



An Employee-Owned Company

July 23, 2024

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Reference: Noise Analysis for the Chabad of Coronado at 970 C Avenue (DR2023-13, PC2023-02, -03, and -04, and CP2023-03; RECON Number 9641-2)

Dear Mr. Becker:

The purpose of this report is to assess potential noise impacts from construction and operation of the Chabad of Coronado Project (project). Impacts are assessed in accordance with standards established in the City of Coronado's (City's) General Plan Noise Element and the Coronado Municipal Code (CMC).

1.0 Introduction

1.1 Project Description

The project site is located at 970 C Avenue in the city of Coronado, California. The project site is currently developed with two one-story commercial buildings. The project site is bounded by multi-family residential units to the northeast, C Avenue, a church and preschool to the east to the southeast, 10th Avenue and commercial uses to the southwest, and an alley followed by commercial uses to the northwest. Figure 1 shows the regional location and Figure 2 shows an aerial photograph of the project vicinity.

The project would demolish the existing on-site buildings totaling 4,874 square feet and construct a 26,806-square-foot, two-story religious structure with underground parking. The project would include 50 parking spaces consisting of 46 tandem parklift spaces, 2 compact spaces, 1 accessible van space, and 1 accessible space. Figure 3 shows the proposed site plan.

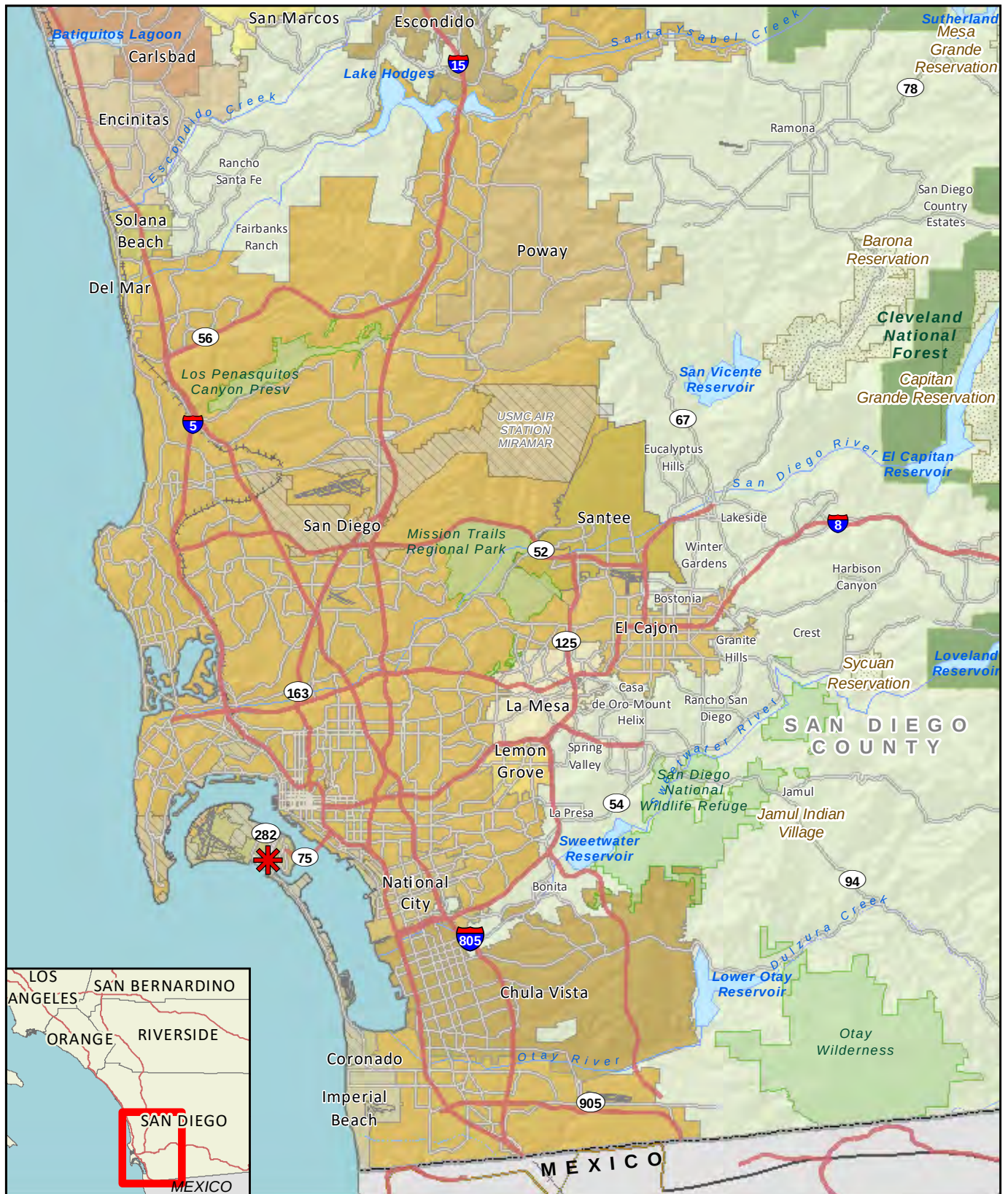
The facility uses would include youth Hebrew classes, bible study, prayer services, and sabbath services. The weekly operating schedule is as follows:

- Sunday
 - 9:15 a.m. to 10:15 a.m. – Hebrew Class (15 adults) – Occurs in Assembly Hall
 - 10:30 a.m. to 11:30 a.m. – Hebrew Class (8 students) – Occurs in Assembly Hall
- Monday
 - 9:30 a.m. to 4:00 p.m. – Administration Office (2 adults)
 - 8:00 a.m. to 9:00 a.m. – Prayer Service (10 to 12 attendees) – Occurs in Assembly Hall
- Tuesday
 - 9:30 a.m. to 4:00 p.m. – Administration Office (2 adults)
 - 6:30 p.m. to 7:30 p.m. – Adult Education Class (12 attendees) – Occurs in Assembly Hall
 - 8:30 p.m. to 9:30 p.m. – Young Parents Class (8 attendees) – Occurs in Assembly Hall

- Wednesday
 - 9:30 a.m. to 4:00 p.m. – Administration Office (2 adults)
 - 2:00 p.m. to 3:00 p.m. – Teens Class (7 attendees) – Occurs in Assembly Hall
- Thursday
 - 9:30 a.m. to 4:00 p.m. – Administration Office (2 adults)
 - 8:00 a.m. to 9:00 a.m. – Prayer Service (10 to 12 attendees) – Occurs in Assembly Hall
- Friday
 - 9:30 a.m. to 4:00 p.m. – Administration Office (2 adults)
 - 6:00 p.m. to 7:00 p.m. – Sabbath Service (25 adults/15 children)
 - 7:00 p.m. to 8:00 p.m. – Sabbath Dinner (25 adults/15 children)
- Saturday
 - 10:00 a.m. to 12:00 p.m. – Sabbath Service (20 adults/10 children)
 - 12:00 p.m. to 1:00 p.m. – Luncheon (20 adults/10 children)

The project would also include extra events throughout the year. No amplified music would be played for any events on Friday evenings, all day Saturday, or any holiday, as it is not allowed per religious beliefs. All extra events would be held in the Assembly Hall, and would never conflict with larger Sabbath gatherings on Friday and Saturday, or any other gatherings. The additional events that would occur include:

- 3 to 5 Bar Mitzvahs (50 adults, 25 children)
 - Held on Saturdays from 10:00 a.m. to 12:00 p.m.
 - Will be at maximum capacity allowed if the event is held on the property
 - No amplified music allowed
 - No dancing
- Chanukah (20 adults, 30 children)
 - One day in December from 5:00 p.m. to 7:00 p.m.
 - Chanukah celebration is usually a child-centered evening, giving the kids a taste of the holiday
- Passover (40 adults, 20 children)
 - Two nights in April from 6:00 p.m. to 9:00 p.m.
 - Coronado Jewish community spends Passover Seder together with an evening dinner and celebration for the holiday
- Shavout (20 adults, 20 kids)
 - Two days in May from 10:00 a.m. to 12:00 p.m.
 - Small holiday get-together for a short service and luncheon to celebrate the holiday together
- Summer Camps (4 adults, 30 kids)
 - First three weeks of July, Monday through Friday, 9:30 a.m. to 2:30 p.m.
- High Holidays
 - Sukkot, Rosh Hashanah, Yom Kippur
 - Held off-site if occupancy exceeds occupant loads established by the California Building Code
- Receptions or Weddings
 - Four weddings/receptions estimated per year
 - Number of attendees not to exceed maximum occupancy for the Assembly Hall as dictated by the California Building Code
 - Any amplified sound to end at 10:00 p.m.



