Figure 1-B: Project Vicinity Map




Source: (Google, 2025)

## 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 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 sounds appears 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.

Peak Particle Velocity (PPV) and Root Mean Square Velocity (RMS) quantify vibration amplitude. PPV represents the maximum instantaneous peak of a vibration wave and is used to assess structural impacts. RMS reflects the wave's instantaneous energy and is used to evaluate human perception of vibration. Both PPV and RMS can be expressed in velocity units (e.g., inches per second) or vibration decibels (VdB).

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 (City of San Marcos Municipal Code, 2019) Section 17.08.080 addresses the limits of grading, extraction and construction activities between 7:00 a.m. and 6:00 p.m. Monday through Friday, 8:00 a.m. and 5:00 p.m. 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.

Carlsbad Municipal Code Section 8.48 prohibits construction after 6:00 PM, before 7:00 AM Monday through Friday, before 8:00 AM on Saturday, all day on Sunday, and on federal holidays. Signs must be posted at jobsite entrance(s) indicating the hours of work.

### 3.2 Vibration Standards

The City of San Marcos and the City of Carlsbad have 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 on the following page, 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 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.

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. In the range of 1 to 3 dBA, humans who are very sensitive to noise may perceive a slight change. 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 General Plan.

It should be noted: the City of Carlsbad has similar transportation Noise Standards within in the City's Noise Guidelines. Since, the proposed land use is within the City of San Marcos, the Carlsbad Noise Guidelines do not apply to this project.

## 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.

*City of San Marcos* GENERAL PLAN | Noise | Page 7-8

## 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

City of San Marcos

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 commercial/and 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 above in Table 3-5. Per the City of San Marcos General Plan Noise Element (GPNE), noise standards for commercial, multi-family, and mixed-use land uses are the same, and are higher than single-family residential areas because they reflect a more urban environment (GPNE, pg. 7-10). Higher thresholds are permitted due to the integrated mix of residential and commercial activity and their usual location near major arterials (GPNE, pg. 7-9).

Prestige Preschool is located to the west across Paseo Plomo. The nearest residential uses are the multi-family units located across San Elijo Road to the south. The City Ordinance limits of 65 dBA hourly noise standard during the daytime hours between 7 a.m. and 10 p.m., a 55 dBA standard during the nighttime hours between 10 p.m. and 7 a.m. would apply at the nearest property lines to the west and south.

Emergency Sirens

Under San Marcos Municipal Code Chapter 10.24 (Noise), prohibitions apply to "loud, annoying, or unnecessary noise" that is *not reasonably necessary* for safety or operation. Because emergency vehicle sirens and warning devices are essential to protect life, property, and public safety, their use falls within recognized exceptions for activities conducted "in the interest of public health and safety" or "in cases of urgent necessity." Therefore, noise generated by authorized emergency vehicles during response operations is considered exempt from local noise restrictions and not subject to enforcement under Chapter 10.24.

**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 a.m. to 10 p.m. (daytime) | 60 |
| 10 p.m. to 7 a.m. (overnight) | 50 |
| Multifamily Residential (R-3)[1,2] | |
| 7 a.m. to 10 p.m. (daytime) | 65 |
| 10 p.m. to 7 a.m. (overnight) | 55 |
| Commercial (C, O-P, SR)[3] | |
| 7 a.m. to 10 p.m. (daytime) | 65 |
| 10 p.m. to 7 a.m. (overnight) | 55 |
| Industrial | |
| 7 a.m. to 10 p.m. (daytime) | 65 |
| 10 p.m. to 7 a.m. (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.

City of Carlsbad

The City of Carlsbad General Plan Noise Element provides standards for noise from non-transportation noise sources. For noise sensitive land uses, these limits are 55 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m.

# 4.0 CONSTRUCTION NOISE AND VIBRATION

## 4.1 Construction Noise Prediction Methodology

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 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.

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 development will consist of a grader, a rubber tire dozer, and a tractor/loader/backhoe. Based on empirical data gathered during the monitoring of the Passerelle Horse Ranch Creek Project in the County of San Diego, CA (Ldn Consulting, 2021), worst case noise levels from the construction equipment for site preparation would occur during the grading operations.

