Noise Analysis for the Santa Fe Flores Project San Marcos, California

Prepared for

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TABLE OF CONTENTS

FIGURES

TABLE OF CONTENTS (cont.)

TABLES

ATTACHMENTS

Acronyms and Abbreviations

ADT	average daily traffic
CALGreen	California Green Building Standards
Caltrans	California Department of Transportation
CCR	California Code of Regulations
City	City of San Marcos
CNEL	community noise equivalent level
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
HVAC	heating, ventilating, and air conditioning
L_{90}	noise level exceeded 90 percent of the time
L_{eq}	one-hour equivalent noise level
L_{max}	maximum noise level
LOS	Level of Service
L_{pw}	sound power level
project	Santa Fe Flores Project

Executive Summary

The Santa Fe Flores Project (project) is located in the city of San Marcos at 2972 and 2982 South Santa Fe Avenue adjacent to Las Flores Drive. The 2.5-acre project site has been previously graded and is undeveloped, and is currently designated Commercial and Light Industrial in the City of San Marcos (City) General Plan and zoned as Commercial and Light Industrial. The project would require a General Plan Amendment and Rezone to Multi-family Residential to allow the development of 50 multi-family residential units.

This report discusses potential noise impacts from the construction and operation of the project. As part of this assessment, noise levels due to vehicle traffic were calculated and evaluated against City noise and land use compatibility guidelines. In addition to compatibility, the potential for noise to impact adjacent uses from future on-site sources and construction activity was assessed. A summary of the findings is provided below.

Construction Noise

Construction activity is regulated by the City Municipal Code, which limits noise by restricting construction activities to hours unlikely to impact the community. Noise associated with the grading, building, and paving for the project would potentially result in short-term impacts to surrounding residential properties. Construction noise levels would range from 57 to 74 A-weighted decibels equivalent noise level [dB(A) L_{eq}] at the adjacent properties. Construction activities would generally occur over the period between 7:00 a.m. and 6:00 p.m. on weekdays. Although the existing adjacent uses would be exposed to construction noise levels that may be heard above ambient conditions, the exposure would be temporary and would not exceed 75 dB(A) L_{eq}. As construction activities associated with the project would comply with Section 10.24.020 (b)(9) of the City Municipal Code, temporary increases in noise levels from construction activities would be less than significant.

Traffic Noise

The additional vehicle trips associated with the project would increase noise levels on nearby roadways. A noise increase of 3 dB or more would be considered significant because 3 dB is the level at which an increase in noise is perceptible to a person. However, the project would not generate enough trips to result in a direct or cumulative noise increase of more than 3 dB. Therefore, the project would result in less than significant direct and cumulative impacts related to traffic noise.

The main source of noise at the project site is vehicle traffic on South Santa Fe Avenue and Las Flores Drive as well as Sprinters on the adjacent rail line. Exterior noise levels were modeled at the project site to determine compatibility with City standards. The applicable standards for multi-family uses are an exterior noise level of 65 community noise equivalent level (CNEL) and an interior noise level of 45 CNEL. The project's exterior useable spaces include the patios and the open play lawn, tot lot, and seating areas on the western side of the proposed buildings. As calculated in this analysis, exterior noise levels are projected to range from 45 to 63 CNEL at the outdoor use areas and building

façade. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL. Exterior noise impacts would be less than significant.

The interior noise level standard is 45 CNEL. Interior noise levels can be reduced through standard construction techniques. When windows are closed, standard construction techniques provide various exterior-to-interior noise level reductions depending on the type of structure and window. Standard light-frame construction would reduce exterior to interior noise levels by at least 20 dB (Federal Highway Administration 2011). Therefore, interior noise levels would be 43 CNEL or less, and are not projected to exceed the interior noise level standard of 45 CNEL. Interior noise impacts would be less than significant.

On-site Generated Noise

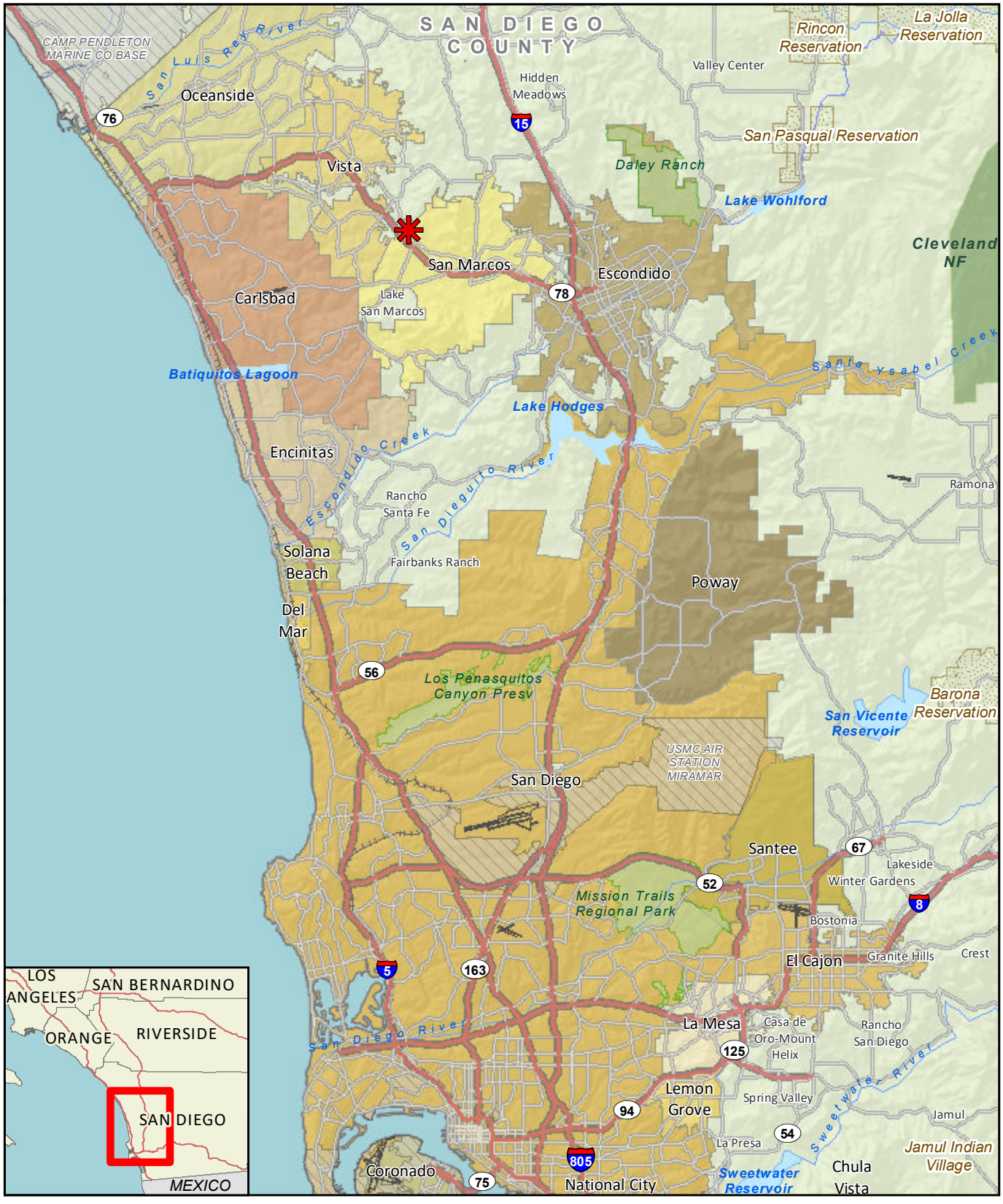
The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any residential use, such as vehicles arriving and leaving, children at play, and landscape maintenance machinery. None of these noise sources are anticipated to violate the Municipal Code. Rooftop heating, ventilating, and air conditioning noise levels were modeled at the property line adjacent properties. As calculated in this analysis, HVAC noise levels would range from 33 to 44 dB(A) L_{eq} at the adjacent properties. Noise levels would not exceed the applicable Noise Ordinance limits at the property lines.

1.0 Introduction

1.1 Project Description

The Santa Fe Flores Project (project) is located in the city of San Marcos at 2972 and 2982 South Santa Fe Avenue adjacent to Las Flores Drive on assessor parcel numbers 217-161-1800 and 217-161-1900. Figure 1 shows the regional location. The 2.5-acre project site has been previously graded and is undeveloped, and is currently designated Commercial and Light Industrial in the City of San Marcos (City) General Plan and zoned as Commercial and Light Industrial. Figure 2 shows an aerial photograph of the project site and vicinity.

The project would require a General Plan Amendment and Rezone to Multi-family Residential to allow the development of 50 multi-family residential units in one building that would be three to four stories in height. The project would also include a 1,000-square-foot roof deck for fitness and leisure, a 1,170-square-foot ground floor leasing and amenity center, and 120-square-foot ground floor fire command center. Vehicle parking would include a total of 107 surface parking spaces and bicycle parking would include a total of 11 lockers or bike storage rooms located on the upper and lower levels. Figure 3 shows the proposed site plan.



Project Location

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FIGURE 1
Regional Location

Image Source: NearMap (flown January 2022)

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FIGURE 2
Project Location on Aerial Photograph

Map Source: Pasco Laret Suiter & Associates

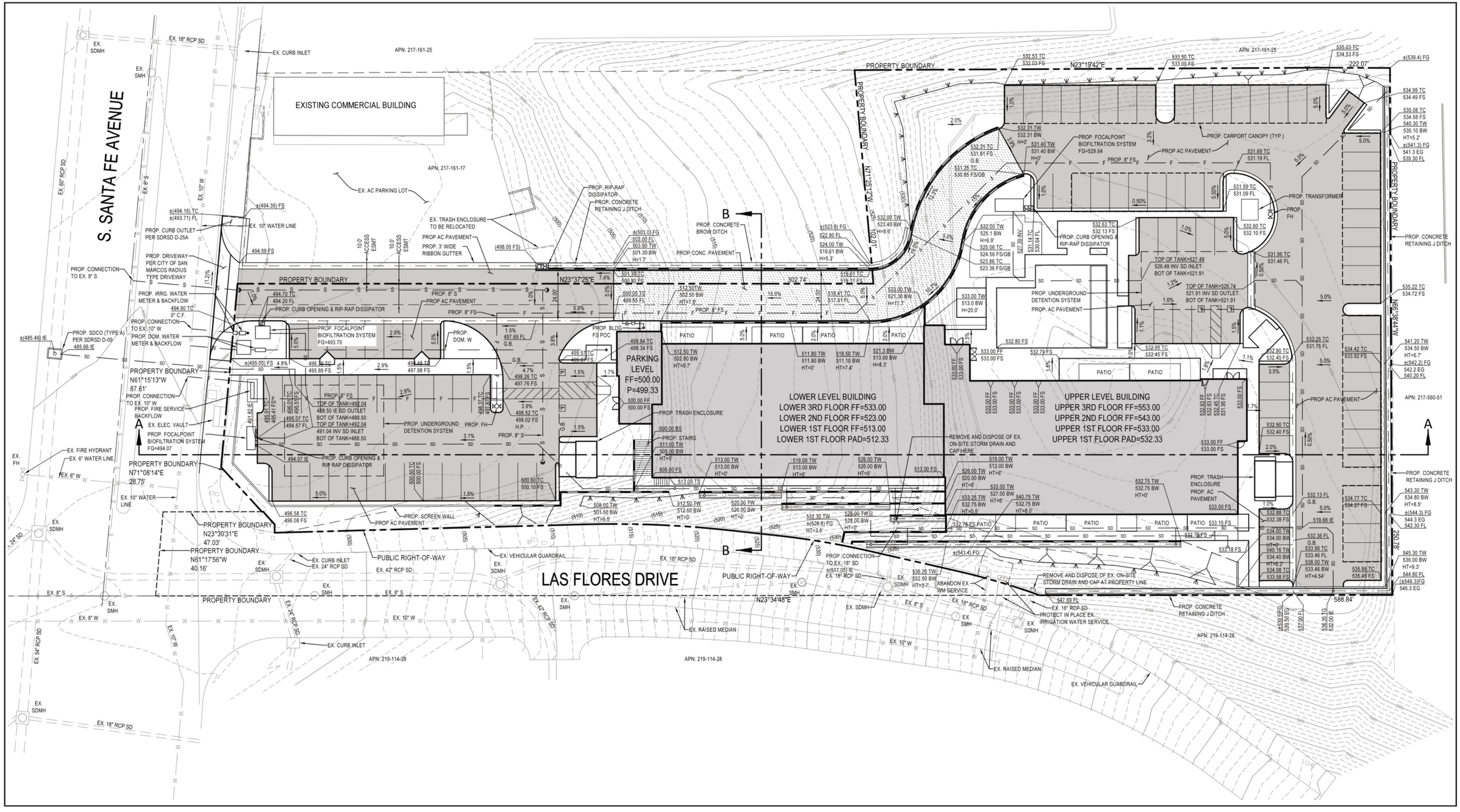

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FIGURE 3
Site Plan

1.2 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease. However, human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 A-weighted dB [dB(A)] barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation 2013).

In technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused, are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone, the sound pressure level. Sound measurement instruments only measure sound pressure, and limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).

1.2.1 Descriptors

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the equivalent noise level (L_{eq}) and the community noise equivalent level (CNEL). The L_{eq} is the equivalent steady-state noise level in a stated period of time that is calculated by averaging the acoustic energy over a time period; when no period is specified, a 1-hour period is assumed.

The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and a 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

1.2.2 Propagation

Sound from a localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) provides an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would drop off at 7.5 dB(A) per doubling of distance.

2.0 Applicable Noise Standards

2.1 General Plan

The Noise Element of the City General Plan provides land use compatibility guidelines to ensure that new developments are sited, designed, and constructed in such a manner that ambient noise levels would not create an unacceptable noise environment for the occupants and patrons of the new development. Table 1 provides the interior and exterior noise guidelines for various types of uses and developments.

The project proposes multi-family residential uses. As shown in Table 1, the applicable standards for multi-family uses are an exterior noise level of 65 CNEL and an interior noise level of 45 CNEL. The exterior noise level standard is applicable at the proposed exterior use areas. For the proposed project, this includes patios and the open play lawn, tot lot, and seating areas on the western side of the proposed buildings.

Table 1 Interior and Exterior Noise Guidelines		
Land Use	Maximum Noise Level (CNEL)	
	Interior[1]	Exterior[2,3]
Residential – single-family, mobile homes, or age-restricted housing	45	60
Residential – multi-family residences or mixed use	45	65
Lodging – hotels, motels	45	65
Schools, churches, hospitals, residential care facility, child-care facilities	50	65
Passive recreational parks, nature preserves, contemplative spaces, cemeteries	--	65
Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation	--	65
Office/professional, government, medical/dental, commercial, retail, laboratories	50	65
Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair	--	65

SOURCE: City of San Marcos General Plan Update, Noise Element 2013.
CNEL = community noise equivalent level.
[1]Applies only to interior habitable rooms.
[2]Exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
[3]For single-family detached dwelling units, "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.