✱ Project Location

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FIGURE 1
Regional Location



 Project Boundary

FIGURE 2
Project Location on Aerial Photograph

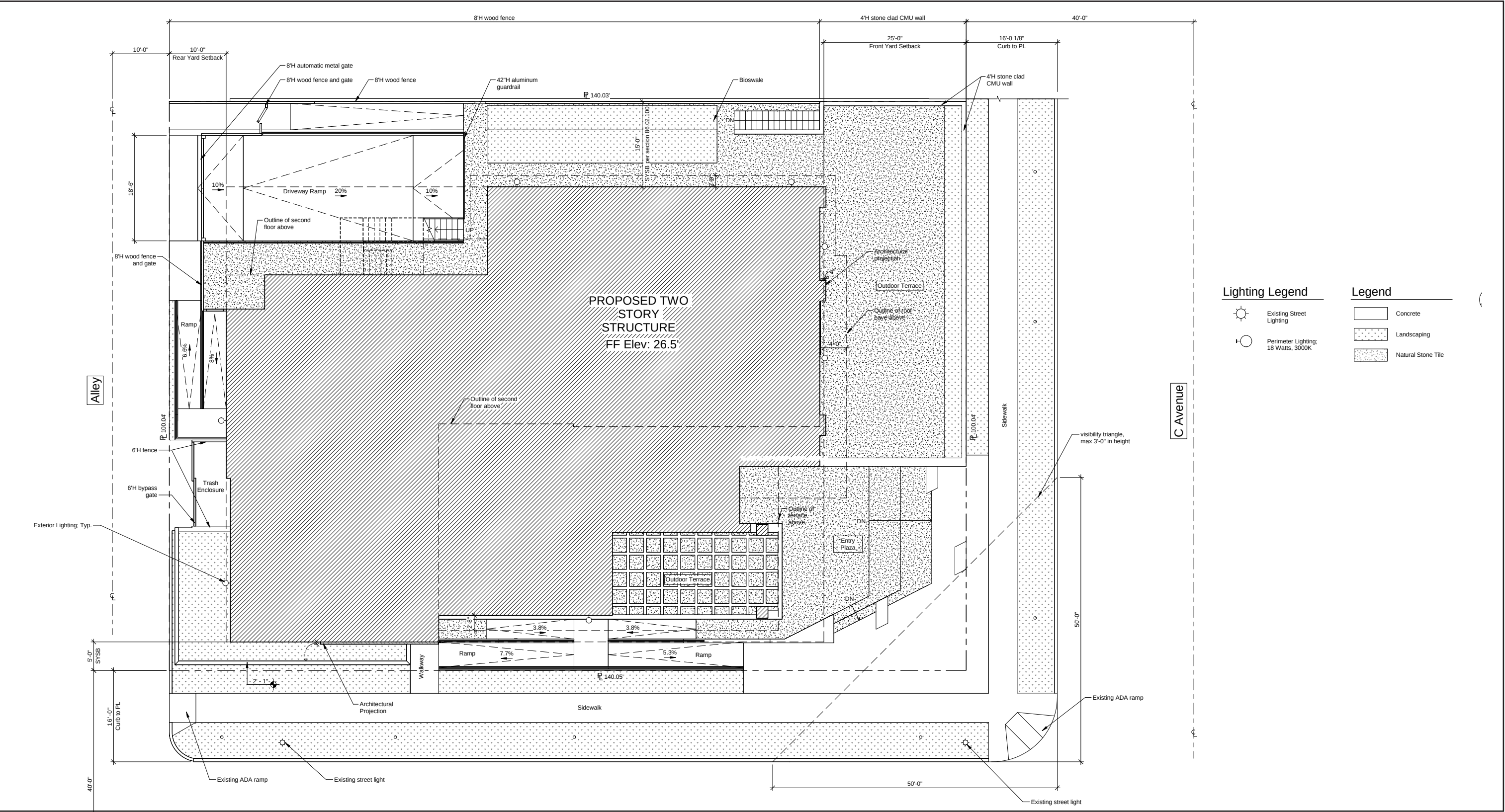


FIGURE 3
Site Plan

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.

Additionally, 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. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from 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 and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level 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). 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 one-hour equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the day night equivalent level (L_{DN}). 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 an additional 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. Similar to the CNEL, the L_{DN} is a 24-hour equivalent level that applies an additional 10 dB(A) penalty to noise occurring during the night.

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

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

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

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 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).

2.0 Applicable Standards

2.1 General Plan

The Noise Element of the General Plan establishes noise compatibility standards for a variety of land uses. For the purposes of this analysis, the noise standards for schools, churches, and libraries were used to assess compatibility. For these land uses, noise levels are considered clearly acceptable up to 55 CNEL and normally acceptable up to 60 CNEL.

2.2 Municipal Code

Title 41 of the CMC contains the City’s Noise Abatement and Control Regulations. Noise level limits for operational noise sources are provided in Section 41.10.010 and construction noise regulations are provided in Sections 4.10.040 and 4.10.050.

2.2.1 Municipal Code Operational Noise Regulations

The applicable property line noise level limits provided in Section 41.10.010 of the CMC are summarized in Table 1. These maximum one-hour sound level limits are the maximum noise levels allowed at any point on or beyond the property boundaries due to activities occurring on the property. Where two or more zones adjoin, the sound level limit is the arithmetic mean of the respective limits for the two zones.

Table 1 Property Line Noise Level Limits		
Land Use Zone	Time of Day	One-Hour Average Sound Level [dB(A) Leq]
Residential: All R-1A; R-1B	7:00 a.m. to 7:00 p.m.	50
	7:00 p.m. to 10:00 p.m.	45
	10:00 p.m. to 7:00 a.m.	40
Residential: All R-3; R-4; R-PDC; and R-5	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
Commercial (C); Commercial Recreation (C-R); Hotel/Motel (H-M); Civic Use (C-U); Open Space (SO); and Parking Overlay (P-1)	7:00 a.m. to 7:00 p.m.	60
	7:00 p.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	50

SOURCE: CMC Section 4.10.010.

The project site is zoned R-3/P. The property to the northeast is zoned R-3/P, the properties to the southeast are zoned R-3, and the properties to the south, west, and north are zoned C. Therefore, the applicable property line limits between the project site and the adjacent residential uses are 55 dB(A) Leq during the daytime, 50 dB(A) Leq in the evening, and 45 dB(A) Leq during the nighttime, and the applicable property line limits between the project site and the adjacent commercial uses are 57.5 dB(A) Leq during the daytime, 55 dB(A) Leq in the evening, and 47.5 dB(A) Leq during the nighttime.

2.2.2 Municipal Code Construction Noise Regulations

The following is from CMC Noise Abatement and Control Regulations:

41.10.040 Construction noise curfew.

- A. It shall be unlawful for any person, between the hours of 7:00 p.m. and 7:00 a.m. of any day or on legal holidays and Sundays to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create a disturbing, excessive or offensive noise unless a noise control permit has been applied for and granted beforehand by the Noise Control Officer. In granting such a permit, the Noise Control Officer should consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime; whether obstruction and interference with traffic, particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur; if the work is in the general public interest; and he shall prescribe such conditions, working time, types of construction equipment to be used and permissible noise levels as he deems to be required in the public interest.
- B. The provisions of subsection A of this section shall not apply to emergency work as defined herein; provided, that the Noise Control Officer shall be notified in writing of such emergency work no later than 48 hours after work commences.

41.10.050 Construction noise limits.

Except as provided in CMC 41.10.040(B), it shall be unlawful for any person, including the City of Coronado, to conduct any construction activity so as to cause, at or within the property lines of any property zoned residential, an average sound level greater than 75 decibels during a one-hour period any time between the hours of 7:00 a.m. to 7:00 p.m. unless a variance has been applied for and granted by the Noise Control Officer.

3.0 Existing Conditions

Existing noise levels in the vicinity of the project site were measured on May 19, 2024, using one Larson-Davis Model LxT, Type 1 Integrating Sound Level Meter, serial number 3829. The following parameters were used:

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

The meter was calibrated before measurement. The meter was set 5 feet above the ground level for each measurement. The weather was cloudy and cool with a slight breeze during the measurement period. Figure 4 shows the noise measurement locations. Noise measurement data is provided in Attachment 1.

Measurement 1 was located near the eastern project boundary approximately 25 feet from C Avenue and 60 feet from 10th Street. The main source of noise was vehicle traffic on C Avenue and 10th Street, and secondary sources of noise included pedestrians. Noise levels were measured for 15 minutes, and vehicle traffic on C Avenue was counted. The average measured noise level was 56.1 dB(A) L_{eq} .



-  Project Boundary
-  Noise Measurements

FIGURE 4
Noise Measurement Locations

Measurement 2 was located near the southern project boundary approximately 30 feet from the centerline of 10th Street and 10 feet from the existing building on-site. The main source of noise was vehicle traffic on 10th Street, and secondary sources of noise included bells and activities at the adjacent church. Noise levels were measured for 15 minutes, and vehicle traffic on 10th Street was counted. The average measured noise level was 60.6 dB(A) L_{eq} .

Measurement 3 was located at the western project boundary adjacent to the alley and approximately 105 feet from 10th Street. The main sources of noise included vehicle traffic on 10th Street and through the alley, a delivery truck in the alley, and activities at the adjacent commercial uses. Noise levels were measured for 15 minutes, and vehicle traffic on 10th Street and in the alley was counted. The average measured noise level was 62.6 dB(A) L_{eq} .

