

Mission San Marcos Industrial Park Project

SDP22-0009

Noise and Vibration Report

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ACRONYMS AND ABBREVIATIONS

μPa	micro-Pascals
ADT	average daily trips
ANSI	American National Standards Institute
CadnaA	DataKustic Computer Aided Noise Abatement model
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Marcos
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
HVAC	heating, ventilation, and air conditioning
Hz	hertz
in/sec	inches per second
ITE	Institute of Transportation Engineers
kHz	kilohertz
L_{DN}	Day Night sound level
L_{EQ}	time-averaged noise level
LLG	Linscott, Law & Greenspan
L_{MAX}	maximum noise level
LTA	Local Transportation Analysis
mph	miles per hour
NSLU	noise-sensitive land use
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
RMS	root mean square
SF	square foot/feet
SPL	sound pressure level
STC	Sound Transmission Class
S_{WL}	Sound Power Level

ACRONYMS AND ABBREVIATIONS (cont.)

TNM	Traffic Noise Model
TRU	transport refrigeration units
USDOT	U.S. Department of Transportation

EXECUTIVE SUMMARY

This report presents an assessment of potential construction and operational noise and vibration impacts resulting from the construction and operation of the proposed Mission San Marcos Industrial Park Project (project). The project site is located at 528 East Mission Road in the eastern portion of the City of San Marcos (City) on the northern side of East Mission Road between Falcon Place and Mulberry Drive in San Diego County, California. The project would demolish the existing light industrial buildings on the project site and develop the site with three light industrial/warehouse buildings. The project would provide approximately 141 on-site parking places and 14 truck-loading bays.

Per the City Municipal Code, construction noise is prohibited except for noise from construction activities that occur during normal daytime hours. Daytime project construction noise was evaluated using the quantitative standards adopted by San Diego County in the absence of a City-adopted noise limit for construction noise. The calculated one-hour project construction equipment noise levels would be less than the San Diego County construction noise standard. Project construction haul trips would not result in a perceptible increase in ambient traffic noise levels. The calculated project operational noise from on-site building heating, ventilation, and air conditioning (HVAC) systems and truck/loading docks (including truck circulation, truck backup alarms, and truck idling) would not exceed the City daytime or nighttime standards for any modeled receivers. The addition of project-related traffic to existing traffic levels and to near-future cumulative traffic levels (existing conditions plus anticipated increases in traffic due to cumulative projects identified in the area) would not result in a perceptible increase in ambient traffic noise. Therefore, the project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project exceeding standards, and the impact would be less than significant.

Project construction would not result in significant vibrations affecting nearby residents or damaging nearby buildings after implementation of mitigation measure NOI-1, which requires vibratory equipment to be used in static mode at specific locations. Project operations would not be a significant source of vibrations. Therefore, project vibration impacts would be less than significant.

The project site is not located within the influence area or the noise contours for any area airports. Therefore, persons residing or working in the project area would not be exposed to substantial noise from airports or aircraft.

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1.0 INTRODUCTION

This report assesses the potential noise impacts that would be associated with construction noise, operational noise, and project-generated traffic noise for the Mission San Marcos Industrial Park Project (project). The analysis includes a description of existing conditions in the project vicinity, an assessment of potential impacts associated with project construction, and an evaluation of project operational impacts. This report has been prepared to support environmental review in accordance with the California Environmental Quality Act (CEQA; California Public Resources Code [PRC] §21000 et seq.); State CEQA Guidelines (California Code of Regulations [CCR], Title 14, §15000 et seq.).

1.1 PROJECT LOCATION

The approximately 10.8-acre site (Assessor's Parcel Number 220-210-26-00) is located at 528 East Mission Road in the eastern portion of the City of San Marcos (City) on the northern side of East Mission Road between Falcon Place and Mulberry Drive in San Diego County, California (see Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*).

1.2 PROJECT DESCRIPTION

The project would demolish the two existing structures (and their associated improvements) on the project site and develop three light industrial/warehouse buildings with associated hardscape and landscape improvements. An approximately 2.95-acre hillside open space in the northwest portion of the project site would remain undeveloped. The three proposed light industrial/warehouse buildings would total approximately 132,810 square feet (SF) and would include a total of 14 loading docks. The proposed buildings would have a maximum height of 38 feet and each building would contain a two-story ancillary office space. The total project light industrial/warehouse space would be approximately 118,810 SF, and the total project ancillary office would be approximately 14,000 SF. Future tenants of the project were unknown at the time of this analysis and could include a variety of light industrial and warehousing uses. However, the project does not propose any refrigerated warehousing (see Figure 3, *Site Plan*).

Vehicular access to the project site would be provided via two driveways on East Mission Road. The project would renovate the sidewalk along East Mission Road to maintain an accessible pedestrian path along this frontage. The existing bus stop at the southeastern corner of the project site would be relocated to the southwestern corner of the project site. The project would provide approximately 141 parking spaces.

The current General Plan land use designation for the project site is Neighborhood Commercial on the southeastern corner and Light Industrial across the remainder of the site. The project site is zoned within the transitional zone for Light Industrial to Light Industrial and Neighborhood Commercial on most of the site and the transitional zone for Light Industrial to Neighborhood Commercial within the southeastern corner. No change to the current land use or zoning designations for the project site is proposed.

2.0 ENVIRONMENTAL SETTING

2.1 NOISE DESCRIPTORS AND TERMINOLOGY

2.1.1 Noise Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} , with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

2.1.2 Noise Terminology

2.1.2.1 Sound, Noise, and Acoustics

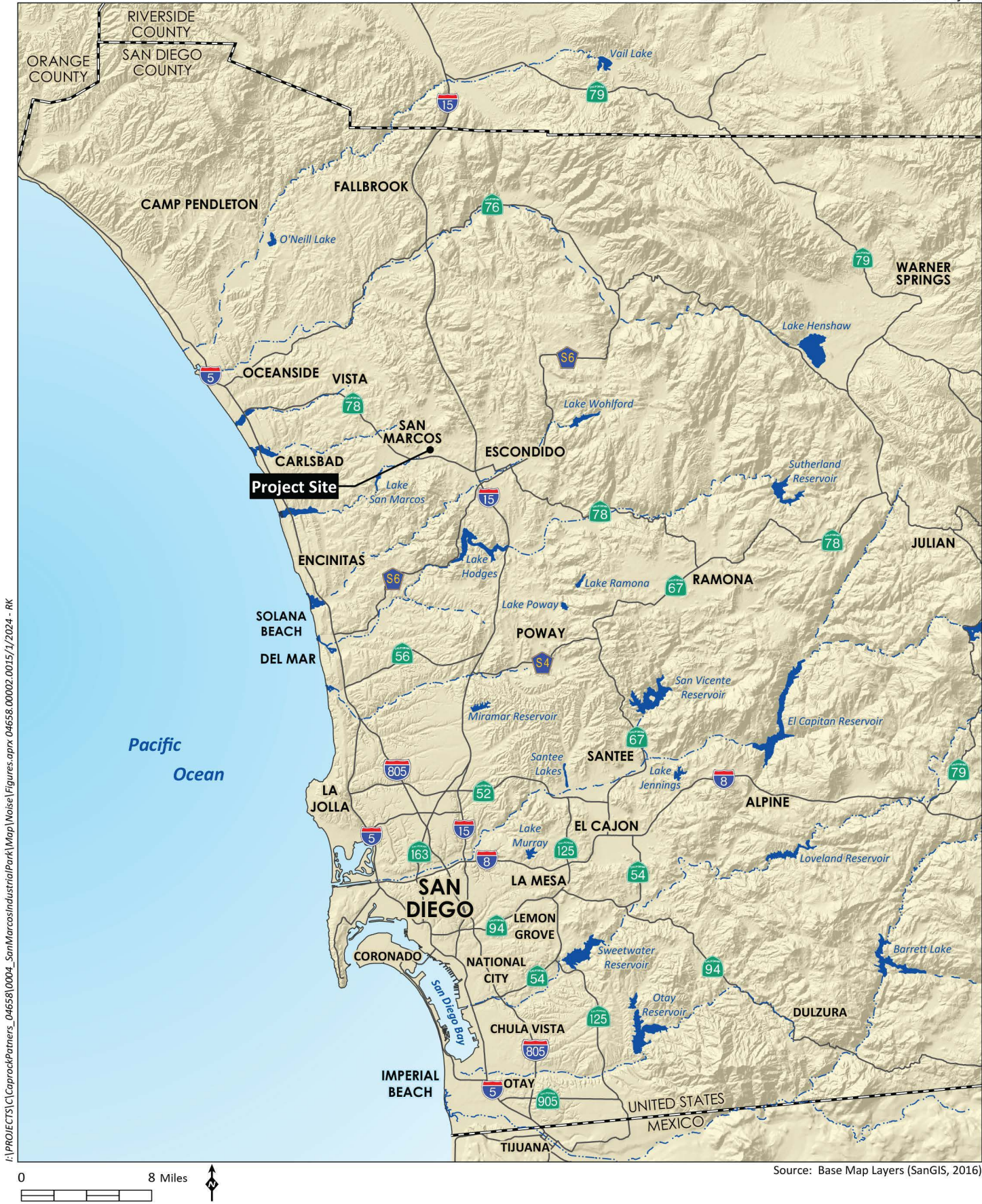
Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

