ATTACHMENT D.10

NOISE ANALYSIS

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

Project Nos. GPA25-0001, R25-0001, MFSDP25-0001, and TSM25-0001

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Acronyms and Abbreviations

APN	assessor parcel number
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
GPA	General Plan Amendment
HVAC	heating, ventilating, and air conditioning
L_{90}	noise level exceeded 90 percent of the time
L_{eq}	one-hour equivalent noise level
LLG	Linscott, Law & Greenspan, Engineers, Inc.
L_{max}	maximum noise level
L_{pw}	sound power level
MND	Mitigated Negative Declaration
project	Santa Fe Flores Townhomes Project
STC	sound transmission class

Executive Summary

The Santa Fe Flores Townhomes Project (project) is located in the city of San Marcos at 2966, 2972, and 2982 South Santa Fe Avenue, adjacent to North Las Flores Drive. The 2.6-acre (net) project site is comprised of assessor parcel numbers (APNs) 217-161-18, 217-161-19, and 0.37 acres of APN 217-161-17. The project would require a General Plan Amendment (GPA) and Rezone to allow the development of 46 multi-family residential townhome units. The project also proposes approximately 0.12 acres of off-site improvements, including the construction of a new shared driveway extending into the southern portion of APN 217-161-17, upgrades to the existing liquor store parking lot, and landscaping within the 8-foot-wide irrevocable offer of dedication area along the project frontage. The liquor store, Gourmet Liquor, located on the southern portion of APN 217-161-17 is not part of the project and would remain.

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 of San Marcos (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 56 to 73 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 North 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 second- and third-floor balconies, roof decks, and the five amenity areas located on the south side of Building 1, on the north side of Building 2, on the east side of Building 4, on the north side of Building 5, and between Buildings 6 and 7. These amenity areas consist of active play areas and passive gathering space. As calculated in this analysis, without consideration of any noise barriers, exterior noise levels are projected to range from 42 to 70 CNEL at the building façades and amenity areas. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL at all locations except the amenity area on the south side of Building 1 (Amenity Area A, Receiver 1) and the south and east sides of Building 1 facing the roadways (Receivers 8 and 9). In order to reduce noise levels at these locations, the project would include a 6-foot barrier adjacent to the amenity area south of Building 1, and a solid 3.5-foot barrier on the balconies located on the south and east sides of Building 1 and on the south and east sides of the Building 1 roof deck. With construction of these barriers, exterior noise levels would be reduced to less than 65 CNEL and 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). With the installation of windows with a sound transmission class (STC) rating of 25 or higher, interior noise levels within the units in Building 1 would be reduced to 45 CNEL and interior noise levels would be less than significant. Interior noise levels at all other buildings would be 45 CNEL with standard light frame construction and without consideration of specific building components.

On-site Generated Noise

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. The applicable daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) Noise Ordinance limits are 60 dB(A) L_{eq} and 50 dB(A) L_{eq} at the single-family residential uses, 65 dB(A) L_{eq} and 55 dB(A) L_{eq} at the multi-family residential and mobile home park uses, 65 dB(A) L_{eq} and 55 dB(A) L_{eq} at the commercial uses, and 65 dB(A) L_{eq} and 60 dB(A) L_{eq} at the industrial uses. 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 42 dB(A) L_{eq} at the adjacent properties. Noise levels would not exceed the applicable Noise Ordinance limits at the property lines.

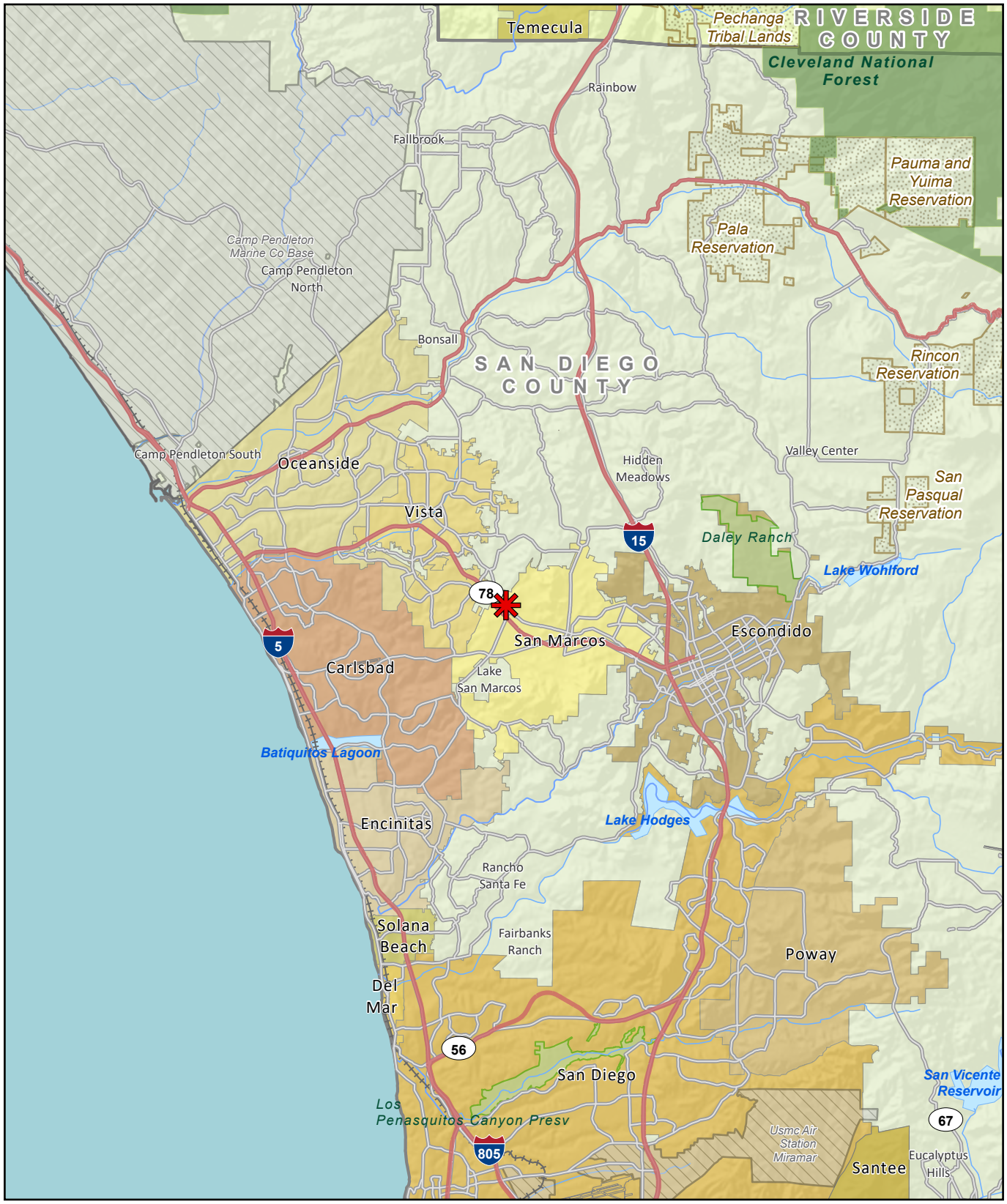
1.0 Introduction

1.1 Project Description

The project is located in the city of San Marcos at 2966, 2972, and 2982 South Santa Fe Avenue adjacent to North Las Flores Drive on assessor parcel numbers (APNs) 217-161-18, 217-161-19, and 0.37 acres of APN 217-161-17. The 2.6-acre (net) project site is comprised of APNs 217-161-18, 217-161-19, and 0.37 acres of APN 217-161-17. The project also proposes approximately 0.12 acres of off-site improvements, including the construction of a new shared driveway extending into the southern portion of APN 217-161-17, upgrades to the existing liquor store parking lot, and landscaping within the 8-foot-wide irrevocable offer of dedication area along the project frontage. Figure 1 shows the regional location. Figure 2 shows an aerial photograph of the project site and vicinity.

On February 28, 2023, the City of San Marcos City Council adopted a Mitigated Negative Declaration (MND; ND22-008; SCH No. 2022090486), approved a GPA (GPA21-0008), approved a Rezone (21-0004), and approved a Multi-Family Site Development Plan (MFSDP21-0002) for the Santa Fe Flores, LP Project (approved project). The requested Rezone (R21-0004) required a second reading prior to approval on March 14, 2023. The approved project evaluated the impacts associated with a GPA to change the land use from Commercial (C) and Light Industrial (L-I) to Medium Density Residential 2 (MDR2) and a zone change from Commercial (C) and Light Industrial (L-I) to Multi-Family Residential (R-3-10) to allow for the construction of 50 multi-family residential townhome units, in conjunction with a Density Bonus, on a 2.23-acre site consisting of two parcels, APNs 217-161-18 and 217-161-19.

Subsequent to MND approval, the applicant modified the site plan and added 0.37 acres of APN 217-161-17 through a lot line adjustment to be processed. The project would require a GPA from Medium Density Residential 2 (MDR2) to Medium High Density Residential (MHDR) for APNs 217-161-18 and 217-161-19, and a GPA from Commercial (C) to Medium High Density Residential (MHDR) for 0.37 acres of the northern portion of APN 217-161-17. Additionally, the project would rezone APNs 217-161-18 and 217-161-19 from Multi-Family Residential 3 (R-3-10) to Multi-Family Residential (R-3-6) and 0.37 acres of the northern portion of APN 217-161-17 from Commercial (C) to Multi-Family Residential (R-3-6). The project would develop 46 multi-family residential townhome units in seven buildings that would be three stories in height. Vehicle parking would include 92 spaces within attached garages and 15 guest spaces. The liquor store would not be part of the project and would remain. Project grading would include 23,300 cubic yards of cut and 3,200 cubic yards of fill resulting in the export of 20,100 cubic yards of soil. Figure 3 shows the proposed site plan.



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Project Location

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FIGURE 1
Regional Location

Image Source: Nearmap (flown May 2025)

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Project Boundary

Off-site Improvements

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FIGURE 2
Project Location on Aerial Photograph

Map Source: PLSA Engineering

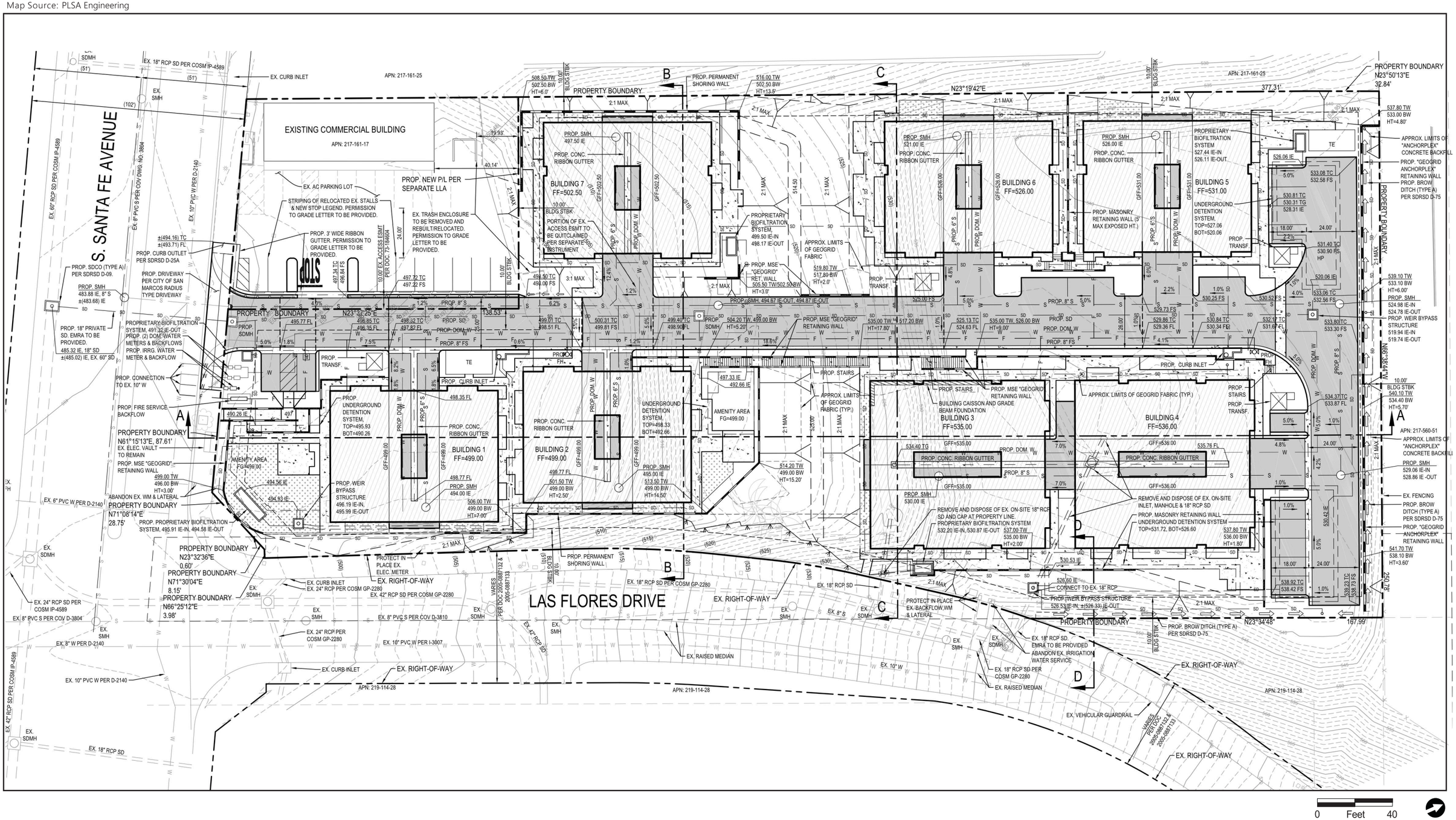

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FIGURE 3
Site Plan

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 [Caltrans] 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 (e.g., a noise level of 60 dB(A) at 50 feet from a point source would attenuate to 54 dB(A) at 100 feet).

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 (e.g., a noise level of 60 dB(A) at 50 feet from a line source would attenuate to 57 dB(A) at 100 feet).

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. For example, under soft site conditions, a noise level of 60 dB(A) at 50 feet from a point source would attenuate to 52.5 dB(A) at 100 feet, and a noise level of 60 dB(A) at 50 feet from a line source would attenuate to 55.5 dB(A) at 100 feet.