Table 2 summarizes the measured noise levels. Table 3 summarizes the traffic counts.

Table 2 Noise Measurements				
Measurement	Location	Time	Main Noise Sources	L_{eq}
1	Eastern project boundary	9:02 a.m. – 9:17 a.m.	Vehicle traffic on C Avenue and 10 th Street	56.1
2	Southern project boundary	8:43 a.m. – 8:58 a.m.	Vehicle traffic on 10 th Street	60.6
3	Western project boundary	9:22 a.m. – 9:37 a.m.	Vehicle traffic on 10 Street and alley, delivery truck, commercial activities	62.6
L_{eq} = equivalent noise level NOTE: Noise measurement data is contained in Attachment 1.				

Table 3 15-minute Traffic Counts							
Measurement	Road	Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
1	C Avenue	Northbound	19	0	0	0	0
		Southbound	21	0	1	0	0
2	10 th Street	Eastbound	30	1	0	0	0
		Westbound	23	2	0	0	0
3	10 th Street	Eastbound	25	0	0	0	0
		Westbound	20	0	0	0	0
3	Alley	Northbound	3	0	0	0	0
		Southbound	2	0	1	0	1

4.0 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 4 summarizes typical construction equipment noise levels and duty cycles.

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

Table 4 Typical Construction Equipment Noise Levels		
Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
SOURCE: Federal Highway Administration 2006 and 2008; Federal Transit Authority 2018. dB(A) L_{eq} = A-weighted decibels average noise level		

The project site is surrounded by multi-family residential uses to the northeast, a church and preschool to the east and southeast, and commercial properties to the south, southwest, and northwest. Construction noise levels were modeled at the adjacent receivers assuming the simultaneous use of an excavator and a loader, which would generate a combined sound power level of 113.9 dB(A) L_{pw} . This noise level was modeled as an area source covering the entire project site. The existing wall located between the project site and the property to the north was taken into account.

Additionally, there is a possibility that site dewatering would be required if groundwater is encountered during excavation. Dewatering would require the use of a 5 horsepower pump that would operate continuously including during the nighttime hours. Based on calculation details provided in *An Introduction to Sound Level Data for Mechanical and Electrical Equipment* (Continuing Education and Development, Inc. 2013), a 5 horsepower pump with a 3,000 to 3,600 rotations per minute motor generates a noise level of 76.0 dB(A) L_{eq} at 3 feet which is equivalent to a sound power level of 83.2 dB(A) L_{pw} . This noise level was modeled as a point source near the center of the project site. Pump specifications are provided in Attachment 2.

4.2 Traffic Noise Analysis

4.2.1 On-Site Noise Compatibility

The SoundPLAN program uses the FHWA Traffic Noise Model algorithms and reference levels to calculate traffic 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 main source of traffic noise at the project site is vehicle traffic on 10th Street, C Avenue, and Orange Avenue. Year 2025 and year 2050 traffic volumes were obtained from San Diego Association of Governments (SANDAG) Series 14 traffic projections (SANDAG 2024). The year 2025 vehicle traffic volumes were used to determine if the project would result in a significant increase in ambient noise levels. Because the year 2025 traffic volumes are greater than year 2050 volumes, year 2025 vehicle traffic volumes were used to determine compatibility with the City's noise standards. There are no traffic projections available for the segments of 10th Street and C Avenue immediately adjacent to the project site because they do not carry large traffic volumes. However, the portion of 10th Street northwest of the project site has a year 2025 volume of 1,400 average daily traffic (ADT). As a conservative analysis, this volume was used to calculate traffic noise levels due to the segments of 10th Street and C Avenue immediately adjacent to the project site. A vehicle classification mix of 95 percent automobiles, 2 percent medium trucks, 1 percent heavy trucks, 1 percent buses, and 1 percent motorcycles was modeled. Based on field traffic counts conducted during the noise

measurements, this vehicle classification mix is conservative. Modeled noise contours take into account shielding provided by existing surrounding buildings and the proposed building. Table 5 summarizes the modeled future vehicle traffic parameters.

Table 5 Vehicle Traffic Parameters							
Roadway Segment	ADT	Speed (mph)	Vehicle Classification Mix (percent)				
			Automobiles	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Orange Avenue							
North of 10 th Street	20,800	25	95	2	1	1	1
South of 10 th Street	21,400	25	95	2	1	1	1
10 th Street	1,400	25	95	2	1	1	1
C Avenue	1,400	25	95	2	1	1	1
SOURCE: SANDAG 2024. ADT = average daily traffic; mph = miles per hour							

4.2.2 Off-Site Traffic Noise Increase

The project was also evaluated to determine if project-generated traffic would result in a significant increase in ambient noise levels. 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. Based on the Vehicle Miles Traveled Assessment prepared for the project, during regular operations the project would generate up to 48 ADT, and during special events the project would generate up to a maximum of 104 ADT (Linscott, Law & Greenspan, Engineers [LLG] 2024). Noise levels adjacent to Orange Avenue, 10th Street, and C Avenue were calculated using the FHWA Traffic Noise Prediction Model algorithms without and with project-generated traffic.

4.3 On-Site Noise Analysis

The operational noise sources on the project site are anticipated to be those that would be typical of religious facility, and would include rooftop mechanical equipment, people gathering, amplified music within the Assembly Hall during wedding receptions, vehicles arriving and leaving, and landscaping equipment. Noise associated with landscaping equipment is anticipated to be similar to the existing landscaping activities on the project site and typical of landscaping activities throughout the City, and would not generate noise levels in excess of CMC limits. Parking activities would occur within the underground parking garage which would be accessed from the alley to the west away from adjacent residential uses. As such, noise levels from underground parking activities would not be audible at the adjacent residential uses and are not anticipated to exceed the CMC noise level limits. This analysis therefore focuses on noise levels generated by rooftop mechanical equipment, people gathering in outdoor spaces, and amplified music. Noise levels were calculated for the following scenarios: (1) wedding/reception with maximum occupancy and amplified music, (2) larger events with maximum occupancy and no amplified music, and (3) nighttime operation of the rooftop mechanical equipment.

As discussed in Section 1.1, amplified music could be played during wedding receptions. The amplified music would be located inside the Assembly Hall and would end at 10:00 p.m. Based on noise level measurements conducted at a wedding, a 100-person event with amplified music and speech generates a noise level of 72.0 dB(A) L_{eq} at 50 feet (Bollard Acoustical Consultants, Inc. 2019). This is equivalent to a sound power level of 103.6 dB(A) L_{pw} . As a condition of project approval, it would be required that all doors and windows in the Assembly Hall remain closed during events with amplified music. A 10 dB(A) noise reduction would be achieved by closing windows and doors (FHWA 2011), therefore, a noise level of 93.6 dB(A) L_{pw} was modeled. Amplified music was modeled during the daytime and evening hours, and would not occur during the nighttime hours after 10:00 p.m.

The project includes an outdoor terrace outside of the Assembly Hall where people could gather. Based on SoundPLAN emissions data, a normal speaking voice generates a sound power level of 65 dB(A) L_{pw} (Navcon Engineering 2018). A total of 25 people were modeled at the outdoor terrace, for a total sound power level of 79.0 dB(A) L_{pw} . This is conservative since it assumes all people would be speaking at the same time. This noise level was modeled during the daytime and evening hours since all regularly scheduled events and special events would end by 10:00 p.m.

The rooftop mechanical equipment would consist of three air conditioning units and a boiler concealed by a 42-inch parapet wall. Each of the air conditioning units were assumed to be similar to a Carrier 12.5-ton rooftop unit that generates a sound power level of 79.0 dB(A) L_{eq} and the boiler was assumed to be similar to a 150 horsepower unit that generates a sound power level of 90.2 dB(A) L_{eq} . Sound specifications are provided in Attachment 3. The rooftop mechanical equipment was modeled at full capacity during the daytime, evening, and nighttime hours for all three modeled scenarios.

5.0 Noise Impacts

5.1 Construction Noise Analysis

The project site is surrounded by multi-family residential uses to the northeast, a church and preschool to the east and southeast, and commercial properties to the south, southwest, and northwest. Construction noise is regulated by Sections 41.10.040 and 41.10.050 of the CMC. Construction noise shall not exceed an average hourly noise level of 75 dB(A) L_{eq} at any residential property line. Using the parameters discussed in Section 4.1, construction noise levels were modeled at a series of 14 receivers located at the adjacent properties. The results are summarized in Table 6. Modeled receiver locations and construction noise contours are shown in Figure 5. SoundPLAN data is presented in Attachment 4.