## 4.2 Grading Activities Noise Findings and Mitigation

The grading activities will consist of the preparation of graded slopes, bioretention basins, internal roadways, and the finished building pad. Grading would require as much as 25,000 cubic yards (CY) of material import. The grading equipment will be spread out over the project site from distances near the property lines to distances of 350 feet. Based upon the site plan the majority of the grading operations, on average, will occur an average of 175 feet from the nearest off-site property line to the west that includes a childcare facility and the multi-family residential located to the south across San Elijo Road. This means that most of the time, the average distance from all the equipment to the same property line is 175 feet or more. As can be seen in Table 4-1, at an average distance of 175 feet from the construction activities to the nearest property line would

result in a noise reduction of roughly 11 dBA without shielding. Additionally, the amount of time equipment is operating during a normal work day, referred to as duty-cycle, was assumed to be 8 hours.

**Table 4-1: Construction Noise Levels**

| Equipment Type | Quantity Used | Source @ 50 Feet (dBA) | Duty Cycle (Hours/Day) | Cumulative Noise Level @ 50 Feet (dBA) |
|---|---|---|---|---|
| Tractor/Backhoe | 2 | 72 | 8 | 75.0 |
| Grader | 1 | 73 | 8 | 73.0 |
| Dozer | 1 | 74 | 8 | 74.0 |
| | | | Cumulative Level | 77.8 |
| | | | Distance to Sensitive Use | 175 |
| | | | Noise Reduction due to Distance | -10.9 |
| | | | **Property Line Noise Level** | **67.0** |

[1] Source: Empirical Data (Ldn Consulting, 2021)

Given this, the noise levels will comply with the 75 dBA Leq standard at the adjacent property lines. Noise levels may be readily audible at the nearest property lines. Therefore, less than significant impacts are anticipated and no mitigation is required during construction of the proposed Project. Additionally, as best management practices (BMPs), all equipment should be properly fitted with mufflers and all staging and maintenance should be conducted as far away for the existing uses as possible.

Haulage

Grading would consist of approximately 25,000 CY of fill material. Assuming the use of 16 CY trucks and 10 work days, this equates to approximately 313 one-way haul truck trips per day. Community noise level changes greater than 3 dBA are often identified as audible and considered potentially 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 of 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.
Typically, it requires a project to double (or add 100%) to the traffic volumes to result in a 3 dBA CNEL which is considered a potential impact. Based on a current traffic volume of approximately 16,180 ADT on San Elijo Road along the site according to the City of San Marcos General Plan, and along the anticipated haul route, the additional trucks would add approximately 1.1 dBA to the overall noise level. This is well below a 3 dBA increase that is considered a potential impact. No noise impacts are anticipated at the residential uses that are located along the roadway due to the low volume of trucks.

## 4.3 Construction Vibration Findings and Mitigation

The nearest vibration-sensitive uses is the Prestige Preschool located as close as 65 feet from the nearest proposed construction equipment with an average distance of 175 feet. Table 4-2 lists the vibration levels that would be experienced at the nearest vibration sensitive land uses from the temporary construction activities.

**Table 4-2: 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 65 Feet (VdB) | Approximate RMS Velocity at 65 Feet (in/sec) |
|---|---|---|---|---|
| Small bulldozer | 58 | 0.003 | 46 | 0.0007 |
| Jackhammer | 79 | 0.035 | 67 | 0.0083 |
| Loaded trucks | 86 | 0.076 | 74 | 0.0181 |
| Large bulldozer | 87 | 0.089 | 75 | 0.0212 |
| Vibratory Roller | 94 | 0.210 | 82 | 0.0501 |
| | | FTA Criteria | 83 | 0.2 |
| | | **Significant Impact?** | **No** | **No** |

[1] Based on the formula $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$ provided by the (FTA, 2018)
[2] Based on the formula VdB = VdB(25 feet) – 30log(d/25) provided by the (FTA, 2018)
Source: (Federal Railroad Administration, 2005)

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 buildings near the demolition and construction areas. The FTA criterion for infrequent vibration induced annoyance is 83 Vibration Velocity (VdB) for institutional uses, which is consistent with the preschool uses that are only operational during the daytime. It should be noted: the vibratory

roller is not anticipated to be utilized within 90-100 feet of the Prestige Preschool. This would reduce the vibration levels to 77 VdB and 0.031 in/sec. No blasting or pile driving is anticipated to be used during the construction operations. Therefore, no impulsive noise sources or associated vibration generating impacts are expected. Therefore, construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby uses and impacts would be less than significant.