2.2 Municipal Code

2.2.1 Title 10, Chapter 10.24 – Construction

Section 10.24.020 (b)(9) of the City Municipal Code identifies permissible hours for general construction activities. Excluding City holidays, construction may occur weekdays from 7:00 a.m. to 6:00 p.m. or Saturdays from 8:00 a.m. to 5:00 p.m. Grading is often the loudest phase of construction. Section 17.32.180 restricts grading and earthworks activities to between the hours of 7:00 a.m. and 4:30 p.m., Monday through Friday.

2.2.2 Title 20 – Zoning Ordinance

City Municipal Code Title 20 – Zoning Ordinance contains General Development Standards. Performance standards in Section 20.300.070 (f) set restrictions on noise levels by zoning. No person shall create or allow the creation of exterior noise that causes the noise level to exceed the noise standards shown in Table 2.

Table 2 Municipal Code Property Line Noise Standards		
Zone	Time	Allowable Property Line Noise Level [dB(A) L_{eq}]
Single-Family Residential (A, R-1, R-2)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 50
Multi-Family Residential (R-3)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 55
Commercial (C, O-P, SR)	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 55
Industrial	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 60
SOURCE: Section 20.300.070(f) Table 20.300-4, San Marcos Municipal Code Title 20 – Zoning Code dB(A) L_{eq} = A-weighted decibels equivalent noise level		

The project site is surrounded by single-family residential uses to the northeast and southeast, multi-family residential uses to the east, a mobile home park to the south, a commercial use to the southwest, and industrial uses to the west and north.

2.3 California Green Building Standards Code – Environmental Comfort

Interior noise levels for habitable rooms are regulated also by Title 24 of the California Code of Regulations (CCR) California Noise Insulation Standards. Title 24, Chapter 12, Section 1206.4, of the 2019 California Building Code requires that interior noise levels attributable to exterior sources not exceed 45 CNEL in any habitable room (CCR 2019). A habitable room is a room used for living, sleeping, eating, or cooking. Bathrooms, closets, hallways, utility spaces, and similar areas are not considered habitable rooms for this regulation (24 CCR, Chapter 12, Section 1206.4 2019).

3.0 Existing Conditions

Existing noise levels in the vicinity of the project site were measured on March 22, 2022, using one Larson-Davis Model LxT, Type 1 Integrating Sound Level Meter, serial number 3895. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Interval Period	1 minute
Time History Period:	5 seconds

The meter was calibrated before and after each measurement. The meter was set 5 feet above the ground level for each measurement.

Noise measurements were taken to obtain typical ambient noise levels at the project site and in the vicinity. The weather was sunny and warm. Two 15-minute measurements were taken, as described

below. The measurement locations are shown on Figure 4, and detailed data is contained in Attachment 1.

Measurement 1 was located near the southern project boundary, 50 feet north of South Sante Fe Avenue. Noise levels were measured for 15 minutes. The main noise source at this location was vehicle traffic on South Santa Fe Avenue. Vehicle traffic on South Sante Fe Avenue was counted during the measurement period. The average measured noise level was 63.2 dB(A) L_{eq}.

Measurement 2 was located near the eastern project boundary, approximately 50 feet west of Las Flores Drive. Noise levels were measured for 15 minutes. The main noise source at this location was vehicle traffic on Las Flores Drive. Secondary sources of noise included vehicle traffic on South Santa Fe Avenue. Vehicle traffic on Las Flores Drive was counted during the measurement period. The average measured noise level was 57.5dB(A) L_{eq}.

Noise measurements are summarized in Table 3. Traffic counts conducted during Measurements 1 and 2 are summarized in Table 4.

Table 3
Noise Measurements

Measurement	Location	Time	Main Noise Source	L_{eq}
1	50 Feet North of S. Santa Fe Avenue	1:34 p.m. – 1:49 p.m.	Vehicle Traffic on S. Santa Fe Avenue	63.2
2	50 feet west of Las Flores Drive	1:55 p.m. – 2:10 p.m.	Vehicle traffic on Las Flores Drive	57.5

L_{90} = Noise level exceeded 90 percent of the time.
NOTE: Noise measurement data is contained in Attachment 1.

Table 4
15-minute Traffic Counts

Measurement	Roadway	Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
1	S. Santa Fe Avenue	Eastbound	78	8	0	5	0
		Westbound	71	4	1	2	0
2	Las Flores Drive	Northbound	13	0	0	0	0
		Southbound	11	0	0	0	0

4.0 Analysis Methodology

Noise level predictions and contour mapping were developed using noise modeling software, SoundPlan Essential, version 4.1 (Navcon Engineering 2018). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear.

Image Source: NearMap (flown January 2022)

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FIGURE 4
Noise Measurement Locations

4.1 Construction Noise Analysis

Project construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading, building construction, loading, unloading, and placing materials and paving. Diesel engine-driven trucks also would bring materials to the site and remove the soils from excavation.

Construction equipment with a diesel engine typically generates maximum noise levels from 70 to 95 dB(A) L_{eq} at a distance of 50 feet (Federal Highway Administration [FHWA] 2006 and 2008, Federal Transit Authority 2006). During construction, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Table 5 summarizes typical construction equipment noise levels and duty cycles.

Table 5
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt amps or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
In situ Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%

Table 5 Typical Construction Equipment Noise Levels		
Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
SOURCE: Federal Highway Administration 2006 and 2008; Federal Transit Authority 2006. dB(A) L_{eq} = A-weighted decibels average noise level		

Construction equipment would generate maximum noise levels between 70 and 95 dB(A) L_{max} at 50 feet from the source when in operation. During excavation, grading, and paving operations, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Average construction noise levels were calculated for the simultaneous operation of three common pieces of construction equipment: dozer, excavator, and loader. The usage factors were applied to the maximum noise level at 50 feet for each piece of equipment, and then noise levels were added logarithmically. Hourly average noise levels would be approximately 85 dB(A) L_{eq} at 50 feet from the center of construction activity when assessing three pieces of common construction equipment working simultaneously.

4.2 Traffic Noise Analysis

4.2.1 On-Site Traffic and Rail Noise

The SoundPLAN program uses the FHWA Traffic Noise Model algorithms and reference levels to calculate noise levels at selected receiver locations. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates. The locations of future buildings were obtained from project plans and drawings.

The main source of traffic noise at the project site is vehicle traffic on South Santa Fe Avenue and Las Flores Drive as well as Sprinters on the adjacent rail line. Future year 205 with project traffic volumes for South Santa Fe Avenue were obtained from the Traffic Impact Analysis prepared for the project (Linscott, Law and Greenspan, Engineers 2022). Future year 2050 traffic volumes for Las Flores Drive were obtained from San Diego Association of Governments (SANDAG) Series 14 traffic projections (SANDAG 2022). A vehicle classification mix of 93.0 percent automobiles, 3.0 percent medium trucks, 2.0 percent heavy trucks, 1.0 percent buses, and 1.0 percent motorcycles was modeled. Based on the field traffic counts, this classification mix is conservative.

Table 6 summarizes the traffic volumes and vehicle classification mixes for the modeled roadways.

Table 6 Modeled Vehicle Traffic Parameters								
				Vehicle Mix (percent)				
Roadway	Segment	Year 2050 Average Daily Traffic	Speed	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
S. Santa Fe Avenue	Vern Road to Las Flores Drive	22,500	45	93	3	2	1	1
	Las Flores Drive to N. Rancho Santa Fe Road	21,450	45	93	3	2	1	1
Las Flores Drive	South of S. Santa Fe Avenue	2,600	25	93	3	2	1	1
	North of S. Santa Fe Avenue	1,600	25	93	3	2	1	1

The project site is also located approximately 150 feet southwest of the Sprinter rail line. The Sprinter is a light rail commuter train operated by the North County Transit District. The east-west Sprinter rail spans 22 miles from Oceanside to Escondido. The Palomar College Station is the closest Sprinter station to the project site. The number of daytime, evening, and nighttime Sprinter trains was obtained from published schedules and is summarized in Table 7.

Table 7 Modeled Sprinter Trains			
Direction	Daytime 7:00 a.m. – 7:00 p.m.	Evening 7:00 p.m. – 10:00 p.m.	Nighttime 10:00 p.m. – 7:00 a.m.
Eastbound	88	17	22
Westbound	88	15	21
Total	176	32	43

4.2.2 Off-site Traffic Noise

Off-site traffic noise was modeled using the FHWA Traffic Noise Prediction Model algorithms and reference levels. Traffic noise levels were calculated at 50 feet from the centerline of the affected roadways to determine the noise level increase associated with the project. The model uses various input parameters, such as traffic volumes; vehicle mix, distribution, and speed.

The roadways included in the traffic impact analysis are South Santa Fe Avenue, Hollencrest Road, and North Rancho Santa Fe Road. Traffic noise levels were calculated based on the total average daily traffic volumes on each roadway segment. For modeling purposes, "hard" ground conditions were used for the analysis of future conditions, since a majority of the project area is paved and the hard site provides the most conservative impact assessment.

Existing (year 2022), near term (year 2025), and future (year 2050) traffic volumes with and without the project were obtained from the project traffic impact analysis (Linscott, Law, and Greenspan Engineers 2022). Table 8 summarizes the future traffic volumes for the area roadway segments. Modeled noise levels do not account for shielding provided by intervening barriers and structures.

Table 8 Future Vehicle Traffic Parameters							
	Average Daily Traffic						
Roadway Segment	Year 2022	Year 2022 + Project	Year 2025	Year 2025 + Project	Year 2050	Year 2050 + Project	Speed (mph)
S. Santa Fe Avenue							
Similax Road to Bosstick Boulevard	14,850	14,940	15,610	15,700	22,200	22,290	45
Bosstick Boulevard to Vern Road	16,660	16,750	17,510	17,600	22,200	22,290	45
Vern Road to Las Flores Drive	16,660	16,960	17,510	17,810	22,200	22,500	45
Las Flores Drive to N. Rancho Santa Fe Road	14,600	14,750	15,340	15,490	21,300	21,450	45
N. Rancho Santa Fe Road to N. Pacific Street	13,500	13,560	14,190	14,250	24,400	24,460	40
Hollencrest Road							
De Leone Road to Hollenbeck Road	560	590	590	620	830	860	25
N. Rancho Santa Fe Avenue							
S. Santa Fe Avenue to Capalina Road	11,730	11,820	12,330	12,420	16,800	16,890	40
mph = miles per hour SOURCE: Linscott, Law and Greenspan, Engineers, Inc. 2022.							

4.3 On-site Generated Noise Analysis

On-site noise sources on the project site after completion of construction are anticipated to be those that would be typical of any multi-family use, such as vehicles arriving and leaving, children at play, and landscape maintenance machinery. None of these noise sources are anticipated to violate the City Municipal Code or result in a substantial permanent increase in existing noise levels. However, the project would include rooftop heating, ventilation, and air conditioning (HVAC) equipment. Noise levels due to HVAC equipment were modeled and compared to City limits (see Table 2).

The HVAC equipment would be located on the roof with screened walls. It is not known at this time which manufacturer, brand, or model of unit or units will be selected for use in the project. For the purposes of this analysis, to determine what general noise levels the HVAC units would generate, it was assumed that the rooftop units would be similar to a Carrier unit with a sound power level of 75 dB(A). Noise specifications are contained in Attachment 2. All units were modeled at full capacity during the daytime and nighttime hours.

Noise levels due to on-site sources were modeled using SoundPLAN. The SoundPLAN program models noise propagation following the International Organization for Standardization method *ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors*. The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening structures.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

Noise associated with the grading, building, and paving for the project would potentially result in short-term impacts to surrounding residential properties. There are residential uses located northeast, east, southeast, and south of the project site. A variety of noise-generating equipment would be used during the construction phase of the project, such as excavators, backhoes, front-end loaders, and concrete saws, along with others. The exact number and pieces of construction equipment required are not known at this time. As discussed, average construction noise levels were calculated. Based on this analysis, hourly average noise levels would be approximately 85 dB(A) L_{eq} at 50 feet from the center of construction activity when assessing three pieces of common construction equipment working simultaneously. Construction noise is considered a point source and would attenuate at approximately 6 dB(A) for every doubling of distance. To reflect the nature of grading and construction activities, equipment was modeled as an area source distributed over the project footprint. Noise levels were modeled at a series of 18 receivers located at the adjacent uses. The results are summarized in Table 9. Modeled receiver locations and construction noise contours are shown in Figure 5. SoundPLAN data is contained in Attachment 3.

Table 9
Construction Noise Levels

Receiver	Land Use	Noise Level [dB(A) L_{eq}]
1	Single-Family Residential	59
2	Single-Family Residential	61
3	Single-Family Residential	61
4	Single-Family Residential	61
5	Single-Family Residential	59
6	Multi-Family Residential	57
7	Multi-Family Residential	58
8	Multi-Family Residential	68
9	Multi-Family Residential	70
10	Single-Family Residential	63
11	Mobile Home Park	66
12	Mobile Home Park	65
13	Mobile Home Park	61
14	Mobile Home Park	59
15	Commercial	72
16	Industrial	65
17	Industrial	66
18	Industrial	74

dB(A) L_{eq} = A-weighted decibels equivalent noise level

As shown, construction noise levels would range from 57 to 74 dB(A) L_{eq} at the adjacent uses. The City's Municipal Code does not place noise limit restrictions on construction activities, however, other jurisdictions commonly apply a noise level limit of 75 dB(A) L_{eq} at residential uses. Construction noise levels would not exceed 75 dB(A) L_{eq}. Construction activities would generally occur over the period between 7:00 a.m. and 6:00 p.m. on weekdays. Although the existing adjacent uses would be exposed

to construction noise levels that may be heard above ambient conditions, the exposure would be temporary and would not exceed 75 dB(A) L_{eq}. As construction activities associated with the project would comply with the time limits established in Section 10.24.020 (b)(9) of the City Municipal Code, temporary increases in noise levels from construction activities would be less than significant.

5.2 Traffic Noise

5.2.1 On-site Traffic and Rail Noise

On-site traffic and rail noise contours were developed using the SoundPLAN program. Noise level contours were modeled at the first-floor level. These contours take into account shielding provided by the proposed building and grading. Future vehicle traffic noise-level contours are shown in Figure 6. SoundPLAN data are contained in Attachment 4.

As discussed in Section 2.1, the exterior noise level standard for multi-family uses is 65 CNEL. This standard is applicable at exterior use areas which include the patios and the open play lawn, tot lot, and seating areas on the western side of the proposed buildings. . The interior noise level standard is 45 CNEL. To refine the noise analysis and determine noise levels at exterior use areas and the building façade, exterior noise levels were calculated at a series of first- through fourth-floor specific receiver locations at the outdoor use areas and around the proposed building. Modeled receiver locations are shown in Figure 6. Table 10 summarizes the projected future noise levels at the 20 modeled receivers.