Project Boundary

Construction Noise Contours

Receivers

60 dB(A) L_{eq}

65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

0 Feet 150



FIGURE 5
Construction Noise Contours

Table 6 Construction Noise Levels at Adjacent Receivers [dB(A) L_{eq}]			
Receiver	Zoning	Construction Noise Level Limit	Construction Noise Level
1	R-3/P	75	74
2	R-3/P	75	75
3	R-3/P	75	75
4	R-3/P	75	74
5	C	--	78
6	C	--	79
7	C	--	78
8	C	--	72
9	C	--	72
10	C	--	72
11	C	--	71
12	R-3	75	70
13	R-3	75	70
14	R-3	75	70
dB(A) L_{eq} = A-weighted decibels equivalent noise level R-3/P = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size with parking overlay C = Commercial R/3 = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size			

As shown, construction noise levels are anticipated to be 75 dB(A) L_{eq} or less at all residentially zoned properties. Although the existing adjacent uses would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. In accordance with Section 41.10.040 of the CMC, construction activities would not occur before 7:00 a.m. or after 7:00 p.m. on Mondays through Saturdays and would not occur any time on Sundays and holidays. As construction activities associated with the project would comply with requirements of the CMC, temporary increases in noise levels from construction activities would be less than significant. Note that modeled construction noise levels take into account the existing wall located between the project site and the residential uses to the north. In order to comply with the noise level limits of the CMC, it shall be required that this wall remain in place during all project construction activities.

Although construction noise levels are not anticipated to exceed 75 dB(A) L_{eq} , due to the proximity of the adjacent residential uses, the following measures are recommended to ensure that the project complies with the CMC.

NOS-1 The City shall ensure that the construction contractor(s) contract and specifications for all project-related activities include the following requirements during construction activities:

- The existing wall located between the project site and the residential uses to the north shall remain in place during all project construction activities.
- Construction hours shall be conducted in compliance with Coronado Municipal Code (CMC) 41.10.040 with respect to allowable timeframes and days of the week (including weekends and holidays). Per CMC 41.10.050, noise from construction activities shall meet the standard of 75 dB(A) L_{eq} over any one-hour period, unless authorization to exceed this limit has been granted via permit by the City's Noise Control Officer (NCO) in advance.

- Construction during nighttime hours is prohibited unless authorized by the NCO in advance via permit.
- All idling (i.e., engines running) equipment shall be kept to a minimum.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be used for safety warning purposes only.
- Communication with local residents shall be maintained prior to and during construction. Specifically, the local residents shall be informed of the schedule, duration, and progress of the construction and shall be provided contact information (e.g., a telephone hotline and/or email address) for noise- or vibration-related complaints. The City shall establish a process to investigate these complaints in a timely manner and, if determined to be valid, detail efforts to provide a timely resolution and response to the complainant—with copy of outcome description documented in a log for the duration of the construction activities.
- Locate fixed/stationary equipment (e.g., generators, compressors) shall be located as far as possible from residential uses.
- All noise-producing equipment and vehicles using internal combustion engines shall be equipped with exhaust mufflers (or comparable noise-reducing exhaust flow treatments); air-inlet silencers; and, hoods, shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specifications. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors, generators) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.

Additionally, as discussed in Section 4.1, there is a possibility that site dewatering would be required with the use of a pump that would operate continuously including during the nighttime hours. Since pump operation would occur outside the times allowable by Section 41.10.040 of the CMC, the applicable noise level limits would be those provided in Section 41.10.010 of the CMC (see Table 1). These limits include 45 dB(A) L_{eq} at the residentially zoned properties and 47.5 dB(A) L_{eq} at the commercially zoned properties. Pump noise levels were modeled using the parameters discussed in Section 4.1. The results are summarized in Table 7. Modeled receiver locations and dewatering noise contours are shown in Figure 6. SoundPLAN data is presented in Attachment 5.

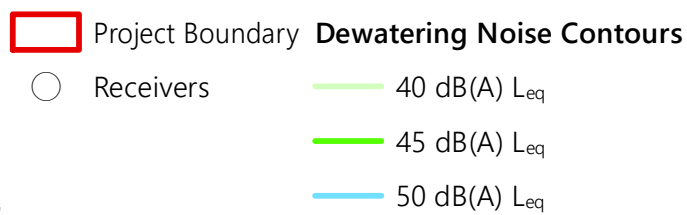
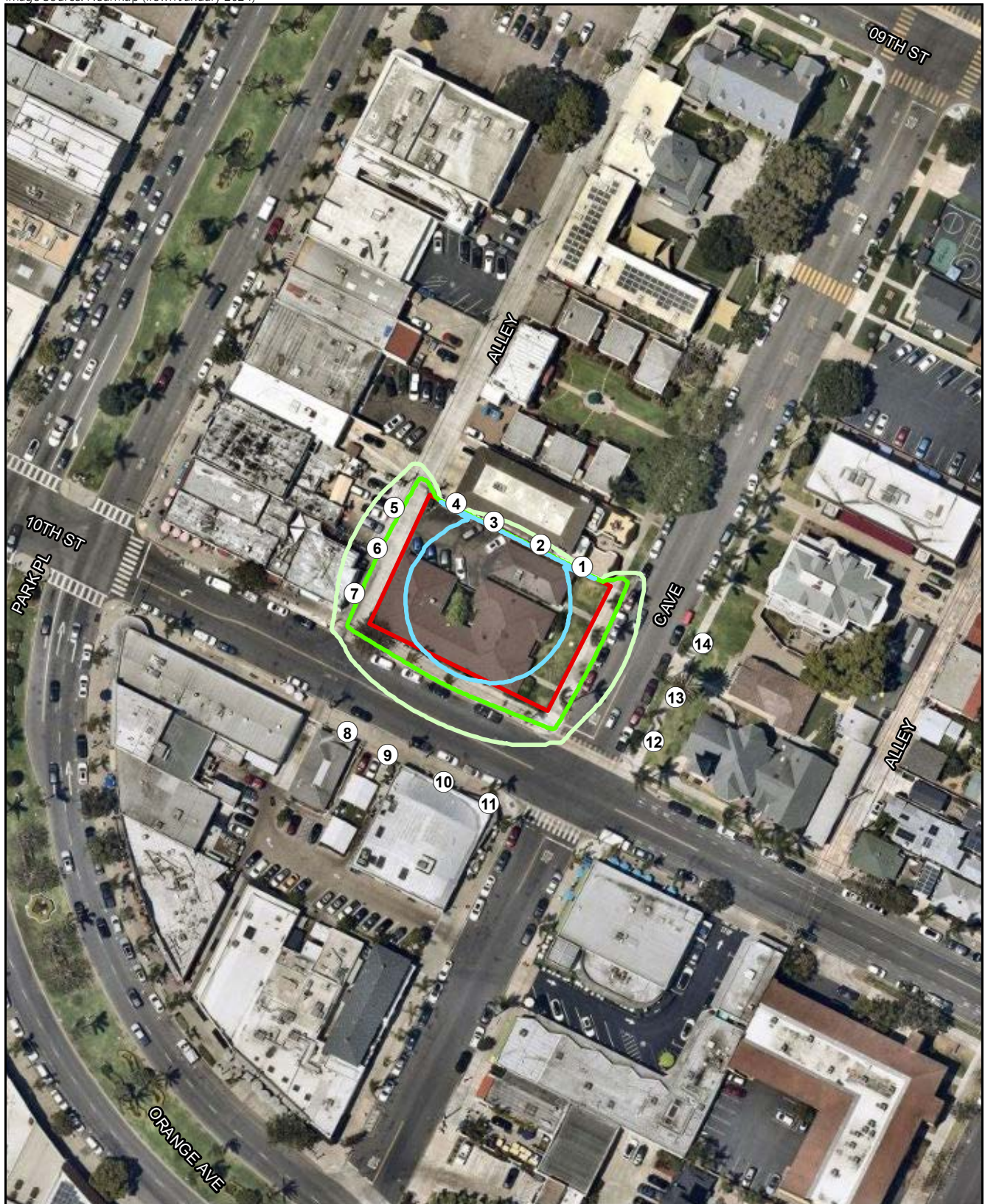


FIGURE 6
Dewatering Noise Contours

Table 7 Dewatering Noise Levels at Adjacent Receivers [dB(A) L_{eq}]			
Receiver	Zoning	Noise Level Limit	Pump Noise Level
1	R-3/P	45	39.6
2	R-3/P	45	40.9
3	R-3/P	45	40.8
4	R-3/P	45	39.5
5	C	47.5	42.0
6	C	47.5	43.2
7	C	47.5	42.2
8	C	47.5	35.1
9	C	47.5	35.3
10	C	47.5	35.3
11	C	47.5	34.8
12	R-3	45	35.3
13	R-3	45	35.5
14	R-3	45	35.2
dB(A) L_{eq} = A-weighted decibels equivalent noise level R-3/P = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size with parking overlay C = Commercial R/3 = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size			

As shown, pump noise levels are not anticipated to exceed the applicable noise level limits at the adjacent properties. Due to the proximity of the adjacent residential uses and the fact that the pump would need to operate during the nighttime hours, the following measures are recommended to ensure that the project complies with the CMC.