2.1.2.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

2.1.2.3 Sound Pressure Levels and Decibels

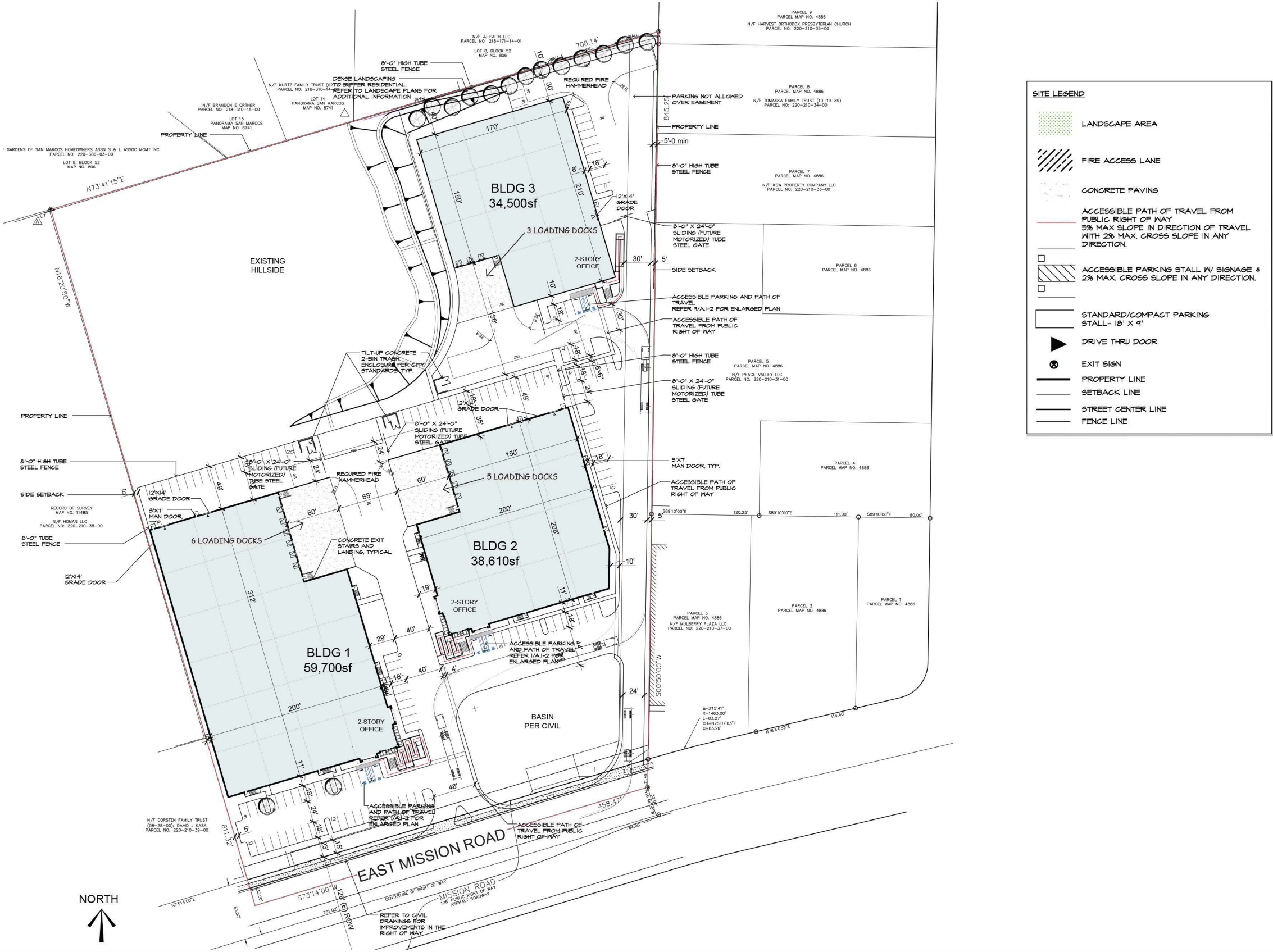
The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (μPa). One μPa is approximately one hundred billionth (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 μPa . Because of this wide range of values, sound is rarely expressed in terms of μPa . Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 μPa .



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Source: Douglas Franz Architects Inc 2023

2.1.2.4 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1 dBA changes in sound levels, when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000 Hz to 8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dBA are generally not perceptible. It is widely accepted, however, that people begin to detect sound level increases of 3 dBA in typical noisy environments. Further, a 5 dBA increase is generally perceived as a distinctly noticeable increase, and a 10 dBA increase is generally perceived as a doubling of loudness.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3 dBA change in noise, which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear in typical outdoor environments.

2.2 GROUNDBORNE VIBRATION DESCRIPTORS AND TERMINOLOGY

Groundborne vibration consists of rapidly fluctuating motions or waves transmitted through the ground with an average motion of zero. Sources of groundborne vibrations include natural phenomena and anthropogenic causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. For this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

2.3 NOISE AND VIBRATION SENSITIVE LAND USES

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. The closest existing NSLUs to the project site are single-family residences with outdoor spaces starting approximately 10 feet north of the project site. A preschool/daycare facility is located adjacent to the northeast corner of the project site. The closest school to the project site is the Mission Hills High Schools, approximately 1,740 feet (0.33 mile) to the east. There are no hospitals, hotels, resorts, or libraries within 0.5 mile of the project site.

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, hospitals, and university research operations are considered “vibration-sensitive”

(Caltrans 2020). The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. In addition, excessive levels of ground-borne vibration of either a regular or an intermittent nature can result in annoyance to residential uses, schools, or transient lodging. Land uses in the project area that are subject to annoyance from vibration include the residences described above.

2.4 REGULATORY FRAMEWORK

2.4.1 California Noise Control Act

The California Noise Control Act is a section within the California Health and Safety Code (HSC §46000) that describes excessive noise as a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

2.4.2 City of San Marcos General Plan Noise Element

The City of San Marcos 2012 General Plan includes a Noise Element that establishes ambient noise and transportation noise compatibility guidelines for various land uses. Per the City General Plan Noise Element Tables 7-3 and 7-4: single-family residential land uses would be normally acceptable with exterior noise levels at or below 60 CNEL; multi-family residential land uses would be normally acceptable with exterior noise levels at or below 65 CNEL; schools and child care facilities would be normally acceptable with noise levels at or below 65 CNEL; commercial office land uses would be normally acceptable with exterior noise levels at or below 65 CNEL; and industrial and warehouse land uses would be normally acceptable with exterior noise levels at or below 65 CNEL (City 2012).

2.4.3 City of San Marcos Municipal Code

The following sections from the City Municipal Code pertaining to noise and vibration would be applicable to the project.

2.4.3.1 Chapter 10.24 – Noise

Section 10.24.010 – Loud, Annoying, and Unnecessary Noises Prohibited

No person shall make, cause to be made, or continue to make or cause to be made, within the limits of the City of San Marcos, any loud, annoying, or unnecessary noise that injures, impairs or endangers the health, peace or safety of any person of reasonable sensibilities, or that disturbs the peace, quiet, comfort or tranquility of the neighborhood or community, or exceeds the noise limits set forth in Section 20.300.070(F) of this Code. The characteristics and conditions that should be considered in determining whether a violation of the provisions of this section exists include, but are not limited to, the following:

- (1) The level and intensity of the noise;
- (2) Whether the nature of the noise is usual or unusual;

- (3) Whether the origin of the noise is natural or unnatural;
- (4) The level and intensity of background noise;
- (5) The nature and zoning of the area abutting and within which the noise emanates;
- (6) The time of the day or night the noise occurs;
- (7) Whether the noise is recurrent, intermittent or constant.