# 5.0 TRANSPORTATION NOISE

## 5.1 Existing Noise Environment Onsite

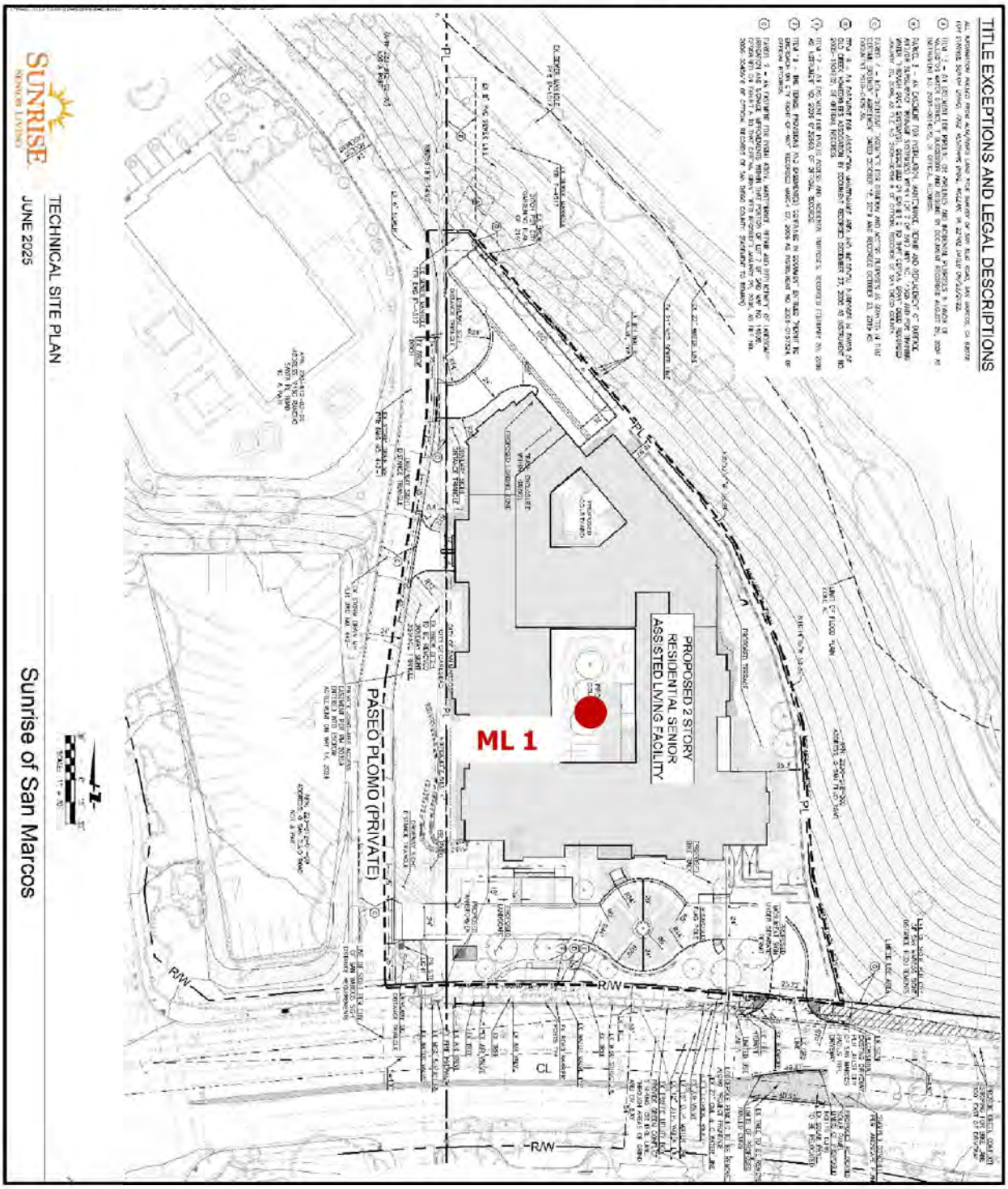
Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 150.