NOS-2 The City shall ensure that the construction contractor(s) contract and specifications for all project-related activities include the following requirements during dewatering activities:

- The existing wall located between the project site and the residential uses to the north shall remain in place during all project construction activities.
- The pump shall be operated in compliance with the Coronado Municipal Code (CMC) 41.10.010 with respect to the allowable daytime and nighttime noise level limits. Per CMC 41.10.010, noise from nighttime pump operation shall meet the standards of 45 dB(A) L_{eq} at the adjacent residentially zoned properties and 47.5 dB(A) L_{eq} at the adjacent commercially zoned properties. The following considerations shall be implemented as necessary to ensure that noise levels due not exceed the applicable CMC limits:
 - The noise specifications for the selected pump shall not exceed a sound pressure level of 76.0 dB(A) L_{eq} at 3 feet.
 - The pump shall be located as far away from the residentially zoned properties as feasible, and shall not be located closer than 50 feet from the residentially zoned properties.
 - An enclosure or barrier shall be constructed around the pump in order to shield noise from the adjacent residentially zoned properties.
- Communication between the applicant team and local residents shall be maintained prior to and during construction, including all dewatering activities. Specifically, the local residents shall be

informed of the schedule, duration, and progress of the dewatering activities and shall be provided contact information (e.g., a telephone hotline and/or email address) for noise- or vibration-related complaints. The City shall investigate these complaints in a timely manner and, if determined to be valid, detail efforts to provide a timely resolution and response to the complainant—with copy of outcome description documented in a log for the duration of the construction activities.

5.2 Traffic Noise Analysis

5.2.1 On-site Noise Compatibility

Noise and land use compatibility is regulated by the Noise Element of the City's General Plan. Noise levels for the project are considered clearly acceptable up to 55 CNEL and normally acceptable up to 60 CNEL. In normally acceptable areas, common building construction would make the indoor noise environment acceptable.

Vehicle traffic noise level contours across the project site were calculated using SoundPLAN. These contours take into account the project area topography and shielding provided by existing surrounding buildings and the proposed building. Noise levels were also modeled at a series of 12 specific receiver locations on the project site. These receivers and noise contours are shown in Figure 7. The results are summarized in Table 8. SoundPLAN data are provided in Attachment 6.

Table 8 On-Site Vehicle Traffic Noise Levels		
Receiver	Exterior Noise Level (CNEL)	
	1 st Floor	2 nd Floor
1	57	57
2	56	57
3	56	57
4	57	58
5	56	57
6	55	56
7	54	55
8	47	50
9	41	45
10	42	47
11	44	50
12	48	53
CNEL = community noise equivalent level		

As shown, vehicle traffic noise levels are projected to be 60 CNEL or less and would be considered normally acceptable. Thus, the project could be compatible with City standards.

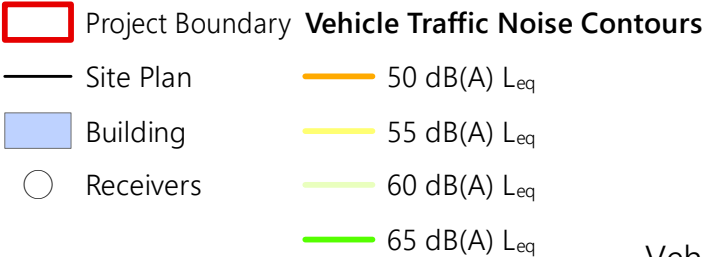
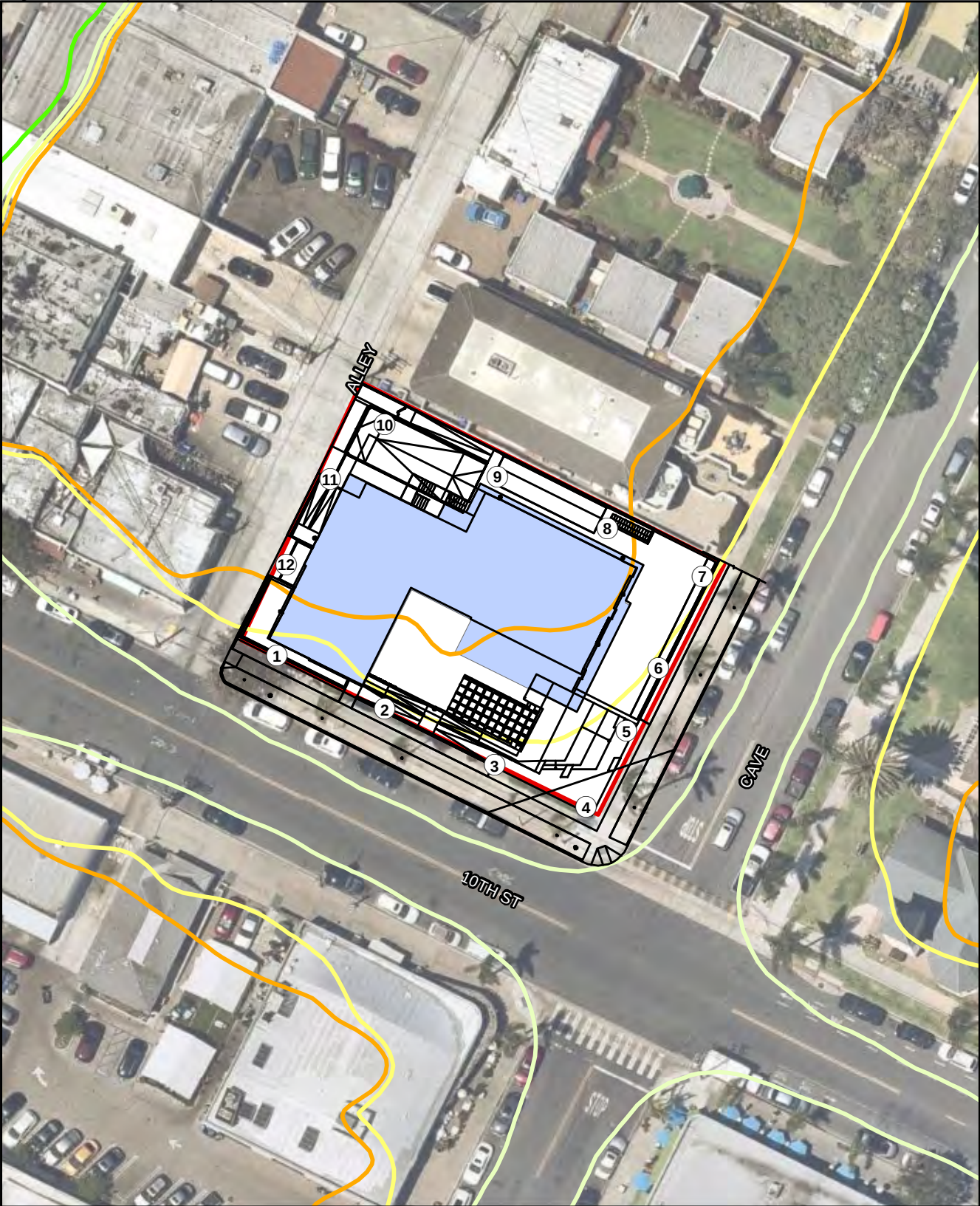


FIGURE 7
Vehicle Traffic Noise Contours

The interior noise level standard for noise sensitive land uses 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. According to the FHWA’s Highway Traffic Noise Analysis and Abatement Guidance, buildings with masonry façades and double-glazed windows can be estimated to provide a noise level reduction of 35 dB, while light-frame structures with standard windows may provide noise level reductions of at least 20 dB (FHWA 2011). Because exterior noise levels are projected to be 60 CNEL or less, assuming a 20 dB exterior-to-interior noise reduction would result in interior noise levels that are 40 CNEL or less. Thus, interior noise levels would not exceed the standard of 45 CNEL. Exterior and interior noise impacts would be less than significant.

5.2.2 Off-Site Vehicle Traffic Noise

The project would contribute traffic to the 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. A substantial noise increase is defined as an increase of 3 dB above existing conditions.

As discussed in Section 2.2.2, during regular operations the project would generate up to 48 ADT, and during special events the project would generate up to a maximum of 104 ADT (LLG 2024). Table 9 summarizes the traffic noise levels without and with the project and the associated increase in noise. FHWA calculations are shown in Attachment 7.

Table 9 Off-Site Vehicle Traffic Noise Levels (CNEL)					
Roadway Segment	Without Project	With Project – Regular Operations		With Project – Special Event	
	Noise Level	Noise Level	Increase Over Existing	Noise Level	Increase Over Existing
Orange Avenue					
North of 10 th Street	66.5	66.5	0.0	66.5	0.0
South of 10 th Street	66.6	66.6	0.0	66.6	0.0
10 th Street	54.8	54.9	0.1	55.1	0.3
C Avenue	54.8	54.9	0.1	55.1	0.3
NOTE: Noise levels are modeled at 50 feet from the roadway. CNEL = community noise equivalent level					

As shown, the project would result in a noise increase of 0.3 dB or less, which would not be an audible change in noise levels. Therefore, the project would not result in the exposure of noise sensitive land uses to significant noise levels, and impacts would be less than significant.