10.24.020 - Definitions and Examples of Prohibited Noise

- (a) Prohibited noise means any sound that disturbs a reasonable person of normal sensitivities or is plainly audible as further defined in this section, or the noise limits set forth in Section 20.300.070(F) of this Code. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of 200 feet from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property.
- (b) The following described noises are hereby declared to be in violation of this chapter; this list is deemed illustrative and shall not be deemed or construed in any degree or way to be an exclusive or all-inclusive list of the noises prohibited by this chapter, it being the intent and purpose of this chapter to include and prohibit all noises of the character described in Section 10.24.010. References to “adjacent” or “neighboring” residences or units in this subsection (b) shall mean those residences or units located next to or near the source of the noise, and no specific distance standard for audibility shall be required for such locations.
- (9) Erection or demolition of buildings, 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 jackhammers except on weekdays 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.

Section 20.300.070 - Performance Standards

- E. Noise. 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.
 1. Noise shall be measured with a sound-level meter that meets the standards of the American National Standards Institute (ANSI) (Section S1.4-1979, Type 1 or Type 2). Noise levels shall be measured in decibels at the property line of the receptor property, and at least five (5) feet above the ground and ten (10) feet from the nearest structure or wall. The unit of measure shall be designated as an A-weighted decibel (dBA) L_{EQ} standard. A calibration check shall be made of the instrument at the time any noise measurement is made.

2. 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 [reproduced in this report as Table 1, *Exterior Noise Standards by Zone*]. Increases in allowable noise levels listed in Table 20.300-4 may be permitted in accordance with the standards outlined in Table 20.300-5 reproduced in this report as Table 2, *Permitted Increase in Noise Levels*].

Table 1
EXTERIOR NOISE STANDARDS BY ZONE

Zone	Allowable Noise Level (dBA L _{EQ}) Measured from the Property Line	
	7 a.m. to 10 p.m. (daytime)	10:00 p.m. to 7:00 a.m. (overnight)
Single-Family Residential (A, R-1, R-2) 1, 2	60	50
Multifamily Residential (R-3) 1, 2	65	55
Commercial (C, O-P, SR) 3	65	55
Industrial	65	60

Source: City of San Marcos Municipal Code Table 20.300-4

1. For single-family detached dwelling units, the "exterior noise level" is defined as the noise level measured at an outdoor living area that 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.

dBA L_{EQ} = A-weighted decibel time-averaged noise level

3. No person shall create nor allow the creation of noise that causes the interior noise level when measured within a dwelling unit to exceed forty-five (45) dBA at any time, except as permitted by Table 20.300-6 [reproduced in this report as Table 3, *Permitted Increase in Interior Noise Levels*].
4. Use of compressors or other equipment, including vents, ducts, and conduits, but excluding window or wall-mounted air conditioners, which are located outside of the exterior walls of any building, shall be enclosed within a permanent, non-combustible, view-obscuring enclosure to ensure that the equipment does not emit noise in excess of the ANSI standards.

Table 2
PERMITTED INCREASE IN EXTERIOR NOISE LEVELS

Permitted Increase (dBA)	Duration (cumulative minutes per hour)
5	15
10	5
15	1
20	Less than 1 minute

Source: City of San Marcos Municipal Code Table 20.300-5
dBA = A-weighted decibel

Table 3
PERMITTED INCREASE IN INTERIOR NOISE LEVELS

Permitted Increase (dBA)	Duration (cumulative minutes per hour)
5	1
10	Less than 1 minute

Source: City of San Marcos Municipal Code Table 20.300-6
dBA = A-weighted decibel

- F. Vibration. Vibration may disturb the conduct of certain activities and create discomfort for some individuals. To minimize the disturbance and inconvenience from vibrations, no person or use shall create, maintain, or cause ground vibration that is discernible without instruments to a person of normal sensitivity at any point on a property that is adjacent to the property of the vibration source. The ground vibration caused by moving vehicles, trains, aircraft, or temporary construction or demolition is exempted.

2.5 EXISTING CONDITIONS

The project site is currently developed with two buildings containing storage, workshop, and office space for a contractor business. Hillside undeveloped open space is located in the northwestern portion of the site. The developed portion of the project site is generally flat while the undeveloped portion slopes up to the north. Elevations on the site range between 600 and 650 feet above mean sea level. Land uses surrounding the project site include residential and open space to the north, industrial to the south, a mix of commercial and light industrial to the west and the east (see Figure 2).

2.5.1 Existing Noise Environment

The existing noise environment is dominated by traffic noise from East Mission Road and Mulberry Drive. Traffic noise from the State Route 78 freeway, approximately 1,800 feet south of the project site, contributes to the ambient noise level in the project area. Railroad tracks, approximately 500 feet south of the project site, contribute occasional intermittent noise from freight trains. The surrounding light industrial and commercial businesses to the east, south, and west of the project site contribute truck noise (including noise from occasional backup alarms) to the existing noise environment.

2.5.2 Noise Survey

Two noise short-term (15-minute) measurements were taken on or near the project site to document existing conditions in the vicinity. The first noise measurement, M1, was taken along the southern

project site boundary, approximately 15 feet north of the closest travel lane on East Mission Road. Traffic counts were taken for cars and trucks traveling along East Mission Road during measurement M1. The second measurement, M2, was recorded within the northern portion of the project site, approximately 180 feet south of the closest residences. The measured noise levels are shown in Table 4, *Noise Measurement Results*. Measurement locations are shown on Figure 4, *Measurement and Modeled Receiver Locations*.

Table 4
NOISE MEASUREMENT RESULTS

Measurement 1	
Date:	December 1, 2023
Time:	9:09 a.m. – 9:24 a.m.
Location:	Southern boundary of the project site, approximately 15 feet north of the closest travel lane on East Mission Road.
Measured Noise Level:	70.2 dBA L_{EQ}
Notes:	Traffic counts: 207 cars and pickups; 11 buses; 1 medium truck; 3 heavy trucks.
Measurement 2	
Date:	December 1, 2023
Time:	9:29 a.m. – 9:44 a.m.
Location:	Northern portion of the project site, approximately 180 feet south of the closest residences.
Measured Noise Level:	56.1 dBA L_{EQ}
Notes:	Noise from trucks (with backup alarms) at the business to the east of the project site. No operational noise from businesses on the project site during the measurement.

dBA = A-weighted decibel; L_{EQ} = time-averaged noise level

3.0 METHODOLOGY, ASSUMPTIONS, AND THRESHOLDS

3.1 METHODOLOGY

3.1.1 Ambient Noise Survey

The following equipment was used to measure existing noise levels at the project site:

- Larson Davis Model LxT Noise Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the noise meter

The sound level meter was calibrated before the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4-1983 R2006). All instruments were maintained with the National Institute of Standards and Technology traceable calibration per the manufacturers' standards.



Noise Measurement and Modeled Receiver Locations

Figure 4

3.1.2 Noise Modeling Software

Project construction noise was analyzed using the Roadway Construction Noise Model Version 1.1 (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

Modeling of the exterior noise environment for on-site noise sources for this report was accomplished using Computer Aided Noise Abatement (CadnaA) version 2023. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. CadnaA vehicle noise prediction is based on the data and methodology used in the Traffic Noise Model (TNM) released by the U.S. Department of Transportation (USDOT).

The project's contribution to off-site traffic noise on area streets was calculated using TNM version 2.5 (USDOT 2004). TNM calculates the daytime average hourly L_{EQ} from roadway geometry inputs and traffic data. The primary purpose of traffic noise modeling in this analysis was to estimate the increase in transportation noise levels on City streets resulting from the addition of project-related traffic. Input variables included lane configuration, roadway width, projected traffic volumes, estimated truck composition percentages, and vehicle speeds.

Peak-hour traffic volumes were estimated based on the assumption that approximately 10 percent of the average daily traffic would occur during a peak hour. The one-hour L_{EQ} noise level is calculated utilizing peak-hour traffic. Peak hour L_{EQ} can be converted to CNEL using the following equation, where $L_{EQ}(h)pk$ is the peak hour L_{EQ} , P is the peak hour volume percentage of the average daily trips (ADT), d and e are divisions of the daytime fraction of ADT to account for daytime and evening hours, and N is the nighttime fraction of ADT:

$$CNEL = L_{EQ}(h)pk + 10\log_{10} 4.17/P + 10\log_{10}(d + 4.77e + 10N)$$

When peak-hour traffic volumes are near 10 percent of ADT, the last two terms of the equation are negligible and the model-calculated one-hour L_{EQ} noise output is approximately equal to the CNEL (California Department of Transportation [Caltrans] 2013).

3.2 ASSUMPTIONS

3.2.1 Construction

Construction activities would include demolition, site preparation, grading, building construction, architectural coating (e.g., painting), and paving. Haul trips during construction would also result in off-site noise. Based on estimates from the project engineer and on the air quality modeling (HELIX 2025a): exporting debris from the site during demolition would result in approximately 1,822 one-way haul trips (an average of approximately 21 one-way trips per workday); exporting vegetation from the site during site preparation would result in approximately 40 one-way haul trips (an average of approximately 2 one-way trips per workday); importing soil to the site during grading would result in approximately 414 one-way haul trips (an average of approximately 9 one-way trips per workday); and importing asphalt to the site during paving would result in approximately 226 one-way haul trips (an average of approximately 11 one-way trips per workday).