The ambient measurements were conducted on April 21, 2025 between 1:15 – 1:30 pm. The results of the noise level measurements are presented in Table 5-1. The measurements were taken on site to establish a baseline of the vehicle noise from adjacent Rancho Santa Fe Road and San Elijo Road. The overall sound level was found to be 48.3 dBA. The overall noise levels were relatively low due to the site being depressed below the roadways and the existing RV storage facility and childcare facility blocking direct line of sight to Rancho Santa Fe Road. The statistical indicators Lmax, Lmin, L10, L50 and L90, are also given for the monitoring location. The noise monitoring locations can be seen in Figure 5-A on the following page.

**Table 5-1: Measured Ambient Noise Levels**

| Measurement Identification | Description | Time | Noise Levels (dBA Leq) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Leq | Lmax | Lmin | L10 | L50 | L90 |
| ML 1 | Central portion of site | 1:15-1:30 p.m. | 48.3 | 67.6 | 41.3 | 50.9 | 47.5 | 44.2 |
| Source: Ldn Consulting April 21, 2025 | | | | | | | | |

## Figure 5-A: Ambient Monitoring Locations



## 5.2 Future Onsite Noise Prediction

To determine the future noise environment and impact potentials the Sound32 model was utilized. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions and the peak hour traffic volume. 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 automobile, medium trucks and heavy trucks for input into the Sound32 Model. The 2035 Buildout conditions include the future traffic volume forecasts provided by SANDAG Series ABM2+/2021 RP Traffic Forecast Model, Forecast Year 2035.

**Table 5-2: Future Traffic Parameters**

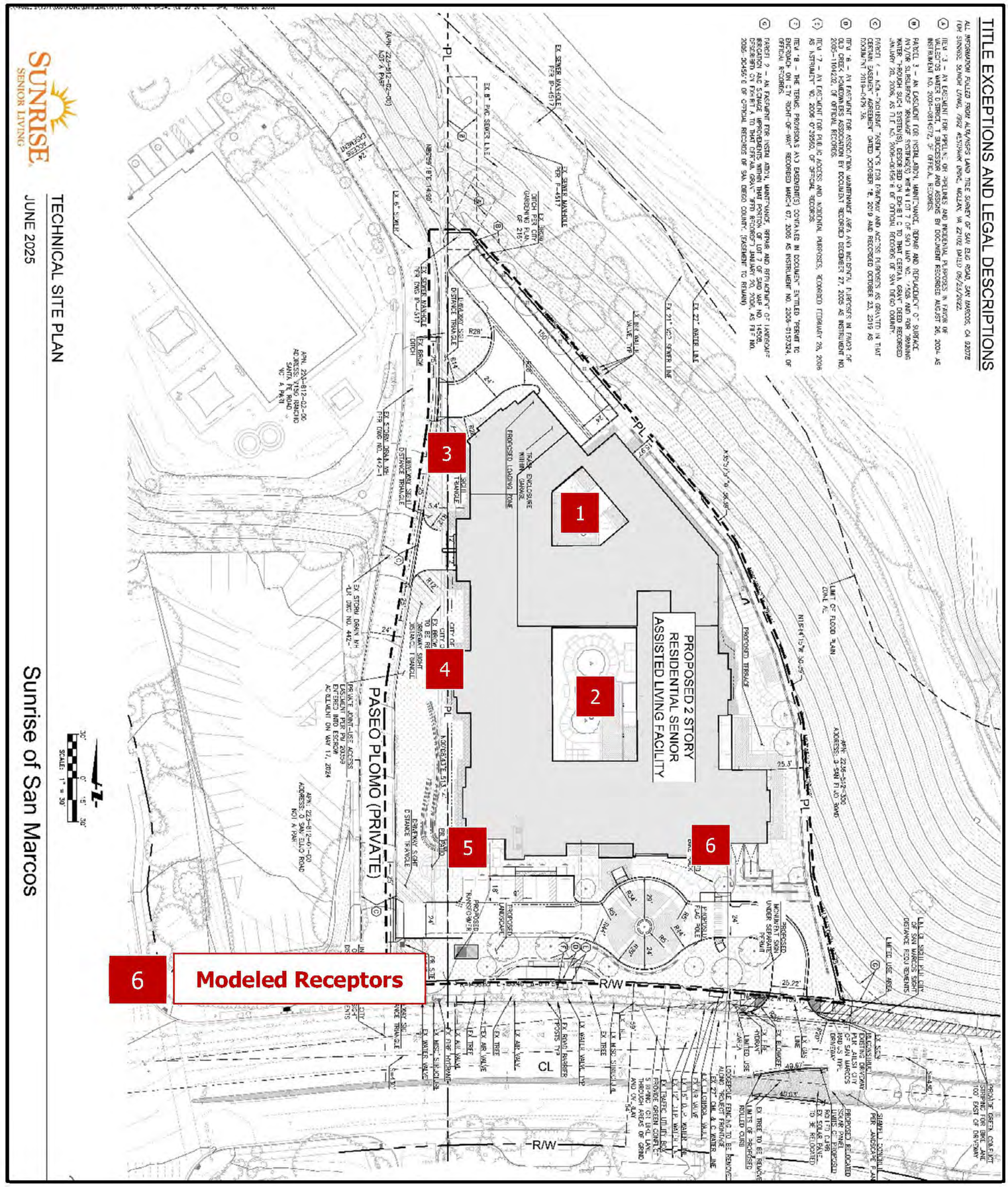
| Roadway | Average Daily Traffic (ADT)[1] | Peak Hour Volumes[1] | Modeled Speeds (MPH) | Auto | Medium Trucks | Heavy Trucks |
|---|---|---|---|---|---|---|
| San Elijo Road | 27,900 | 2,790 | 45 | 2,656 | 86 | 47 |
| Rancho Santa Fe Road (North of San Elijo Road) | 40,200 | 4,020 | 55 | 3,827 | 125 | 68 |
| Rancho Santa Fe Road (South of San Elijo Road) | 50,500 | 5,050 | 55 | 4,808 | 157 | 86 |