5.3 On-Site Noise Analysis

The operational noise sources on the project site are anticipated to include rooftop mechanical equipment, people gathering, and amplified music within the Assembly Hall during wedding receptions. Noise level limits for operational

noise sources are provided in Section 41.10.010 of the CMC. Using the parameters discussed in Section 4.3, property line noise levels were modeled using SoundPLAN. Noise levels were calculated for the following scenarios: (1) wedding/reception with maximum occupancy and amplified music, (2) larger events with maximum occupancy and no amplified music, and (3) nighttime operation of the rooftop mechanical equipment. The modeling results are summarized in Table 10. Operational noise contours are shown in Figures 8a through 8c. SoundPLAN data is contained in Attachment 8.

Table 10 Operational Noise Levels at Adjacent Receivers [dB(A) L_{eq}]					
Receiver	Zoning	Noise Level Limit Day/Evening/Night	Operational Noise Level		
			Special Event with Amplified Music	Event without Amplified Music	Rooftop Mechanical Equipment Only
1 – 1 st Floor	R-3/P	55/50/45	45	43	33
1 – 2 nd Floor	R-3/P	55/50/45	50	49	37
2 – 1 st Floor	R-3/P	55/50/45	44	37	36
2 – 2 nd Floor	R-3/P	55/50/45	46	42	40
3 – 1 st Floor	R-3/P	55/50/45	40	38	38
3 – 2 nd Floor	R-3/P	55/50/45	43	42	42
4 – 1 st Floor	R-3/P	55/50/45	41	40	40
4 – 2 nd Floor	R-3/P	55/50/45	43	43	43
5	C	57.5/55/47.5	38	38	38
6	C	57.5/55/47.5	33	31	31
7	C	57.5/55/47.5	33	31	31
8	C	57.5/55/47.5	35	34	34
9	C	57.5/55/47.5	38	37	36
10	C	57.5/55/47.5	40	38	37
11	C	57.5/55/47.5	40	38	35
12	R-3	55/50/45	41	40	30
13	R-3	55/50/45	42	41	30
14	R-3	55/50/45	41	40	30
dB(A) L_{eq} = A-weighted decibels equivalent noise level R-3/P = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size with parking overlay C = Commercial R/3 = Multiple Family Residential, 28 dwelling units per acre, 3,500 square feet minimum lot size					

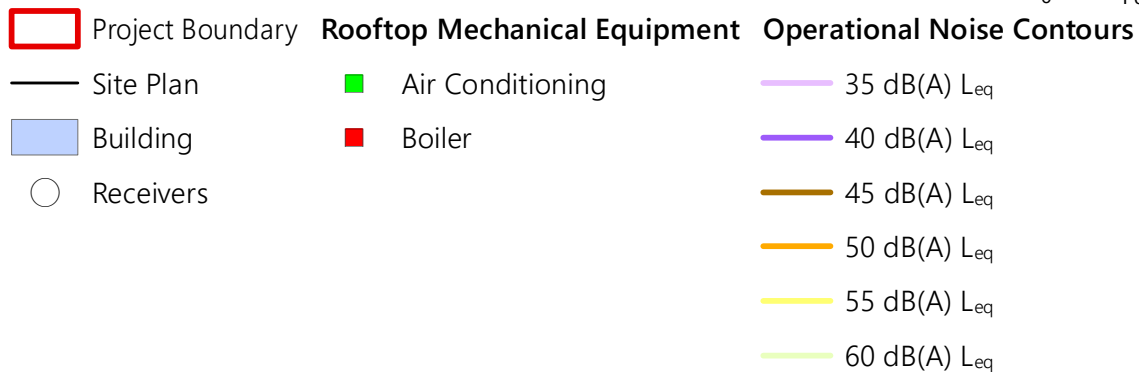
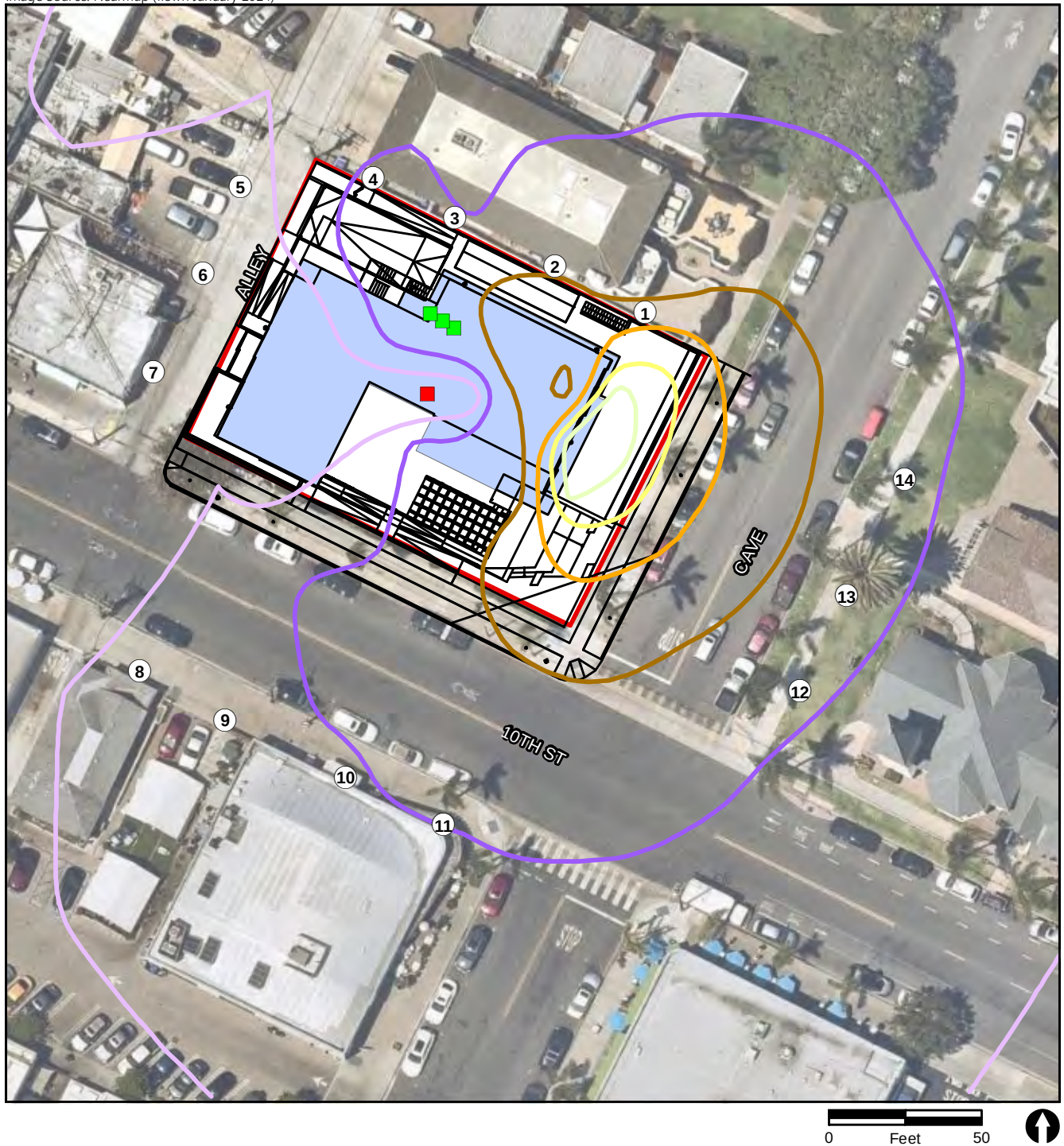