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 second- and third-floor balconies, rooftop decks, and the five proposed amenity areas consisting of active play areas and passive gathering areas.

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

CNEL = community noise equivalent level
SOURCE: City of San Marcos General Plan Update, Noise Element 2012.
[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
dB(A) L_{eq} = A-weighted decibels equivalent noise level SOURCE: Section 20.300.070(f) Table 20.300-4, San Marcos Municipal Code Title 20 – Zoning Code.		

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. 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).

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 Santa 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 Santa 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 North Las Flores Drive. Noise levels were measured for 15 minutes. The main noise source at this location was vehicle traffic on North Las Flores Drive. Secondary sources of noise included vehicle traffic on South Santa Fe Avenue. Vehicle traffic on North 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 South Santa Fe Avenue	1:34 p.m. – 1:49 p.m.	Vehicle Traffic on South Santa Fe Avenue	63.2
2	50 feet west of North Las Flores Drive	1:55 p.m. – 2:10 p.m.	Vehicle traffic on North 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	South Santa Fe Avenue	Eastbound	78	8	0	5	0
		Westbound	71	4	1	2	0
2	North Las Flores Drive	Northbound	13	0	0	0	0
		Southbound	11	0	0	0	0

Image Source: Nearmap (flown May 2025)

Project Boundary

Off-site Improvements

Noise Measurement Location

0 Feet 200

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FIGURE 4
Noise Measurement Locations

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.

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 2018). 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%

Table 5 Typical Construction Equipment Noise Levels		
Equipment	Noise Level at 50 Feet (dB(A) L_{eq})	Typical Duty Cycle
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%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
dB(A) L_{eq} = A-weighted decibels average noise level SOURCE: Federal Highway Administration 2006 and 2008; Federal Transit Authority 2018.		

Construction equipment would generate maximum noise levels between 70 and 95 dB(A) maximum noise level (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. FTA guidance recommends analyzing the two noisiest pieces of construction equipment (FTA 2018), therefore this is a conservative assessment. 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 North Las Flores Drive as well as Sprinters on the adjacent rail line. Future year 2050 with project traffic volumes for South Santa Fe Avenue were obtained from the Traffic Impact Analysis prepared for the project (Linscott, Law & Greenspan, Engineers [LLG] 2026). Future year 2050 traffic volumes for North Las Flores Drive were obtained from San Diego Association of Governments (SANDAG) traffic projections (SANDAG 2025). 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 were 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

Roadway	Segment	Year 2050 Average Daily Traffic	Speed	Vehicle Mix (percent)				
				Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
South Santa Fe Avenue	Community Drive to North Las Flores Drive	22,570	45	93	3	2	1	1
	North Las Flores Drive to North Rancho Santa Fe Road	21,480	45	93	3	2	1	1
Las Flores Drive	South of South Santa Fe Avenue	3,400	25	93	3	2	1	1
North Las Flores Drive	North of South 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. Fridays experience the largest number of daily Sprinter trains. The number of Friday 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	24	6	10
Westbound	24	6	8
TOTAL	**48**	**12**	**18**

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 2027), and future (year 2050) traffic volumes with and without the project were obtained from the project traffic impact analysis (LLG 2026). 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

Roadway Segment	Average Daily Traffic						Speed (mph)
	Existing	Existing + Project	Year 2027	Year 2027 + Project	Year 2050	Year 2050 + Project	
South Santa Fe Avenue							
Similax Road to Bosstick Boulevard	14,850	14,960	16,110	16,220	22,200	22,310	45
Bosstick Boulevard to Community Drive	16,660	16,770	18,080	18,190	22,200	22,310	45
Community Drive to North Las Flores Drive	16,660	17,030	18,080	18,450	22,200	22,570	45
North Las Flores Drive to North Rancho Santa Fe Road	14,600	14,780	15,840	16,020	21,300	21,480	45
North Rancho Santa Fe Road to North Pacific Street	13,500	13,570	14,650	14,720	24,400	24,470	40
Hollencrest Road							
De Leone Road to Hollenbeck Road	560	600	610	650	830	870	25
North Rancho Santa Fe Avenue							
South Santa Fe Avenue to Capalina Road	11,730	11,840	12,730	12,840	16,800	16,910	40

mph = miles per hour
SOURCE: Linscott, Law & Greenspan, Engineers, Inc. 2026.

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	58
2	Single-Family Residential	60
3	Single-Family Residential	61
4	Single-Family Residential	60
5	Single-Family Residential	59
6	Multi-Family Residential	56
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	Industrial	68
16	Industrial	66
17	Industrial	73
18	Commercial	73

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

As shown, construction noise levels would range from 56 to 73 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 buildings and grading. Future vehicle and rail 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 second- and third-floor balconies, rooftop decks, and the five proposed amenity areas consisting of active play areas and passive gathering areas 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 third-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 26 modeled receivers. Modeled noise levels shown in Table 10 do not include noise reduction provided by any noise barriers.

Image Source: Nearmap (flown May 2025)

Project Boundary
Off-site Improvements
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

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FIGURE 5
Construction Noise Contours

Image Source: Nearmap (flown May 2025)

Project Boundary
Off-site Improvements
Receivers
Site Plan
Amenity Area A 6-foot Barrier
Buildings

Vehicle and Rail Noise
50 CNEL
55 CNEL
60 CNEL
65 CNEL

0 Feet 150

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FIGURE 6
Future Vehicle and Rail Noise Contours

Table 10 Future Vehicle and Rail Traffic Noise Levels				
		Exterior Noise Level (CNEL)		
Receiver	Location	First-Floor	Second-Floor	Third-Floor
1	Amenity Area A	**68**	--	--
2	Amenity Area B	46	--	--
3	Amenity Area C	50	--	--
4	Amenity Area D	46	--	--
5	Amenity Area E	54	--	--
6	Amenity Area E	42	--	--
7	Building 1	61	63	65
8	Building 1	**67**	**69**	**70**
9	Building 1	63	65	**66**
10	Building 1 and 2	49	53	55
11	Building 2	57	61	61
12	Building 2	46	50	52
13	Building 2	54	58	60
14	Building 3	54	55	56
15	Building 3	58	60	61
16	Building 3	57	60	60
17	Building 3 and 4	45	49	51
18	Building 4	51	55	59
19	Building 4	48	51	52
20	Building 4	46	51	52
21	Building 5	46	50	51
22	Building 5	45	49	50
23	Building 5	48	54	56
24	Building 5 and 6	43	49	50
25	Building 6	51	56	57
26	Building 6	55	58	59
27	Building 6	49	53	55
28	Building 7	43	45	49
29	Building 7	47	56	60
30	Building 7	59	63	65
31	Building 7	54	56	58
CNEL = community noise equivalent level **Bold** = Exceeds 65 CNEL				

As shown, exterior noise levels are projected to range from 42 to 70 CNEL at the building façades and amenity areas. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL at all locations except the amenity area on the south side of Building 1 (Amenity Area A, Receiver 1) and the south and east sides of Building 1 facing the roadways (Receivers 8 and 9). There are second-floor balconies on the south side of Building 1 and third-floor balconies on the east side of Building 1 and a rooftop deck. These balconies and rooftop deck could be exposed to noise levels that exceed 65 CNEL. Based upon these findings, noise control recommendations are necessary at the amenity area south of Building 1, at the balconies on the south and east sides of Building 1, and on the south and east sides of the Building 1 roof deck in order to comply with the City's noise standard of 65 CNEL. A 6-foot barrier adjacent to the amenity area as shown in Figure 6 was modeled using SoundPLAN and would be necessary to reduce noise levels to 65 CNEL or less

at this active play area. Modeling data is provided in Attachment 4. To determine the required barrier heights at the Building 1 balconies and roof deck, the Fresnel barrier noise reductions were modeled. The balcony and roof deck barriers were modeled using this equation-based method rather than SoundPLAN because of the geometry of these barriers when elevated on balconies and the roof deck. These reductions are based on distance, source height, receiver elevation, and barrier height. The Fresnel barrier reduction calculations are provided as Attachment 5. It was calculated that a 3.5-foot balcony barrier would provide a 7.4 dB reduction at the balconies on the south side of Building 1 (Receiver 2), a 5.9 dB reduction at the balconies on the east side of Building 1 (Receiver 3), and a 7.0 dB reduction on the roof deck. In order to reduce noise levels at these locations, the project would include a 3.5-foot balcony railing as a solid barrier. With construction of these barriers, exterior noise levels would be reduced to less than 65 CNEL.

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).

As shown in Table 10, noise levels would be as high as 70 CNEL at the south side of Building 1 and 66 CNEL at the east side of Building 1. While the proposed 3.5-foot balcony barriers would reduce noise levels to 65 CNEL at a seated receiver, the entire building façade would not get the same noise attenuation, and the evaluation of specific building components is required. The sound transmission class (STC) rating of windows, walls, and roofs is an integer value that rates how well a building component attenuates noise. The STC rating generally reflects the decibel reduction that a building component can achieve. Standard walls and roofs typically have STC ratings greater than 40, while window components have lower ratings; thus, this analysis focuses on the minimum required window STC ratings. Because a noise reduction of up to 25 dB(A) is required to achieve interior noise levels of 45 CNEL or less, window components with an STC rating of 25 or higher are required for units located on the south and east side of Building 1. With the installation of windows with an STC rating of 25 or higher, interior noise levels within the units in Building 1 would be reduced to 45 CNEL and interior noise levels would be less than significant. Interior noise levels at all other buildings would be 45 CNEL with standard light frame construction and without consideration of specific building components.

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, near term (year 2027), 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 6.

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

Roadway Segment	Existing			Near-Term (Year 2027)			Future (Year 2050)			Cumulative Increase Over Existing
	No Project	Project	Increase	No Project	Project	Increase	No Project	Project	Increase	
South Santa Fe Avenue										
Similax Road to Bosstick Boulevard	71.3	71.3	0.0	71.6	71.7	0.1	73.0	73.1	0.1	1.8
Bosstick Boulevard to Community Drive	71.8	71.8	0.0	72.1	72.2	0.1	73.0	73.1	0.1	1.3
Community Drive to North Las Flores Drive	71.8	71.9	0.1	72.1	72.2	0.1	73.0	73.1	0.1	1.3
North Las Flores Drive to North Rancho Santa Fe Road	71.2	71.3	0.1	71.6	71.6	0.0	72.9	72.9	0.0	1.7
North Rancho Santa Fe Road to North Pacific Street	69.8	69.8	0.0	70.1	70.1	0.0	72.3	72.3	0.0	2.5
Hollencrest Road										
De Leone Road to Hollenbeck Road	52.7	53.0	0.3	53.1	53.4	0.3	54.4	54.6	0.2	1.9
North Rancho Santa Fe Avenue										
South Santa Fe Avenue to Capalina Road	69.1	69.2	0.1	69.5	69.5	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 17 receivers located at the adjacent properties. 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 7. Future projected noise levels are summarized in Table 12.

Image Source: Nearmap (flown May 2025)

Project Boundary
Off-site Improvements
Receivers
HVAC
Site Plan
Buildings

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

0 Feet 200

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FIGURE 7
HVAC Noise Contours

As shown, HVAC noise levels would range from 33 to 42 dB(A) Leq. 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.

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	33	60/50
2	Single Family Residential	35	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	34	65/55
7	Multi-Family Residential	35	65/55
8	Multi-Family Residential	42	65/55
9	Multi-Family Residential	41	65/55
10	Single-Family Residential	35	60/50
11	Mobile Home Park	36	65/55
12	Mobile Home Park	36	65/55
13	Mobile Home Park	35	65/55
14	Mobile Home Park	34	65/55
15	Industrial	39	65/60
16	Industrial	38	65/60
17	Industrial	40	65/60
18	Commercial	39	65/55

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 56 to 73 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 North 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 second- and third-floor balconies, rooftop decks, and the five proposed amenity areas consisting of active play areas and passive gathering areas. As shown in Table 10, without consideration of any noise barriers, exterior noise levels are projected to range from 42 to 70 CNEL at the building façades and amenity area. Noise levels would be compatible with the City's exterior multi-family noise level standard of 65 CNEL at all locations except the amenity area on the south side of Building 1 (Amenity Area A, Receiver 1) and the south and east sides of Building 1 facing the roadways (Receivers 8 and 9). In order to reduce noise levels at these locations, the project would include a 6-foot barrier adjacent to the amenity area south of Building 1, and a solid 3.5-foot barrier on the balconies located on the south and east sides of Building 1 and on the south and east sides of the Building 1 roof deck. With construction of these barriers, exterior noise levels would be reduced to less than 65 CNEL and 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). With the installation of windows with an STC rating of 25 or higher, interior noise levels within the units in Building 1 would be reduced to 45 CNEL and interior noise levels would be less than significant. Interior noise levels at all other buildings would be 45 CNEL with standard light frame construction and without consideration of specific building components.

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 42 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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2012 City of San Marcos General Plan Update, Noise Element.