[1] Source: SANDAG Series ABM2+/2021 RP, Forecast Year 2035
[2] Vehicular mix provided in the San Marcos General Plan

The required coordinate information necessary for the noise model input was taken from the conceptual site plans provided by Fuscoe Engineering, August 2023. The conceptual plans were used to identify the pad elevations, roadway elevations, and the relationship between the noise source(s) and the outdoor receptor areas.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in the sensitive use areas provided by common use interior courtyards. No private ground floor patios or balconies are proposed. The receptors were placed five feet above the pad elevation and near the center of the use area. Building façade noise levels were also determined using a height of 15 feet above the pad elevations for the second floor locations. The modeled observer locations for the potential outdoor use areas and building facades are presented in Figure 5-B.

# Figure 5-B: Modeled Receptor Locations



## 5.3 Onsite Noise Findings and Mitigation

The outdoor common use areas were modeled to determine if shielding/mitigation is required to reduce the noise levels below the City's 60 dBA CNEL threshold. It was determined that the ground level outdoor use areas will comply with the City's noise standard of 60 dBA CNEL. The modeling results are provided in Table 5-3 for the ground floor outdoor use areas, depicted as receptor numbers 1 and 2. There is no outdoor access from second floor porches for the residences. The first floor and second floor building facades were modeled to determine if interior noise reductions will be needed. Based upon these findings, no noise mitigation would be necessary to comply with the City of San Marcos noise standard of 60 dBA CNEL at the outdoor useable areas. The modeling results for building second floor facades are provided in Table 5-3. The modeling input and outputs are provided in ***Attachment A***.

The building facades were found to be above 60 dBA CNEL and an interior noise assessment is required prior to the issuance of the 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 to meet the City's established interior noise limit of 45 dBA CNEL.