The loudest construction noise source is anticipated to be the use of heavy equipment during demolition and grading. Construction equipment noise was evaluated using the RCNM and methodology from the Federal Transit Administration's (FTA's) *Transit Noise and Vibration Impact Assessment Manual*, Option A for a quantitative construction noise assessment. Using this method, equipment is assumed to operate at the center or centerline of the project site, and the two noisiest pieces of construction equipment are assumed to operate concurrently in close proximity to each other (FTA 2018). Based on the construction equipment anticipated in the air quality modeling (HELIX 2025a), this would include a dozer and excavator for building demolition, a concrete saw and excavator for pavement cuts during demolition, and a dozer and grader for grading. Other phases of project construction would use quieter construction equipment. Table 5, *Anticipated Construction Equipment*, presents a summary of the heavy equipment anticipated to be used for demolition and grading, the typical operating time percentage, and the average noise level at a distance of 50 feet reported by the RCNM.

Table 5
ANTICIPATED CONSTRUCTION EQUIPMENT

Construction Equipment	Percent Operating Time	Noise Level at 50 feet (dBA L _{EQ})
Demolition (Buildings)		
Dozer	40%	77.7
Excavator	40%	76.7
Demolition (Pavement)		
Concrete Saw	20%	82.6
Excavator	40%	76.7
Grading		
Dozer	40%	77.7
Grader	40%	81.0

Source: Roadway Construction Noise Model (U.S. Department of Transportation 2008); HELIX 2025a
dBA = A-weighted decibels; L_{EQ} = time averaged sound level.

3.2.2 Operations

Anticipated operational noise sources are assumed to include vehicular traffic; delivery trucks (some with backup alarms); and rooftop heating, ventilation, and air conditioning (HVAC) systems.

3.2.2.1 Vehicular Traffic

Per the project Local Transportation Analysis (LTA), the project would generate 664 ADT (Linscott Law & Greenspan [LLG] 2024). Table 6, *Roadway Segment Traffic Volumes*, summarizes the ADT data for the roadway segments analyzed in the LTA. Existing traffic volume was based on traffic counts taken in August 2023 and January 2024 (LLG 2024). Near-Term cumulative traffic volumes represent existing conditions and anticipated increases in trips due to cumulative projects identified in the area for 2025 (LLG 2024). Based on typical traffic distributions and the traffic counts conducted during the noise survey, a traffic distribution of 95 percent automobiles, 4 percent medium trucks and buses, and 1 percent heavy trucks was used in this analysis for existing traffic on local roadways. As discussed further below, 31.2 percent of project-generated trips are conservatively anticipated to be from trucks, resulting in approximately 207 average daily truck trips. The project-generated truck trips were conservatively modeled in TNM as heavy trucks.

Table 6
ROADWAY SEGMENT TRAFFIC VOLUMES

Roadway Segment	Project ADT	Existing (2024) ADT	Near Term Cumulative (2025) ADT	Near Term Cumulative (2025) + Project ADT
Mulberry Drive				
East Mission Road to Borden Road	110	15,930	16,505	16,615
East Mission Road				
San Marcos Boulevard to Project	410	23,020	24,195	24,605
Project to Mulberry Drive	530	23,020	24,195	24,725
Mulberry Drive to Woodland Parkway	330	21,670	22,968	23,298
Woodland Parkway				
East Mission Road to Rancheros Drive	260	15,030	15,801	16,601
Rancheros Drive to Barham Drive	140	21,980	22,694	22,834

Source: LLG 2024

ADT = average daily traffic

3.2.2.2 Delivery Trucks

The LTA only analyzed total vehicle trip generation and did not estimate the number of truck trips in the project total trip generation. Project truck trips were estimated from the *High-Cube Warehouse Vehicle Trip Generation Analysis* report prepared for the South Coast Air Quality Management District (SCAQMD) by the Institute of Transportation Engineers (ITE). Per the ITE report, for a transload and short-term storage unrefrigerated warehouse, approximately 31.2 percent of trips would be from trucks (ITE 2016), resulting in approximately 207 average daily truck trips for the project. Project warehouse operations are anticipated to be 24 hours per day and the hourly distribution of project truck trips would not follow the pattern for employee commute trips with distinct morning and afternoon peak hours. Per the ITE report, peak hour truck trips for a transload and short-term storage unrefrigerated warehouse are approximately 5.3 percent of the average daily truck trips (ITE 2016). To be conservative in accounting for peak project truck noise, both daytime and nighttime peak hours were assumed to have 5.3 percent of the average daily truck trips, or approximately 11 peak hour truck trips (each trip is one truck entering or one truck leaving the project site). In the modeling, truck trips were rounded up to even numbers and distributed between the three project buildings based on the percentages of loading docks: 6 peak hour truck trips for Building 1 (with 6 loading docks); 4 peak hour truck trips for Building 2 (with 5 loading docks); and 2 peak hour truck trips for Building 3 (with 3 loading docks).

The modeling assumes each truck would enter the project site via one of the project driveways on East Mission Road, circulate within the project site at an average speed of 10 mph, reverse into a loading bay at an average speed of 5 mph, idle at the loading dock for the maximum allowable 5 minutes (per California Code of Regulations Title 13, Section 2485), then depart the project site.

There are no California or federal regulations which require on-road trucks to be equipped with backup warning devices. Backup alarms are commonly used on fleet vehicles used for local delivery of packages and goods. However, on-road trucks which transport goods between ports, airports, manufacturing facilities, and warehouses are rarely equipped with backup alarms. The most common truck backup alarm is a pulsing single tone, typically at one kHz. Recently, in response to noise complaints, backup alarms that produce a less intrusive pulsing broad-spectrum noise have been introduced. To be

conservative, all trucks entering the project site were assumed to be equipped with a traditional one kHz backup alarm operating for an average of 30 seconds per truck. Alarms were assumed to be mounted on the back of the trucks at a height of three feet. Backup alarms were modeled with typical noise levels of 109.7 dBA measured at four feet.

As discussed in Section 1.2, above, the project would not include any refrigerated warehouse space. Therefore, no use of transport refrigeration units (TRUs) was included in the on-site operational noise modeling.

3.2.2.3 Heating, Ventilation, and Air Conditioning Units

The project would use commercial-sized HVAC units located on the rooftop of the building for the proposed office space. The warehouse space would not be conditioned. Specific planning data for the future HVAC systems was not available at the time of this analysis. Standard HVAC planning assumes approximately one ton of HVAC for every 350 to 500 SF of occupied office space (American Society of Heating, Refrigeration, and Air Conditioning Engineers [ASHRAE] 2012). For this analysis, one Carrier 50PG 12-ton HVAC unit, which has a sound power level (S_{WL}) of 80.0 dBA, was assumed for the office space of each of the project buildings (14,000 SF in total). The HVAC systems were assumed to be mounted on the project building roof and would be surrounded by standard parapet walls approximately four feet high. The manufacturer's noise data is provided below in Table 7, *Condenser Noise Data*, and in Appendix A, *HVAC Sound Data*.

Table 7
CONDENSER NOISE DATA

Noise Levels in Decibels ¹ (dB) Measured at Octave Frequencies								Overall Noise Level (dBA) ¹
63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	
90.4	83.1	80.9	77.8	75.2	70.0	66.1	57.6	80.0

¹ Sound Power Level (S_{WL})

HZ = Hertz; KHz = kilohertz

3.3 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, implementation of the project would result in a significant adverse impact if it would:

Threshold 1: *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.*

As discussed in Section 2.4.3, per the City Municipal Code Section 10.24.020, construction noise is prohibited except for Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays between the hours of 8:00 a.m. to 5:00 p.m. The City Municipal Code does not establish limits for acceptable construction noise levels that occur during the above hours. Therefore, this analysis relies on the construction noise standard adopted by San Diego County. A temporary or periodic increase in ambient noise levels due to on-site construction activity would be considered significant if noise from non-emergency construction activity exceeds an average of 75 dBA for an eight-hour period (San Diego County 2009).

As discussed in Section 2.4.3, per the City Municipal Code Section 20.300.070, noise generated on the project site would be significant if noise exceeds the daytime or nighttime standards shown in Table 1, measured in the outdoor living spaces for the single-family residences north of the project site, or public outdoor space for commercial and industrial businesses east and west of the project site.