ATTACHMENTS

ATTACHMENT 1

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 μPa^2h			
EA8	6.712 mPa^2h			
EA40	33.562 mPa^2h			
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			

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 μPa^2h			
EA8	1.791 mPa^2h			
EA40	8.953 mPa^2h			
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

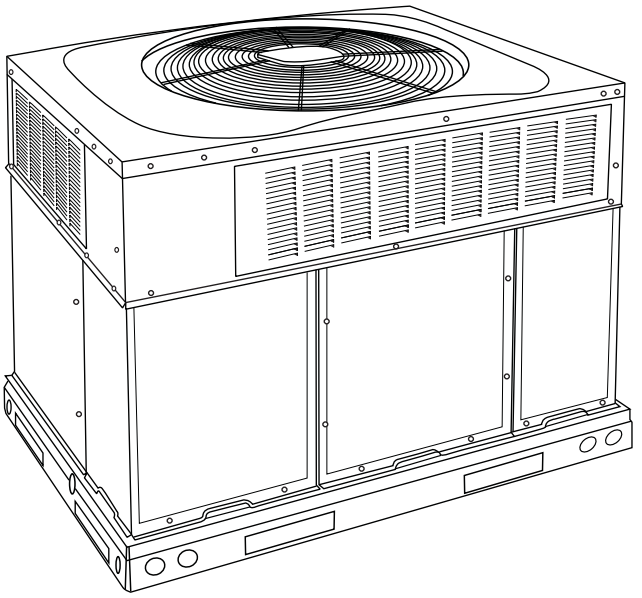

Fig. 1 - Unit 50VG-A

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

10587 Santa Fe Flores Townhomes

SoundPLAN Data - Construction

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

10587 Santa Fe Flores Townhomes

SoundPLAN Data - Construction

No.	Coordinates X (meters)	Coordinates Y (meters)	Height (meters)	Noise Level dB(A)
1	481468.23	3668972.47	182.38	58.4
2	481477.03	3668933.16	185.26	60.2
3	481491.51	3668901.09	186.46	60.8
4	481513.24	3668863.85	186.82	59.9
5	481534.96	3668832.30	186.16	58.7
6	481452.72	3668803.33	161.69	56.1
7	481417.03	3668787.30	160.02	57.7
8	481389.61	3668758.33	159.09	67.6
9	481373.58	3668720.06	157.61	69.9
10	481348.75	3668660.57	154.54	63.1
11	481317.72	3668679.71	153.92	66.0
12	481280.47	3668693.16	153.14	64.7
13	481232.89	3668717.47	152.07	61.4
14	481185.82	3668741.78	151.46	58.9
15	481288.85	3668803.43	156.64	67.9
16	481306.71	3668845.77	157.91	66.3
17	481370.21	3668885.46	167.46	73.2
18	481303.57	3668756.45	153.75	72.6

ATTACHMENT 4

SoundPLAN Data – On-site Traffic and Rail Noise

Station	ADT	Traffic values Vehicles type	Vehicle nar	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	%		%
S Santa Fe Avenue		Traffic direction:	In entry direction									
0+000	21474	Total	-	1378	716	310	-	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Automobiles	-	1282	666	288	72	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Medium trucks	-	41	21	9	72	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Heavy trucks	-	28	14	6	72	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Buses	-	14	7	3	72	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Motorcycles	-	14	7	3	72	none	-	-	Average (of DGAC and PCC)	2.481481481
0+000	21474	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	2.481481481
0+426	22566	Total	-	1448	752	326	-	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Automobiles	-	1347	699	303	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Medium trucks	-	43	23	10	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Heavy trucks	-	29	15	7	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Buses	-	14	8	3	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Motorcycles	-	14	8	3	72	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+426	22566	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-2.923076923
0+985	-	-	-	-	-	-						
N Las Flores Drive		Traffic direction:	In entry direction									
0+000	3396	Total	-	218	113	49	-	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Automobiles	-	203	105	46	40	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Medium trucks	-	7	3	1	40	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Heavy trucks	-	4	2	1	40	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Buses	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Motorcycles	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	42
0+000	3396	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	42
0+258	1602	Total	-	103	53	23	-	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Automobiles	-	96	49	21	40	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Medium trucks	-	3	2	1	40	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Heavy trucks	-	2	1	0	40	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Buses	-	1	1	0	40	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Motorcycles	-	1	1	0	40	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+258	1602	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0.0 / 19.3
0+628	-	-	-	-	-	-						

10587 Santa Fe Flores Townhomes

SoundPLAN Data - Vehicle and Rail Traffic

Track Station km	Coordinates of track axis X	Y	Z	Track type [dB]	Curve radius [dB]	Multiple reflections [dB]	Corrected mission 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)
0	48	12	18	80	80	yes	57.3	57.3	54.3
0+000	481709.9	3668428	173.36	-	-	-	-	57.3	57.3
0+951	481421.7	3669304	162.19	-	-	-	-	57.3	57.3

	Coordinates				Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier				Difference			
No.	X	Y	Floor	Height	Day	Evening	Night	CNEL	Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
	(meters)			(meters)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	481335.65	3668716.01	1.Fl	153.62	66.2	63.3	59.7	68.1	61.8	59.0	55.3	63.7	-4.4	-4.3	-4.3	-4.3
1	481335.65	3668716.01	2.Fl	156.72	67.8	64.9	61.3	69.7	67.6	64.8	61.1	69.5	-0.2	-0.2	-0.2	-0.2
1	481335.65	3668716.01	3.Fl	159.82	67.8	65.0	61.4	69.7	67.8	65.0	61.3	69.7	0.0	0.0	0.0	0.0
2	481355.89	3668781.10	1.Fl	153.90	44.1	41.5	38.0	46.3	44.1	41.5	38.0	46.3	0.0	0.0	0.0	0.0
2	481355.89	3668781.10	2.Fl	157.00	47.4	44.8	41.2	49.5	47.4	44.8	41.2	49.5	0.0	0.0	0.0	0.0
2	481355.89	3668781.10	3.Fl	160.10	50.8	48.3	44.8	53.0	50.8	48.3	44.8	53.0	0.0	0.0	0.0	0.0
3	481402.17	3668834.91	1.Fl	164.87	47.2	45.0	41.6	49.7	47.2	45.0	41.6	49.7	0.0	0.0	0.0	0.0
3	481402.17	3668834.91	2.Fl	167.97	51.6	49.2	45.8	53.9	51.5	49.2	45.7	53.8	-0.1	-0.1	-0.1	-0.1
3	481402.17	3668834.91	3.Fl	171.07	56.1	53.6	50.1	58.3	56.1	53.6	50.0	58.3	0.0	0.0	0.0	0.0
4	481347.96	3668870.55	1.Fl	163.63	42.9	41.4	38.2	46.0	42.9	41.4	38.2	46.0	0.0	0.0	0.0	0.0
4	481347.96	3668870.55	2.Fl	166.73	48.6	46.6	43.3	51.3	48.6	46.6	43.3	51.3	0.0	0.0	0.0	0.0
4	481347.96	3668870.55	3.Fl	169.83	49.9	48.0	44.6	52.6	49.9	48.0	44.6	52.6	0.0	0.0	0.0	0.0
5	481330.02	3668811.50	1.Fl	160.91	51.8	49.1	45.5	53.8	51.8	49.1	45.5	53.8	0.0	0.0	0.0	0.0
5	481330.02	3668811.50	2.Fl	164.01	55.0	52.3	48.7	57.0	55.0	52.3	48.6	57.0	0.0	0.0	0.0	0.0
5	481330.02	3668811.50	3.Fl	167.11	56.9	54.1	50.5	58.9	56.9	54.1	50.5	58.9	0.0	0.0	0.0	0.0
6	481326.76	3668793.80	1.Fl	154.66	39.5	37.5	34.2	42.2	39.5	37.5	34.2	42.2	0.0	0.0	0.0	0.0
6	481326.76	3668793.80	2.Fl	157.76	42.1	40.5	37.2	45.1	42.1	40.5	37.2	45.1	0.0	0.0	0.0	0.0
6	481326.76	3668793.80	3.Fl	160.86	46.1	44.0	40.5	48.6	46.1	44.0	40.5	48.6	0.0	0.0	0.0	0.0
7	481331.07	3668741.36	1.Fl	153.90	59.0	56.2	52.5	60.9	59.0	56.2	52.5	60.9	0.0	0.0	0.0	0.0
7	481331.07	3668741.36	2.Fl	157.00	61.4	58.6	54.9	63.3	61.4	58.6	54.9	63.3	0.0	0.0	0.0	0.0
7	481331.07	3668741.36	3.Fl	160.10	63.0	60.1	56.5	64.9	63.0	60.1	56.5	64.9	0.0	0.0	0.0	0.0
8	481336.40	3668724.08	1.Fl	153.90	65.3	62.5	58.8	67.2	63.1	60.3	56.6	65.0	-2.2	-2.2	-2.2	-2.2
8	481336.40	3668724.08	2.Fl	157.00	67.4	64.6	60.9	69.3	67.3	64.4	60.8	69.2	-0.1	-0.1	-0.1	-0.1
8	481336.40	3668724.08	3.Fl	160.10	67.9	65.0	61.4	69.8	67.9	65.0	61.4	69.8	0.0	0.0	0.0	0.0
9	481351.47	3668732.17	1.Fl	153.96	61.0	58.2	54.6	62.9	60.8	58.0	54.4	62.7	-0.2	-0.2	-0.2	-0.2
9	481351.47	3668732.17	2.Fl	157.06	62.6	59.7	56.1	64.5	62.5	59.7	56.0	64.4	-0.1	-0.1	-0.1	-0.1
9	481351.47	3668732.17	3.Fl	160.16	63.6	60.8	57.2	65.5	63.6	60.8	57.2	65.5	0.0	0.0	0.0	0.0
10	481344.49	3668750.54	1.Fl	153.90	46.6	44.1	40.6	48.8	46.6	44.1	40.6	48.8	0.0	0.0	0.0	0.0
10	481344.49	3668750.54	2.Fl	157.00	51.3	48.7	45.1	53.4	51.4	48.7	45.1	53.4	0.0	0.0	0.0	0.0
10	481344.49	3668750.54	3.Fl	160.10	53.2	50.6	47.0	55.3	53.2	50.6	47.0	55.3	0.0	0.0	0.0	0.0
11	481359.92	3668758.08	1.Fl	153.90	54.7	51.9	48.2	56.6	54.7	51.9	48.3	56.7	0.0	0.0	0.0	0.0
11	481359.92	3668758.08	2.Fl	157.00	58.5	55.8	52.1	60.5	58.5	55.8	52.1	60.5	0.0	0.0	0.0	0.0
11	481359.92	3668758.08	3.Fl	160.10	59.5	56.7	53.1	61.4	59.5	56.7	53.1	61.4	0.0	0.0	0.0	0.0
12	481355.15	3668776.09	1.Fl	153.90	43.9	41.4	37.9	46.1	43.9	41.4	37.9	46.1	0.0	0.0	0.0	0.0
12	481355.15	3668776.09	2.Fl	157.00	47.8	45.2	41.7	50.0	47.8	45.2	41.7	50.0	0.0	0.0	0.0	0.0
12	481355.15	3668776.09	3.Fl	160.10	49.9	47.5	44.1	52.2	49.9	47.5	44.1	52.2	0.0	0.0	0.0	0.0
13	481339.34	3668768.00	1.Fl	153.90	52.2	49.4	45.8	54.2	52.2	49.4	45.8	54.2	0.0	0.0	0.0	0.0
13	481339.34	3668768.00	2.Fl	157.00	56.0	53.2	49.6	57.9	56.0	53.2	49.6	57.9	0.0	0.0	0.0	0.0
13	481339.34	3668768.00	3.Fl	160.10	57.8	55.0	51.4	59.8	57.8	55.0	51.4	59.8	0.0	0.0	0.0	0.0
14	481360.11	3668813.57	1.Fl	164.57	51.9	49.3	45.7	54.0	51.9	49.3	45.7	54.0	0.0	0.0	0.0	0.0
14	481360.11	3668813.57	2.Fl	167.67	52.7	50.0	46.4	54.7	52.7	50.0	46.4	54.7	0.0	0.0	0.0	0.0
14	481360.11	3668813.57	3.Fl	170.77	53.4	50.8	47.2	55.5	53.4	50.8	47.2	55.5	0.0	0.0	0.0	0.0
15	481366.91	3668795.75	1.Fl	164.34	56.2	53.5	49.9	58.2	56.2	53.5	49.9	58.2	0.0	0.0	0.0	0.0
15	481366.91	3668795.75	2.Fl	167.44	58.1	55.4	51.7	60.1	58.1	55.4	51.7	60.1	0.0	0.0	0.0	0.0
15	481366.91	3668795.75	3.Fl	170.54	59.2	56.4	52.8	61.1	59.2	56.4	52.8	61.1	0.0	0.0	0.0	0.0
16	481386.75	3668803.65	1.Fl	164.57	55.1	52.3	48.7	57.0	55.1	52.3	48.7	57.0	0.0	0.0	0.0	0.0
16	481386.75	3668803.65	2.Fl	167.67	58.1	55.4	51.9	60.2	58.1	55.4	51.9	60.2	0.0	0.0	0.0	0.0
16	481386.75	3668803.65	3.Fl	170.77	58.4	55.7	52.1	60.4	58.4	55.7	52.1	60.4	0.0	0.0	0.0	0.0
17	481379.40	3668822.58	1.Fl	164.87	42.6	40.7	37.4	45.3	42.6	40.7	37.4	45.3	0.0	0.0	0.0	0.0
17	481379.40	3668822.58	2.Fl	167.97	46.5	44.8	41.5	49.4	46.5	44.8	41.5	49.4	0.0	0.0	0.0	0.0
17	481379.40	3668822.58	3.Fl	171.07	47.6	45.9	42.6	50.5	47.6	45.9	42.6	50.5	0.0	0.0	0.0	0.0
18	481397.04	3668829.19	1.Fl	164.87	48.6	46.4	42.9	51.0	48.6	46.4	42.9	51.0	0.0	0.0	0.0	0.0
18	481397.04	3668829.19	2.Fl	167.97	52.7	50.2	46.7	54.9	52.8	50.2	46.7	54.9	0.0	0.0	0.0	0.0
18	481397.04	3668829.19	3.Fl	171.07	56.6	54.0	50.5	58.7	56.6	54.0	50.5	58.7	0.0	0.0	0.0	0.0
19	481390.79	3668848.85	1.Fl	164.87	44.6	43.8	40.6	48.3	44.6	43.8	40.6	48.3	0.0	0.0	0.0	0.0
19	481390.79	3668848.85	2.Fl	167.97	46.8	46.0	42.8	50.5	46.8	46.0	42.8	50.5	0.0	0.0	0.0	0.0
19	481390.79	3668848.85	3.Fl	171.07	48.1	47.2	44.0	51.7	48.1	47.2	44.0	51.7	0.0	0.0	0.0	0.0
20	481372.23	3668840.95	1.Fl	164.87	43.2	41.5	38.2	46.1	43.2	41.5	38.2	46.1	0.0	0.0	0.0	0.0
20	481372.23	3668840.95	2.Fl	167.97	48.8	46.5	43.0	51.2	48.8	46.5	43.0	51.2	0.0	0.0	0.0	0.0
20	481372.23	3668840.95	3.Fl	171.07	49.5	47.2	43.7	51.9	49.5	47.2	43.7	51.9	0.0	0.0	0.0	0.0
21	481358.45	3668847.75	1.Fl	163.35	42.9	41.6	38.4	46.2	42.9	41.6	38.4	46.2	0.0	0.0	0.0	0.0
21	481358.45	3668847.75	2.Fl	166.45	47.2	45.3	41.9	49.9	47.2	45.3	41.9	49.9	0.0	0.0	0.0	0.0
21	481358.45	3668847.75	3.Fl	169.55	48.2	46.3	43.0	51.0	48.2	46.3	43.0	51.0	0.0	0.0	0.0	0.0
22	481354.78	3668864.47	1.Fl	163.35	41.6	40.4	37.2	45.0	41.6	40.4	37.2	45.0	0.0	0.0	0.0	0.0
22	481354.78	3668864.47	2.Fl	166.45	45.8	44.6	41.5	49.2	45.8	44.6	41.5	49.2	0.0	0.0	0.0	0.0
22	481354.78	3668864.47	3.Fl	169.55	46.9	45.7	42.5	50.2	46.9	45.7	42.5	50.2	0.0	0.0	0.0	0.0
23	481338.24	3668856.75	1.Fl	163.36	46.2	43.5	39.9	48.2	46.2	43.5	39.9	48.2	0.0	0.0	0.0	0.0
23	481338.24	3668856.75	2.Fl	166.46	52.4	49.7	46.1	54.4	52.4	49.7	46.1	54.4	0.0	0.0	0.0	0.0
23	481338.24	3668856.75	3.Fl	169.56	53.8	51.1	47.5	55.8	53.8	51.1	47.5	55.8	0.0	0.0	0.0	0.0
24	481341.92	3668839.85	1.Fl	162.53	40.3	38.5	35.1	43.1	40.3	38.5	35.1	43.1	0.0	0.0	0.0	0.0
24	481341.92	3668839.85	2.Fl	165.63	46.1	44.0	40.5	48.6	46.1	44.0	40.5	48.6	0.0	0.0	0.0	0.0
24	481341.92	3668839.85	3.Fl	168.73	48.0	45.7	42.2	50.3	48.0	45.7	42.2	50.3	0.0	0.0	0.0	0.0
25	481326.48	3668829.93	1.Fl	161.82	49.1	46.4	42.8	51.1	49.1	46.4	42.8	51.1	0.0	0.0	0.0	0.0
25	481326.48	3668829.93	2.Fl	164.92	53.7	50.9	47.3	55.7	53.7	50.9	47.3	55.7	0.0	0.0	0.0	0.0
25	481326.48	3668829.93	3.Fl	168.02	55.2	52.4	48.8	57.1	55.2	52.4	48.8	57.1	0.0	0.0	0.0	0.0
26	481330.89	3668813.57	1.Fl	161.73	52.9	50.1	46.5	54.9	52.9	50.1	46.5	54.9	0.0	0.0	0.0	0.0
26	481330.89	3668813.57	2.Fl	164.83	55.6	52.8	49.2	57.5	55.6	52.8	49.2	57.5	0.0	0.0	0.0	0.0
26	481330.89	3668813.57	3.Fl	167.93	57.4	54.7	51.0	59.4	57.4	54.7	51.0	59.4	0.0	0.0	0.0	0.0
27	481346.51	3668821.84	1.Fl	161.82	46.9	44.3	40.8	49.0	46.9	44.3	40.8	49.0	0.0	0.0	0.0	0.0
27	481346.51	3668821.84	2.Fl	164.92	51.2	48.6	45.0	53.3	51.2	48.6	45.0	53.3	0.0	0.0	0.0	0.0
27	481346.51	3668821.84	3.Fl	168.02	52.6	50.0	46.4	54.7	52.6	50.0	46.4	54.7	0.0	0.0	0.0	0.0
28	481322.44	3668793.91	1.Fl	154.66	39.8	38.0	34.6	42.6	39.8	38.0	34.6	42.6	0.0	0.0	0.0	0.0
28	481322.44	3668793.91	2.Fl	157.76	42.3	40.8	37.5	45.3	42.3	40.8	37.5	45.3	0.0	0.0	0.0	0.0
28	481322.44	3668793.91	3.Fl	160.86	46.0	43.9	40.5	48.6	46.0	43.9	40.5	48.6	0.0	0.0	0.0	0.0
29	481307.92	3668785.09	1.Fl	154.66	45.4	42.7	39.1	47.4	45.4	42.7	39.1	47.4	0.0	0.0	0.0	0.0
29	481307.92	3668785.09	2.Fl	157.76	53.6	50.8	47.2	55.5	53.6	50.8	47.2	55.5	0.0	0.0	0.0	0.0
29	481307.92	3668785.09	3.Fl	160.86	58.3	55.4	51.8	60.2	58.3	55.4	51.8	60.2	0.0	0.0	0.0	0.0
30	481311.78	3668768.92	1.Fl	154.66	57.5	54.7	51.0	59.4	57.4	54.5	50.9	59.3	-0.1	-0.1	-0.1	-0.1
30	481311.78	3668768.92	2.Fl	157.76	61.0	58.2	54.6	62.9	61.0	58.1	54.5	62.9	-0.1	-0.1	-0.1	-0.1
30	481311.78	3668768.92	3.Fl	160.86	62.9	60.1	56.4	64.8	62.9	60.1	56.4	64.8	0.0	0.0	0.0	0.0
31	481326.85	3668775.72	1.Fl	154.70	51.7	48.9	45.3	53.6	51.6	48.8	45.2	53.5	-0.1	-0.1	-0.1	-0.1
31	481326.85	3668775.72	2.Fl	157.80	54.1	51.3	47.7	56.1	54.0	51.3	47.7	56.0	-0.1	-0.1	-0.1	-0.1
31	481326.85	3668775.72	3.Fl	160.90	55.8	53.1	49.5	57.8	55.6	53.0	49.4	57.7	-0.1	-0.1	-0.1	-0.1