FIGURE 8a

Operational Noise Contours –
Event with Amplified Music

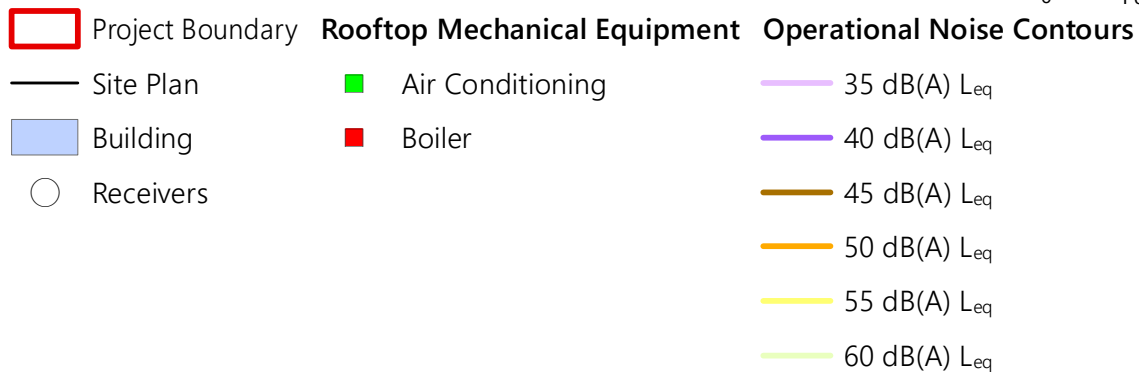
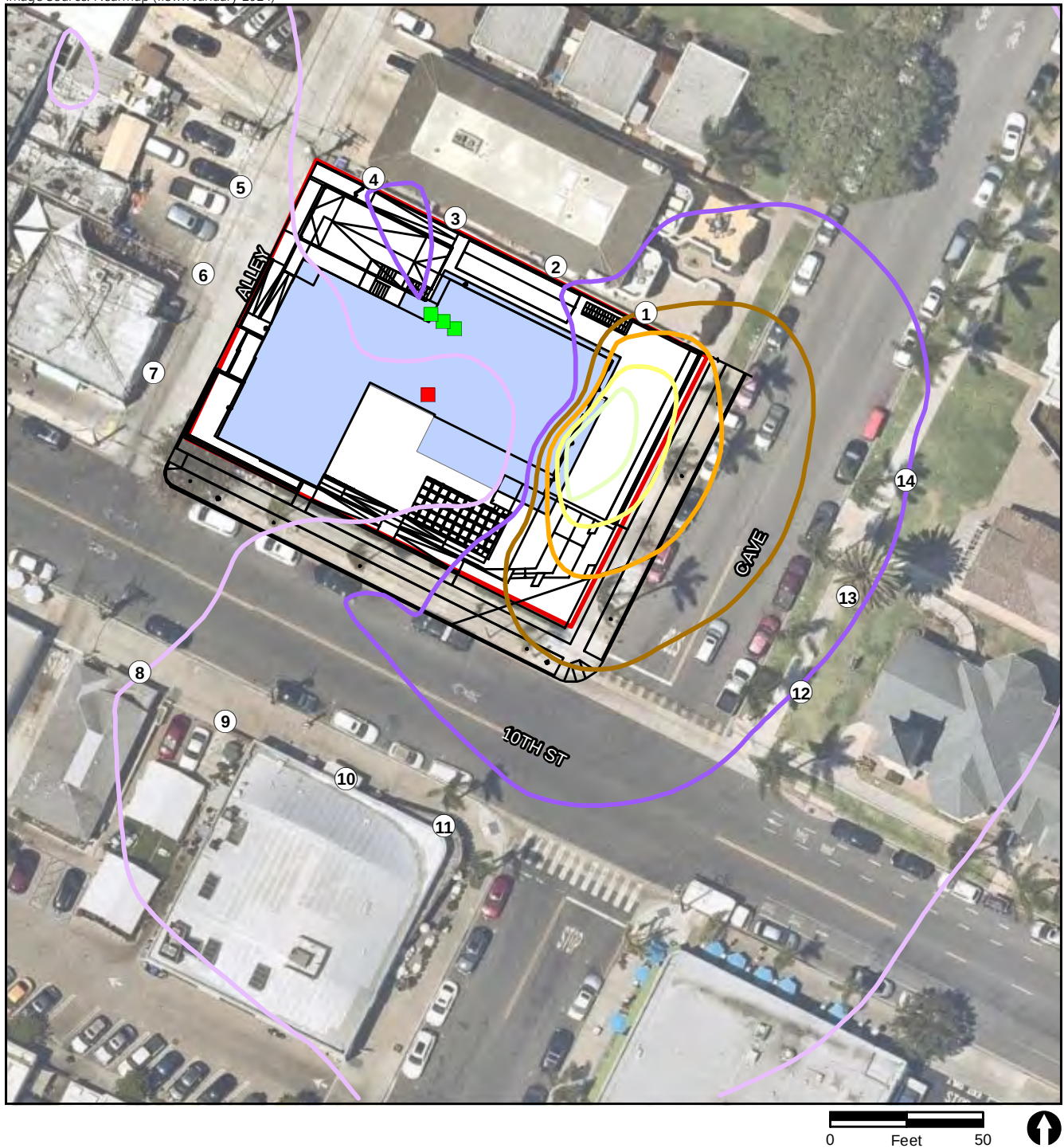


FIGURE 8b

Operational Noise Contours –
Event without Amplified Music

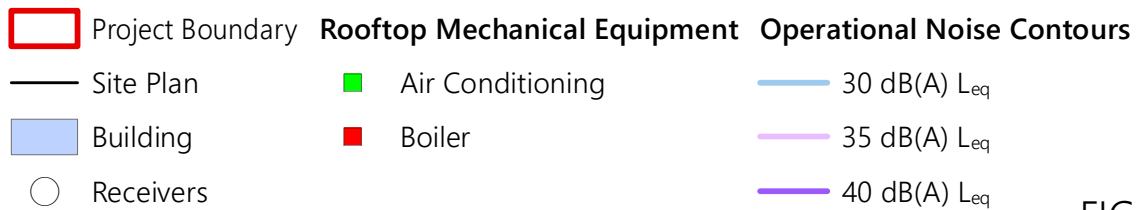
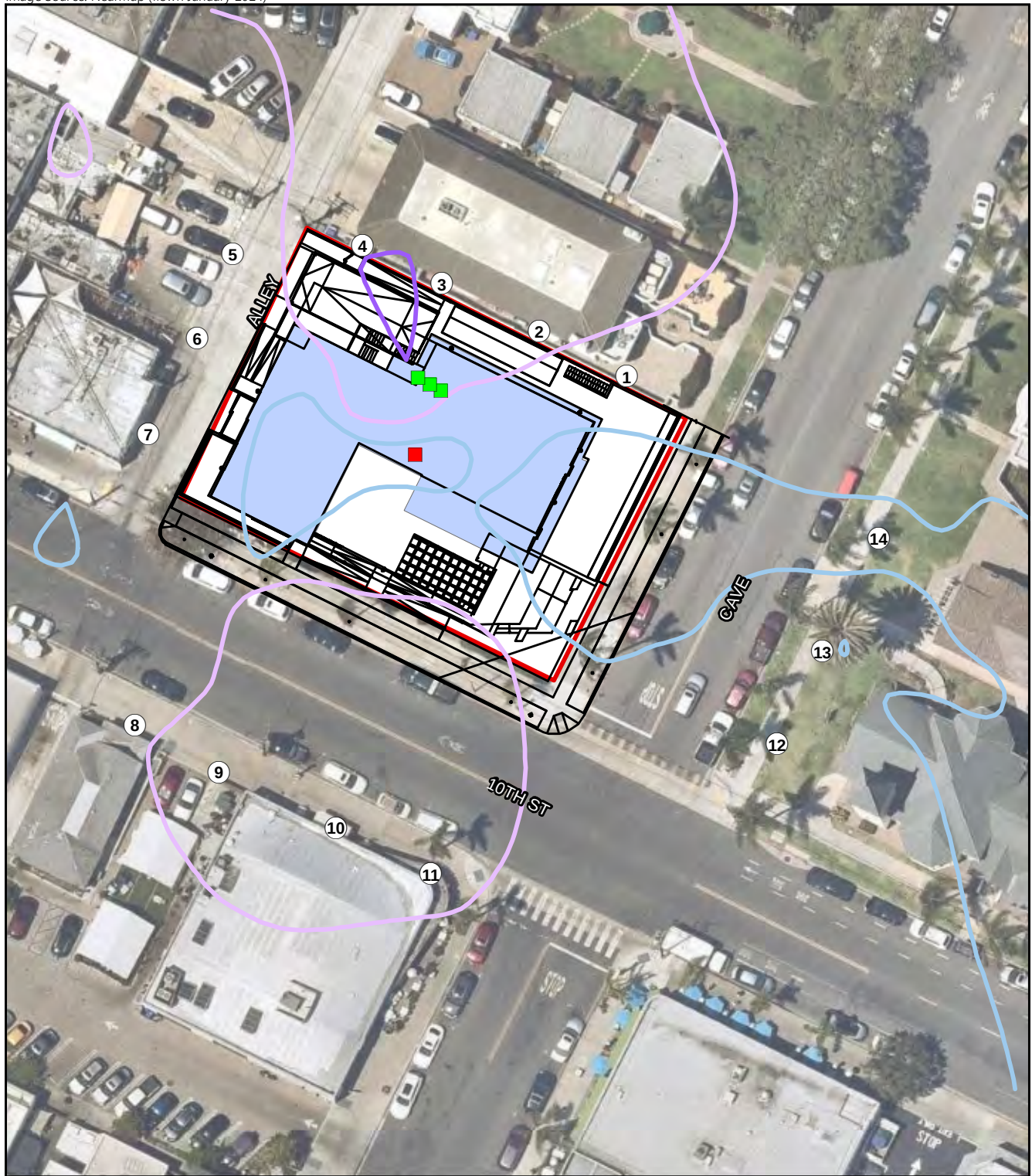


FIGURE 8c

Operational Noise Contours –
Rooftop Mechanical Equipment Only

The noise sources modeled for the first scenario, special event with amplified music, includes indoor amplified music and speech, people gathering on the outdoor terrace, and rooftop mechanical equipment. The noise sources modeled for the second scenario, event without amplified music, include people gathering on the outdoor terrace and rooftop mechanical equipment. As shown in Table 10, noise levels due to these on-site noise sources would not exceed either the daytime or evening noise level limits. All events would end at 10:00 p.m. Therefore, the only remaining on-site noise source during the nighttime hours would be the rooftop mechanical equipment. As shown, noise levels due to this equipment would be less than the applicable nighttime noise level limit. Project operation would comply with the CMC and impacts would be less than significant. As a condition of project approval, it would be required that all doors and windows in the Assembly Hall remain closed during events with amplified music.