**Table 5-3: Future Exterior Noise Levels**

| Receptor Number | Receptor Location | First Floor/Building Façade Noise Levels (dBA CNEL)* | Second Floor Building Façade Noise Levels (dBA CNEL)* |
|---|---|---|---|
| 1 | Northern Courtyard | 53 | n/a |
| 2 | Southern Courtyard | 54 | n/a |
| 3 | Northwest Façade | 64 | 64 |
| 4 | Central West Façade | 64 | 64 |
| 5 | Southwest Façade | 65 | 66 |
| 6 | Southeast Facade | 64 | 66 |

* Interior Noise Assessment required if façade noise level is above 60 dBA CNEL. The building will be constructed to comply with interior noise requirements per the building code.

## 5.4 Project Related Offsite Transportation Noise

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 the proposed project. The project is estimated to only generate 243 daily trips with a peak hour volume of 19 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. The project will add less than a 1% increase to the exiting roadway volumes and no direct or cumulative impacts are anticipated.

## 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 roof mounted mechanical ventilation system (HVAC) are the primary source of stationary noise.

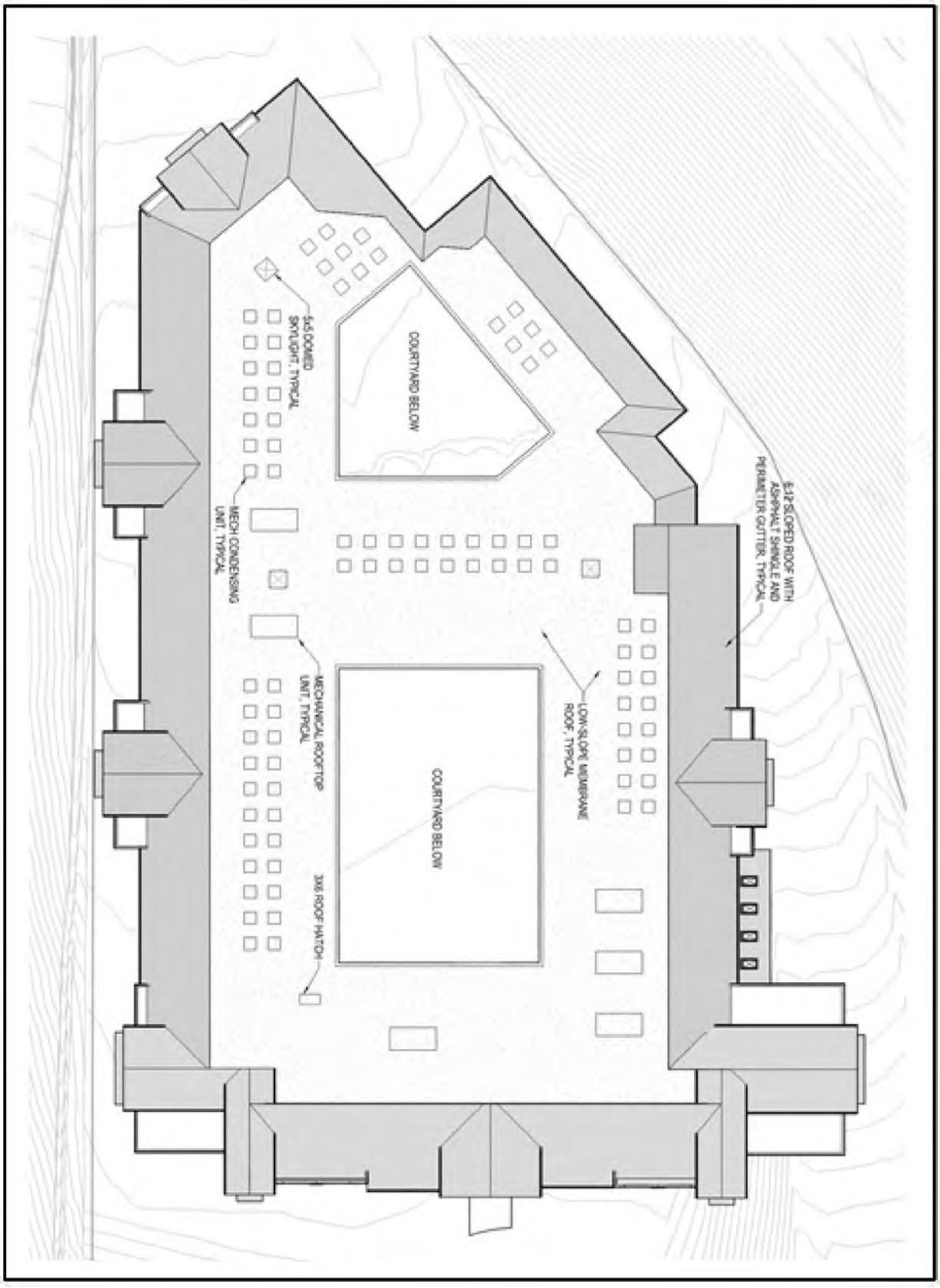
The Prestige Preschool is located to the west across Paseo Plomo. Therefore, the City Ordinance limits of 65 dBA hourly noise standard during the daytime hours between 7 a.m. and 10 p.m., a 55 dBA standard during the nighttime hours between 10 p.m. and 7 a.m. would apply at all property lines under the City of San Marcos thresholds. However, since the preschool is located within the City of Carlsbad boundaries, the more restrictive 55 dBA daytime threshold was utilized.