Table 10
Future Vehicle and Rail Traffic Noise Levels

Receiver	Exterior Noise Level (CNEL)			
	First-Floor	Second-Floor	Third-Floor	Fourth-Floor
1	54	56	57	58
2	51	54	56	57
3	54	56	57	58
4	52	55	56	57
5	47	53	55	56
6	48	53	55	56
7	45	51	57	58
8	47	55	57	58
9	50	56	58	59
10	55	57	58	60
11	58	62	63	63
12	57	60	61	62
13	51	57	60	61
14	55	60	61	61
15	53	59	60	61
16	52	56	60	60
17	51	55	59	60
18	51	54	57	59
19	49	54	55	56
20	50	54	55	56

CNEL = community noise equivalent level

Image Source: NearMap (flown January 2022)

Project Boundary

Receivers

Construction Noise

60 dB(A) L_{eq}

65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

0 Feet 200

RECON

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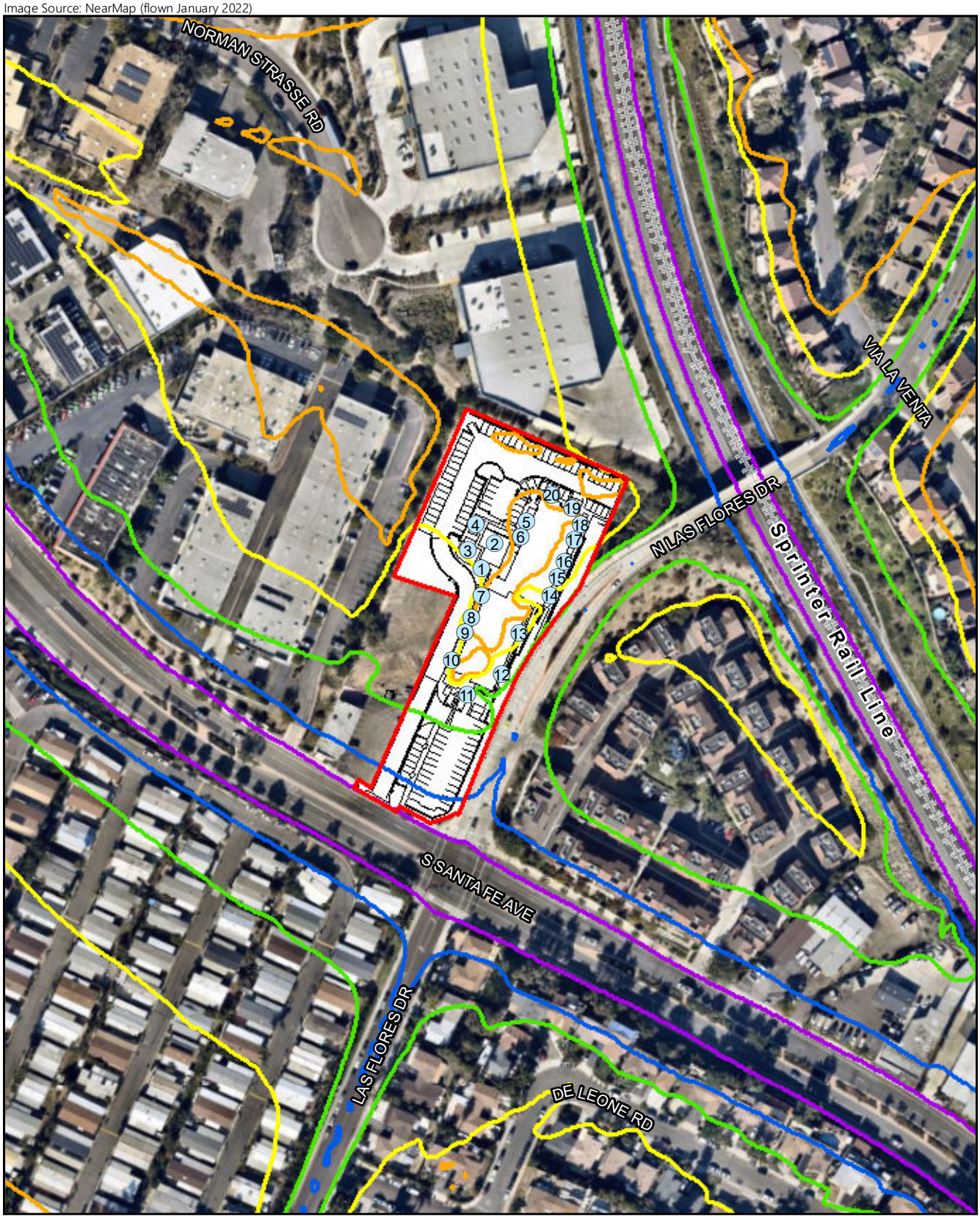
FIGURE 5
Construction Noise Contours

Image Source: NearMap (flown January 2022)



Project Boundary
Receivers
Site Plan

Vehicle and Rail Traffic Noise

50 CNEL
55 CNEL
60 CNEL
65 CNEL
70 CNEL

0 Feet 200

FIGURE 6
Future Vehicle and Rail Traffic Noise Contours

RECON

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As shown, exterior noise levels are projected to range from 45 to 63 CNEL at the outdoor use areas and building façade. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL. Exterior noise impacts would be less than significant.

The interior noise level standard is 45 CNEL. Interior noise levels can be reduced through standard construction techniques. When windows are closed, standard construction techniques provide various exterior-to-interior noise level reductions depending on the type of structure and window. Standard light-frame construction would reduce exterior to interior noise levels by at least 20 dB (FHWA 2011). Therefore, interior noise levels would be 43 CNEL or less, and are not projected to exceed the interior noise level standard of 45 CNEL. Interior noise impacts would be less than significant.

5.2.2 Off-site Traffic Noise

The project would increase traffic volumes on local roadways. However, the project would not substantially alter the vehicle classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. While changes in noise levels would occur along any roadway where project-related traffic occurs, for noise assessment purposes, noise level increases are assumed to be greatest nearest the project site, as this location would represent the greatest concentration of project-related traffic. Traffic noise increases attributable to the project were assessed against a significance threshold of 3 dB, which is the level at which an increase in noise is considered to be barely perceptible (Caltrans 2013).

Table 11 presents a conservative assessment of traffic noise levels based on the existing (year 2022), near term (year 2025), and future (year 2050) noise levels without and with the project. Table 11 also summarizes the direct and cumulative traffic noise level increases due to the project. Noise level calculations are contained in Attachment 5.

Table 11
Traffic Noise Level with and without Project and Ambient Noise Increases (CNEL)

Roadway Segment	Year 2022			Year 2025			Year 2050			Cumulative Increase Over Existing
	No Project	Project	Increase	No Project	Project	Increase	No Project	Project	Increase	
S. Santa Fe Avenue										
Similax Road to Bosstick Boulevard	71.3	71.3	0.0	71.5	71.5	0.0	73.0	73.1	0.1	1.8
Bosstick Boulevard to Vern Road	71.8	71.8	0.0	72.0	72.0	0.0	73.0	73.1	0.1	1.3
Vern Road to Las Flores Drive	71.8	71.9	0.1	72.0	72.1	0.1	73.0	73.1	0.1	1.3
Las Flores Drive to N. Rancho Santa Fe Road	71.2	71.3	0.1	71.4	71.5	0.1	72.9	72.9	0.0	1.7
N. Rancho Santa Fe Road to N. Pacific Street	69.8	69.8	0.0	70.0	70.0	0.0	72.3	72.3	0.0	2.5

Table 11 Traffic Noise Level with and without Project and Ambient Noise Increases (CNEL)										
	Year 2022			Year 2025			Year 2050			Cumulative Increase Over Existing
Roadway Segment	No Project	Project	Increase	No Project	Project	Increase	No Project	Project	Increase	
Hollencrest Road										
De Leone Road to Hollenbeck Road	52.7	53.0	0.3	53.0	53.2	0.2	54.4	54.6	0.2	1.9
N. Rancho Santa Fe Avenue										
S. Santa Fe Avenue to Capalina Road	69.1	69.2	0.1	69.4	69.4	0.0	70.7	70.7	0.0	1.6
Note: Increase calculations may vary due to independent rounding.										

As shown, the project would not result in a direct or cumulative noise increase of more than 3 dB. Therefore, the project would result in less than significant direct and cumulative impacts related to traffic noise.

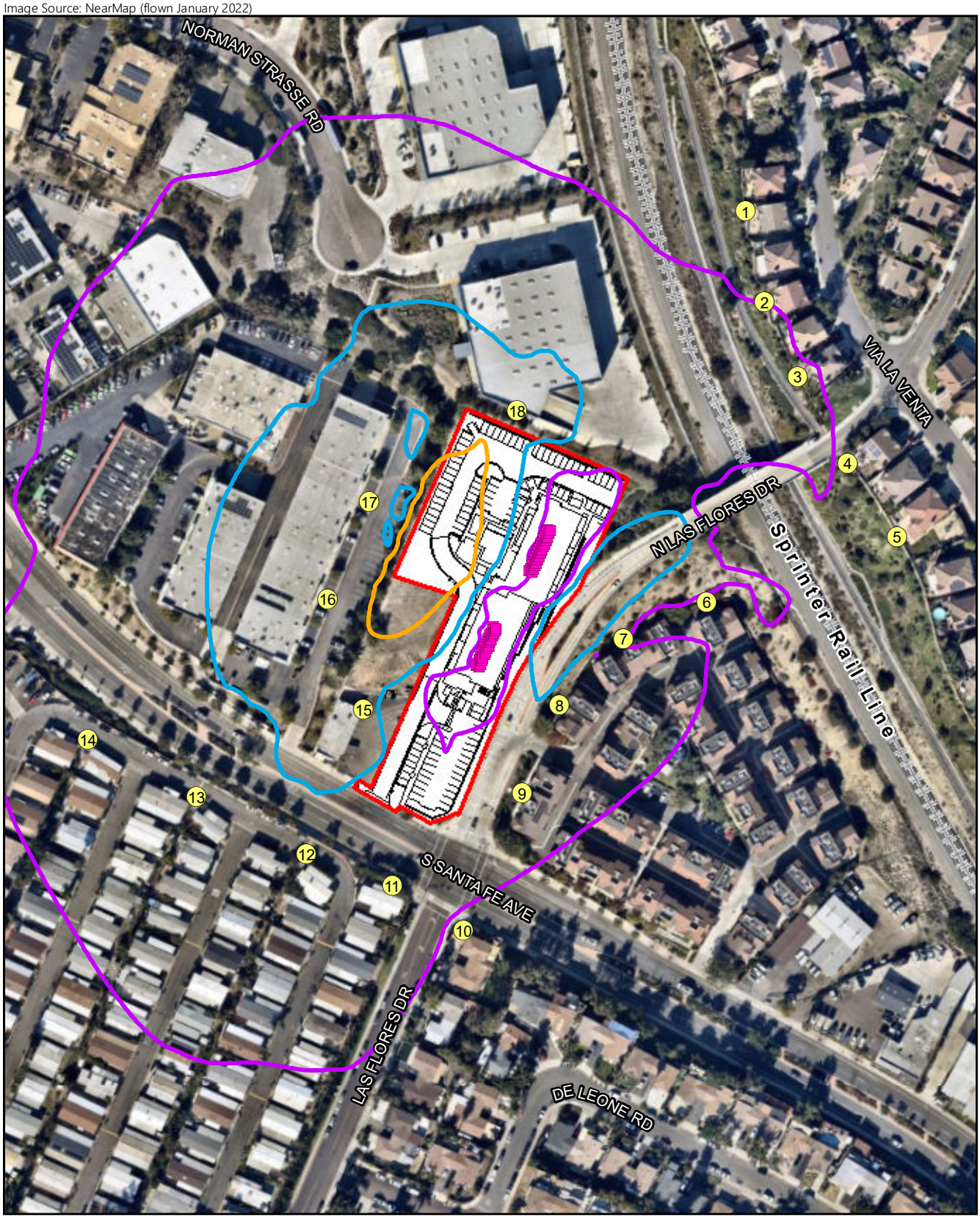
5.3 On-site Generated Noise

The primary noise sources on-site would be HVAC equipment. Rooftop HVAC equipment that would have the potential to produce noise in excess of City limits (see Table 2). Using the on-site noise source parameters discussed in Section 4.3, noise levels were modeled at a series of 18 receivers located at the adjacent properties. The rooftop mechanical equipment would be screened with a six-foot wall. Noise generated by HVAC equipment would occur on an intermittent basis, primarily during the day and evening hours and less frequently during the nighttime hours. For a worst-case analysis, it was assumed that the HVAC units would operate at maximum capacity during the daytime and nighttime hours.

Modeled receivers and the locations of the HVAC units are shown in Figure 7. Modeled data is included in Attachment 6. Future projected noise levels are summarized in Table 12.

As shown, HVAC noise levels would range from 33 to 44 dB(A) L_{eq}. Noise levels would not exceed the applicable Noise Ordinance limits at the property lines and impacts related to on-site generated noise would be less than significant.

Image Source: NearMap (flown January 2022)



Project Boundary
Receivers
HVAC
Site Plan

HVAC Noise
35 dB(A) L_{eq}
40 dB(A) L_{eq}
45 dB(A) L_{eq}

0 Feet 200

RECON

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FIGURE 7
HVAC Noise Contours

Table 12 HVAC Noise Levels at Adjacent Properties			
Receiver	Land Use	Noise Level [dB(A) L_{eq}]	Noise Ordinance Limit Daytime/Nighttime [dB(A) L_{eq}]
1	Single Family Residential	34	60/50
2	Single Family Residential	36	60/50
3	Single Family Residential	36	60/50
4	Single-Family Residential	35	60/50
5	Single-Family Residential	34	60/50
6	Multi-Family Residential	33	65/55
7	Multi-Family Residential	33	65/55
8	Multi-Family Residential	38	65/55
9	Multi-Family Residential	37	65/55
10	Single-Family Residential	35	60/50
11	Mobile Home Park	37	65/55
12	Mobile Home Park	39	65/55
13	Mobile Home Park	38	65/55
14	Mobile Home Park	37	65/55
15	Commercial	41	60/55
16	Industrial	43	65/60
17	Industrial	43	65/60
18	Industrial	44	65/60
dB(A) L_{eq} = A-weighted decibels equivalent noise level			

6.0 Conclusions

6.1 Construction Noise

As shown in Table 9, construction noise levels would range from 57 to 74 dB(A) L_{eq} at the adjacent property lines. The City's Municipal Code does not place noise limit restrictions on construction activities, however, other jurisdictions commonly apply a noise level limit of 75 dB(A) L_{eq} at residential uses. Construction activities would generally occur over the period between 7:00 a.m. and 6:00 p.m. on weekdays. Although the existing adjacent uses would be exposed to construction noise levels that may be heard above ambient conditions, the exposure would be temporary and would not exceed 75 dB(A) L_{eq}. As construction activities associated with the project would comply with the time limits established in Section 10.24.020 (b)(9) of the City Municipal Code, temporary increases in noise levels from construction activities would be less than significant.