Source name									Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier			
									Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
									dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	1.Fl	66.2	63.3	59.7	68.1	61.8	59.0	55.3	63.7							
N Las Flores Drive									51.4	48.5	44.9	53.3	47.0	44.1	40.5	48.9
S Santa Fe Avenue									66.0	63.2	59.5	67.9	61.6	58.8	55.2	63.5
Sprinter									37.8	37.8	34.8	42.2	37.7	37.7	34.7	42.2
1	2.Fl	67.8	64.9	61.3	69.7	67.6	64.8	61.1	69.5							
N Las Flores Drive									52.9	50.0	46.4	54.8	52.7	49.8	46.2	54.6
S Santa Fe Avenue									67.6	64.8	61.2	69.5	67.5	64.6	61.0	69.4
Sprinter									38.3	38.3	35.3	42.8	38.3	38.3	35.3	42.7
1	3.Fl	67.8	65.0	61.4	69.7	67.8	65.0	61.3	69.7							
N Las Flores Drive									53.0	50.1	46.5	54.9	53.0	50.1	46.5	54.9
S Santa Fe Avenue									67.7	64.8	61.2	69.6	67.7	64.8	61.2	69.6
Sprinter									39.7	39.7	36.7	44.1	39.6	39.6	36.6	44.1
2	1.Fl	44.1	41.5	38.0	46.3	44.1	41.5	38.0	46.3							
N Las Flores Drive									42.7	39.8	36.2	44.5	42.7	39.8	36.2	44.5
S Santa Fe Avenue									37.6	34.7	31.1	39.5	37.6	34.7	31.1	39.5
Sprinter									32.5	32.5	29.5	36.9	32.5	32.5	29.5	36.9
2	2.Fl	47.4	44.8	41.2	49.5	47.4	44.8	41.2	49.5							
N Las Flores Drive									46.2	43.4	39.7	48.1	46.2	43.4	39.7	48.1
S Santa Fe Avenue									39.8	36.9	33.3	41.7	39.8	36.9	33.3	41.7
Sprinter									35.3	35.3	32.2	39.7	35.3	35.3	32.2	39.7
2	3.Fl	50.8	48.3	44.8	53.0	50.8	48.3	44.8	53.0							
N Las Flores Drive									48.4	45.5	41.9	50.3	48.4	45.5	41.9	50.3
S Santa Fe Avenue									46.1	43.3	39.6	48.0	46.1	43.3	39.6	48.0
Sprinter									40.2	40.2	37.2	44.7	40.2	40.2	37.2	44.7
3	1.Fl	47.2	45.0	41.6	49.7	47.2	45.0	41.6	49.7							
N Las Flores Drive									45.2	42.4	38.7	47.1	45.2	42.3	38.7	47.1
S Santa Fe Avenue									39.9	37.1	33.5	41.8	39.8	36.9	33.3	41.7
Sprinter									39.8	39.8	36.8	44.2	39.8	39.8	36.8	44.2
3	2.Fl	51.6	49.2	45.8	53.9	51.5	49.2	45.7	53.8							
N Las Flores Drive									48.3	45.5	41.8	50.2	48.3	45.5	41.8	50.2
S Santa Fe Avenue									47.7	44.8	41.2	49.6	47.4	44.6	40.9	49.3
Sprinter									42.7	42.7	39.7	47.1	42.7	42.7	39.7	47.1
3	3.Fl	56.1	53.6	50.1	58.3	56.1	53.6	50.0	58.3							
N Las Flores Drive									52.0	49.1	45.5	53.9	52.0	49.1	45.5	53.9
S Santa Fe Avenue									53.4	50.5	46.9	55.3	53.3	50.5	46.8	55.2
Sprinter									45.3	45.3	42.3	49.7	45.3	45.3	42.3	49.7
4	1.Fl	42.9	41.4	38.2	46.0	42.9	41.4	38.2	46.0							
N Las Flores Drive									36.7	33.8	30.2	38.6	36.7	33.8	30.2	38.6
S Santa Fe Avenue									38.5	35.7	32.0	40.4	38.5	35.7	32.0	40.4
Sprinter									39.0	39.0	35.9	43.4	39.0	39.0	35.9	43.4
4	2.Fl	48.6	46.6	43.3	51.3	48.6	46.6	43.3	51.3							
N Las Flores Drive									37.2	34.3	30.7	39.1	37.2	34.3	30.7	39.1
S Santa Fe Avenue									46.8	44.0	40.4	48.7	46.8	44.0	40.4	48.7
Sprinter									42.6	42.6	39.6	47.1	42.6	42.6	39.6	47.1
4	3.Fl	49.9	48.0	44.6	52.6	49.9	48.0	44.6	52.6							
N Las Flores Drive									37.7	34.8	31.2	39.6	37.7	34.8	31.2	39.6
S Santa Fe Avenue									48.4	45.5	41.9	50.3	48.4	45.5	41.9	50.3
Sprinter									43.7	43.7	40.7	48.2	43.7	43.7	40.7	48.2
5	1.Fl	51.8	49.1	45.5	53.8	51.8	49.1	45.5	53.8							
N Las Flores Drive									38.8	35.9	32.3	40.7	38.8	35.9	32.3	40.7
S Santa Fe Avenue									51.5	48.7	45.0	53.4	51.5	48.7	45.0	53.4
Sprinter									36.0	36.0	33.0	40.4	36.0	36.0	33.0	40.4
5	2.Fl	55.0	52.3	48.7	57.0	55.0	52.3	48.6	57.0							
N Las Flores Drive									40.6	37.7	34.1	42.5	40.6	37.7	34.1	42.5
S Santa Fe Avenue									54.8	51.9	48.3	56.7	54.8	51.9	48.3	56.7
Sprinter									37.7	37.7	34.7	42.1	37.7	37.7	34.7	42.1
5	3.Fl	56.9	54.1	50.5	58.9	56.9	54.1	50.5	58.9							
N Las Flores Drive									41.8	39.0	35.3	43.7	41.8	39.0	35.3	43.7
S Santa Fe Avenue									56.7	53.9	50.3	58.6	56.7	53.9	50.2	58.6
Sprinter									38.6	38.6	35.6	43.1	38.6	38.6	35.6	43.1
6	1.Fl	39.5	37.5	34.2	42.2	39.5	37.5	34.2	42.2							
N Las Flores Drive									36.4	33.6	29.9	38.3	36.4	33.6	29.9	38.3
S Santa Fe Avenue									33.5	30.7	27.0	35.4	33.5	30.7	27.0	35.4
Sprinter									33.5	33.5	30.5	37.9	33.5	33.5	30.5	37.9
6	2.Fl	42.1	40.5	37.2	45.1	42.1	40.5	37.2	45.1							
N Las Flores Drive									38.5	35.6	32.0	40.4	38.5	35.6	32.0	40.4
S Santa Fe Avenue									35.8	32.9	29.3	37.7	35.8	32.9	29.3	37.7
Sprinter									37.5	37.5	34.4	41.9	37.5	37.5	34.4	41.9
6	3.Fl	46.1	44.0	40.5	48.6	46.1	44.0	40.5	48.6							
N Las Flores Drive									40.0	37.2	33.5	41.9	40.0	37.2	33.5	41.9
S Santa Fe Avenue									43.6	40.7	37.1	45.5	43.6	40.7	37.1	45.5
Sprinter									39.0	39.0	36.0	43.4	39.0	39.0	36.0	43.4
7	1.Fl	59.0	56.2	52.5	60.9	59.0	56.2	52.5	60.9							
N Las Flores Drive									25.6	22.7	19.1	27.5	25.6	22.7	19.1	27.5
S Santa Fe Avenue									59.0	56.1	52.5	60.9	59.0	56.1	52.5	60.9
Sprinter									33.3	33.3	30.3	37.7	33.3	33.3	30.3	37.7
7	2.Fl	61.4	58.6	54.9	63.3	61.4	58.6	54.9	63.3							
N Las Flores Drive									27.6	24.7	21.1	29.5	27.6	24.7	21.1	29.5
S Santa Fe Avenue									61.4	58.5	54.9	63.3	61.4	58.5	54.9	63.3
Sprinter									33.7	33.7	30.7	38.1	33.7	33.7	30.7	38.1
7	3.Fl	63.0	60.1	56.5	64.9	63.0	60.1	56.5	64.9							
N Las Flores Drive									31.0	28.1	24.5	32.9	31.0	28.1	24.5	32.9
S Santa Fe Avenue									63.0	60.1	56.5	64.9	63.0	60.1	56.5	64.9
Sprinter									34.1	34.1	31.1	38.5	34.1	34.1	31.1	38.5