Roof-top mechanical ventilation units (HVAC) will be installed at the proposed building. The project anticipates installing Carrier 24ACB3 or equivalent HVAC units with a reference sound power level of 75 dBA, which equates to a sound pressure level of 70 dBA at 3-feet (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 68 dBA based on operational time. To predict the property line noise level, a reference noise level of 68 dBA at 3-feet was used to represent the HVAC units.

The HVAC units are located a minimum of 120 feet from the adjacent property to the west and will be shielded by the parapet walls that will break the line of sight to the HVAC units and will provide a minimum 5 dBA reduction (Federal Highway Administration, 2017). The typical locations of the proposed HVAC units are shown in Figure 6-1. Up to 22 units will be clustered together closest to the nearest property line to the west. At any point along the property line, the receiver would be exposed to more than the 22-unit cluster. However, the additional clusters are separated by at least 80 feet and this separation would result in a 20 dBA difference between other HVAC clusters. This 20 dBA difference would not cumulatively increase the noise levels at the point of the receiver. Therefore, the worst-case combined noise from the HVAC would occur from 22 units.

**Figure 6-1: Locations of Proposed HVAC Units**



Utilizing a 6 dBA decrease per doubling of distance, noise levels at the nearest residential property line as described above were calculated for the HVAC. The HVAC units are located a minimum of 120 feet from the nearest property line to the west. The noise level reductions due to distance and the building for the nearest property line is provided in Table 6-1. Additionally, the nearest residential property line to the south is located further from the proposed project, therefore the noise levels would be further reduced.

**Table 6-1: Project HVAC Noise Levels (Nearest Property Line)**

| Distance to Nearest Observer Location (Feet) | Hourly Reference Noise Level (dBA) | Noise Source Reference Distance (Feet) | Noise Reduction Due to Distance (dBA) | Reduction Due to Buildings (dBA) | Noise Level at Property Line (dBA) | Quantity | Property Line Cumulative Noise Level (dBA)* |
|---|---|---|---|---|---|---|---|
| 120 | 68.0 | 3.0 | -32.0 | -5.0 | 31.0 | 22 | **44.4** |
| *Complies with the nighttime Noise Standard of 45 dBA. | | | | | | | |

The noise levels from the proposed roof-mounted HVAC would be considered less than significant at the nearest property line to the west and the residential property lines to the south with the proposed parapet walls and are in compliance with the City of San Marcos and City of Carlsbad Municipal Codes.

Emergency Sirens

In accordance with Chapter 10.24 (Noise) of the San Marcos Municipal Code, the City prohibits "loud, annoying, or unnecessary noise" that disturbs the peace, health, or safety of the community. The intent of this ordinance is to regulate unreasonable noise sources that cause community disturbance, rather than to restrict activities that are necessary for public safety. Section 10.24.020 identifies specific examples of prohibited noise, including vehicle horns and engine noise, when such sounds are used in a manner "not reasonably necessary" for safe operation. The inclusion of this qualifying language provides a clear basis for exempting emergency vehicle sirens, which are essential warning devices required for the protection of life and property during emergency response situations. Further, Sections 10.24.030 and 10.24.040 outline enforcement procedures and recognize defenses or exceptions for noise generated "in the interest of public health and safety" or "in cases of urgent necessity." The use of sirens and emergency signals falls directly within these categories, as such noise is integral to ensuring the safety of both emergency responders and the public.