6.2 Traffic Noise

6.2.1 On-site Traffic and Rail Noise

The main source of noise at the project site is vehicle traffic on South Santa Fe Avenue and Las Flores Drive as well as Sprinters on the adjacent rail line. The exterior noise level standard for multi-family

uses is 65 CNEL. This standard is applicable at exterior use areas which include the patios and the open play lawn, tot lot, and seating areas on the western side of the proposed buildings. As shown in Table 10, exterior noise levels are projected to range from 45 to 63 CNEL at the outdoor use areas and building façade. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL. Exterior noise impacts would be less than significant.

The interior noise level standard is 45 CNEL. Interior noise levels can be reduced through standard construction techniques. When windows are closed, standard construction techniques provide various exterior-to-interior noise level reductions depending on the type of structure and window. Standard light-frame construction would reduce exterior to interior noise levels by at least 20 dB (FHWA 2011). Therefore, interior noise levels would be 43 CNEL or less, and are not projected to exceed the interior noise level standard of 45 CNEL. Interior noise impacts would be less than significant.

6.2.2 Off-site Traffic Noise

The additional vehicle trips associated with the project would increase noise levels on nearby roadways. A noise increase of 3 dB or more would be considered significant because 3 dB is the level at which an increase in noise is perceptible to a person. As shown in Table 11, the project would not result in a direct or cumulative noise increase of more than 3 dB. Therefore, the project would result in less than significant direct and cumulative impact related to traffic noise.

6.3 On-site Generated Noise

The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any residential use, such as vehicles arriving and leaving, children at play, and landscape maintenance machinery. None of these noise sources are anticipated to violate the City Municipal Code. Rooftop HVAC noise levels were modeled at the adjacent properties. As shown in Table 12, HVAC noise levels would range from 33 to 44 dB(A) L_{eq}. Noise levels would not exceed the applicable Noise Ordinance limits at the property lines.

7.0 References Cited

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ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

9865 Santa Fe Flores
Noise Measurement Data

Summary				
Start	2022/03/22	13:34:51		
Stop	2022/03/22	13:49:56		
Duration		0:15:04.7		
Run Time		0:15:02.6		
Pause		0:00:02.1		
Pre Calibration	2022/03/22	13:33:32		
Post Calibration		None		
Calibration Deviation		---		
Overall Settings				
RMS Weight		A Weighting		
Peak Weight		A Weighting		
Detector		Slow		
Preamp		PRMLxT1		
Microphone Correction		Off		
Integration Method		Linear		
Overload		144.6 dB		
		A	**C**	**Z**
Under Range Peak		**100.6**	97.6	102.6 dB
Under Range Limit		**37.8**	37.4	44.5 dB
Noise Floor		28.6	28.3	35.3 dB
Results				
LAeq		63.2 dB		
LAE		92.8 dB		
EA		210.368 µPa²h		
EA8		6.712 mPa²h		
EA40		33.562 mPa²h		
LApeak (max)	2022/03/22	13:37:15	101.8 dB	
LASmax	2022/03/22	13:39:26	74.7 dB	
LASmin	2022/03/22	13:46:59	51.6 dB	
SEA		-99.9 dB		
LAS > 60.0 dB (Exceedence Counts / Duration)		31	563.6 s	
LAS > 70.0 dB (Exceedence Counts / Duration)		6	27.3 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)		0	0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)		0	0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)		0	0.0 s	
LCeq		75.2 dB		
LAeq		63.2 dB		
LCeq - LAeq		12.0 dB		
LAIeq		65.0 dB		
LAeq		63.2 dB		
LAIeq - LAeq		1.8 dB		
# Overloads		0		
Overload Duration		0.0 s		
Dose Settings				
Dose Name		OSHA-1	OSHA-2	
Exch. Rate		5	5 dB	
Threshold		90	80 dB	
Criterion Level		90	90 dB	
Criterion Duration		8	8 h	
Results				
Dose		-99.9	-99.9 %	
Projected Dose		-99.9	-99.9 %	
TWA (Projected)		-99.9	-99.9 dB	
TWA (t)		-99.9	-99.9 dB	
Lep (t)		48.2	48.2 dB	
Statistics				
LAS5.00		68.6 dB		
LAS10.00		66.6 dB		
LAS33.30		62.9 dB		
LAS50.00		60.5 dB		
LAS66.60		58.4 dB		
LAS90.00		55.0 dB		

9865 Santa Fe Flores
Noise Measurement Data

Summary				
Start	2022/03/22 13:55:50			
Stop	2022/03/22 14:10:51			
Duration	0:15:00.5			
Run Time	0:15:00.5			
Pause	0:00:00.0			
Pre Calibration	2022/03/22 13:33:30			
Post Calibration	None			
Calibration Deviation	---			
Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.6 dB			
		A	**C**	**Z**
Under Range Peak		**100.6**	97.6	102.6 dB
Under Range Limit		**37.8**	37.4	44.5 dB
Noise Floor		28.6	28.3	35.3 dB
Results				
LAeq	57.5 dB			
LAE	87.0 dB			
EA	55.989 µPa²h			
EA8	1.791 mPa²h			
EA40	8.953 mPa²h			
LApeak (max)	2022/03/22 14:03:57	102.3 dB		
LASmax	2022/03/22 14:09:26	66.5 dB		
LASmin	2022/03/22 14:03:45	49.9 dB		
SEA	-99.9 dB			
LAS > 60.0 dB (Exceedence Counts / Duration)	19	185.3 s		
LAS > 70.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LCeq	66.1 dB			
LAeq	57.5 dB			
LCeq - LAeq	8.6 dB			
LAIeq	59.3 dB			
LAeq	57.5 dB			
LAIeq - LAeq	1.8 dB			
# Overloads	0			
Overload Duration	0.0 s			
Dose Settings				
Dose Name	OSHA-1	OSHA-2		
Exch. Rate	5	5 dB		
Threshold	90	80 dB		
Criterion Level	90	90 dB		
Criterion Duration	8	8 h		
Results				
Dose	-99.9	-99.9 %		
Projected Dose	-99.9	-99.9 %		
TWA (Projected)	-99.9	-99.9 dB		
TWA (t)	-99.9	-99.9 dB		
Lep (t)	42.4	42.4 dB		
Statistics				
LAS5.00	61.7 dB			
LAS10.00	60.6 dB			
LAS33.30	57.6 dB			
LAS50.00	56.1 dB			
LAS66.60	54.4 dB			
LAS90.00	52.7 dB			

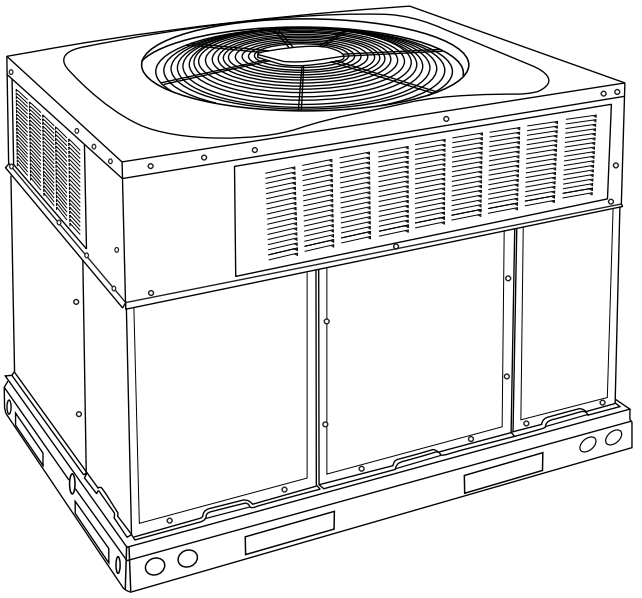
ATTACHMENT 2

HVAC Specifications

50VG–A
Performance™ 16 SEER 2–Stage Packaged Air Conditioner System with Puron® (R–410A) Refrigerant
Single and Three Phase
2 to 5 Nominal Tons (Sizes 24–60)

Carrier
turn to the experts

Product Data



A09033

Fig. 1 - Unit 50VG-A

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- 15.0-16.0 SEER / 12.0-12.5 EER
- Factory-Installed TXV
- Multi-speed ECM Blower Motor - Standard
- Sound levels as low as 72dBA
- Two Stages of Cooling
- Dehumidification Feature

FEATURES/BENEFITS

One-piece cooling unit with optional electric heater, low sound levels, easy installation, low maintenance, and dependable performance.

Puron Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems proving highly reliable, environmentally sound performance.

Easy Installation

Factory-assembled package is a compact, fully self-contained, electric cooling unit that is prewired, pre-piped, and pre-charged for minimum installation expense. These units are available in a variety of standard cooling sizes with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

Convertible duct configuration

Unit is designed for use in either downflow or horizontal applications. Each unit is converted from horizontal to downflow and includes horizontal duct covers. Downflow operation is provided in the field to allow vertical ductwork connections. The basepan seals on the bottom openings to ensure a positive seal in the vertical airflow mode.

Efficient operation High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of up to 16.0. (See page 4.)

Durable, dependable components

Scroll Compressors have 2 stages of cooling and are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Multi-speed ECM Blower Motor is standard on all 50VG-A.

Direct-drive PSC (Permanent Split Capacitor) condenser-fan motors are designed to help reduce energy consumption and provide for cooing operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Thermostatic Expansion Valve - A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72dBA. (See Page 4.)

Easy to service cabinets provide easy 3 panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with a mounting pad. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. (19.05 mm) wide perimeter flange makes frame mounting on a rooftop easy.

AHRI* CAPACITIES

Cooling Capacities and Efficiencies

Unit Model 50VG-A	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
24	2	800 / 600	23000	12.0	15.0
30	2-1/2	1000 / 750	29000	12.0	15.0
36	3	1200 / 900	35400	12.5	16.0
42	3-1/2	1400 / 1050	42000	12.5	16.0
48	4	1600 / 1200	47500	12.3	16.0
60	5	1750 / 1200	57000	12.3	16.0

LEGEND
dB–Sound Levels (decibels)
db—Dry Bulb
SEER—Seasonal Energy Efficiency Ratio
wb—Wet Bulb
COP–Coefficient of Performance
* Air Conditioning, Heating & Refrigeration Institute.
**At "A" conditions–80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.
† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or AHRI Standards 210/240.

Notes:
1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
Cooling Standard: 80°F (26.7°C) db, 67°F wb (19.4°C) indoor entering–air temperature and 95°F db (35°C) outdoor entering–air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

A-WEIGHTED SOUND POWER LEVEL (dBA)

Model 50VG-A	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	73	60.0	62.5	68.5	68.5	64.0	60.0	53.0
30	77	57.5	67.0	73.5	72.0	67.0	61.0	52.5
36	73	62.5	65.5	67.5	68.0	65.5	60.0	52.5
42	73	60.5	63.5	68.0	68.0	66.0	60.5	53.0
48	72	60.0	63.5	66.0	67.0	63.5	58.5	49.5
60	75	69.0	67.0	69.0	68.0	65.0	61.5	54.0

NOTE: Tested in accordance with AHRI Standard 270 (not listed in AHRI).

ATTACHMENT 3

SoundPLAN Data – Construction Noise

9865 Santa Fe Flores

SoundPLAN Data - Construction

Source name	Reference	Level	Corrections		
		Leq1	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)
Construction	Lw/unit	116.3	-	-	-

9865 Santa Fe Flores

SoundPLAN Data - Construction

No.	Coordinates X	Y	Height	Noise Level
	(meters)		(meters)	dB(A)
1	481468.23	3668972.47	182.38	58.9
2	481477.03	3668933.16	185.26	60.9
3	481491.51	3668901.09	186.46	61.4
4	481513.24	3668863.85	186.82	60.5
5	481534.96	3668832.30	186.16	59.2
6	481452.72	3668803.33	161.69	56.8
7	481417.03	3668787.30	160.02	58.2
8	481389.61	3668758.33	159.09	67.7
9	481373.58	3668720.06	157.61	70.1
10	481348.75	3668660.57	154.54	63.4
11	481317.72	3668679.71	153.92	66.4
12	481280.47	3668693.16	153.14	64.9
13	481232.89	3668717.47	152.07	61.3
14	481185.82	3668741.78	151.46	58.7
15	481304.72	3668755.81	153.73	72.3
16	481288.85	3668803.43	156.64	65.3
17	481306.71	3668845.77	157.91	66.3
18	481370.21	3668885.46	167.46	74.2

ATTACHMENT 4

SoundPLAN Data – On-site Traffic and Rail Noise

Station	ADT	Traffic values Vehicles type	Vehicle name	day	evening	night	Speed	Control device	Constr. Speed	Affect. veh.	Road surface	Gradient Min / Max
km	Veh/24h			Veh/h	Veh/h	Veh/h	km/h		km/h	%		%
Santa Fe Avenue		Traffic direction:	In entry direction									
0+000	21447	Total	-	1376	715	310	-	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Automobiles	-	1280	665	288	72	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Medium trucks	-	41	21	9	72	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Heavy trucks	-	28	14	6	72	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Buses	-	14	7	3	72	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Motorcycles	-	14	7	3	72	none	-	-	Average (of DGAC and PCC)	2.407407407
0+000	21447	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	2.407407407
0+426	22503	Total	-	1444	750	325	-	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Automobiles	-	1343	698	302	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Medium trucks	-	43	23	10	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Heavy trucks	-	29	15	7	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Buses	-	14	8	3	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Motorcycles	-	14	8	3	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22503	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+985	-	-	-	-	-	-						
Las Flores Drive		Traffic direction:	In entry direction									
0+000	2607	Total	-	167	87	38	-	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Automobiles	-	155	81	35	40	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Medium trucks	-	5	3	1	40	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Heavy trucks	-	3	2	1	40	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Buses	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Motorcycles	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	1.75
0+000	2607	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	1.75
0+221	1602	Total	-	103	53	23	-	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Automobiles	-	96	49	21	40	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Medium trucks	-	3	2	1	40	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Heavy trucks	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Buses	-	1	1	0	40	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Motorcycles	-	1	1	0	40	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+221	1602	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.010362694
0+628	-	-	-	-	-	-						