Source name									Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier			
									Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
									dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
8	1.Fl	65.3	62.5	58.8	67.2	63.1	60.3	56.6	65.0							
N Las Flores Drive										50.3	47.4	43.8	52.2	46.4	43.5	39.9	48.3
S Santa Fe Avenue										65.2	62.3	58.7	67.1	63.0	60.2	56.5	64.9
Sprinter										36.2	36.2	33.2	40.6	36.1	36.1	33.1	40.5
8	2.Fl	67.4	64.6	60.9	69.3	67.3	64.4	60.8	69.2							
N Las Flores Drive										51.9	49.0	45.4	53.8	51.5	48.6	45.0	53.4
S Santa Fe Avenue										67.3	64.4	60.8	69.2	67.2	64.3	60.7	69.1
Sprinter										36.2	36.2	33.2	40.6	36.2	36.2	33.2	40.6
8	3.Fl	67.9	65.0	61.4	69.8	67.9	65.0	61.4	69.8							
N Las Flores Drive										52.1	49.2	45.6	54.0	52.1	49.2	45.6	54.0
S Santa Fe Avenue										67.8	64.9	61.3	69.7	67.8	64.9	61.3	69.7
Sprinter										37.2	37.2	34.2	41.6	37.2	37.2	34.1	41.6
9	1.Fl	61.0	58.2	54.6	62.9	60.8	58.0	54.4	62.7							
N Las Flores Drive										55.1	52.2	48.6	56.9	55.0	52.1	48.5	56.9
S Santa Fe Avenue										59.7	56.8	53.2	61.6	59.4	56.6	52.9	61.3
Sprinter										40.1	40.1	37.1	44.6	40.1	40.1	37.1	44.6
9	2.Fl	62.6	59.7	56.1	64.5	62.5	59.7	56.0	64.4							
N Las Flores Drive										56.2	53.3	49.7	58.1	56.2	53.3	49.7	58.1
S Santa Fe Avenue										61.4	58.5	54.9	63.3	61.3	58.4	54.8	63.2
Sprinter										41.3	41.3	38.3	45.8	41.3	41.3	38.3	45.8
9	3.Fl	63.6	60.8	57.2	65.5	63.6	60.8	57.2	65.5							
N Las Flores Drive										56.0	53.1	49.5	57.8	56.0	53.1	49.5	57.9
S Santa Fe Avenue										62.8	59.9	56.3	64.7	62.7	59.9	56.3	64.6
Sprinter										42.4	42.4	39.4	46.8	42.4	42.4	39.4	46.8
10	1.Fl	46.6	44.1	40.6	48.8	46.6	44.1	40.6	48.8							
N Las Flores Drive										41.3	38.4	34.8	43.2	41.3	38.4	34.8	43.2
S Santa Fe Avenue										44.2	41.4	37.8	46.1	44.2	41.4	37.8	46.1
Sprinter										37.2	37.2	34.2	41.6	37.2	37.2	34.2	41.6
10	2.Fl	51.3	48.7	45.1	53.4	51.4	48.7	45.1	53.4							
N Las Flores Drive										45.1	42.2	38.6	47.0	45.1	42.2	38.6	47.0
S Santa Fe Avenue										49.9	47.0	43.4	51.8	49.9	47.0	43.4	51.8
Sprinter										38.4	38.4	35.4	42.8	38.4	38.4	35.4	42.8
10	3.Fl	53.2	50.6	47.0	55.3	53.2	50.6	47.0	55.3							
N Las Flores Drive										45.1	42.2	38.6	47.0	45.1	42.2	38.6	47.0
S Santa Fe Avenue										52.3	49.4	45.8	54.2	52.3	49.4	45.8	54.2
Sprinter										40.2	40.2	37.2	44.7	40.2	40.2	37.2	44.7
11	1.Fl	54.7	51.9	48.2	56.6	54.7	51.9	48.3	56.7							
N Las Flores Drive										50.1	47.2	43.6	52.0	50.1	47.2	43.6	52.0
S Santa Fe Avenue										52.8	50.0	46.3	54.7	52.9	50.0	46.4	54.8
Sprinter										31.6	31.6	28.6	36.0	31.6	31.6	28.6	36.0
11	2.Fl	58.5	55.8	52.1	60.5	58.5	55.8	52.1	60.5							
N Las Flores Drive										54.7	51.8	48.2	56.6	54.7	51.8	48.2	56.6
S Santa Fe Avenue										56.1	53.2	49.6	58.0	56.1	53.3	49.6	58.0
Sprinter										40.9	40.9	37.9	45.3	40.9	40.9	37.9	45.3
11	3.Fl	59.5	56.7	53.1	61.4	59.5	56.7	53.1	61.4							
N Las Flores Drive										54.8	51.9	48.3	56.7	54.8	51.9	48.3	56.7
S Santa Fe Avenue										57.5	54.7	51.1	59.4	57.5	54.7	51.1	59.4
Sprinter										42.2	42.2	39.2	46.6	42.2	42.2	39.2	46.6
12	1.Fl	43.9	41.4	37.9	46.1	43.9	41.4	37.9	46.1							
N Las Flores Drive										43.1	40.2	36.5	44.9	43.1	40.2	36.5	44.9
S Santa Fe Avenue										32.4	29.6	26.0	34.3	32.4	29.6	26.0	34.3
Sprinter										33.8	33.8	30.8	38.3	33.8	33.8	30.8	38.3
12	2.Fl	47.8	45.2	41.7	50.0	47.8	45.2	41.7	50.0							
N Las Flores Drive										47.2	44.4	40.7	49.1	47.2	44.4	40.7	49.1
S Santa Fe Avenue										33.3	30.4	26.8	35.2	33.3	30.4	26.8	35.2
Sprinter										37.0	37.0	34.0	41.5	37.0	37.0	34.0	41.5
12	3.Fl	49.9	47.5	44.1	52.2	49.9	47.5	44.1	52.2							
N Las Flores Drive										49.0	46.1	42.5	50.8	49.0	46.1	42.5	50.8
S Santa Fe Avenue										37.5	34.7	31.0	39.4	37.5	34.7	31.0	39.4
Sprinter										41.3	41.3	38.3	45.7	41.3	41.3	38.3	45.7
13	1.Fl	52.2	49.4	45.8	54.2	52.2	49.4	45.8	54.2							
N Las Flores Drive										31.0	28.1	24.5	32.9	31.0	28.1	24.5	32.9
S Santa Fe Avenue										52.1	49.3	45.7	54.0	52.1	49.3	45.7	54.0
Sprinter										33.1	33.1	30.0	37.5	33.1	33.1	30.0	37.5
13	2.Fl	56.0	53.2	49.6	57.9	56.0	53.2	49.6	57.9							
N Las Flores Drive										32.5	29.6	26.0	34.4	32.5	29.6	26.0	34.4
S Santa Fe Avenue										55.9	53.1	49.4	57.8	55.9	53.1	49.4	57.8
Sprinter										36.6	36.6	33.6	41.1	36.6	36.6	33.6	41.1
13	3.Fl	57.8	55.0	51.4	59.8	57.8	55.0	51.4	59.8							
N Las Flores Drive										34.5	31.7	28.0	36.4	34.5	31.7	28.0	36.4
S Santa Fe Avenue										57.7	54.9	51.3	59.6	57.7	54.9	51.3	59.6
Sprinter										38.6	38.6	35.6	43.0	38.6	38.6	35.6	43.0
14	1.Fl	51.9	49.3	45.7	54.0	51.9	49.3	45.7	54.0							
N Las Flores Drive										34.9	32.1	28.4	36.8	35.0	32.1	28.5	36.8
S Santa Fe Avenue										51.6	48.8	45.2	53.5	51.6	48.8	45.2	53.5
Sprinter										38.6	38.6	35.6	43.0	38.6	38.6	35.6	43.0
14	2.Fl	52.7	50.0	46.4	54.7	52.7	50.0	46.4	54.7							
N Las Flores Drive										35.5	32.6	29.0	37.4	35.5	32.7	29.0	37.4
S Santa Fe Avenue										52.4	49.5	45.9	54.3	52.4	49.5	45.9	54.3
Sprinter										39.0	39.0	36.0	43.4	39.0	39.0	36.0	43.4
14	3.Fl	53.4	50.8	47.2	55.5	53.4	50.8	47.2	55.5							
N Las Flores Drive										35.8	32.9	29.3	37.7	35.8	33.0	29.3	37.7
S Santa Fe Avenue										53.2	50.3	46.7	55.1	53.2	50.3	46.7	55.1
Sprinter										39.5	39.5	36.5	43.9	39.5	39.5	36.5	43.9

Source name										Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier			
										Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
										dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
15	1.Fl	56.2	53.5	49.9	58.2	56.2	53.5	49.9	58.2								
N Las Flores Drive										48.9	46.0	42.4	50.8	48.9	46.0	42.4	50.8
S Santa Fe Avenue										55.2	52.4	48.8	57.1	55.2	52.4	48.8	57.1
Sprinter										39.5	39.5	36.5	44.0	39.5	39.5	36.5	44.0
15	2.Fl	58.1	55.4	51.7	60.1	58.1	55.4	51.7	60.1								
N Las Flores Drive										50.1	47.2	43.6	52.0	50.1	47.2	43.6	52.0
S Santa Fe Avenue										57.3	54.5	50.8	59.2	57.3	54.5	50.8	59.2
Sprinter										40.6	40.6	37.6	45.0	40.6	40.6	37.6	45.0
15	3.Fl	59.2	56.4	52.8	61.1	59.2	56.4	52.8	61.1								
N Las Flores Drive										50.2	47.3	43.7	52.0	50.2	47.3	43.7	52.0
S Santa Fe Avenue										58.5	55.6	52.0	60.4	58.5	55.6	52.0	60.4
Sprinter										41.4	41.4	38.4	45.8	41.4	41.4	38.4	45.8
16	1.Fl	55.1	52.3	48.7	57.0	55.1	52.3	48.7	57.0								
N Las Flores Drive										51.8	48.9	45.3	53.7	51.8	48.9	45.3	53.7
S Santa Fe Avenue										52.1	49.2	45.6	54.0	52.1	49.3	45.6	54.0
Sprinter										38.5	38.5	35.5	42.9	38.5	38.5	35.5	42.9
16	2.Fl	58.1	55.4	51.9	60.2	58.1	55.4	51.9	60.2								
N Las Flores Drive										55.2	52.3	48.7	57.1	55.2	52.3	48.7	57.1
S Santa Fe Avenue										54.6	51.7	48.1	56.5	54.6	51.8	48.1	56.5
Sprinter										44.5	44.5	41.5	48.9	44.5	44.5	41.5	48.9
16	3.Fl	58.4	55.7	52.1	60.4	58.4	55.7	52.1	60.4								
N Las Flores Drive										55.0	52.1	48.5	56.9	55.0	52.1	48.5	56.9
S Santa Fe Avenue										55.2	52.3	48.7	57.1	55.2	52.3	48.7	57.1
Sprinter										45.7	45.7	42.7	50.1	45.7	45.7	42.7	50.1
17	1.Fl	42.6	40.7	37.4	45.3	42.6	40.7	37.4	45.3								
N Las Flores Drive										40.4	37.6	33.9	42.3	40.4	37.6	33.9	42.3
S Santa Fe Avenue										33.4	30.6	27.0	35.3	33.4	30.6	27.0	35.3
Sprinter										36.9	36.9	33.9	41.4	36.9	36.9	33.9	41.4
17	2.Fl	46.5	44.8	41.5	49.4	46.5	44.8	41.5	49.4								
N Las Flores Drive										43.7	40.8	37.1	45.5	43.7	40.8	37.1	45.5
S Santa Fe Avenue										38.3	35.4	31.8	40.2	38.3	35.4	31.8	40.2
Sprinter										41.7	41.7	38.7	46.1	41.7	41.7	38.7	46.1
17	3.Fl	47.6	45.9	42.6	50.5	47.6	45.9	42.6	50.5								
N Las Flores Drive										44.1	41.2	37.6	45.9	44.1	41.2	37.6	45.9
S Santa Fe Avenue										41.5	38.6	35.0	43.4	41.5	38.6	35.0	43.4
Sprinter										42.6	42.6	39.6	47.1	42.6	42.6	39.6	47.1
18	1.Fl	48.6	46.4	42.9	51.0	48.6	46.4	42.9	51.0								
N Las Flores Drive										46.2	43.3	39.6	48.0	46.2	43.3	39.6	48.0
S Santa Fe Avenue										42.9	40.1	36.4	44.8	42.9	40.1	36.5	44.8
Sprinter										40.7	40.7	37.7	45.2	40.7	40.7	37.7	45.2
18	2.Fl	52.7	50.2	46.7	54.9	52.8	50.2	46.7	54.9								
N Las Flores Drive										49.4	46.5	42.9	51.3	49.4	46.5	42.9	51.3
S Santa Fe Avenue										49.3	46.5	42.8	51.2	49.3	46.5	42.9	51.2
Sprinter										42.2	42.2	39.2	46.6	42.2	42.2	39.2	46.6
18	3.Fl	56.6	54.0	50.5	58.7	56.6	54.0	50.5	58.7								
N Las Flores Drive										52.7	49.9	46.2	54.6	52.7	49.9	46.2	54.6
S Santa Fe Avenue										53.6	50.8	47.1	55.5	53.6	50.8	47.2	55.5
Sprinter										45.5	45.5	42.5	49.9	45.5	45.5	42.5	49.9
19	1.Fl	44.6	43.8	40.6	48.3	44.6	43.8	40.6	48.3								
N Las Flores Drive										39.9	37.0	33.4	41.7	39.9	37.0	33.4	41.7
S Santa Fe Avenue										30.7	27.9	24.2	32.6	30.7	27.9	24.2	32.6
Sprinter										42.6	42.6	39.6	47.0	42.6	42.6	39.6	47.0
19	2.Fl	46.8	46.0	42.8	50.5	46.8	46.0	42.8	50.5								
N Las Flores Drive										40.8	37.9	34.3	42.7	40.8	37.9	34.3	42.7
S Santa Fe Avenue										37.7	34.9	31.3	39.6	37.7	34.9	31.2	39.6
Sprinter										44.8	44.8	41.8	49.2	44.8	44.8	41.8	49.2
19	3.Fl	48.1	47.2	44.0	51.7	48.1	47.2	44.0	51.7								
N Las Flores Drive										42.5	39.6	36.0	44.4	42.5	39.6	36.0	44.4
S Santa Fe Avenue										39.6	36.7	33.1	41.5	39.6	36.7	33.1	41.5
Sprinter										45.8	45.8	42.8	50.3	45.8	45.8	42.8	50.3
20	1.Fl	43.2	41.5	38.2	46.1	43.2	41.5	38.2	46.1								
N Las Flores Drive										32.1	29.2	25.6	34.0	32.1	29.2	25.6	34.0
S Santa Fe Avenue										41.0	38.1	34.5	42.9	41.0	38.1	34.5	42.9
Sprinter										38.3	38.3	35.3	42.7	38.3	38.3	35.3	42.7
20	2.Fl	48.8	46.5	43.0	51.2	48.8	46.5	43.0	51.2								
N Las Flores Drive										33.0	30.2	26.5	34.9	33.0	30.2	26.5	34.9
S Santa Fe Avenue										48.1	45.2	41.6	50.0	48.1	45.2	41.6	50.0
Sprinter										40.1	40.1	37.1	44.5	40.1	40.1	37.1	44.5
20	3.Fl	49.5	47.2	43.7	51.9	49.5	47.2	43.7	51.9								
N Las Flores Drive										31.7	28.8	25.2	33.6	31.7	28.8	25.2	33.6
S Santa Fe Avenue										48.8	45.9	42.3	50.7	48.8	45.9	42.3	50.7
Sprinter										40.9	40.9	37.9	45.4	40.9	40.9	37.9	45.4
21	1.Fl	42.9	41.6	38.4	46.2	42.9	41.6	38.4	46.2								
N Las Flores Drive										33.8	31.0	27.3	35.7	33.8	31.0	27.4	35.7
S Santa Fe Avenue										39.0	36.2	32.6	40.9	39.0	36.2	32.6	40.9
Sprinter										39.6	39.6	36.6	44.1	39.6	39.6	36.6	44.1
21	2.Fl	47.2	45.3	41.9	49.9	47.2	45.3	41.9	49.9								
N Las Flores Drive										35.8	33.0	29.3	37.7	35.8	33.0	29.3	37.7
S Santa Fe Avenue										45.4	42.5	38.9	47.3	45.4	42.5	38.9	47.3
Sprinter										41.5	41.5	38.5	45.9	41.5	41.5	38.5	45.9
21	3.Fl	48.2	46.3	43.0	51.0	48.2	46.3	43.0	51.0								
N Las Flores Drive										37.8	34.9	31.3	39.7	37.8	35.0	31.3	39.7
S Santa Fe Avenue										46.2	43.4	39.8	48.1	46.2	43.4	39.8	48.1
Sprinter										42.6	42.6	39.6	47.0	42.6	42.6	39.6	47.0