The City has not established standards for determining the significance of increases in transportation noise resulting from a development project. Therefore, the standards of significance are based on perceived increases in ambient noise levels. Impacts would be significant in areas where existing traffic noise at NSLUs exceeds 60 CNEL (the City General Plan noise compatibility level for residential uses) and if the addition of project-related traffic would increase noise levels 3 dBA, a just perceptible increase.

Threshold 2: *Generation of excessive groundborne vibration or groundborne noise levels.*

Excessive ground-borne vibration would occur if construction-related ground-borne vibration exceeds the “distinctly perceptible” vibration annoyance potential criteria for disruption of sleep of 0.035 in/sec PPV for steady-state sources or exceeds the damage potential criteria of 0.4 in/sec PPV for residential buildings in good repair with gypsum board walls (Caltrans 2020).

Threshold 3: *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.*

Excessive noise exposure from airport activity is defined as noise levels that exceed the standards in the City General Plan Noise Element, 65 CNEL for industrial land uses such as the project site.

4.0 IMPACT ANALYSIS

4.1 THRESHOLD 1: INCREASE IN AMBIENT NOISE LEVELS

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

4.1.1 Impact Analysis

4.1.1.1 Construction Equipment Noise

As discussed in Sections 2.4.3 and 3.3, construction noise is prohibited except for Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays between the hours of 8:00 a.m. to 5:00 p.m. Project construction noise within the allowable hours would be significant if it results in an 8-hour average noise level of 75 dBA L_{EQ} or more.

The magnitude of construction noise would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction could occur as close as 30 feet from NSLUs (residences and the daycare facility north and northeast of the project site). However, construction equipment would not all operate at the same time or location and would not be in constant use during the 8-hour operating day.

Further, not all the pieces of equipment would be used within 30 feet of the closest off-site residences. As described in Section 3.2.1, construction equipment noise is assessed based on the distance to the center of the project site and the assumption that the two noisiest pieces of construction equipment for a given phase would operate concurrently in close proximity to each other (FTA 2018). Based on the distance between the closest NSLUs and the approximate center point of existing buildings and pavement in the southern half of the project site, it is anticipated that, over the course of an 8-hour day, demolition equipment would operate at an average distance of 500 feet from NSLUs. Based on the total area to be graded for the project, it is anticipated that, over the course of an 8-hour day, earthmoving equipment used during site preparation and grading would operate at an average distance of 200 feet from the closest NSLUs. This distance represents the assumed average distance from the NSLUs that construction equipment would be operating over the course of a workday.

The loudest combination of equipment is anticipated to be used simultaneously for each of these construction activities and the resultant noise levels at the applicable distances are shown in Table 8, *Construction Noise Levels*. The RCNM output reports are included in Appendix B, *RCNM Output*, to this report.

Table 8
CONSTRUCTION NOISE LEVELS

Activity	Simultaneous Construction Equipment	Average Distance to Nearest NSLU (feet)	Noise Level (dBA L_{EQ})
Demolition (Buildings)	Dozer, Excavator	500	60.2
Demolition (Pavement)	Concrete Saw, Excavator	500	63.6
Grading	Dozer, Grader	200	70.6

Source: Roadway Construction Noise Model (U.S. Department of Transportation 2008).

NSLU = noise sensitive land use; dBA = A-weighted decibels; L_{EQ} = time averaged sound pressure level.

As shown in Table 8, the calculated one-hour project construction equipment noise levels for all activities would be less than the San Diego County eight-hour average limit of 75 dBA.

Per the project Biological Letter Report, the project site contains trees, shrubs, and other vegetation that provide suitable nesting habitat for birds, including coastal California gnatcatcher, a special status species (HELIX 2025b). The Biological Letter Report contains mitigation measures requiring focused surveys for coastal California gnatcatcher before commencing project construction activities. If coastal California gnatcatcher is detected during focused surveys, project construction activity would be required to follow noise monitoring and/or noise attenuation measures during the breeding season. Adherence to the mitigation measure contained in the Biological Letter Report would ensure noise impacts to listed and sensitive species during project construction activities would be less than significant.

4.1.1.2 Construction Haul Truck Noise

As discussed in Section 3.2.1 above, the maximum project construction truck traffic would be during demolition when approximately 21 haul truck trips per workday (approximately 3 trips per hour during the 8-hour workday) are anticipated to be added to traffic on East Mission Road. As described in Section 3.2.2, above, East Mission Road currently carries approximately 23,020 ADT, of which one percent (230) are estimated to be heavy trucks. As discussed in Section 2.1.2 above, the human threshold for a detectable increase in outdoor noise is an increase of approximately 3 dBA, which requires a doubling of

sound energy. For traffic noise, a doubling of traffic volume would result in doubling of sound energy and an approximate 3 dBA increase. Therefore, the addition of 21 project haul trucks per day to the existing 230 trucks per day on East Mission Road would not double the truck traffic volume and would not result in a perceptible increase in ambient traffic noise.

4.1.1.3 Operational On-site Noise

The proposed on-site truck circulation routes, loading dock areas, and rooftop HVAC units would generate elevated noise levels compared to existing conditions. The primary noise sources for the loading dock areas are delivery truck engines idling and truck backup alarms, as described in Section 3.2.2.

Operation of all noise-generating components was modeled using CadnaA. The project buildings were included in the model. The modeling accounts for noise reductions due to terrain but does not account for noise reductions due to off-site structures. As described in Section 2.5.2, the closest existing NSLU to the project site are single-family residences near the project site northern property line. A preschool/daycare facility is located adjacent to the northeast corner of the project site. Seven receivers were placed in the model at the outdoor spaces of the closest residential properties north of the project site (R1 through R7). Two receivers were placed in the model at the daycare facility northeast of the project site (D1 and D2). Three receivers were placed in the model at the closest commercial/retail buildings around the project site (C1 through C3). Eight receivers were placed in the model at the closest industrial buildings around the project site (I1 through I8). The modeled receiver locations are shown in Figure 4.

The project is anticipated to operate 24 hours per day resulting in nighttime noise generated on the project site. HVAC systems were assumed to operate for one hour or more continuously during daytime or nighttime. For truck circulation and loading dock operations, it is unknown how many trucks per hour would arrive and depart the project site at night. Therefore, this analysis conservatively assumes that peak hourly nighttime truck trips could be as high as the peak hourly daytime truck trips described in Section 3.2.2.2. Table 9, *On-Site Operational Noise*, compares the calculated peak hour on-site noise level results to both the City's daytime and nighttime noise standard (measured in the outdoor spaces or building façades of the receiving properties). The CadnaA modeling output tables are included in Appendix C, *CadnaA Output*, to this report. See Figure 4 for modeled receiver locations.

Table 9
ON-SITE OPERATIONAL NOISE

Receiver Number	Land Use	Project Noise (dBA L_{EQ})	City Noise Limit Daytime/Nighttime (dBA) ¹	Exceed Standard?
R1	Residential	34.4	60/50	No
R2	Residential	23.9	60/50	No
R3	Residential	26.2	60/50	No
R4	Residential	29.1	60/50	No
R5	Residential	31.5	60/50	No
R6	Residential	46.6	60/50	No
R7	Residential	41.3	60/50	No
D1	Daycare	37.1	60/50 ²	No
D2	Daycare	35.8	60/50 ²	No
C1	Commercial	53.8	75/65 ³	No
C2	Commercial	55.3	75/65 ³	No
C3	Commercial	41.5	65/55	No
I1	Industrial	47.4	65/60	No
I2	Industrial	43.4	65/60	No
I3	Industrial	39.2	65/60	No
I4	Industrial	41.5	65/60	No
I5	Industrial	46.7	65/60	No
I6	Industrial	25.2	65/60	No
I7	Industrial	46.7	65/60	No
I8	Industrial	45.6	65/60	No

Source: CadnaA

¹ Noise standard per City Municipal Code Tables 20.300-4 and 20.300-5.

² City Municipal Code Tables 20.300-4 does not contain standards for schools or daycare facilities, residential standards assumed.

³ Receivers affected by truck pass-by events, approximately 2 cumulative minutes per hour, 10 dBA increase applied to standard per City Municipal Code Tables 20.300-5.

dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; L_{EQ} = time-averaged noise level

Receivers C1 and C2 are at the rear commercial/retail building façade near the project site eastern property line. Modeling indicates these receivers are affected primarily by truck pass-by events for trucks entering and exiting the project site and traveling to Building 3 (the furthest north on the project site). Truck pass-by events along the project's eastern property line are estimated to be a maximum of one minute for each event and up to two events in the peak hour for a total of up to two minutes in the peak hour. Therefore, per City Municipal Code Section 20.300.070 (E) and Table 20.300-5, the commercial noise standard is increased by 10 dBA for receivers C1 and C2. City Municipal Code Section 20.300.070 (E) and Table 20.300-4 do not contain noise standards for schools or daycare facilities. Therefore, the most restrictive noise standard (for residential land uses) was assumed for the daycare receivers D1 and D2. As shown in Table 9, the calculated noise from project on-site building HVAC and truck/loading dock noise would not exceed the City daytime or nighttime standards for any modeled receivers.