SoundPLAN Data - Vehicle and Rail

Track Station km	Coordinates of track axis X	Y	Z	Track type [dB]	Curve radius [dB]	Multiple reflections [dB]	Corrected Emission level day	Evening	night
Sprinter	Rail track:	Direction:		Section:	1	Km:	0+000		
Train type	Number of trains day	Evening	night	Speed km/h	Length per train m	Max	Emission level day dB(A)	Evening dB(A)	night dB(A)
LRT	176	32	43	80	80	yes	62.9	61.6	58.1
0+000	481709.9	3668428	173.36	-	-	-	-	62.9	61.6
0+951	481421.7	3669304	162.19	-	-	-	-	62.9	61.6

9865 Santa Fe Flores

SoundPLAN Data - Vehicle and Rail

	Coordinates				Noise Level			
No.	X	Y	Floor	Height	Day	Evening	Night	Lden
	(meters)			(meters)		dB(A)		
1	481355.17	3668817.11	1.Fl	163.65	51.9	49.3	45.7	54.0
1	481355.17	3668817.11	2.Fl	166.75	54.1	51.4	47.8	56.1
1	481355.17	3668817.11	3.Fl	169.85	54.8	52.1	48.5	56.8
1	481355.17	3668817.11	4.Fl	172.95	55.4	52.8	49.2	57.5
2	481360.87	3668828.12	1.Fl	163.65	48.4	46.0	42.5	50.7
2	481360.87	3668828.12	2.Fl	166.75	52.3	49.8	46.2	54.4
2	481360.87	3668828.12	3.Fl	169.85	53.4	50.8	47.2	55.5
2	481360.87	3668828.12	4.Fl	172.95	54.6	52.1	48.5	56.7
3	481349.23	3668825.03	1.Fl	163.65	51.7	49.0	45.4	53.7
3	481349.23	3668825.03	2.Fl	166.75	54.0	51.3	47.7	56.0
3	481349.23	3668825.03	3.Fl	169.85	55.1	52.4	48.8	57.1
3	481349.23	3668825.03	4.Fl	172.95	55.6	53.0	49.4	57.7
4	481352.64	3668836.27	1.Fl	163.71	49.8	47.3	43.8	52.0
4	481352.64	3668836.27	2.Fl	166.81	53.3	50.7	47.1	55.4
4	481352.64	3668836.27	3.Fl	169.91	54.3	51.7	48.1	56.4
4	481352.64	3668836.27	4.Fl	173.01	55.2	52.7	49.1	57.3
5	481374.70	3668837.75	1.Fl	163.65	44.9	42.8	39.2	47.3
5	481374.70	3668837.75	2.Fl	166.75	50.9	48.5	44.9	53.1
5	481374.70	3668837.75	3.Fl	169.85	52.5	50.1	46.5	54.7
5	481374.70	3668837.75	4.Fl	172.95	53.6	51.1	47.5	55.8
6	481372.16	3668831.08	1.Fl	163.65	45.4	43.2	39.7	47.8
6	481372.16	3668831.08	2.Fl	166.75	51.0	48.5	45.0	53.2
6	481372.16	3668831.08	3.Fl	169.85	52.5	50.0	46.5	54.7
6	481372.16	3668831.08	4.Fl	172.95	53.6	51.1	47.5	55.8
7	481355.33	3668805.47	1.Fl	157.56	43.0	40.8	37.2	45.4
7	481355.33	3668805.47	2.Fl	160.66	48.9	46.2	42.6	50.9
7	481355.33	3668805.47	3.Fl	163.76	54.8	52.0	48.4	56.7
7	481355.33	3668805.47	4.Fl	166.86	55.9	53.1	49.5	57.8
8	481351.20	3668795.95	1.Fl	157.56	45.3	42.8	39.2	47.4
8	481351.20	3668795.95	2.Fl	160.66	53.4	50.6	47.0	55.3
8	481351.20	3668795.95	3.Fl	163.76	55.2	52.5	48.8	57.2
8	481351.20	3668795.95	4.Fl	166.86	56.2	53.4	49.8	58.2
9	481348.34	3668789.49	1.Fl	157.56	47.8	45.1	41.5	49.8
9	481348.34	3668789.49	2.Fl	160.66	54.3	51.5	47.9	56.2
9	481348.34	3668789.49	3.Fl	163.76	55.7	53.0	49.3	57.7
9	481348.34	3668789.49	4.Fl	166.86	56.6	53.9	50.3	58.6
10	481342.84	3668777.53	1.Fl	157.56	52.8	50.0	46.4	54.7
10	481342.84	3668777.53	2.Fl	160.66	54.7	51.9	48.3	56.7
10	481342.84	3668777.53	3.Fl	163.76	55.8	53.0	49.4	57.8

10	481342.84	3668777.53	4.Fl	166.86	57.7	54.9	51.3	59.7
11	481349.40	3668762.50	1.Fl	153.57	56.4	53.6	49.9	58.3
11	481349.40	3668762.50	2.Fl	156.67	59.6	56.8	53.1	61.5
11	481349.40	3668762.50	3.Fl	159.77	60.7	57.9	54.3	62.7
11	481349.40	3668762.50	4.Fl	162.87	61.5	58.7	55.1	63.4
12	481364.54	3668771.50	1.Fl	157.75	55.3	52.5	48.9	57.3
12	481364.54	3668771.50	2.Fl	160.85	58.4	55.7	52.1	60.4
12	481364.54	3668771.50	3.Fl	163.95	59.2	56.5	52.9	61.2
12	481364.54	3668771.50	4.Fl	167.05	59.6	57.0	53.4	61.7
13	481371.84	3668789.38	1.Fl	157.71	48.6	45.8	42.2	50.6
13	481371.84	3668789.38	2.Fl	160.81	54.9	52.2	48.5	56.9
13	481371.84	3668789.38	3.Fl	163.91	58.1	55.4	51.8	60.1
13	481371.84	3668789.38	4.Fl	167.01	58.8	56.1	52.5	60.8
14	481385.07	3668805.89	1.Fl	163.65	52.7	50.0	46.4	54.7
14	481385.07	3668805.89	2.Fl	166.75	57.8	55.2	51.6	59.9
14	481385.07	3668805.89	3.Fl	169.85	58.4	55.9	52.3	60.6
14	481385.07	3668805.89	4.Fl	172.95	58.7	56.2	52.6	60.9
15	481388.24	3668813.73	1.Fl	163.65	51.1	48.6	45.0	53.2
15	481388.24	3668813.73	2.Fl	166.75	56.5	53.9	50.3	58.6
15	481388.24	3668813.73	3.Fl	169.85	57.8	55.3	51.7	59.9
15	481388.24	3668813.73	4.Fl	172.95	58.3	55.8	52.2	60.5
16	481391.21	3668820.60	1.Fl	163.65	49.9	47.5	43.9	52.1
16	481391.21	3668820.60	2.Fl	166.75	53.7	51.2	47.6	55.8
16	481391.21	3668820.60	3.Fl	169.85	57.3	54.8	51.2	59.5
16	481391.21	3668820.60	4.Fl	172.95	57.9	55.5	51.9	60.1
17	481395.44	3668830.02	1.Fl	163.65	48.9	46.6	43.0	51.2
17	481395.44	3668830.02	2.Fl	166.75	52.3	50.0	46.4	54.6
17	481395.44	3668830.02	3.Fl	169.85	56.6	54.2	50.6	58.8
17	481395.44	3668830.02	4.Fl	172.95	57.5	55.1	51.5	59.7
18	481397.98	3668836.59	1.Fl	163.65	48.4	46.1	42.5	50.7
18	481397.98	3668836.59	2.Fl	166.75	51.9	49.7	46.2	54.3
18	481397.98	3668836.59	3.Fl	169.85	55.0	52.6	49.0	57.2
18	481397.98	3668836.59	4.Fl	172.95	57.1	54.7	51.2	59.4
19	481394.38	3668843.78	1.Fl	163.65	46.0	44.2	40.7	48.7
19	481394.38	3668843.78	2.Fl	166.75	50.7	49.1	45.6	53.6
19	481394.38	3668843.78	3.Fl	169.85	51.9	50.3	46.8	54.8
19	481394.38	3668843.78	4.Fl	172.95	53.2	51.6	48.0	56.0
20	481385.49	3668849.18	1.Fl	163.70	46.9	45.2	41.7	49.7
20	481385.49	3668849.18	2.Fl	166.80	50.8	49.2	45.7	53.7
20	481385.49	3668849.18	3.Fl	169.90	52.2	50.5	47.0	55.0
20	481385.49	3668849.18	4.Fl	173.00	53.1	51.5	48.0	55.9

Source name									Noise Level Day	Evening	Night	Lden
									dB(A)			
1	1.Fl	51.9	49.3	45.7	54.0	0.0	0.0	0.0	0.0			
Las Flores Drive									23.1	20.3	16.6	25.0
Santa Fe Avenue									51.4	48.5	44.9	53.3
Sprinter									42.5	41.1	37.7	45.6
1	2.Fl	54.1	51.4	47.8	56.1	0.0	0.0	0.0	0.0			
Las Flores Drive									27.2	24.4	20.8	29.1
Santa Fe Avenue									53.7	50.8	47.2	55.6
Sprinter									43.6	42.2	38.7	46.6
1	3.Fl	54.8	52.1	48.5	56.8	0.0	0.0	0.0	0.0			
Las Flores Drive									32.3	29.5	25.9	34.3
Santa Fe Avenue									54.4	51.5	47.9	56.3
Sprinter									44.2	42.9	39.4	47.3
1	4.Fl	55.4	52.8	49.2	57.5	0.0	0.0	0.0	0.0			
Las Flores Drive									36.7	33.9	30.3	38.6
Santa Fe Avenue									54.7	51.8	48.2	56.6
Sprinter									46.9	45.6	42.1	50.0
2	1.Fl	48.4	46.0	42.5	50.7	0.0	0.0	0.0	0.0			
Las Flores Drive									21.8	18.9	15.3	23.7
Santa Fe Avenue									46.8	44.0	40.3	48.7
Sprinter									43.2	41.8	38.3	46.2
2	2.Fl	52.3	49.8	46.2	54.4	0.0	0.0	0.0	0.0			
Las Flores Drive									23.5	20.6	17.0	25.3
Santa Fe Avenue									51.6	48.7	45.1	53.5
Sprinter									44.3	42.9	39.4	47.3
2	3.Fl	53.4	50.8	47.2	55.5	0.0	0.0	0.0	0.0			
Las Flores Drive									27.7	24.8	21.2	29.6
Santa Fe Avenue									52.8	49.9	46.3	54.7
Sprinter									44.9	43.5	40.1	48.0
2	4.Fl	54.6	52.1	48.5	56.7	0.0	0.0	0.0	0.0			
Las Flores Drive									33.0	30.2	26.5	34.9
Santa Fe Avenue									53.5	50.6	47.0	55.4
Sprinter									47.9	46.5	43.0	50.9
3	1.Fl	51.7	49.0	45.4	53.7	0.0	0.0	0.0	0.0			
Las Flores Drive									31.1	28.3	24.7	33.0
Santa Fe Avenue									51.0	48.1	44.5	52.9
Sprinter									42.9	41.5	38.0	45.9
3	2.Fl	54.0	51.3	47.7	56.0	0.0	0.0	0.0	0.0			
Las Flores Drive									32.0	29.1	25.5	33.9
Santa Fe Avenue									53.5	50.7	47.1	55.4
Sprinter									43.9	42.5	39.0	46.9
3	3.Fl	55.1	52.4	48.8	57.1	0.0	0.0	0.0	0.0			
Las Flores Drive									34.1	31.3	27.7	36.0
Santa Fe Avenue									54.6	51.8	48.1	56.5
Sprinter									44.7	43.3	39.8	47.7
3	4.Fl	55.6	53.0	49.4	57.7	0.0	0.0	0.0	0.0			
Las Flores Drive									37.2	34.3	30.7	39.1
Santa Fe Avenue									54.8	52.0	48.3	56.7
Sprinter									47.6	46.2	42.7	50.6
4	1.Fl	49.8	47.3	43.8	52.0	0.0	0.0	0.0	0.0			
Las Flores Drive									30.5	27.6	24.0	32.4
Santa Fe Avenue									48.5	45.7	42.1	50.4

Sprinter										43.6	42.2	38.7	46.6
4	2.Fl	53.3	50.7	47.1	55.4	0.0	0.0	0.0	0.0				
Las Flores Drive										31.4	28.6	25.0	33.3
Santa Fe Avenue										52.6	49.8	46.1	54.5
Sprinter										44.8	43.4	40.0	47.9
4	3.Fl	54.3	51.7	48.1	56.4	0.0	0.0	0.0	0.0				
Las Flores Drive										33.6	30.8	27.1	35.5
Santa Fe Avenue										53.6	50.8	47.2	55.5
Sprinter										45.6	44.3	40.8	48.7
4	4.Fl	55.2	52.7	49.1	57.3	0.0	0.0	0.0	0.0				
Las Flores Drive										37.8	34.9	31.3	39.7
Santa Fe Avenue										54.1	51.3	47.6	56.0
Sprinter										48.2	46.8	43.4	51.3
5	1.Fl	44.9	42.8	39.2	47.3	0.0	0.0	0.0	0.0				
Las Flores Drive										20.5	17.6	13.9	22.3
Santa Fe Avenue										42.6	39.8	36.1	44.5
Sprinter										41.1	39.7	36.2	44.1
5	2.Fl	50.9	48.5	44.9	53.1	0.0	0.0	0.0	0.0				
Las Flores Drive										20.6	17.7	14.1	22.5
Santa Fe Avenue										49.6	46.8	43.1	51.5
Sprinter										44.9	43.6	40.1	48.0
5	3.Fl	52.5	50.1	46.5	54.7	0.0	0.0	0.0	0.0				
Las Flores Drive										24.1	21.3	17.6	26.0
Santa Fe Avenue										51.5	48.7	45.0	53.4
Sprinter										45.8	44.4	40.9	48.8
5	4.Fl	53.6	51.1	47.5	55.8	0.0	0.0	0.0	0.0				
Las Flores Drive										29.5	26.7	23.0	31.4
Santa Fe Avenue										52.5	49.6	46.0	54.4
Sprinter										47.1	45.7	42.2	50.1
6	1.Fl	45.4	43.2	39.7	47.8	0.0	0.0	0.0	0.0				
Las Flores Drive										20.5	17.6	14.0	22.4
Santa Fe Avenue										43.0	40.1	36.5	44.9
Sprinter										41.7	40.3	36.8	44.7
6	2.Fl	51.0	48.5	45.0	53.2	0.0	0.0	0.0	0.0				
Las Flores Drive										20.3	17.4	13.8	22.2
Santa Fe Avenue										49.7	46.8	43.2	51.6
Sprinter										45.0	43.7	40.2	48.1
6	3.Fl	52.5	50.0	46.5	54.7	0.0	0.0	0.0	0.0				
Las Flores Drive										24.1	21.2	17.6	26.0
Santa Fe Avenue										51.5	48.7	45.0	53.4
Sprinter										45.8	44.4	40.9	48.8
6	4.Fl	53.6	51.1	47.5	55.8	0.0	0.0	0.0	0.0				
Las Flores Drive										28.9	26.0	22.4	30.7
Santa Fe Avenue										52.5	49.6	46.0	54.4
Sprinter										47.1	45.7	42.2	50.1
7	1.Fl	43.0	40.8	37.2	45.4	0.0	0.0	0.0	0.0				
Las Flores Drive										17.5	14.6	11.0	19.4
Santa Fe Avenue										41.0	38.2	34.5	42.9
Sprinter										38.7	37.3	33.8	41.7
7	2.Fl	48.9	46.2	42.6	50.9	0.0	0.0	0.0	0.0				
Las Flores Drive										18.6	15.8	12.1	20.5
Santa Fe Avenue										48.4	45.6	41.9	50.3
Sprinter										38.8	37.4	33.9	41.9
7	3.Fl	54.8	52.0	48.4	56.7	0.0	0.0	0.0	0.0				