Source name										Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier			
										Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
										dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
22	1.Fl	41.6	40.4	37.2	45.0	41.6	40.4	37.2	45.0								
N Las Flores Drive										37.2	34.3	30.7	39.1	37.2	34.3	30.7	39.1
S Santa Fe Avenue										32.3	29.4	25.8	34.2	32.3	29.4	25.8	34.2
Sprinter										38.7	38.7	35.7	43.2	38.7	38.7	35.7	43.2
22	2.Fl	45.8	44.6	41.5	49.2	45.8	44.6	41.5	49.2								
N Las Flores Drive										38.2	35.3	31.7	40.1	38.2	35.3	31.7	40.1
S Santa Fe Avenue										40.4	37.6	34.0	42.3	40.4	37.6	34.0	42.3
Sprinter										43.0	43.0	40.0	47.4	43.0	43.0	40.0	47.4
22	3.Fl	46.9	45.7	42.5	50.2	46.9	45.7	42.5	50.2								
N Las Flores Drive										38.7	35.8	32.2	40.6	38.7	35.8	32.2	40.6
S Santa Fe Avenue										42.0	39.2	35.6	43.9	42.0	39.2	35.6	43.9
Sprinter										44.0	44.0	41.0	48.4	44.0	44.0	41.0	48.4
23	1.Fl	46.2	43.5	39.9	48.2	46.2	43.5	39.9	48.2								
N Las Flores Drive										17.7	14.8	11.2	19.6	17.7	14.8	11.2	19.6
S Santa Fe Avenue										46.0	43.1	39.5	47.9	46.0	43.1	39.5	47.9
Sprinter										32.7	32.7	29.6	37.1	32.7	32.7	29.6	37.1
23	2.Fl	52.4	49.7	46.1	54.4	52.4	49.7	46.1	54.4								
N Las Flores Drive										18.6	15.8	12.1	20.5	18.6	15.8	12.1	20.5
S Santa Fe Avenue										52.3	49.5	45.8	54.2	52.3	49.5	45.8	54.2
Sprinter										37.1	37.1	34.1	41.6	37.1	37.1	34.1	41.6
23	3.Fl	53.8	51.1	47.5	55.8	53.8	51.1	47.5	55.8								
N Las Flores Drive										23.3	20.5	16.8	25.2	23.3	20.5	16.8	25.2
S Santa Fe Avenue										53.7	50.9	47.2	55.6	53.7	50.9	47.2	55.6
Sprinter										38.1	38.1	35.1	42.5	38.1	38.1	35.1	42.5
24	1.Fl	40.3	38.5	35.1	43.1	40.3	38.5	35.1	43.1								
N Las Flores Drive										30.6	27.8	24.1	32.5	30.6	27.8	24.1	32.5
S Santa Fe Avenue										38.0	35.2	31.6	39.9	38.0	35.2	31.6	39.9
Sprinter										35.0	35.0	31.9	39.4	35.0	35.0	31.9	39.4
24	2.Fl	46.1	44.0	40.5	48.6	46.1	44.0	40.5	48.6								
N Las Flores Drive										30.2	27.4	23.7	32.1	30.2	27.4	23.7	32.1
S Santa Fe Avenue										45.1	42.2	38.6	47.0	45.1	42.2	38.6	47.0
Sprinter										38.9	38.9	35.8	43.3	38.9	38.9	35.8	43.3
24	3.Fl	48.0	45.7	42.2	50.3	48.0	45.7	42.2	50.3								
N Las Flores Drive										32.8	29.9	26.3	34.7	32.8	29.9	26.3	34.7
S Santa Fe Avenue										47.2	44.3	40.7	49.1	47.2	44.3	40.7	49.1
Sprinter										39.4	39.4	36.3	43.8	39.4	39.4	36.3	43.8
25	1.Fl	49.1	46.4	42.8	51.1	49.1	46.4	42.8	51.1								
N Las Flores Drive										17.8	14.9	11.3	19.7	17.8	14.9	11.3	19.7
S Santa Fe Avenue										49.0	46.2	42.6	50.9	49.0	46.2	42.6	50.9
Sprinter										32.6	32.6	29.6	37.0	32.6	32.6	29.6	37.0
25	2.Fl	53.7	50.9	47.3	55.7	53.7	50.9	47.3	55.7								
N Las Flores Drive										19.4	16.5	12.9	21.3	19.4	16.5	12.9	21.3
S Santa Fe Avenue										53.6	50.8	47.1	55.5	53.6	50.8	47.1	55.5
Sprinter										36.5	36.5	33.5	40.9	36.5	36.5	33.5	40.9
25	3.Fl	55.2	52.4	48.8	57.1	55.2	52.4	48.8	57.1								
N Las Flores Drive										23.5	20.6	17.0	25.4	23.5	20.6	17.0	25.4
S Santa Fe Avenue										55.1	52.3	48.7	57.0	55.1	52.3	48.7	57.0
Sprinter										36.8	36.8	33.8	41.3	36.8	36.8	33.8	41.3
26	1.Fl	52.9	50.1	46.5	54.9	52.9	50.1	46.5	54.9								
N Las Flores Drive										39.0	36.1	32.5	40.9	39.0	36.1	32.5	40.8
S Santa Fe Avenue										52.6	49.7	46.1	54.5	52.6	49.7	46.1	54.5
Sprinter										36.8	36.8	33.8	41.2	36.8	36.8	33.8	41.2
26	2.Fl	55.6	52.8	49.2	57.5	55.6	52.8	49.2	57.5								
N Las Flores Drive										41.0	38.2	34.5	42.9	41.0	38.1	34.5	42.9
S Santa Fe Avenue										55.3	52.5	48.8	57.2	55.3	52.5	48.8	57.2
Sprinter										38.6	38.6	35.6	43.0	38.6	38.6	35.6	43.0
26	3.Fl	57.4	54.7	51.0	59.4	57.4	54.7	51.0	59.4								
N Las Flores Drive										42.3	39.4	35.8	44.2	42.3	39.4	35.8	44.2
S Santa Fe Avenue										57.2	54.4	50.8	59.1	57.2	54.4	50.8	59.1
Sprinter										39.3	39.3	36.3	43.7	39.3	39.3	36.3	43.7
27	1.Fl	46.9	44.3	40.8	49.0	46.9	44.3	40.8	49.0								
N Las Flores Drive										33.7	30.8	27.2	35.6	33.7	30.8	27.2	35.6
S Santa Fe Avenue										46.3	43.5	39.8	48.2	46.3	43.5	39.8	48.2
Sprinter										35.6	35.6	32.6	40.0	35.6	35.6	32.6	40.0
27	2.Fl	51.2	48.6	45.0	53.3	51.2	48.6	45.0	53.3								
N Las Flores Drive										37.7	34.8	31.2	39.6	37.7	34.8	31.2	39.6
S Santa Fe Avenue										50.8	47.9	44.3	52.7	50.8	47.9	44.3	52.7
Sprinter										38.8	38.8	35.8	43.2	38.8	38.8	35.8	43.2
27	3.Fl	52.6	50.0	46.4	54.7	52.6	50.0	46.4	54.7								
N Las Flores Drive										39.4	36.5	32.9	41.3	39.4	36.5	32.9	41.3
S Santa Fe Avenue										52.2	49.3	45.7	54.1	52.2	49.3	45.7	54.1
Sprinter										39.9	39.9	36.9	44.3	39.9	39.9	36.9	44.3
28	1.Fl	39.8	38.0	34.6	42.6	39.8	38.0	34.6	42.6								
N Las Flores Drive										37.0	34.1	30.5	38.9	37.0	34.1	30.5	38.9
S Santa Fe Avenue										32.8	29.9	26.3	34.7	32.8	29.9	26.3	34.7
Sprinter										34.3	34.3	31.3	38.7	34.3	34.3	31.3	38.7
28	2.Fl	42.3	40.8	37.5	45.3	42.3	40.8	37.5	45.3								
N Las Flores Drive										38.7	35.9	32.2	40.6	38.7	35.9	32.2	40.6
S Santa Fe Avenue										34.8	31.9	28.3	36.7	34.8	31.9	28.3	36.7
Sprinter										38.1	38.1	35.1	42.5	38.1	38.1	35.1	42.5
28	3.Fl	46.0	43.9	40.5	48.6	46.0	43.9	40.5	48.6								
N Las Flores Drive										40.1	37.2	33.6	42.0	40.1	37.2	33.6	42.0
S Santa Fe Avenue										43.4	40.5	36.9	45.3	43.4	40.5	36.9	45.3
Sprinter										39.1	39.1	36.1	43.5	39.1	39.1	36.1	43.5

Source name										Noise Level without Amenity Area A Barrier				Noise Level with Amenity Area A Barrier			
										Day	Evening	Night	CNEL	Day	Evening	Night	CNEL
										dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
29	1.Fl	45.4	42.7	39.1	47.4	45.4	42.7	39.1	47.4								
N Las Flores Drive										18.6	15.7	12.1	20.4	18.5	15.7	12.1	20.4
S Santa Fe Avenue										45.2	42.3	38.7	47.1	45.2	42.3	38.7	47.1
Sprinter										31.7	31.7	28.7	36.2	31.7	31.7	28.7	36.2
29	2.Fl	53.6	50.8	47.2	55.5	53.6	50.8	47.2	55.5								
N Las Flores Drive										20.0	17.2	13.6	21.9	20.0	17.2	13.5	21.9
S Santa Fe Avenue										53.6	50.7	47.1	55.5	53.6	50.7	47.1	55.5
Sprinter										31.9	31.9	28.9	36.4	31.9	31.9	28.9	36.4
29	3.Fl	58.3	55.4	51.8	60.2	58.3	55.4	51.8	60.2								
N Las Flores Drive										24.1	21.2	17.6	26.0	24.1	21.2	17.6	26.0
S Santa Fe Avenue										58.2	55.4	51.8	60.1	58.2	55.4	51.8	60.1
Sprinter										33.2	33.2	30.2	37.7	33.2	33.2	30.2	37.7
30	1.Fl	57.5	54.7	51.0	59.4	57.4	54.5	50.9	59.3								
N Las Flores Drive										40.7	37.9	34.2	42.6	40.6	37.7	34.1	42.5
S Santa Fe Avenue										57.4	54.5	50.9	59.3	57.2	54.4	50.8	59.1
Sprinter										34.2	34.2	31.2	38.6	34.2	34.2	31.2	38.6
30	2.Fl	61.0	58.2	54.6	62.9	61.0	58.1	54.5	62.9								
N Las Flores Drive										41.8	38.9	35.3	43.7	41.4	38.6	34.9	43.3
S Santa Fe Avenue										61.0	58.1	54.5	62.9	60.9	58.1	54.4	62.8
Sprinter										35.3	35.3	32.2	39.7	35.3	35.3	32.2	39.7
30	3.Fl	62.9	60.1	56.4	64.8	62.9	60.1	56.4	64.8								
N Las Flores Drive										42.7	39.8	36.2	44.6	42.6	39.8	36.1	44.5
S Santa Fe Avenue										62.8	60.0	56.4	64.7	62.8	60.0	56.4	64.8
Sprinter										37.4	37.4	34.4	41.8	37.4	37.4	34.4	41.8
31	1.Fl	51.7	48.9	45.3	53.6	51.6	48.8	45.2	53.5								
N Las Flores Drive										38.5	35.6	32.0	40.4	38.3	35.4	31.8	40.2
S Santa Fe Avenue										51.4	48.5	44.9	53.3	51.3	48.4	44.8	53.2
Sprinter										34.6	34.6	31.6	39.0	34.6	34.6	31.6	39.0
31	2.Fl	54.1	51.3	47.7	56.1	54.0	51.3	47.7	56.0								
N Las Flores Drive										39.9	37.0	33.4	41.8	39.9	37.0	33.4	41.8
S Santa Fe Avenue										53.9	51.0	47.4	55.8	53.8	50.9	47.3	55.7
Sprinter										36.7	36.7	33.7	41.2	36.7	36.7	33.7	41.2
31	3.Fl	55.8	53.1	49.5	57.8	55.6	53.0	49.4	57.7								
N Las Flores Drive										41.2	38.4	34.7	43.1	41.2	38.3	34.7	43.1
S Santa Fe Avenue										55.4	52.6	49.0	57.3	55.3	52.5	48.8	57.2
Sprinter										41.6	41.6	38.6	46.0	41.6	41.6	38.6	46.0