4.1.1.4 Operational Off-site Transportation Noise

The project would generate vehicular traffic along nearby roadways. As described in Section 3.2.2 above, TNM was used to calculate the peak p.m. hour noise for the Existing (year 2024), Existing (year 2024) plus Project, Near-Term Cumulative (year 2025), and Near-Term Cumulative (year 2025) plus Project conditions along project-affected roadways. As noted in Section 3.2.2, traffic noise levels presented in this analysis are based on traffic volumes provided in the project's LTA and cumulative traffic volume represents existing conditions plus anticipated increases in traffic due to cumulative projects identified in the area for 2025 (LLG 2024). The off-site roadway modeling represents a conservative analysis that does not consider topography or attenuation provided by existing structures. The results of the analysis for the Existing and Existing + Project conditions are shown in Table 10, *Existing (Year 2024) Off-Site Traffic Noise Levels*. The results of the analysis for the Cumulative and Cumulative + Project conditions are shown in Table 11, *Near-Term Cumulative (Year 2025) Off-Site Traffic Noise Levels*.

Table 10
EXISTING (YEAR 2024) OFF-SITE TRAFFIC NOISE LEVELS

Roadway Segment	Distance to Nearest NSLU (feet)	Existing (CNEL)	Existing + Project (CNEL)	Increase (CNEL)
Mulberry Drive				
East Mission Road to Borden Road	65	69.1	69.1	<0.1
East Mission Road				
San Marcos Boulevard to Project	90	69.3	69.5	0.2
Project to Mulberry Drive	90 ¹	69.3	69.6	0.3
Mulberry Drive to Woodland Parkway	65	70.4	70.6	0.2
Woodland Parkway				
East Mission Road to Rancheros Drive	75 ¹	66.9	67.1	0.2
Rancheros Drive to Barham Drive	55 ¹	69.8	69.9	0.1

Source: TNM.

¹ No NSLU along this roadway segment, distance and noise level shown for nearest commercial building.

NSLU = noise sensitive land use; CNEL = Community Noise Equivalent Level in A-weighted decibels.

Table 11
NEAR-TERM CUMULATIVE (YEAR 2025) OFF-SITE TRAFFIC NOISE LEVELS

Roadway Segment	Distance to Nearest NSLU (feet)	Cumulative (CNEL)	Cumulative + Project (CNEL)	Increase (CNEL)
Mulberry Drive				
East Mission Road to Borden Road	65	69.3	69.3	<0.1
East Mission Road				
San Marcos Boulevard to Project	90	69.5	69.7	0.2
Project to Mulberry Drive	90 ¹	69.5	69.8	0.3
Mulberry Drive to Woodland Parkway	65	70.7	70.9	0.2
Woodland Parkway				
East Mission Road to Rancheros Drive	75 ¹	67.1	67.3	0.2
Rancheros Drive to Barham Drive	55 ¹	69.9	70.0	0.1

Source: TNM.

¹ No NSLU along this roadway segment, distance and noise level shown for nearest commercial building.

NSLU = noise sensitive land use; CNEL = Community Noise Equivalent Level in A-weighted decibels.

As shown in Tables 10 and 11, the maximum increase in traffic noise because of the project would be 0.3 dBA and would not exceed the standard of a 3 dBA increase. The increase in ambient traffic noise along project-affected road segments would not be perceptible to the human ear.

4.1.2 Significance of Impacts

The calculated one-hour project construction equipment noise levels would be less than the San Diego County eight-hour average limit of 75 dBA measured at nearby NSLUs. Project construction haul trips would not result in a perceptible increase in ambient traffic noise levels. The calculated project operational noise from on-site building HVAC systems and truck/loading docks would not exceed the City daytime or nighttime standards for the receiving land uses. The increase in traffic noise due to the addition of project traffic to City streets would be less than 3 dBA for all project-affected road segments and would not be perceptible to the human ear. Therefore, the project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project exceeding standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The impact would be less than significant.

4.1.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.1.4 Significance After Mitigation

The project would not result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project exceeding standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The impact would be less than significant.

4.2 THRESHOLD 2: GROUND-BORNE VIBRATION

Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

4.2.1 Construction Vibration

The most prominent source of vibration anticipated during general project construction activities would be a vibratory roller used for soil and/or pavement compaction. Other construction equipment anticipated to be required for project construction would have lower vibration levels; therefore, this analysis focuses on the potential effects of vibratory roller use. Based on the limits of proposed pavement, a vibratory roller could be used as close as 8 feet from the nearest commercial structure to the east and 30 feet from the closest off-site residential structure to the north or from the closest industrial/commercial structure to the west. According to Caltrans, a vibratory roller creates a PPV of 0.210 in/sec at 25 feet (Caltrans 2020). A vibratory roller would create a PPV of 0.735 in/sec at 8 feet and a PPV of 0.172 in/sec at 30 feet.¹

At 30 feet, this vibration level would be more than what is considered a “distinctly perceptible” level for humans of 0.035 in/sec PPV, and the Caltrans threshold for vibrations impacting buildings where people normally sleep. Per City Ordinance Section 10.24.020, construction noise is prohibited except Monday

¹ Equipment PPV = Reference PPV * (25/D)ⁿ (in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013b.

through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays between the hours of 8:00 a.m. to 5:00 p.m. Because the use of a vibratory roller would be intermittent and temporary and would cease completely once project construction is completed, and because construction activity would be limited to daytime hours, the use of rollers would not result in excessive ground-borne vibrations affecting nearby residents.

The calculated 0.172 in/sec PPV from rollers used in project construction at 30 feet from nearby structures would not exceed the Caltrans criteria of 0.4 in/sec PPV for damage to buildings in good repair with gypsum board walls, such as the residential buildings north of the project site and the commercial/industrial buildings east and west of the project site. However, at the nearest commercial building to the east, the calculated 0.735 in/sec PPV from a roller used at 8 feet would exceed the FTA criteria of 0.4 in/sec PPV. Once the roller reaches 15 feet from the adjacent building, vibration levels would be below the 0.4 in/sec PPV threshold.

4.2.2 Operational Vibration

Land uses that may generate substantial ground-borne operational vibrations include heavy industrial or mining operations that require the use of vibratory equipment. The project would not include equipment that would generate substantial vibration.

4.2.3 Significance of Impacts

Although a vibratory roller may be perceptible to nearby human receptors, temporary vibrations from project construction would be prohibited at night and would not affect sleep at nearby NSLUs. Temporary vibrations from project construction would not exceed the Caltrans damage criteria for buildings in good repair with gypsum board walls at residential buildings but could exceed this damage criteria when operating within 15 feet of the commercial building to the east. Long-term operation of the project would not be a source of substantial ground-borne vibrations. The impact would be potentially significant for construction and less than significant for operations.

4.2.4 Mitigation Framework

NOI-1 Construction Vibration. The applicant or designated contractor shall ensure all vibratory rollers or other vibratory equipment are used in static mode only (no vibrations) when operating within 15 feet of an offsite building. The City shall ensure these restrictions are reflected on applicable construction documents before issuance of a construction permit.

4.2.5 Significance After Mitigation

At 15 feet, a vibratory roller is estimated to generate a PPV of 0.368 in/sec, below the applicable building damage criteria. Therefore, with implementation of mitigation measure NOI-1, the project would not result in the generation of excessive ground-borne vibration levels, and the impact would be less than significant.

4.3 THRESHOLD 3: AIRCRAFT NOISE

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

4.3.1 Impact Analysis

The closest airport or private airstrip to the project site is the McClellan Palomar Airport approximately seven miles west of the project site. The project site is not within the McClellan Palomar Airport influence area or the airport 60 CNEL noise contour (San Diego County Airport Land Use Commission 2011). Therefore, the project would not expose people working on the project site to excessive noise from aircraft or airport operations.

4.3.2 Significance of Impacts

The project would not expose people working on the project site to excessive noise from aircraft or airport operations, and the impact would be less than significant.

4.3.3 Mitigation Framework

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.3.4 Significance After Mitigation

The project would not expose people working on the project site to excessive noise from aircraft or airport operations, and the impact would be less than significant.