Las Flores Drive										21.3	18.4	14.8	23.2
Santa Fe Avenue										54.6	51.7	48.1	56.5
Sprinter										41.5	40.1	36.6	44.5
7	4.Fl	55.9	53.1	49.5	57.8	0.0	0.0	0.0	0.0				
Las Flores Drive										28.3	25.5	21.8	30.2
Santa Fe Avenue										55.6	52.7	49.1	57.5
Sprinter										43.6	42.2	38.7	46.6
8	1.Fl	45.3	42.8	39.2	47.4	0.0	0.0	0.0	0.0				
Las Flores Drive										18.1	15.3	11.6	20.0
Santa Fe Avenue										44.4	41.5	37.9	46.3
Sprinter										38.0	36.6	33.2	41.1
8	2.Fl	53.4	50.6	47.0	55.3	0.0	0.0	0.0	0.0				
Las Flores Drive										18.7	15.9	12.2	20.6
Santa Fe Avenue										53.2	50.4	46.7	55.1
Sprinter										39.1	37.7	34.2	42.1
8	3.Fl	55.2	52.5	48.8	57.2	0.0	0.0	0.0	0.0				
Las Flores Drive										22.0	19.1	15.5	23.8
Santa Fe Avenue										55.0	52.2	48.6	57.0
Sprinter										41.5	40.1	36.6	44.5
8	4.Fl	56.2	53.4	49.8	58.2	0.0	0.0	0.0	0.0				
Las Flores Drive										29.0	26.1	22.5	30.9
Santa Fe Avenue										56.0	53.1	49.5	57.9
Sprinter										43.4	42.1	38.6	46.5
9	1.Fl	47.8	45.1	41.5	49.8	0.0	0.0	0.0	0.0				
Las Flores Drive										18.7	15.8	12.2	20.6
Santa Fe Avenue										47.4	44.6	40.9	49.3
Sprinter										37.4	36.0	32.5	40.4
9	2.Fl	54.3	51.5	47.9	56.2	0.0	0.0	0.0	0.0				
Las Flores Drive										19.4	16.5	12.9	21.3
Santa Fe Avenue										54.2	51.3	47.7	56.1
Sprinter										39.2	37.8	34.3	42.2
9	3.Fl	55.7	53.0	49.3	57.7	0.0	0.0	0.0	0.0				
Las Flores Drive										22.4	19.5	15.9	24.3
Santa Fe Avenue										55.6	52.7	49.1	57.5
Sprinter										41.7	40.3	36.9	44.8
9	4.Fl	56.6	53.9	50.3	58.6	0.0	0.0	0.0	0.0				
Las Flores Drive										29.7	26.8	23.2	31.6
Santa Fe Avenue										56.4	53.6	49.9	58.3
Sprinter										43.8	42.4	38.9	46.8
10	1.Fl	52.8	50.0	46.4	54.7	0.0	0.0	0.0	0.0				
Las Flores Drive										19.4	16.6	12.9	21.3
Santa Fe Avenue										52.6	49.7	46.1	54.5
Sprinter										39.0	37.6	34.1	42.0
10	2.Fl	54.7	51.9	48.3	56.7	0.0	0.0	0.0	0.0				
Las Flores Drive										21.4	18.5	14.9	23.3
Santa Fe Avenue										54.6	51.7	48.1	56.5
Sprinter										40.0	38.6	35.1	43.0
10	3.Fl	55.8	53.0	49.4	57.8	0.0	0.0	0.0	0.0				
Las Flores Drive										24.7	21.9	18.2	26.6
Santa Fe Avenue										55.6	52.8	49.2	57.5
Sprinter										42.0	40.7	37.2	45.1
10	4.Fl	57.7	54.9	51.3	59.7	0.0	0.0	0.0	0.0				
Las Flores Drive										37.8	35.0	31.4	39.7
Santa Fe Avenue										57.5	54.6	51.0	59.4

Sprinter										44.1	42.8	39.3	47.2
11	1.Fl	56.4	53.6	49.9	58.3	0.0	0.0	0.0	0.0				
Las Flores Drive										44.6	41.7	38.1	46.4
Santa Fe Avenue										56.1	53.2	49.6	58.0
Sprinter										36.3	34.9	31.4	39.3
11	2.Fl	59.6	56.8	53.1	61.5	0.0	0.0	0.0	0.0				
Las Flores Drive										48.1	45.2	41.6	50.0
Santa Fe Avenue										59.2	56.3	52.7	61.1
Sprinter										43.1	41.7	38.3	46.2
11	3.Fl	60.7	57.9	54.3	62.7	0.0	0.0	0.0	0.0				
Las Flores Drive										49.4	46.5	42.9	51.2
Santa Fe Avenue										60.3	57.5	53.8	62.2
Sprinter										43.9	42.5	39.0	46.9
11	4.Fl	61.5	58.7	55.1	63.4	0.0	0.0	0.0	0.0				
Las Flores Drive										49.5	46.7	43.0	51.4
Santa Fe Avenue										61.1	58.3	54.6	63.0
Sprinter										45.1	43.7	40.2	48.1
12	1.Fl	55.3	52.5	48.9	57.3	0.0	0.0	0.0	0.0				
Las Flores Drive										50.5	47.6	44.0	52.4
Santa Fe Avenue										53.2	50.4	46.7	55.1
Sprinter										42.2	40.8	37.3	45.2
12	2.Fl	58.4	55.7	52.1	60.4	0.0	0.0	0.0	0.0				
Las Flores Drive										54.1	51.2	47.6	55.9
Santa Fe Avenue										55.8	52.9	49.3	57.7
Sprinter										47.8	46.4	42.9	50.8
12	3.Fl	59.2	56.5	52.9	61.2	0.0	0.0	0.0	0.0				
Las Flores Drive										54.3	51.4	47.7	56.1
Santa Fe Avenue										56.9	54.0	50.4	58.8
Sprinter										49.0	47.6	44.1	52.0
12	4.Fl	59.6	57.0	53.4	61.7	0.0	0.0	0.0	0.0				
Las Flores Drive										54.0	51.1	47.5	55.9
Santa Fe Avenue										57.5	54.7	51.0	59.4
Sprinter										50.0	48.6	45.1	53.0
13	1.Fl	48.6	45.8	42.2	50.6	0.0	0.0	0.0	0.0				
Las Flores Drive										45.0	42.1	38.5	46.9
Santa Fe Avenue										45.3	42.5	38.8	47.2
Sprinter										37.8	36.4	32.9	40.9
13	2.Fl	54.9	52.2	48.5	56.9	0.0	0.0	0.0	0.0				
Las Flores Drive										50.6	47.8	44.1	52.5
Santa Fe Avenue										52.6	49.7	46.1	54.5
Sprinter										41.7	40.3	36.9	44.8
13	3.Fl	58.1	55.4	51.8	60.1	0.0	0.0	0.0	0.0				
Las Flores Drive										53.8	50.9	47.3	55.7
Santa Fe Avenue										55.2	52.3	48.7	57.1
Sprinter										48.4	47.0	43.5	51.4
13	4.Fl	58.8	56.1	52.5	60.8	0.0	0.0	0.0	0.0				
Las Flores Drive										54.0	51.1	47.5	55.9
Santa Fe Avenue										56.1	53.3	49.7	58.0
Sprinter										49.5	48.1	44.6	52.5
14	1.Fl	52.7	50.0	46.4	54.7	0.0	0.0	0.0	0.0				
Las Flores Drive										49.1	46.2	42.6	51.0
Santa Fe Avenue										49.1	46.3	42.6	51.0
Sprinter										43.6	42.2	38.7	46.6
14	2.Fl	57.8	55.2	51.6	59.9	0.0	0.0	0.0	0.0				

Las Flores Drive										54.2	51.3	47.7	56.0
Santa Fe Avenue										53.9	51.1	47.4	55.8
Sprinter										49.7	48.3	44.8	52.7
14	3.Fl	58.4	55.9	52.3	60.6	0.0	0.0	0.0	0.0				
Las Flores Drive										54.2	51.4	47.7	56.1
Santa Fe Avenue										54.9	52.0	48.4	56.8
Sprinter										51.0	49.6	46.1	54.0
14	4.Fl	58.7	56.2	52.6	60.9	0.0	0.0	0.0	0.0				
Las Flores Drive										54.0	51.2	47.5	55.9
Santa Fe Avenue										55.2	52.4	48.8	57.1
Sprinter										52.0	50.6	47.1	55.0
15	1.Fl	51.1	48.6	45.0	53.2	0.0	0.0	0.0	0.0				
Las Flores Drive										47.4	44.5	40.9	49.3
Santa Fe Avenue										46.9	44.0	40.4	48.8
Sprinter										44.1	42.7	39.2	47.1
15	2.Fl	56.5	53.9	50.3	58.6	0.0	0.0	0.0	0.0				
Las Flores Drive										52.8	49.9	46.3	54.7
Santa Fe Avenue										52.5	49.7	46.0	54.4
Sprinter										48.6	47.3	43.8	51.7
15	3.Fl	57.8	55.3	51.7	59.9	0.0	0.0	0.0	0.0				
Las Flores Drive										53.7	50.8	47.2	55.6
Santa Fe Avenue										53.9	51.0	47.4	55.8
Sprinter										50.9	49.5	46.0	53.9
15	4.Fl	58.3	55.8	52.2	60.5	0.0	0.0	0.0	0.0				
Las Flores Drive										53.6	50.7	47.1	55.5
Santa Fe Avenue										54.5	51.7	48.0	56.4
Sprinter										52.0	50.7	47.2	55.1
16	1.Fl	49.9	47.5	43.9	52.1	0.0	0.0	0.0	0.0				
Las Flores Drive										46.2	43.3	39.7	48.1
Santa Fe Avenue										44.4	41.5	37.9	46.3
Sprinter										44.4	43.1	39.6	47.5
16	2.Fl	53.7	51.2	47.6	55.8	0.0	0.0	0.0	0.0				
Las Flores Drive										49.6	46.7	43.1	51.5
Santa Fe Avenue										49.7	46.9	43.2	51.6
Sprinter										46.8	45.4	41.9	49.8
16	3.Fl	57.3	54.8	51.2	59.5	0.0	0.0	0.0	0.0				
Las Flores Drive										53.0	50.1	46.5	54.9
Santa Fe Avenue										53.4	50.6	47.0	55.3
Sprinter										50.7	49.3	45.8	53.8
16	4.Fl	57.9	55.5	51.9	60.1	0.0	0.0	0.0	0.0				
Las Flores Drive										53.1	50.2	46.6	55.0
Santa Fe Avenue										54.1	51.2	47.6	56.0
Sprinter										52.0	50.6	47.2	55.1
17	1.Fl	48.9	46.6	43.0	51.2	0.0	0.0	0.0	0.0				
Las Flores Drive										45.5	42.6	39.0	47.4
Santa Fe Avenue										42.0	39.1	35.5	43.9
Sprinter										44.2	42.8	39.3	47.2
17	2.Fl	52.3	50.0	46.4	54.6	0.0	0.0	0.0	0.0				
Las Flores Drive										47.9	45.0	41.4	49.8
Santa Fe Avenue										47.0	44.2	40.5	48.9
Sprinter										47.6	46.2	42.7	50.6
17	3.Fl	56.6	54.2	50.6	58.8	0.0	0.0	0.0	0.0				
Las Flores Drive										51.9	49.0	45.3	53.7
Santa Fe Avenue										52.9	50.0	46.4	54.8

Sprinter										50.5	49.1	45.7	53.6
17	4.Fl	57.5	55.1	51.5	59.7	0.0	0.0	0.0	0.0				
Las Flores Drive										52.1	49.2	45.6	53.9
Santa Fe Avenue										53.7	50.9	47.3	55.6
Sprinter										52.0	50.7	47.2	55.1
18	1.Fl	48.4	46.1	42.5	50.7	0.0	0.0	0.0	0.0				
Las Flores Drive										45.3	42.4	38.8	47.2
Santa Fe Avenue										41.5	38.6	35.0	43.4
Sprinter										43.4	42.0	38.5	46.4
18	2.Fl	51.9	49.7	46.2	54.3	0.0	0.0	0.0	0.0				
Las Flores Drive										47.1	44.2	40.6	49.0
Santa Fe Avenue										45.6	42.8	39.2	47.5
Sprinter										48.3	46.9	43.4	51.3
18	3.Fl	55.0	52.6	49.0	57.2	0.0	0.0	0.0	0.0				
Las Flores Drive										50.5	47.6	44.0	52.4
Santa Fe Avenue										50.0	47.1	43.5	51.9
Sprinter										50.0	48.6	45.2	53.1
18	4.Fl	57.1	54.7	51.2	59.4	0.0	0.0	0.0	0.0				
Las Flores Drive										51.4	48.5	44.9	53.3
Santa Fe Avenue										53.1	50.3	46.7	55.0
Sprinter										52.2	50.8	47.3	55.2
19	1.Fl	46.0	44.2	40.7	48.7	0.0	0.0	0.0	0.0				
Las Flores Drive										40.8	37.9	34.3	42.6
Santa Fe Avenue										27.3	24.5	20.8	29.2
Sprinter										44.4	43.0	39.5	47.4
19	2.Fl	50.7	49.1	45.6	53.6	0.0	0.0	0.0	0.0				
Las Flores Drive										42.0	39.1	35.5	43.9
Santa Fe Avenue										31.1	28.2	24.6	33.0
Sprinter										50.0	48.6	45.1	53.0
19	3.Fl	51.9	50.3	46.8	54.8	0.0	0.0	0.0	0.0				
Las Flores Drive										44.0	41.1	37.5	45.8
Santa Fe Avenue										36.4	33.6	29.9	38.3
Sprinter										51.0	49.6	46.2	54.1
19	4.Fl	53.2	51.6	48.0	56.0	0.0	0.0	0.0	0.0				
Las Flores Drive										44.7	41.8	38.2	46.6
Santa Fe Avenue										38.4	35.5	31.9	40.3
Sprinter										52.3	50.9	47.4	55.4
20	1.Fl	46.9	45.2	41.7	49.7	0.0	0.0	0.0	0.0				
Las Flores Drive										40.3	37.5	33.8	42.2
Santa Fe Avenue										31.4	28.6	25.0	33.3
Sprinter										45.6	44.3	40.8	48.7
20	2.Fl	50.8	49.2	45.7	53.7	0.0	0.0	0.0	0.0				
Las Flores Drive										41.3	38.4	34.8	43.2
Santa Fe Avenue										38.5	35.7	32.0	40.4
Sprinter										50.0	48.7	45.2	53.1
20	3.Fl	52.2	50.5	47.0	55.0	0.0	0.0	0.0	0.0				
Las Flores Drive										42.6	39.7	36.1	44.5
Santa Fe Avenue										42.6	39.8	36.1	44.5
Sprinter										51.1	49.7	46.2	54.1
20	4.Fl	53.1	51.5	48.0	55.9	0.0	0.0	0.0	0.0				
Las Flores Drive										43.0	40.1	36.5	44.9
Santa Fe Avenue										44.0	41.2	37.6	45.9
Sprinter										52.1	50.7	47.2	55.1