ATTACHMENT 5

Fresnel Barrier Reduction Calculations

Fresnel Barrier Reduction Calculations

Receiver 8, Level 2, Santa Fe Avenue

Reference Noise Level	69.2			GF = 500				
Reference Distance	104			2nd Floor = 510				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
108	3	111	498	513.5	513	6.97	69	61.66

Receiver 8, Level 2, Las Flores Drive

Reference Noise Level	53.8			GF = 500				
Reference Distance	72			2nd Floor = 510				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
46	3	49	504	513.5	513	7.58	57	49.56

Receiver 8, Level 2, Combined Santa Fe Avenue and Las Flores Drive

No Barrier	69.3
With Barrier	61.9
Barrier Reduction	7.4

Receiver 9, Level 3, Santa Fe Avenue

Reference Noise Level	64.7			GF = 500				
Reference Distance	151			3rd Floor = 520				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
108	3	111	498	523.5	523	7.98	67	59.39

Receiver 9, Level 3, Las Flores Drive

Reference Noise Level	57.8			GF = 500				
Reference Distance	39			3rd Floor = 510				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
46	3	49	504	523.5	523	9.84	56	45.98

Receiver 9, Level 3, Combined Santa Fe Avenue and Las Flores Drive

No Barrier	65.5
With Barrier	59.6
Barrier Reduction	5.9

10587 Santa Fe Flores Townhomes
Fresnel Barrier Reduction Calculations

Receiver 8, Roof Deck, Santa Fe Avenue

Reference Noise Level	69.2			GF = 500				
Reference Distance	104			Roof = 530				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
108	3	111	498	533.5	533	8.98	69	59.65

Receiver 8, Roof Deck Las Flores Drive

Reference Noise Level	53.8			GF = 500				
Reference Distance	72			Roof = 530				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
46	3	49	504	533.5	533	11.64	57	45.50

Receiver 8, Roof Deck, Combined Santa Fe Avenue and Las Flores Drive

No Barrier	69.3
With Barrier	59.8
Barrier Reduction	9.5

Receiver 9, Roof Deck, Santa Fe Avenue

Reference Noise Level	64.7			GF = 500				
Reference Distance	151			Roof = 530				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
108	3	111	498	533.5	533	8.98	67	58.39

Receiver 9, Roof Deck, Las Flores Drive

Reference Noise Level	57.8			GF = 500				
Reference Distance	39			Roof = 530				
Site Conditions	Hard			Balcony Wall = 3.5				
Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
46	3	49	504	533.5	533	11.64	56	44.18

Receiver 9, Roof Deck, Combined Santa Fe Avenue and Las Flores Drive

No Barrier	65.5
With Barrier	58.6
Barrier Reduction	7.0

ATTACHMENT 6

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

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Existing

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 Community Drive	16,660	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive 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	14,960	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	16,770	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	17,030	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	14,780	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	13,570	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	600	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	11,840	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

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Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Existing
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 Community Drive	69.7	63.0	65.7	71.8	24	76	239	757	2,393	7,568
3	S. Santa Fe Avenue	Community Drive 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 Community Drive	69.8	63.0	65.7	71.8	24	76	239	757	2,393	7,568
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	69.8	63.1	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	44.6	50.4	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	63.8	69.2	13	42	132	416	1,315	4,159

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Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Near-Term (2027)

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	16,110	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	18,080	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	18,080	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	15,840	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	14,650	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	610	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	12,730	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	16,220	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	18,190	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	18,450	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	16,020	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	14,720	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	650	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	12,840	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

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Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Near-Term (2027)
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	69.6	62.8	65.6	71.6	23	72	229	723	2,285	7,227
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	70.1	63.3	66.1	72.1	26	81	256	811	2,564	8,109
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	70.1	63.3	66.1	72.1	26	81	256	811	2,564	8,109
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.5	62.7	65.5	71.6	23	72	229	723	2,285	7,227
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.7	61.6	64.7	70.1	16	51	162	512	1,618	5,116
6	Hollencrest Road	De Leone Road to Hollenbeck Road	48.0	44.6	50.5	53.1	0	1	3	10	32	102
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	67.1	61.0	64.1	69.5	14	45	141	446	1,409	4,456
WITH PROJECT												
1	S. Santa Fe Avenue	Smilax Road to Bosstick Boulevard	69.6	62.9	65.6	71.7	23	74	234	740	2,339	7,396
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	70.1	63.4	66.1	72.2	26	83	262	830	2,624	8,298
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	70.2	63.4	66.1	72.2	26	83	262	830	2,624	8,298
4	S. Santa Fe Avenue	Las Flores Drive to N. Rancho Santa Fe Road	69.6	62.8	65.5	71.6	23	72	229	723	2,285	7,227
5	S. Santa Fe Avenue	N. Rancho Santa Fe Road and N. Pacific Street	67.7	61.6	64.7	70.1	16	51	162	512	1,618	5,116
6	Hollencrest Road	De Leone Road to Hollenbeck Road	48.3	44.9	50.8	53.4	0	1	3	11	35	109
7	N. Rancho Santa Fe Road	S. Santa Fe Avenue to Capalina Road	67.1	61.0	64.1	69.5	14	45	141	446	1,409	4,456

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Traffic Noise Prediction Model

Data Input Sheet

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Long-Term (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 Community Drive	22,200	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive 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	22,310	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
2	S. Santa Fe Avenue	Bosstick Boulevard to Community Drive	22,310	45	50	95.00	3.00	2.00	77.00	10.00	13.00	
3	S. Santa Fe Avenue	Community Drive to Las Flores Drive	22,570	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	21,480	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	24,470	40	50	95.00	3.00	2.00	77.00	10.00	13.00	
6	Hollencrest Road	De Leone Road to Hollenbeck Road	870	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	16,910	40	50	95.00	3.00	2.00	77.00	10.00	13.00	

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Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Santa Fe Flores Townhomes
Project Number : 10587
Modeled Condition : Long-Term (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 Community Drive	71.0	64.2	67.0	73.0	32	100	315	998	3,155	9,976
3	S. Santa Fe Avenue	Community Drive 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 Community Drive	71.0	64.2	67.0	73.1	32	102	323	1,021	3,228	10,209
3	S. Santa Fe Avenue	Community Drive 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	49.6	46.2	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 7

SoundPLAN Data – On-site Generated Noise

10587 Santa Fe Flores Townhomes
SoundPLAN Data - HVAC

Source name	Reference	Noise Level dB(A)	Corrections Cwall dB(A)	CI dB(A)	CT dB(A)
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	-	-	-

10587 Santa Fe Flores Townhomes

SoundPLAN Data - HVAC

No.	Coordinates X (meters)	Y (meters)	Height (meters)	Noise Level dB(A)
1	481468.23	3668972.47	182.38	32.8
2	481477.03	3668933.16	185.26	34.8
3	481491.51	3668901.09	186.46	35.5
4	481513.24	3668863.85	186.82	35.3
5	481534.96	3668832.30	186.16	34.3
6	481452.72	3668803.33	161.69	33.9
7	481417.03	3668787.30	160.02	35.0
8	481389.61	3668758.33	159.84	41.9
9	481373.58	3668720.06	157.61	40.7
10	481348.75	3668660.57	154.54	35.0
11	481317.72	3668679.71	153.92	35.5
12	481280.47	3668693.16	153.14	35.8
13	481232.89	3668717.47	152.07	34.9
14	481185.82	3668741.78	151.46	33.6
15	481288.85	3668803.43	156.64	39.0
16	481306.71	3668845.77	157.91	38.0
17	481370.21	3668885.46	167.45	39.6
18	481303.57	3668756.45	154.67	38.8

Source name				Noise Level dB(A)
1	1.Fl	32.8	0.0	
HVAC1				10.9
HVAC2				11.3
HVAC3				10.7
HVAC4				12.3
HVAC5				10.8
HVAC6				9.9
HVAC7				8.0
HVAC8				7.6
HVAC9				7.4
HVAC10				5.6
HVAC11				6.3
HVAC12				6.3
HVAC13				14.7
HVAC14				15.0
HVAC15				12.6
HVAC16				10.0
HVAC17				13.2
HVAC18				15.4
HVAC19				16.1
HVAC20				16.3
HVAC21				16.5
HVAC22				15.4
HVAC23				16.3
HVAC24				16.9
HVAC25				17.5
HVAC26				18.9
HVAC27				18.7
HVAC28				17.9
HVAC29				18.3
HVAC30				18.3
HVAC31				18.5
HVAC32				18.7
HVAC33				18.7
HVAC34				18.9
HVAC35				19.2
HVAC36				19.2
HVAC37				19.2
HVAC38				19.2
HVAC39				16.8
HVAC40				16.8
HVAC41				16.9
HVAC42				16.8
HVAC43				16.8
HVAC44				16.9
HVAC45				16.8
HVAC46				16.7
2	1.Fl	34.8	0.0	
HVAC1				13.7
HVAC2				15.4
HVAC3				14.9
HVAC4				15.6
HVAC5				15.6
HVAC6				12.6
HVAC7				10.1
HVAC8				10.9
HVAC9				16.3
HVAC10				7.6
HVAC11				9.0
HVAC12				7.9
HVAC13				12.6
HVAC14				14.5
HVAC15				14.9
HVAC16				11.9
HVAC17				14.8
HVAC18				12.9
HVAC19				17.2
HVAC20				18.9
HVAC21				16.9
HVAC22				17.0
HVAC23				17.6
HVAC24				18.2
HVAC25				18.8
HVAC26				20.6
HVAC27				20.1
HVAC28				19.3
HVAC29				20.7
HVAC30				19.6
HVAC31				20.6
HVAC32				21.1
HVAC33				20.8
HVAC34				21.8
HVAC35				21.4
HVAC36				21.0
HVAC37				21.4
HVAC38				21.2
HVAC39				18.3
HVAC40				18.6
HVAC41				18.7
HVAC42				19.7
HVAC43				19.0
HVAC44				18.7
HVAC45				19.6
HVAC46				19.4

Source name				Noise Level dB(A)
3	1.Fl	35.5	0.0	
HVAC1				15.8
HVAC2				15.9
HVAC3				15.3
HVAC4				15.9
HVAC5				16.1
HVAC6				16.2
HVAC7				12.8
HVAC8				17.0
HVAC9				16.7
HVAC10				16.8
HVAC11				14.0
HVAC12				9.8
HVAC13				11.9
HVAC14				13.2
HVAC15				14.4
HVAC16				14.8
HVAC17				13.3
HVAC18				10.2
HVAC19				17.2
HVAC20				17.9
HVAC21				18.9
HVAC22				17.5
HVAC23				17.3
HVAC24				17.8
HVAC25				19.0
HVAC26				20.7
HVAC27				20.2
HVAC28				19.7
HVAC29				21.0
HVAC30				19.6
HVAC31				21.6
HVAC32				22.6
HVAC33				21.9
HVAC34				21.7
HVAC35				21.6
HVAC36				21.0
HVAC37				22.4
HVAC38				22.0
HVAC39				19.2
HVAC40				20.0
HVAC41				20.0
HVAC42				20.1
HVAC43				19.5
HVAC44				19.0
HVAC45				20.5
HVAC46				20.2
4	1.Fl	35.3	0.0	
HVAC1				16.4
HVAC2				16.8
HVAC3				15.6
HVAC4				16.1
HVAC5				16.9
HVAC6				16.7
HVAC7				17.0
HVAC8				17.4
HVAC9				17.0
HVAC10				17.4
HVAC11				17.6
HVAC12				16.9
HVAC13				14.0
HVAC14				13.0
HVAC15				13.4
HVAC16				12.8
HVAC17				11.7
HVAC18				10.4
HVAC19				18.2
HVAC20				16.6
HVAC21				16.6
HVAC22				18.4
HVAC23				16.8
HVAC24				17.5
HVAC25				18.1
HVAC26				19.7
HVAC27				19.2
HVAC28				19.4
HVAC29				19.8
HVAC30				18.7
HVAC31				21.1
HVAC32				22.6
HVAC33				21.7
HVAC34				21.0
HVAC35				20.8
HVAC36				20.5
HVAC37				21.5
HVAC38				21.2
HVAC39				19.4
HVAC40				20.7
HVAC41				19.9
HVAC42				19.5
HVAC43				19.3
HVAC44				19.0
HVAC45				20.0
HVAC46				19.6

Source name				Noise Level dB(A)
5	1.Fl	34.3	0.0	
HVAC1				16.6
HVAC2				17.0
HVAC3				15.4
HVAC4				15.9
HVAC5				17.2
HVAC6				17.0
HVAC7				17.3
HVAC8				17.8
HVAC9				16.5
HVAC10				16.9
HVAC11				17.9
HVAC12				17.4
HVAC13				15.4
HVAC14				15.3
HVAC15				14.9
HVAC16				11.7
HVAC17				13.4
HVAC18				11.5
HVAC19				16.2
HVAC20				15.8
HVAC21				15.5
HVAC22				15.7
HVAC23				16.4
HVAC24				16.3
HVAC25				16.6
HVAC26				16.9
HVAC27				17.2
HVAC28				18.0
HVAC29				18.2
HVAC30				17.2
HVAC31				20.1
HVAC32				20.6
HVAC33				19.8
HVAC34				19.5
HVAC35				19.3
HVAC36				19.2
HVAC37				20.0
HVAC38				19.6
HVAC39				18.3
HVAC40				19.8
HVAC41				18.8
HVAC42				18.7
HVAC43				18.4
HVAC44				18.2
HVAC45				19.5
HVAC46				18.9
6	1.Fl	33.9	0.0	
HVAC1				19.1
HVAC2				19.7
HVAC3				20.0
HVAC4				20.6
HVAC5				20.0
HVAC6				19.7
HVAC7				19.7
HVAC8				20.9
HVAC9				21.4
HVAC10				21.6
HVAC11				20.5
HVAC12				18.2
HVAC13				16.6
HVAC14				13.1
HVAC15				12.5
HVAC16				3.4
HVAC17				7.6
HVAC18				12.8
HVAC19				7.2
HVAC20				6.5
HVAC21				6.2
HVAC22				5.5
HVAC23				6.2
HVAC24				6.8
HVAC25				6.4
HVAC26				5.1
HVAC27				4.9
HVAC28				3.7
HVAC29				4.4
HVAC30				4.8
HVAC31				7.7
HVAC32				9.1
HVAC33				10.2
HVAC34				11.5
HVAC35				13.9
HVAC36				15.6
HVAC37				12.7
HVAC38				10.8
HVAC39				12.5
HVAC40				15.4
HVAC41				19.5
HVAC42				21.6
HVAC43				23.9
HVAC44				23.6
HVAC45				20.3
HVAC46				18.1