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Appendix A

HVAC Sound Data

50PG03-28

Ultra High Efficiency Single Package Electric Cooling with Optional
Electric Heat Commercial Rooftop Units with PURON® (R-410A)
Refrigerant, Optional EnergyX™ (Energy Recovery Ventilator)



Turn to the Experts.™

Product Data



EnergyX model shown



Operation Air Quantity Limits

50PG03-16 Units

UNIT 50PG	COOLING (cfm)		HEATING (cfm) ELECTRIC HEAT	
	Min	Max	Min	Max
03	600	1000	600	1000
04	900	1500	900	1500
05	1200	2000	1200	2000
06	1500	2500	1500	2500
07	1800	3000	1800	3000
08	2250	3750	2250	3750
09	2550	4250	2550	4250
12	3000	5000	3000	5000
14	3750	6250	3750	6250
16	4500	7500	4500	7500

50PG20-28 Units

50PG	COOLING		ELECTRIC HEAT	ELECTRIC HEAT (Vertical)	ELECTRIC HEAT (Horizontal)
	Minimum Cfm	Maximum Cfm		Minimum Cfm	Minimum Cfm
20	5000	9,000	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750
24	5500	10,000	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750
28	6500	12,000	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750

Outdoor Sound Power (Total Unit)

UNIT 50PG	A-WEIGHTED* (dB)	OCTAVE BAND LEVELS dB							
		63	125	250	500	1000	2000	4000	8000
03	75.0	82.6	79.9	75.7	73.3	70.0	64.3	58.4	50.5
04	73.2	79.8	77.2	74.1	70.1	68.0	63.6	58.4	51.9
05	71.9	79.7	79.6	72.6	69.6	66.0	61.4	56.4	48.5
06	78.5	82.2	82.6	79.5	75.7	73.9	68.6	64.0	56.3
07	78.5	87.5	83.0	78.5	76.3	73.8	68.4	63.8	56.5
08	80.0	91.7	83.6	81.0	77.9	75.0	69.9	66.0	59.3
09	79.9	89.1	82.7	80.0	77.7	75.0	70.2	66.3	57.8
12	80.0	90.4	83.1	80.9	77.8	75.2	70.0	66.1	57.6
14	83.3	86.4	85.9	85.3	81.8	78.2	72.2	67.9	59.9
16	84.0	90.3	85.2	83.5	81.1	79.0	73.7	70.5	65.4
20	81.7	90.2	84.8	80.7	79.0	77.6	71.4	66.7	60.7
24	84.9	90.0	86.3	83.6	82.9	80.3	74.9	71.4	66.5
28	84.9	90.0	86.3	83.6	82.9	80.3	74.9	71.4	66.5

LEGEND

db --- Decibel

*Sound Rating ARI or Tone Adjusted, A---Weighted Sound Power Level in dB. For sizes 03---12, the sound rating is in accordance with ARI Standard 270---1995. For sizes 14---28, the sound rating is in accordance with ARI 370---2001.

**Outdoor Sound Power (Total Unit)
with High CFM EnergyX**

UNIT 50PG w/ERV	A - WEIGHTED* (dB)	OCTAVE BAND LEVELS dB							
		63	125	250	500	1000	2000	4000	8000
03	83.0	82.8	81.4	79.7	78.1	77.9	76.5	72.5	70.1
04	82.7	80.2	79.6	79.1	77.3	77.6	76.5	72.5	70.1
05	82.6	80.1	81.1	78.8	77.2	77.4	76.4	72.4	70.0
06	83.8	82.4	83.4	81.6	79.1	78.8	76.9	72.9	70.2
07	83.8	87.6	83.8	81.1	79.3	78.8	76.9	72.9	70.2
08	87.3	92.0	86.8	84.5	82.4	81.8	80.5	78.0	74.2
09	87.2	89.6	86.4	84.1	82.4	81.8	80.5	78.1	74.2
12	87.3	90.8	86.5	84.5	82.4	81.8	80.5	78.0	74.2
14	88.2	87.2	88.0	87.0	84.2	82.7	80.8	78.2	74.3
16	91.4	93.2	92.8	88.2	86.3	85.5	84.4	83.4	78.4
20	91.2	93.1	92.7	87.4	85.8	85.2	84.2	83.3	78.3
24	91.7	93.0	93.0	88.2	86.9	85.8	84.5	83.5	78.5
28	91.7	93.0	93.0	88.2	86.9	85.8	84.5	83.5	78.5

LEGEND

dB --- Decibel

* Sound Rating ARI or tone Adjusted, A---Weighted Sound Power Level in dB. For sizes 03---12, the sound rating is in accordance with ARI Standard 270---1995. For sizes 14---28, the sound rating is in accordance with ARI 370---2001.

PHYSICAL DATA

50PG03 -07

BASE UNIT 50PG		03	04	05	06	07
NOMINAL CAPACITY (Tons)		2	3	4	5	6
OPERATING WEIGHT (lb)						
Unit*		704	704	775	829	874
Economizer						
Vertical		40	40	40	40	40
Horizontal		50	50	50	50	50
Humidi-MiZert Adaptive Dehumidification System		22	22	31	27	26
Roof Curb						
14-in.		122	122	122	122	122
24-in.		184	184	184	184	184
COMPRESSOR				Fully Hermetic Scroll		
Quantity		1	1	1	1	1
Oil Type				Copeland 3MA		
Number of Refrigerant Circuits		1	1	1	1	1
Oil (oz)		38	42	42	66	56
REFRIGERANT TYPE				R-410A (Puron® Refrigerant)		
Expansion Device		TXV	TXV	TXV	TXV	TXV
Operating Charge (lb) — Standard Unit		7.3	9.0	15.7	16.6	19.0
Operating Charge (lb) — Unit with Humidi-MiZer System		11.75	13.50	25.00	22.00	22.70
CONDENSER COIL				Enhanced Copper Tubes, Aluminum Lanced Fins		
Condenser A (Outer)						
Rows...Fins/in.		1...17	1...17	2...17	2...17	2...17
Face Area (sq ft)		12.6	12.6	12.6	12.6	12.6
Condenser B (Inner)						
Rows...Fins/in.		—	1...17	2...17	2...17	2...17
Face Area (sq ft)		—	12.6	12.6	12.6	12.6
HUMIDI-MIZER COIL				Enhanced Copper Tubes, Aluminum Lanced Fins		
Rows...Fins/in.		1...17	1...17	1...17	1...17	1...17
Face Area (sq ft)		6.4	6.4	9.3	9.3	9.3
CONDENSER FAN				Propeller		
Quantity...Diameter (in.)		1...24	1...24	1...24	1...24	1...24
Nominal Cfm (Total, all fans)		3500	3500	3500	4500	4500
Motor Hp		1/8	1/8	1/8	1/4	1/4
Nominal Rpm — High Speed		825	825	825	1100	1100
Nominal Rpm — Low Speed		300	300	300	300	300
EVAPORATOR COIL				Enhanced Copper Tubes, Aluminum Double-Wavy Fins, Face Split		
Rows...Fins/in.		2...15	2...15	2...15	3...15	4...15
Face Area (sq ft)		9.3	9.3	9.3	9.3	9.3
EVAPORATOR FAN				Centrifugal Type, Belt Drive		
Quantity...Size (in.)		1...12 x 9	1...12 x 9	1...12 x 9	1...12 x 9	1...12 x 9
Type Drive		1...12 x 9	1...12 x 9	1...12 x 9	1...12 x 9	1...12 x 9
Low		Belt	Belt	Belt	Belt	Belt
High		Belt	Belt	Belt	Belt	Belt
Nominal Cfm		800	1200	1600	2000	2400
Maximum Continuous Bhp		0.85	0.85	0.85	0.85/2.40†	2.40
Motor Nominal Rpm		0.85	0.85	1.60/2.40†	1.60/2.40†	3.10
Motor Frame Size		1620	1620	1620	1725	1725
Fan Rpm Range		48Y	48Y	48Y	56Y	56Y
Low		48Y	48Y	56Y	56Y	56Y
High		482-736	482-736	596-910	690-978	796-1128
Motor Bearing Type		656-1001	796-1128	828-1173	929-1261	1150-1438
Maximum Fan Rpm		Ball	Ball	Ball	Ball	Ball
Motor Pulley Pitch Diameter Range (in.)		2000	2000	2000	2000	2000
Low		1.9-2.9	1.9-2.9	1.9-2.9	2.4-3.4	2.4-3.4
High		1.9-2.9	2.4-3.4	2.4-3.4	2.8-3.8	4.0-5.0
Fan Pulley Pitch Diameter (in.)		Low	6.8	5.5	6.0	5.2
High		5.0	5.2	5.0	5.2	6.0
Nominal Motor Shaft Diameter (in.)		Low	1/2	1/2	5/8	5/8
High		1/2	1/2	5/8	5/8	7/8
Belt...Pitch Length (in.)		Low	49.3	49.3	49.3	49.3
High		49.3	49.3	49.3	49.3	52.3
Belt...Type		Low	AX	AX	AX	AX
High		AX	AX	AX	AX	AX
Pulley Center Line Distance Min. (in.)		Low	16.2	16.2	16.2	16.2
High		16.2	16.2	16.2	16.2	16.2
Pulley Center Line Distance Max. (in.)		Low	20.2	20.2	20.2	20.2
High		20.2	20.2	20.2	20.2	20.2
Speed Change per Full Turn of Movable Pulley Flange (rpm)		Low	48	59	58	66
High		65	62	69	66	58
Movable Pulley Maximum Full Turns from Closed Position		Low	5	5	5	5
High		5	5	5	5	5
Factory Pulley Setting (rpm)		Low	482	596	690	796
High		656	796	828	929	1150
Fan Shaft Diameter at Pulley (in.)		3/4	3/4	3/4	3/4	3/4
HIGH-PRESSURE SWITCH (psig)						
Cutout		660 ± 10	660 ± 10	660 ± 10	660 ± 10	660 ± 10
Reset (Auto.)		505 ± 20	505 ± 20	505 ± 20	505 ± 20	505 ± 20
RETURN-AIR FILTERS				Throwaway		
Quantity...Size (in.)		4...16 x 20 x 2	4...16 x 20 x 2	4...16 x 20 x 2	4...16 x 20 x 2	4...16 x 20 x 2