ATTACHMENT 5

FHWA RD-77-108 – Off-site Traffic Noise

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2022

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	14,850	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	16,660	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	16,660	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	14,600	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	13,500	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	560	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	11,730	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	14,940	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	16,750	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	16,960	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	14,750	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	13,560	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	590	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	11,820	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2022
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	69.2	62.5	65.2	71.3	21	67	213	674	2,133	6,745
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	69.7	63.0	65.7	71.8	24	76	239	757	2,393	7,568
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	69.7	63.0	65.7	71.8	24	76	239	757	2,393	7,568
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.2	62.4	65.1	71.2	21	66	208	659	2,084	6,591
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.3	61.3	64.3	69.8	15	48	151	477	1,510	4,775
6	Hollencrest Road	De Leone Road to Hollenbeck Road	47.6	44.3	50.1	52.7	0	1	3	9	29	93
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	66.7	60.6	63.7	69.1	13	41	129	406	1,285	4,064
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	69.3	62.5	65.2	71.3	21	67	213	674	2,133	6,745
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	69.7	63.0	65.7	71.8	24	76	239	757	2,393	7,568
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	69.8	63.0	65.8	71.9	24	77	245	774	2,449	7,744
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.2	62.4	65.2	71.3	21	67	213	674	2,133	6,745
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.4	61.3	64.3	69.8	15	48	151	477	1,510	4,775
6	Hollencrest Road	De Leone Road to Hollenbeck Road	47.9	44.5	50.3	53.0	0	1	3	10	32	100
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	66.8	60.7	63.7	69.2	13	42	132	416	1,315	4,159

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2025

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	15,610	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	17,510	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	17,510	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	15,340	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	14,190	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	590	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	12,330	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	15,700	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	17,600	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	17,810	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	15,490	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	14,250	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	620	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	12,420	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2025
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	69.4	62.7	65.4	71.5	22	71	223	706	2,233	7,063
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	69.9	63.2	65.9	72.0	25	79	251	792	2,506	7,924
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	69.9	63.2	65.9	72.0	25	79	251	792	2,506	7,924
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.4	62.6	65.3	71.4	22	69	218	690	2,183	6,902
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.6	61.5	64.5	70.0	16	50	158	500	1,581	5,000
6	Hollencrest Road	De Leone Road to Hollenbeck Road	47.9	44.5	50.3	53.0	0	1	3	10	32	100
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	66.9	60.9	63.9	69.4	14	44	138	435	1,377	4,355
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	69.5	62.7	65.4	71.5	22	71	223	706	2,233	7,063
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	70.0	63.2	65.9	72.0	25	79	251	792	2,506	7,924
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	70.0	63.3	66.0	72.1	26	81	256	811	2,564	8,109
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.4	62.7	65.4	71.5	22	71	223	706	2,233	7,063
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.6	61.5	64.6	70.0	16	50	158	500	1,581	5,000
6	Hollencrest Road	De Leone Road to Hollenbeck Road	48.1	44.7	50.6	53.2	0	1	3	10	33	104
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	67.0	60.9	64.0	69.4	14	44	138	435	1,377	4,355

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2050

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	22,200	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	22,200	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	22,200	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	21,300	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	24,400	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	830	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	16,800	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	22,290	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	22,290	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	22,500	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	21,450	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	24,460	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	860	25	50	95.00	3.00	2.00	77.00	10.00	13.00	
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	16,890	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores
Project Number : 9865
Modeled Condition : 2050
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	71.0	64.2	67.0	73.0	32	100	315	998	3,155	9,976
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	71.0	64.2	67.0	73.0	32	100	315	998	3,155	9,976
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	71.0	64.2	67.0	73.0	32	100	315	998	3,155	9,976
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	70.8	64.0	66.8	72.9	31	97	308	975	3,083	9,749
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	69.9	63.8	66.9	72.3	27	85	269	849	2,685	8,491
6	Hollencrest Road	De Leone Road to Hollenbeck Road	49.3	46.0	51.8	54.4	0	1	4	14	44	138
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	68.3	62.2	65.3	70.7	19	59	186	587	1,858	5,874
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	71.0	64.2	67.0	73.1	32	102	323	1,021	3,228	10,209
2	S. Santa Fe Avenue	Bosstick Boulevard to Vern Road	71.0	64.2	67.0	73.1	32	102	323	1,021	3,228	10,209
3	S. Santa Fe Avenue	Vern Road to Las Flores Drive	71.0	64.3	67.0	73.1	32	102	323	1,021	3,228	10,209
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	70.8	64.1	66.8	72.9	31	97	308	975	3,083	9,749
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	69.9	63.8	66.9	72.3	27	85	269	849	2,685	8,491
6	Hollencrest Road	De Leone Road to Hollenbeck Road	49.5	46.1	52.0	54.6	0	1	5	14	46	144
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	68.3	62.2	65.3	70.7	19	59	186	587	1,858	5,874

ATTACHMENT 6

SoundPLAN Data – On-site Generated Noise

Source name	Reference	Noise Level dB(A) Lpw
HVAC1	Lw/unit	75
HVAC2	Lw/unit	75
HVAC3	Lw/unit	75
HVAC4	Lw/unit	75
HVAC5	Lw/unit	75
HVAC6	Lw/unit	75
HVAC7	Lw/unit	75
HVAC8	Lw/unit	75
HVAC9	Lw/unit	75
HVAC10	Lw/unit	75
HVAC11	Lw/unit	75
HVAC12	Lw/unit	75
HVAC13	Lw/unit	75
HVAC14	Lw/unit	75
HVAC15	Lw/unit	75
HVAC16	Lw/unit	75
HVAC17	Lw/unit	75
HVAC18	Lw/unit	75
HVAC19	Lw/unit	75
HVAC20	Lw/unit	75
HVAC21	Lw/unit	75
HVAC22	Lw/unit	75
HVAC23	Lw/unit	75
HVAC24	Lw/unit	75
HVAC25	Lw/unit	75
HVAC26	Lw/unit	75
HVAC27	Lw/unit	75
HVAC28	Lw/unit	75
HVAC29	Lw/unit	75
HVAC30	Lw/unit	75
HVAC31	Lw/unit	75
HVAC32	Lw/unit	75
HVAC33	Lw/unit	75
HVAC34	Lw/unit	75
HVAC35	Lw/unit	75
HVAC36	Lw/unit	75
HVAC37	Lw/unit	75
HVAC38	Lw/unit	75
HVAC39	Lw/unit	75
HVAC40	Lw/unit	75
HVAC41	Lw/unit	75
HVAC42	Lw/unit	75
HVAC43	Lw/unit	75
HVAC44	Lw/unit	75
HVAC45	Lw/unit	75
HVAC46	Lw/unit	75
HVAC47	Lw/unit	75
HVAC48	Lw/unit	75
HVAC49	Lw/unit	75
HVAC50	Lw/unit	75
HVAC51	Lw/unit	75
HVAC52	Lw/unit	75
HVAC53	Lw/unit	75
HVAC54	Lw/unit	75
HVAC55	Lw/unit	75
HVAC56	Lw/unit	75

9865 Santa Fe Flores

SoundPLAN Data - HVAC

No.	Coordinates X	Y	Height	Noise Level
	(meters)		(meters)	dB(A) Leq
1	481468.23	3668972.47	182.38	33.7
2	481477.03	3668933.16	185.26	35.7
3	481491.51	3668901.09	186.46	35.6
4	481513.24	3668863.85	186.82	35.2
5	481534.96	3668832.30	186.16	34.2
6	481452.72	3668803.33	161.69	33.3
7	481417.03	3668787.30	160.02	32.9
8	481389.61	3668758.33	159.09	37.9
9	481373.58	3668720.06	157.61	37.0
10	481348.75	3668660.57	154.54	35.1
11	481317.72	3668679.71	153.92	37.4
12	481280.47	3668693.16	153.14	38.8
13	481232.89	3668717.47	152.07	38.0
14	481185.82	3668741.78	151.46	36.6
15	481304.72	3668755.81	153.73	40.8
16	481288.85	3668803.43	156.64	43.2
17	481306.71	3668845.77	157.91	43.0
18	481370.21	3668885.46	167.46	44.1

Source name			Noise Level dB(A) Leq
1	1.Fl	33.7	
HVAC1			15.9
HVAC2			16.8
HVAC3			17.7
HVAC4			17.8
HVAC5			18.0
HVAC6			18.0
HVAC7			19.7
HVAC8			19.7
HVAC9			19.6
HVAC10			19.6
HVAC11			19.6
HVAC12			19.5
HVAC13			19.5
HVAC14			19.5
HVAC15			19.4
HVAC16			19.4
HVAC17			19.4
HVAC18			19.4
HVAC19			19.4
HVAC20			19.4
HVAC21			19.4
HVAC22			19.5
HVAC23			17.6
HVAC24			17.5
HVAC25			17.3
HVAC26			17.0
HVAC27			16.1
HVAC28			14.7
HVAC29			5.2
HVAC30			6.2
HVAC31			8.1
HVAC32			9.2
HVAC33			9.5
HVAC34			9.7
HVAC35			10.0
HVAC36			10.2
HVAC37			10.4
HVAC38			10.6
HVAC39			11.4
HVAC40			11.6
HVAC41			11.7
HVAC42			11.9
HVAC43			11.6
HVAC44			11.4
HVAC45			11.5
HVAC46			11.3
HVAC47			10.6
HVAC48			10.4
HVAC49			10.2
HVAC50			10.0
HVAC51			9.7
HVAC52			9.5
HVAC53			9.2
HVAC54			8.9
HVAC55			3.4
HVAC56			2.9
2	1.Fl	35.7	
HVAC1			17.4
HVAC2			18.4
HVAC3			19.1
HVAC4			19.2
HVAC5			19.3
HVAC6			19.2
HVAC7			19.0
HVAC8			20.8
HVAC9			22.0
HVAC10			22.0

HVAC11			22.0
HVAC12			21.9
HVAC13			21.9
HVAC14			21.8
HVAC15			21.2
HVAC16			21.2
HVAC17			21.2
HVAC18			21.3
HVAC19			19.6
HVAC20			19.6
HVAC21			18.8
HVAC22			18.8
HVAC23			19.0
HVAC24			19.1
HVAC25			19.1
HVAC26			18.9
HVAC27			18.0
HVAC28			16.7
HVAC29			5.1
HVAC30			5.8
HVAC31			14.3
HVAC32			14.6
HVAC33			14.9
HVAC34			15.1
HVAC35			15.7
HVAC36			15.7
HVAC37			15.7
HVAC38			15.8
HVAC39			15.8
HVAC40			15.9
HVAC41			15.8
HVAC42			15.8
HVAC43			15.8
HVAC44			15.8
HVAC45			15.8
HVAC46			15.8
HVAC47			15.8
HVAC48			15.7
HVAC49			15.5
HVAC50			15.4
HVAC51			15.1
HVAC52			14.9
HVAC53			14.6
HVAC54			14.3
HVAC55			9.8
HVAC56			8.5
3	1.Fl	35.6	
HVAC1			18.2
HVAC2			19.2
HVAC3			19.8
HVAC4			19.8
HVAC5			19.7
HVAC6			19.6
HVAC7			20.0
HVAC8			20.0
HVAC9			19.9
HVAC10			19.8
HVAC11			19.8
HVAC12			21.7
HVAC13			21.6
HVAC14			21.6
HVAC15			21.0
HVAC16			18.7
HVAC17			18.9
HVAC18			19.0
HVAC19			19.0
HVAC20			19.1
HVAC21			19.1
HVAC22			18.8
HVAC23			19.0
HVAC24			19.1

HVAC25		19.2
HVAC26		19.2
HVAC27		19.1
HVAC28		17.8
HVAC29		10.1
HVAC30		11.8
HVAC31		18.3
HVAC32		16.1
HVAC33		16.3
HVAC34		16.5
HVAC35		16.6
HVAC36		16.7
HVAC37		16.7
HVAC38		16.7
HVAC39		16.6
HVAC40		16.6
HVAC41		16.5
HVAC42		18.2
HVAC43		17.1
HVAC44		17.2
HVAC45		17.2
HVAC46		15.9
HVAC47		15.6
HVAC48		15.5
HVAC49		15.3
HVAC50		14.8
HVAC51		14.5
HVAC52		14.1
HVAC53		13.5
HVAC54		15.9
HVAC55		11.9
HVAC56		10.3
4	1.Fl	35.2
HVAC1		18.4
HVAC2		19.1
HVAC3		19.0
HVAC4		18.9
HVAC5		18.9
HVAC6		18.8
HVAC7		18.7
HVAC8		18.7
HVAC9		18.6
HVAC10		18.6
HVAC11		18.6
HVAC12		18.5
HVAC13		18.5
HVAC14		20.8
HVAC15		17.5
HVAC16		17.4
HVAC17		17.6
HVAC18		17.7
HVAC19		17.7
HVAC20		17.7
HVAC21		17.6
HVAC22		17.6
HVAC23		17.8
HVAC24		17.9
HVAC25		17.9
HVAC26		17.9
HVAC27		18.0
HVAC28		18.1
HVAC29		11.8
HVAC30		18.2
HVAC31		19.5
HVAC32		19.5
HVAC33		17.1
HVAC34		17.4
HVAC35		17.3
HVAC36		17.3
HVAC37		17.2
HVAC38		17.2