Source name				Noise Level dB(A)
7	1.Fl	35.0	0.0	
HVAC1				20.9
HVAC2				22.7
HVAC3				23.1
HVAC4				24.2
HVAC5				23.1
HVAC6				19.1
HVAC7				20.3
HVAC8				24.5
HVAC9				21.3
HVAC10				22.6
HVAC11				20.7
HVAC12				16.4
HVAC13				14.7
HVAC14				13.8
HVAC15				13.1
HVAC16				12.5
HVAC17				13.7
HVAC18				14.6
HVAC19				10.3
HVAC20				9.9
HVAC21				9.1
HVAC22				5.0
HVAC23				9.5
HVAC24				10.5
HVAC25				7.1
HVAC26				5.8
HVAC27				5.3
HVAC28				5.1
HVAC29				5.4
HVAC30				6.0
HVAC31				9.4
HVAC32				11.3
HVAC33				13.0
HVAC34				14.2
HVAC35				15.6
HVAC36				16.8
HVAC37				15.0
HVAC38				11.7
HVAC39				16.5
HVAC40				15.4
HVAC41				20.6
HVAC42				21.6
HVAC43				22.7
HVAC44				23.2
HVAC45				15.9
HVAC46				12.6
8	1.Fl	41.9	0.0	
HVAC1				25.3
HVAC2				27.2
HVAC3				28.2
HVAC4				29.7
HVAC5				27.8
HVAC6				26.5
HVAC7				27.0
HVAC8				30.4
HVAC9				31.8
HVAC10				32.6
HVAC11				30.5
HVAC12				29.0
HVAC13				24.2
HVAC14				23.6
HVAC15				22.9
HVAC16				23.5
HVAC17				24.0
HVAC18				26.7
HVAC19				24.0
HVAC20				20.8
HVAC21				20.6
HVAC22				12.9
HVAC23				12.3
HVAC24				8.7
HVAC25				7.7
HVAC26				6.6
HVAC27				7.0
HVAC28				5.3
HVAC29				5.7
HVAC30				5.6
HVAC31				9.4
HVAC32				12.8
HVAC33				20.5
HVAC34				21.5
HVAC35				21.9
HVAC36				24.3
HVAC37				12.8
HVAC38				10.1
HVAC39				17.4
HVAC40				19.7
HVAC41				24.3
HVAC42				24.1
HVAC43				25.0
HVAC44				27.5
HVAC45				24.6
HVAC46				23.6

Source name				Noise Level dB(A)
9	1.Fl	40.7	0.0	
HVAC1				25.3
HVAC2				29.1
HVAC3				32.7
HVAC4				32.4
HVAC5				28.9
HVAC6				25.2
HVAC7				23.8
HVAC8				27.0
HVAC9				29.9
HVAC10				28.6
HVAC11				26.2
HVAC12				24.1
HVAC13				20.3
HVAC14				15.8
HVAC15				15.2
HVAC16				14.6
HVAC17				15.8
HVAC18				17.5
HVAC19				21.4
HVAC20				19.0
HVAC21				20.1
HVAC22				20.8
HVAC23				21.8
HVAC24				20.4
HVAC25				10.5
HVAC26				18.0
HVAC27				16.2
HVAC28				16.2
HVAC29				10.1
HVAC30				6.9
HVAC31				7.8
HVAC32				9.5
HVAC33				17.7
HVAC34				18.4
HVAC35				19.3
HVAC36				17.6
HVAC37				10.4
HVAC38				10.1
HVAC39				17.6
HVAC40				18.1
HVAC41				24.4
HVAC42				20.1
HVAC43				20.7
HVAC44				23.7
HVAC45				22.0
HVAC46				22.1
10	1.Fl	35.0	0.0	
HVAC1				23.2
HVAC2				23.0
HVAC3				25.5
HVAC4				24.2
HVAC5				22.0
HVAC6				20.8
HVAC7				18.4
HVAC8				19.8
HVAC9				21.7
HVAC10				21.6
HVAC11				19.3
HVAC12				17.5
HVAC13				14.7
HVAC14				14.2
HVAC15				19.8
HVAC16				14.5
HVAC17				13.5
HVAC18				12.5
HVAC19				15.5
HVAC20				16.4
HVAC21				16.2
HVAC22				14.8
HVAC23				15.7
HVAC24				14.9
HVAC25				15.2
HVAC26				12.9
HVAC27				11.5
HVAC28				11.0
HVAC29				12.0
HVAC30				14.6
HVAC31				8.1
HVAC32				8.3
HVAC33				14.8
HVAC34				15.3
HVAC35				14.1
HVAC36				13.4
HVAC37				9.6
HVAC38				9.6
HVAC39				16.7
HVAC40				16.9
HVAC41				18.7
HVAC42				20.2
HVAC43				17.3
HVAC44				19.0
HVAC45				18.8
HVAC46				18.9

Source name				Noise Level dB(A)
11	1.Fl	35.5	0.0	
HVAC1				24.8
HVAC2				23.8
HVAC3				25.0
HVAC4				21.7
HVAC5				22.2
HVAC6				21.5
HVAC7				18.5
HVAC8				18.1
HVAC9				18.5
HVAC10				17.1
HVAC11				17.1
HVAC12				16.9
HVAC13				22.5
HVAC14				23.1
HVAC15				23.3
HVAC16				21.4
HVAC17				22.6
HVAC18				21.3
HVAC19				18.5
HVAC20				19.5
HVAC21				19.7
HVAC22				18.9
HVAC23				19.0
HVAC24				11.4
HVAC25				11.0
HVAC26				12.4
HVAC27				12.9
HVAC28				10.9
HVAC29				11.4
HVAC30				9.2
HVAC31				7.0
HVAC32				7.0
HVAC33				6.8
HVAC34				7.5
HVAC35				8.4
HVAC36				8.9
HVAC37				8.8
HVAC38				8.8
HVAC39				12.4
HVAC40				12.5
HVAC41				12.4
HVAC42				13.1
HVAC43				14.6
HVAC44				17.4
HVAC45				15.9
HVAC46				16.5
12	1.Fl	35.8	0.0	
HVAC1				24.6
HVAC2				22.1
HVAC3				22.7
HVAC4				20.0
HVAC5				20.8
HVAC6				23.8
HVAC7				22.4
HVAC8				19.6
HVAC9				18.0
HVAC10				17.7
HVAC11				19.4
HVAC12				21.6
HVAC13				22.9
HVAC14				22.3
HVAC15				22.1
HVAC16				21.0
HVAC17				21.5
HVAC18				21.6
HVAC19				19.8
HVAC20				19.3
HVAC21				19.8
HVAC22				18.8
HVAC23				16.3
HVAC24				18.8
HVAC25				12.9
HVAC26				12.0
HVAC27				12.7
HVAC28				10.6
HVAC29				11.0
HVAC30				10.7
HVAC31				15.5
HVAC32				7.5
HVAC33				7.2
HVAC34				7.9
HVAC35				8.6
HVAC36				8.9
HVAC37				9.0
HVAC38				14.4
HVAC39				18.4
HVAC40				16.4
HVAC41				16.3
HVAC42				16.8
HVAC43				17.7
HVAC44				19.2
HVAC45				18.6
HVAC46				18.5

Source name				Noise Level dB(A)
13	1.Fl	34.9	0.0	
HVAC1				22.6
HVAC2				20.1
HVAC3				19.5
HVAC4				18.4
HVAC5				19.4
HVAC6				21.8
HVAC7				21.1
HVAC8				19.1
HVAC9				18.4
HVAC10				17.8
HVAC11				18.6
HVAC12				20.1
HVAC13				20.6
HVAC14				21.2
HVAC15				24.3
HVAC16				21.3
HVAC17				19.1
HVAC18				18.2
HVAC19				19.1
HVAC20				19.5
HVAC21				18.1
HVAC22				17.5
HVAC23				19.1
HVAC24				18.2
HVAC25				11.9
HVAC26				13.9
HVAC27				16.7
HVAC28				16.0
HVAC29				14.9
HVAC30				9.8
HVAC31				10.8
HVAC32				13.7
HVAC33				9.0
HVAC34				8.4
HVAC35				8.0
HVAC36				7.8
HVAC37				10.6
HVAC38				16.5
HVAC39				16.6
HVAC40				16.5
HVAC41				15.5
HVAC42				16.1
HVAC43				16.9
HVAC44				18.2
HVAC45				16.8
HVAC46				17.7
14	1.Fl	33.6	0.0	
HVAC1				18.6
HVAC2				17.5
HVAC3				17.1
HVAC4				19.4
HVAC5				17.5
HVAC6				18.4
HVAC7				18.1
HVAC8				19.8
HVAC9				19.5
HVAC10				16.6
HVAC11				20.0
HVAC12				18.8
HVAC13				18.4
HVAC14				18.5
HVAC15				19.9
HVAC16				19.4
HVAC17				18.3
HVAC18				19.5
HVAC19				16.3
HVAC20				15.9
HVAC21				17.4
HVAC22				16.9
HVAC23				15.7
HVAC24				18.1
HVAC25				18.4
HVAC26				18.5
HVAC27				16.2
HVAC28				15.6
HVAC29				14.7
HVAC30				13.7
HVAC31				9.6
HVAC32				10.4
HVAC33				9.7
HVAC34				10.8
HVAC35				9.9
HVAC36				9.0
HVAC37				12.0
HVAC38				13.8
HVAC39				15.6
HVAC40				15.8
HVAC41				15.3
HVAC42				15.6
HVAC43				15.5
HVAC44				15.7
HVAC45				15.4
HVAC46				16.9

Source name				Noise Level dB(A)
15	1.Fl	39.0	0.0	
HVAC1				14.4
HVAC2				12.0
HVAC3				11.4
HVAC4				11.2
HVAC5				12.0
HVAC6				13.6
HVAC7				14.2
HVAC8				12.6
HVAC9				12.3
HVAC10				20.2
HVAC11				13.2
HVAC12				14.5
HVAC13				22.9
HVAC14				26.3
HVAC15				31.3
HVAC16				32.6
HVAC17				26.7
HVAC18				23.4
HVAC19				26.5
HVAC20				20.2
HVAC21				26.1
HVAC22				25.0
HVAC23				26.2
HVAC24				25.1
HVAC25				14.4
HVAC26				17.2
HVAC27				23.1
HVAC28				21.7
HVAC29				17.7
HVAC30				12.0
HVAC31				7.6
HVAC32				6.7
HVAC33				6.2
HVAC34				7.2
HVAC35				8.3
HVAC36				9.0
HVAC37				9.8
HVAC38				10.5
HVAC39				12.6
HVAC40				18.2
HVAC41				16.0
HVAC42				16.0
HVAC43				15.8
HVAC44				21.0
HVAC45				18.8
HVAC46				23.9
16	1.Fl	38.0	0.0	
HVAC1				14.5
HVAC2				15.2
HVAC3				15.1
HVAC4				15.0
HVAC5				15.9
HVAC6				15.8
HVAC7				19.0
HVAC8				19.2
HVAC9				18.3
HVAC10				7.5
HVAC11				19.4
HVAC12				21.1
HVAC13				22.7
HVAC14				23.7
HVAC15				25.5
HVAC16				27.4
HVAC17				24.9
HVAC18				25.3
HVAC19				19.6
HVAC20				22.7
HVAC21				28.3
HVAC22				29.4
HVAC23				23.5
HVAC24				19.9
HVAC25				20.6
HVAC26				21.7
HVAC27				27.7
HVAC28				26.5
HVAC29				21.9
HVAC30				18.3
HVAC31				8.7
HVAC32				6.8
HVAC33				5.6
HVAC34				7.7
HVAC35				6.8
HVAC36				6.9
HVAC37				8.5
HVAC38				10.9
HVAC39				11.2
HVAC40				8.3
HVAC41				6.8
HVAC42				6.8
HVAC43				6.8
HVAC44				6.7
HVAC45				8.7
HVAC46				10.7

Source name				Noise Level dB(A)
17	1.Fl	39.6	0.0	
HVAC1				18.4
HVAC2				18.6
HVAC3				15.2
HVAC4				13.6
HVAC5				18.7
HVAC6				19.0
HVAC7				20.2
HVAC8				20.6
HVAC9				12.5
HVAC10				9.7
HVAC11				17.3
HVAC12				21.0
HVAC13				11.2
HVAC14				7.8
HVAC15				7.3
HVAC16				7.1
HVAC17				7.7
HVAC18				11.5
HVAC19				15.3
HVAC20				15.2
HVAC21				14.9
HVAC22				16.0
HVAC23				15.7
HVAC24				16.4
HVAC25				25.1
HVAC26				26.3
HVAC27				25.1
HVAC28				30.3
HVAC29				28.8
HVAC30				30.9
HVAC31				29.5
HVAC32				26.7
HVAC33				27.0
HVAC34				24.4
HVAC35				22.1
HVAC36				21.2
HVAC37				23.0
HVAC38				26.6
HVAC39				25.9
HVAC40				18.3
HVAC41				15.6
HVAC42				15.6
HVAC43				15.5
HVAC44				15.4
HVAC45				19.5
HVAC46				23.7
18	1.Fl	38.8	0.0	
HVAC1				29.2
HVAC2				23.9
HVAC3				22.0
HVAC4				22.1
HVAC5				24.0
HVAC6				29.5
HVAC7				29.2
HVAC8				23.7
HVAC9				22.4
HVAC10				21.3
HVAC11				23.6
HVAC12				28.1
HVAC13				26.8
HVAC14				25.0
HVAC15				27.6
HVAC16				21.7
HVAC17				22.6
HVAC18				28.7
HVAC19				12.2
HVAC20				11.8
HVAC21				12.8
HVAC22				11.4
HVAC23				9.1
HVAC24				11.0
HVAC25				7.1
HVAC26				6.5
HVAC27				7.5
HVAC28				5.7
HVAC29				5.7
HVAC30				5.2
HVAC31				5.4
HVAC32				4.9
HVAC33				4.0
HVAC34				4.5
HVAC35				5.4
HVAC36				6.0
HVAC37				6.5
HVAC38				7.7
HVAC39				11.6
HVAC40				9.5
HVAC41				9.2
HVAC42				9.8
HVAC43				11.0
HVAC44				22.4
HVAC45				12.0
HVAC46				12.2