LEGEND

TXV --- Thermostatic Expansion Valve

*Aluminum evaporator coil/aluminum condenser coil.

{ Single phase/three phase

Appendix B

RCNM Output

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/7/2024

Case Descriptic San Marco Industrial Demoltion

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Residence	Commercial	56	56	56

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	500	0
Dozer	No	40		81.7	500	0

Results

Equipment	Calculated (dBA)		
	*Lmax	Leq	Day Lmax
Backhoe	57.6	53.6	N/A
Dozer	61.7	57.7	N/A
Total	61.7	59.1	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/7/2024

Case Descriptio San Marco Industrial Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Residence	Commercial	56	56	56

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	200	0
Grader	No	40	85		200	0
Scraper	No	40		83.6	200	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Dozer	69.6	65.6
Grader	73	69
Scraper	71.5	67.6
Total	73	72.4

*Calculated Lmax is the Loudest value.

Appendix C

CadnaA Output

San Marcos Industrial Park CadnaA Local Library Table

Name	ID	Type	1/3 Oktave Spectrum (dB)										
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin
Carrier 50PG HVAC	HVAC	Li		90.4	83.1	80.9	77.8	75.2	70	66.1	57.6	80.2	91.9
Backup Alarm	ALRM	Li						106.6				106.6	106.6
Truck Idling	IDLE	Li						96				96	96

San Marcos Industrial Park
CadnaA Point Source Table

Name	Sel.	M.	ID	Result. PWL			Lw / Li		Direct.	Height		Coordinates		
				Day	Evening	Night	Type	Value				X	Y	Z
				(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
B1 HVAC			HVAC	80.2	80.2	80.2	Lw	HVAC	(none)	1	g	485867.6	3667370.3	193.76
B2 HVAC			HVAC	80.2	80.2	80.2	Lw	HVAC	(none)	1	g	485896.4	3667411.38	195.46
B3 HVAC			HVAC	80.2	80.2	80.2	Lw	HVAC	(none)	1	g	485940.19	3667531.64	196.34
Truck Idling B1-1			TRID	96	96	96	Lw	IDLE	(none)	2	r	485856.35	3667432.48	187.89
Truck Idling B1-2			TRID	96	96	96	Lw	IDLE	(none)	2	r	485853.18	3667443.75	187.84
Truck Idling B1-3			TRID	96	96	96	Lw	IDLE	(none)	2	r	485851.03	3667451.5	187.85
Truck Idling B2-1			TRID	96	96	96	Lw	IDLE	(none)	2	r	485879.68	3667446.84	187.93
Truck Idling B2-2			TRID	96	96	96	Lw	IDLE	(none)	2	r	485875.03	3667462.03	188.22
Truck Idling B3-1			TRID	96	96	96	Lw	IDLE	(none)	2	r	485903.57	3667517.25	189.09

San Marcos Industrial Park
CadnaA Line Source Table

Name	Sel.	M.	ID	Result. PWL			Result. PWL'			Lw / Li		Operating Time			K0	Freq.	Direct.
				Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night			
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(dB)	(Hz)	
Truck Backup Alarm B1			TRAL1	106.6	106.6	106.6	91.7	91.7	91.7	Lw	ALRM	1.5	0	0	0		(none)
Truck Backup Alarm B2			TRAL2	106.6	106.6	106.6	92	92	92	Lw	ALRM	1	0	0	0		(none)
Truck Backup Alarm B3			TRAL3	106.6	106.6	106.6	93.3	93.3	93.3	Lw	ALRM	0.5	0	0	0		(none)

San Marcos Industrial Park
CadnaA Road Source Table

Name	Sel.	M.	ID	Lme			Count Data DTV	Str.class.	exact Count Data			p (%)			Speed Limit		SCS Dist.	Surface Dstro (dB)	Type	Gradient (%)	Mult. Drefl (dB)	Reflection Hbuild (m)	Dist. (m)	
				Day	Evening	Night			M	Day	Evening	Night	Day	Evening	Night	Auto (km/h)								Truck (km/h)
				(dBA)	(dBA)	(dBA)																		
Truck Entry B1			TREN1	50.5	0	0			3	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Entry B2			TREN2	48.7	0	0			2	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Entry B3			TREN2	45.7	0	0			1	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Exit B1			TREX1	50.5	0	0			3	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Exit B2			TREX2	48.7	0	0			2	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Exit B3			TREX3	45.7	0	0			1	0	0	100	0	0	16	w2.44	0	1	0	0				
Truck Reversing B1			TRRV1	53.8	0	0			3	0	0	100	0	0	8	w2.44	0	1	0	0				
Truck Reversing B2			TRRV2	52	0	0			2	0	0	100	0	0	8	w2.44	0	1	0	0				
Truck Reversing B3			TRRV3	49	0	0			1	0	0	100	0	0	8	w2.44	0	1	0	0				

San Marcos Industrial Park
CadnaA Receiver Table

Name	Sel.	M.	ID	Level Lr		Limit. Value		Land Use		Noise Type	Height (m)	Coordinates			
				Day (dBA)	Night (dBA)	Day (dBA)	Night (dBA)	Type	Auto			X (m)	Y (m)	Z (m)	
R1			R1	34.4	23.2	0	0		x	Total	1.52	r	485941.32	3667610.77	189.63
R2			R2	23.9	16.7	0	0		x	Total	1.52	r	485917.99	3667600.78	188.79
R3			R3	26.2	20	0	0		x	Total	1.52	r	485905.71	3667602.41	191.61
R4			R4	29.1	20.8	0	0		x	Total	1.52	r	485896.04	3667602.56	192.06
R5			R5	31.5	20	0	0		x	Total	1.52	r	485883.39	3667590.69	192.32
R6			R6	44.6	28.8	0	0		x	Total	1.52	r	485847.71	3667579.13	199.79
R7			R7	41.3	27.3	0	0		x	Total	1.52	r	485828.05	3667586.04	201.39
D1			D1	37.1	23.8	0	0		x	Total	1.52	r	485964.02	3667608.41	188.67
D2			D2	35.8	22.9	0	0		x	Total	1.52	r	485998.93	3667630	189.33
C1			C1	53.8	27.6	0	0		x	Total	1.52	r	485960.43	3667381.07	187.01
C2			C2	55.3	23.6	0	0		x	Total	1.52	r	485960.71	3667435.73	187.45
C3			C3	41.5	22.2	0	0		x	Total	1.52	r	485805.29	3667330.09	185.03
I1			I1	47.4	27.1	0	0		x	Total	1.52	r	485987.39	3667524.93	188.06
I2			I2	43.4	26	0	0		x	Total	1.52	r	485997.8	3667568.25	189.24
I3			I3	39.2	25.3	0	0		x	Total	1.52	r	485997.7	3667584.11	189.28
I4			I4	41.5	22.5	0	0		x	Total	1.52	r	485761.21	3667496.1	191.11
I5			I5	46.7	21.4	0	0		x	Total	1.52	r	485774.16	3667455.24	189.52
I6			I6	25.2	17.9	0	0		x	Total	1.52	r	485794.53	3667385.1	188.06
I7			I7	46.7	25.7	0	0		x	Total	1.52	r	485877	3667290.43	185.59
I8			I8	45.6	24.7	0	0		x	Total	1.52	r	485987.57	3667324.9	186.65