HVAC39			17.1
HVAC40			17.1
HVAC41			17.1
HVAC42			17.1
HVAC43			16.2
HVAC44			16.3
HVAC45			16.3
HVAC46			16.4
HVAC47			16.2
HVAC48			16.3
HVAC49			16.5
HVAC50			16.3
HVAC51			16.4
HVAC52			16.4
HVAC53			16.3
HVAC54			19.1
HVAC55			16.4
HVAC56			15.5
5	1.Fl	34.2	
HVAC1			17.6
HVAC2			17.5
HVAC3			17.5
HVAC4			17.4
HVAC5			17.4
HVAC6			17.3
HVAC7			17.3
HVAC8			17.3
HVAC9			17.2
HVAC10			17.2
HVAC11			17.2
HVAC12			17.1
HVAC13			17.1
HVAC14			17.0
HVAC15			16.0
HVAC16			15.9
HVAC17			16.0
HVAC18			16.1
HVAC19			16.1
HVAC20			16.1
HVAC21			16.0
HVAC22			16.0
HVAC23			16.2
HVAC24			16.3
HVAC25			16.3
HVAC26			16.2
HVAC27			16.3
HVAC28			16.4
HVAC29			17.9
HVAC30			18.9
HVAC31			19.0
HVAC32			19.0
HVAC33			16.3
HVAC34			16.2
HVAC35			16.2
HVAC36			16.3
HVAC37			16.3
HVAC38			16.3
HVAC39			16.2
HVAC40			16.1
HVAC41			16.2
HVAC42			16.2
HVAC43			15.2
HVAC44			15.2
HVAC45			15.2
HVAC46			15.3
HVAC47			15.1
HVAC48			15.1
HVAC49			15.2
HVAC50			15.0
HVAC51			15.3
HVAC52			15.3

HVAC53			18.4
HVAC54			18.4
HVAC55			18.3
HVAC56			15.2
6	1.Fl	33.3	
HVAC1			11.3
HVAC2			11.5
HVAC3			11.8
HVAC4			12.1
HVAC5			12.4
HVAC6			12.5
HVAC7			12.7
HVAC8			13.1
HVAC9			13.3
HVAC10			13.4
HVAC11			13.6
HVAC12			13.7
HVAC13			13.9
HVAC14			14.0
HVAC15			13.8
HVAC16			13.7
HVAC17			13.5
HVAC18			13.4
HVAC19			13.2
HVAC20			13.1
HVAC21			12.9
HVAC22			12.6
HVAC23			12.4
HVAC24			12.3
HVAC25			12.0
HVAC26			11.8
HVAC27			11.4
HVAC28			11.2
HVAC29			16.6
HVAC30			17.1
HVAC31			17.4
HVAC32			17.5
HVAC33			14.9
HVAC34			18.4
HVAC35			18.3
HVAC36			18.3
HVAC37			18.3
HVAC38			18.3
HVAC39			18.2
HVAC40			18.2
HVAC41			18.2
HVAC42			18.2
HVAC43			17.6
HVAC44			17.6
HVAC45			17.6
HVAC46			17.7
HVAC47			17.6
HVAC48			17.7
HVAC49			17.8
HVAC50			17.7
HVAC51			17.8
HVAC52			17.9
HVAC53			17.0
HVAC54			16.9
HVAC55			16.7
HVAC56			16.3
7	1.Fl	32.9	
HVAC1			14.7
HVAC2			12.5
HVAC3			12.8
HVAC4			13.1
HVAC5			13.4
HVAC6			13.6
HVAC7			13.9
HVAC8			14.0
HVAC9			14.3

HVAC10			14.4
HVAC11			14.6
HVAC12			14.7
HVAC13			14.9
HVAC14			15.0
HVAC15			15.2
HVAC16			15.1
HVAC17			15.0
HVAC18			14.9
HVAC19			14.7
HVAC20			14.5
HVAC21			14.3
HVAC22			14.1
HVAC23			13.8
HVAC24			13.5
HVAC25			13.2
HVAC26			13.0
HVAC27			12.7
HVAC28			12.5
HVAC29			17.9
HVAC30			18.0
HVAC31			18.1
HVAC32			15.8
HVAC33			15.9
HVAC34			16.0
HVAC35			16.0
HVAC36			16.1
HVAC37			16.1
HVAC38			16.2
HVAC39			16.2
HVAC40			16.3
HVAC41			16.3
HVAC42			16.3
HVAC43			16.1
HVAC44			16.1
HVAC45			16.1
HVAC46			16.1
HVAC47			16.0
HVAC48			16.0
HVAC49			15.9
HVAC50			15.8
HVAC51			15.9
HVAC52			15.8
HVAC53			15.7
HVAC54			17.9
HVAC55			17.8
HVAC56			17.8
8	1.Fl	37.9	
HVAC1			15.4
HVAC2			15.4
HVAC3			15.4
HVAC4			15.4
HVAC5			15.4
HVAC6			13.4
HVAC7			13.5
HVAC8			13.5
HVAC9			13.7
HVAC10			13.7
HVAC11			14.2
HVAC12			14.5
HVAC13			15.0
HVAC14			15.4
HVAC15			15.5
HVAC16			15.1
HVAC17			14.6
HVAC18			14.4
HVAC19			14.3
HVAC20			14.2
HVAC21			14.1
HVAC22			14.0
HVAC23			13.9

HVAC24			13.8
HVAC25			13.7
HVAC26			13.7
HVAC27			15.9
HVAC28			15.9
HVAC29			25.6
HVAC30			24.1
HVAC31			22.1
HVAC32			22.2
HVAC33			22.2
HVAC34			22.3
HVAC35			22.3
HVAC36			22.3
HVAC37			22.4
HVAC38			22.4
HVAC39			22.5
HVAC40			22.5
HVAC41			22.5
HVAC42			22.6
HVAC43			22.8
HVAC44			22.7
HVAC45			22.7
HVAC46			22.6
HVAC47			22.6
HVAC48			22.6
HVAC49			22.5
HVAC50			22.5
HVAC51			22.4
HVAC52			22.4
HVAC53			22.3
HVAC54			22.3
HVAC55			24.1
HVAC56			24.0
9	1.Fl	37.0	
HVAC1			13.3
HVAC2			13.4
HVAC3			13.4
HVAC4			13.5
HVAC5			16.2
HVAC6			16.3
HVAC7			16.3
HVAC8			16.3
HVAC9			15.6
HVAC10			15.7
HVAC11			16.0
HVAC12			16.2
HVAC13			16.4
HVAC14			16.3
HVAC15			16.4
HVAC16			16.4
HVAC17			16.2
HVAC18			16.1
HVAC19			16.0
HVAC20			16.0
HVAC21			15.9
HVAC22			12.3
HVAC23			12.1
HVAC24			11.9
HVAC25			13.8
HVAC26			13.7
HVAC27			13.6
HVAC28			13.5
HVAC29			23.5
HVAC30			23.6
HVAC31			22.6
HVAC32			22.7
HVAC33			21.3
HVAC34			21.2
HVAC35			21.3
HVAC36			21.3
HVAC37			20.0

HVAC38			20.1
HVAC39			20.8
HVAC40			21.2
HVAC41			22.2
HVAC42			24.9
HVAC43			22.1
HVAC44			21.5
HVAC45			20.9
HVAC46			20.7
HVAC47			20.5
HVAC48			20.1
HVAC49			20.0
HVAC50			19.9
HVAC51			19.8
HVAC52			21.3
HVAC53			21.2
HVAC54			21.1
HVAC55			22.6
HVAC56			22.4
10	1.Fl	35.1	
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HVAC2			15.1
HVAC3			15.1
HVAC4			15.1
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HVAC9			14.4
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HVAC11			14.6
HVAC12			14.8
HVAC13			14.8
HVAC14			14.6
HVAC15			13.7
HVAC16			13.9
HVAC17			14.1
HVAC18			14.0
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HVAC21			13.3
HVAC22			14.4
HVAC23			14.3
HVAC24			14.3
HVAC25			14.3
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HVAC36			19.6
HVAC37			18.3
HVAC38			19.1
HVAC39			20.1
HVAC40			21.2
HVAC41			23.2
HVAC42			21.6
HVAC43			21.4
HVAC44			20.2
HVAC45			18.7
HVAC46			18.5
HVAC47			18.2
HVAC48			18.2
HVAC49			18.1
HVAC50			18.0
HVAC51			17.9

HVAC52			19.4
HVAC53			19.3
HVAC54			18.6
HVAC55			18.6
HVAC56			18.3
11	1.Fl	37.4	
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HVAC2			14.6
HVAC3			14.6
HVAC4			14.6
HVAC5			14.7
HVAC6			14.7
HVAC7			14.8
HVAC8			14.9
HVAC9			14.9
HVAC10			15.0
HVAC11			13.7
HVAC12			17.3
HVAC13			17.0
HVAC14			16.6
HVAC15			14.5
HVAC16			14.8
HVAC17			15.2
HVAC18			13.6
HVAC19			15.0
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HVAC22			14.8
HVAC23			14.7
HVAC24			14.7
HVAC25			14.6
HVAC26			14.6
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HVAC31			20.4
HVAC32			20.6
HVAC33			20.9
HVAC34			21.9
HVAC35			22.4
HVAC36			23.0
HVAC37			23.5
HVAC38			24.0
HVAC39			24.3
HVAC40			22.3
HVAC41			23.8
HVAC42			25.9
HVAC43			24.6
HVAC44			24.1
HVAC45			23.0
HVAC46			22.6
HVAC47			21.6
HVAC48			21.4
HVAC49			21.0
HVAC50			20.5
HVAC51			20.3
HVAC52			19.6
HVAC53			19.1
HVAC54			19.1
HVAC55			18.9
HVAC56			18.8
12	1.Fl	38.8	
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HVAC2			18.8
HVAC3			17.4
HVAC4			17.6
HVAC5			17.8
HVAC6			18.0
HVAC7			18.2
HVAC8			17.2

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HVAC10			17.6
HVAC11			18.0
HVAC12			17.8
HVAC13			18.0
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HVAC20			18.7
HVAC21			18.5
HVAC22			18.4
HVAC23			19.2
HVAC24			19.1
HVAC25			19.0
HVAC26			18.9
HVAC27			18.8
HVAC28			18.7
HVAC29			21.5
HVAC30			21.7
HVAC31			22.2
HVAC32			22.3
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HVAC36			22.2
HVAC37			22.5
HVAC38			22.3
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HVAC40			24.6
HVAC41			25.0
HVAC42			25.1
HVAC43			24.1
HVAC44			23.4
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HVAC46			23.6
HVAC47			23.1
HVAC48			22.8
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HVAC50			22.9
HVAC51			24.1
HVAC52			22.9
HVAC53			23.0
HVAC54			22.9
HVAC55			22.8
HVAC56			22.7
13	1.Fl	38.0	
HVAC1			18.1
HVAC2			18.2
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HVAC13			17.4
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HVAC15			12.5
HVAC16			18.1
HVAC17			18.3
HVAC18			18.1
HVAC19			17.8
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HVAC22			18.7

HVAC23			18.7
HVAC24			18.7
HVAC25			18.3
HVAC26			18.2
HVAC27			20.0
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HVAC35			21.7
HVAC36			21.8
HVAC37			21.9
HVAC38			22.0
HVAC39			22.4
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HVAC43			22.7
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HVAC45			23.2
HVAC46			22.4
HVAC47			22.0
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HVAC50			21.4
HVAC51			21.3
HVAC52			22.1
HVAC53			21.2
HVAC54			21.5
HVAC55			21.8
HVAC56			21.6
14	1.Fl	36.6	
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HVAC2			18.1
HVAC3			18.2
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HVAC5			18.3
HVAC6			18.2
HVAC7			18.3
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HVAC27			17.7
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HVAC32			19.3
HVAC33			19.2
HVAC34			19.5
HVAC35			20.3
HVAC36			20.4

HVAC37			20.5
HVAC38			20.6
HVAC39			20.8
HVAC40			21.1
HVAC41			20.7
HVAC42			20.3
HVAC43			20.8
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HVAC53			19.3
HVAC54			19.0
HVAC55			18.5
HVAC56			19.1
15	1.Fl	40.8	
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HVAC2			17.0
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HVAC5			18.1
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HVAC7			17.1
HVAC8			17.5
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HVAC11			19.7
HVAC12			18.9
HVAC13			19.7
HVAC14			20.3
HVAC15			12.6
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HVAC17			20.1
HVAC18			19.7
HVAC19			18.3
HVAC20			17.9
HVAC21			17.4
HVAC22			18.8
HVAC23			18.3
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HVAC25			17.6
HVAC26			18.4
HVAC27			18.1
HVAC28			18.2
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HVAC30			20.6
HVAC31			21.5
HVAC32			22.1
HVAC33			23.6
HVAC34			25.4
HVAC35			26.1
HVAC36			26.0
HVAC37			26.3
HVAC38			25.9
HVAC39			26.3
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HVAC41			28.2
HVAC42			28.9
HVAC43			29.3
HVAC44			28.9
HVAC45			27.1
HVAC46			26.3
HVAC47			25.9
HVAC48			25.9
HVAC49			25.4
HVAC50			24.8

HVAC51			24.6
HVAC52			21.7
HVAC53			21.3
HVAC54			21.7
HVAC55			21.4
HVAC56			21.1
16	1.Fl	43.2	
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HVAC2			23.8
HVAC3			23.8
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HVAC11			23.8
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HVAC22			24.7
HVAC23			24.7
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HVAC25			24.5
HVAC26			24.4
HVAC27			24.4
HVAC28			25.9
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HVAC31			24.3
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HVAC34			27.6
HVAC35			26.9
HVAC36			27.8
HVAC37			28.2
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HVAC52			25.8
HVAC53			24.9
HVAC54			24.2
HVAC55			23.2
HVAC56			22.6
17	1.Fl	43.0	
HVAC1			25.8
HVAC2			25.8
HVAC3			25.8
HVAC4			25.9
HVAC5			25.9
HVAC6			25.9
HVAC7			26.0

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HVAC27			26.2
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HVAC31			22.7
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HVAC34			25.8
HVAC35			25.3
HVAC36			25.4
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HVAC43			25.8
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HVAC51			24.7
HVAC52			24.1
HVAC53			23.2
HVAC54			22.6
HVAC55			21.7
HVAC56			21.4
18	1.Fl	44.1	
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HVAC2			30.3
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HVAC4			30.2
HVAC5			30.2
HVAC6			30.0
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HVAC12			29.6
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HVAC15			29.8
HVAC16			28.7
HVAC17			28.9
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HVAC20			29.3
HVAC21			29.4

HVAC22	29.5
HVAC23	29.7
HVAC24	28.9
HVAC25	29.0
HVAC26	29.0
HVAC27	29.2
HVAC28	23.9
HVAC29	9.3
HVAC30	9.6
HVAC31	11.2
HVAC32	11.5
HVAC33	11.9
HVAC34	12.2
HVAC35	12.6
HVAC36	14.4
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HVAC46	14.4
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HVAC51	11.8
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HVAC53	11.3
HVAC54	11.2
HVAC55	9.6
HVAC56	9.3