Given the ordinance's structure and intent, it is reasonable to interpret that noise generated by authorized emergency vehicles, including sirens, horns, and other warning devices used during

active response operations, is exempt from enforcement under Chapter 10.24. These sounds are inherently temporary, occur only during emergency or official operations, and serve a critical public function.

Accordingly, emergency vehicle noise should be recognized as exempt from municipal noise limits within the City of San Marcos, as it constitutes necessary and legally defensible activity in the interest of public health, safety, and welfare.

## 7.0 REFERENCES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# ATTACHMENT A

FUTURE EXTERIOR NOISE MODEL
INPUT AND OUTPUT FILES

Sunrise Assisted Living - Ground Level Unmitigated
T-PEAK HOUR TRAFFIC CONDITIONS, 1
3827 , 55 , 125 , 55 , 68 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
4808 , 55 , 157 , 55 , 86 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 3
2656 , 45 , 86 , 45 , 47 , 45
L-Ranch Santa Fe N, 1
N,0,0,380,
N,710,110,425,
L-Rancho Santa Fe S, 2
N,710,110,425,
N,992,154,440,
L-San Elijo, 3
N,710,-71,425,
N,710,110,425,
N,710,326,427,
N,711,623,422,
N,716,1089,417,
B-Road Edge, 1 , 2 , 0 ,0
-13,84,380,380,
665,189,425,425,
664,346,427,427,
662,542,425,425,
674,671,420,420,
679,1086,417,417,
R, 1 , 65 ,10
336,486,414,R1
R, 2 , 65 ,10
463,484,414,R2
R, 3 , 65 ,10
289,408,414,R3
R, 4 , 65 ,10
432,401,414,R4
R, 5 , 65 ,10
562,405,414,R5
R, 6 , 65 ,10
564,612,414,R6
K,-3
3 ,3,4
K,-3
1 ,6
K,-9.9
ALL,1,2
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Sunrise Assisted Living - Ground Level Unmitigated

| REC | REC ID | DNL | PEOPLE | LEQ(CAL) |
|---|---|---|---|---|
| 1 | R1 | 65. | 10. | 52.7 |
| 2 | R2 | 65. | 10. | 54.4 |
| 3 | R3 | 65. | 10. | 63.9 |
| 4 | R4 | 65. | 10. | 64.4 |
| 5 | R5 | 65. | 10. | 65.0 |
| 6 | R6 | 65. | 10. | 64.4 |

Sunrise Assisted Living - Second Level Facade
T-PEAK HOUR TRAFFIC CONDITIONS, 1
3827 , 55 , 125 , 55 , 68 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
4808 , 55 , 157 , 55 , 86 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 3
2656 , 45 , 86 , 45 , 47 , 45
L-Ranch Santa Fe N, 1
N,0,0,380,
N,710,110,425,
L-Rancho Santa Fe S, 2
N,710,110,425,
N,992,154,440,
L-San Elijo, 3
N,710,-71,425,
N,710,110,425,
N,710,326,427,
N,711,623,422,
N,716,1089,417,
B-Road Edge, 1 , 2 , 0 ,0
-13,84,380,380,
665,189,425,425,
664,346,427,427,
662,542,425,425,
674,671,420,420,
679,1086,417,417,
R, 1 , 65 ,10
289,408,424.,R3
R, 2 , 65 ,10
432,401,424.,R4
R, 3 , 65 ,10
562,405,424.,R5
R, 4 , 65 ,10
564,612,424.,R6
K,-3
3 ,1,2
K,-3
1 ,4
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Sunrise Assisted Living - Second Level Facade

| REC | REC ID | DNL | PEOPLE | LEQ(CAL) |
|---|---|---|---|---|
| 1 | R3 | 65. | 10. | 63.7 |
| 2 | R4 | 65. | 10. | 64.0 |
| 3 | R5 | 65. | 10. | 66.2 |
| 4 | R6 | 65. | 10. | 65.5 |