NOS-3 The project’s Major Special Use Permit shall include the following conditions:

- Noise levels shall not exceed the applicable noise level limits specified in the CMC. The applicable noise level limits between the project site and the adjacent R-3 and R-3/P zones are 55 dB(A) L_{eq} between 7:00 a.m. and 7:00 p.m., 50 dB(A) L_{eq} between 7:00 p.m. and 10:00 p.m., and 45 dB(A) L_{eq} between 10:00 p.m. and 7:00 a.m. The applicable noise level limits between the project site and the adjacent C zones are 57.5 dB(A) L_{eq} between 7:00 a.m. and 7:00 p.m., 55 dB(A) L_{eq} between 7:00 p.m. and 10:00 p.m., and 47.5 dB(A) L_{eq} between 10:00 p.m. and 7:00 a.m.
- During all events with amplified music, all facility windows and doors shall remain closed.
- Amplified music shall not exceed a noise level of 72 dB(A) L_{eq} when measured at 50 feet from the speakers.

5.4 Vibration

Human reaction to vibration is dependent on the environment the receiver is in, as well as individual sensitivity. For example, outdoor vibration is rarely noticeable and generally not considered annoying. Typically, humans must be inside a structure for vibrations to become noticeable and/or annoying (FTA 2018). Based on several federal studies, the threshold of perception is 0.035 inch per second (in/sec) peak particle velocity (PPV), with 0.24 in/sec PPV being a distinctly perceptible (Caltrans 2013). Vibration perception would occur at structures, as people do not perceive vibrations without vibrating structures (FTA 2018).

Construction activities produce varying degrees of ground vibration depending on the equipment and methods employed. Ground vibrations from typical construction activities rarely reach levels high enough to cause damage to structures. Based on best available data, impacts associated with project construction equipment vibration shall be considered significant if the PPV exceeds 0.2 in/sec which is the standard recommended by the FTA for assessing construction vibration impacts at masonry structures such as those surrounding the project site (FTA 2018).

Table 11 summarizes the vibration levels generated by equipment that could be used at the project site.

Table 11 Construction Equipment Vibration Levels		
Equipment	PPV (in/sec) at 25 feet	Distance to 0.2 PPV (feet)
Small Bulldozer	0.003	<1
Loaded Truck	0.076	10
Jackhammer	0.035	5
SOURCE: FTA 2018. PPV = peak particle velocity; in/sec = inch per second		

Construction equipment with the greatest potential to generate vibration would be a loaded truck. According to the FTA, loaded trucks generate vibration levels of 0.089 in/sec PPV at 25 feet. Vibration levels would exceed 0.2 in/sec PPV at distances closer than 10 feet between the equipment and a building. The nearest building is located approximately 10 feet from the edge of the project footprint. A loaded truck would not be located immediately adjacent to the building due to physical constraints. Rather, they would be located either on the adjacent roads or on the project site at distances greater than 10 feet from the adjacent buildings. All other construction equipment operating on-site would generate vibration levels that are less than a loaded truck. Further, all construction activities would occur during the daytime hours between 7:00 a.m. and 7:00 p.m. as required by the CMC Noise Abatement and Control Regulations and would not generate any vibration during the night when it would be more likely to create a disturbance. Therefore, project construction is not anticipated to generate significant vibration levels. Once operational, the project would not be a source of groundborne vibration.

6.0 Conclusions

Noise impacts due to construction and operation of the project were assessed in accordance with standards established in the City's General Plan Noise Element and the CMC. As discussed in this analysis, construction noise levels are anticipated to be 75 dB(A) L_{eq} or less at the adjacent properties. Although the existing adjacent uses would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Due to the proximity of the adjacent residential uses, in order to ensure that construction activities associated with the project comply with requirements of the CMC, mitigation measure NOS-1 would be required. With implementation of mitigation measure NOS-1, temporary increases in noise levels from construction activities would be less than significant.

The project may also require dewatering if groundwater is encountered. Since pump operation would occur outside the times allowable by Section 41.10.040 of the CMC, the applicable noise level limits would be those provided in Section 41.10.010 of the CMC. Pump noise levels are not anticipated to exceed the applicable noise level limits at the adjacent properties. Due to the proximity of the adjacent residential uses and the fact that the pump would need to operate during the nighttime hours, mitigation measure NOS-2 would be required. With implementation of mitigation measure NOS-2, temporary increases in noise levels from dewatering activities would be less than significant.

Future exterior noise levels are projected to be less than 60 CNEL at the proposed church, and are considered normally acceptable. Thus, the project could be compatible with City standards. Because exterior noise levels are projected to be 60 CNEL or less, assuming a 20 dB exterior-to-interior noise reduction would result in interior noise levels that are 40 CNEL or less. Thus, interior noise levels would not exceed the standard of 45 CNEL. Exterior and interior noise impacts would be less than significant.

The project would contribute traffic to the local roadways. As calculated in this analysis, the project would result in a noise increase of 0.3 dB or less, which would not be an audible change in noise levels. Therefore, the project would not result in the exposure of noise sensitive land uses to significant noise levels, and impacts would be less than significant.

Property line noise levels due to on-site events with amplified music, events without amplified music, and rooftop mechanical equipment are not anticipated to exceed the applicable limits specified in the CMC. In order to ensure that project operation would comply with requirements of the CMC, mitigation measure NOS-2 would be required. With implementation of mitigation measure NOS-3, impacts due to on-site noise sources would be less than significant.

Mr. Jon Becker
Page 29
July 23, 2024

Project construction is not anticipated to generate significant vibration levels. Once operational, the project would not be a source of groundborne vibration.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333 extension 177.

Sincerely,

A handwritten signature in black ink that reads "Jessica Fleming". The signature is written in a cursive, flowing style with a large, stylized "J" and "F".

Jessica Fleming
Senior Noise Analyst

JLF:sh

Attachments

References Cited

Bollard Acoustical Consultants, Inc.

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Navcon Engineering, Inc.

- 2018 SoundPLAN Essential version 4.1.

San Diego Association of Governments (SANDAG)

- 2024 Transportation Forecast Information Center. Year 2025 ABM2+/2021 RP. Accessed May 14, 2024. <http://tfic.sandag.org/>.

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Summary	
File Name on Meter	LxT_Data.007.s
File Name on PC	LxTse_0003829-20240419 090141-LxT_Data.007.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2024-04-19 09:01:41
Stop	2024-04-19 09:16:43
Duration	00:15:02.0
Run Time	00:15:00.6
Pause	00:00:01.4
Pre-Calibration	2024-04-19 08:35:08
Post-Calibration	None
Calibration Deviation	---

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.1 dB			
	A	C	Z	
Under Range Peak	78.4	75.4	80.4 dB	
Under Range Limit	26.2	25.3	32.2 dB	
Noise Floor	16.3	16.2	22.1 dB	
	First	Second	Third	
Instrument Identification				

Results			
LAeq	56.1 dB		
LAE	85.6 dB		
EA	40.765 μPa²h		
LApk (max)	2024-04-19 09:07:17	89.1 dB	
LASmax	2024-04-19 09:05:03	71.8 dB	
LASmin	2024-04-19 09:10:48	46.9 dB	
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 60.0 dB	12	72.9 s
LAS > 70.0 dB	2	4.1 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	56.1	56.1	-99.9	56.1	56.1	-99.9	-99.9	dB

LCeq	68.5 dB
LAeq	56.1 dB
LCeq - LAeq	12.4 dB
LAlaq	60.2 dB
LAeq	56.1 dB
LAlaq - LAeq	4.1 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	56.1		68.5			
LS(max)	71.8	2024/04/19 9:05:03				
LS(min)	46.9	2024/04/19 9:10:48				
Lpk(max)	89.1	2024/04/19 9:07:17				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles	
LA 5.00	60.4 dB
LA 10.00	58.3 dB
LA 33.30	54.7 dB
LA 50.00	53.3 dB
LA 66.60	52.1 dB
LA 90.00	49.8 dB

Summary	
File Name on Meter	LxT_Data.006.s
File Name on PC	LxTse_0003829-20240419 084334-LxT_Data.006.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2024-04-19 08:43:34
Stop	2024-04-19 08:58:40
Duration	00:15:05.4
Run Time	00:15:00.7
Pause	00:00:04.7
Pre-Calibration	2024-04-19 08:35:08
Post-Calibration	None
Calibration Deviation	---

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.1 dB			
	A	C	Z	
Under Range Peak	78.4	75.4	80.4 dB	
Under Range Limit	26.2	25.3	32.2 dB	
Noise Floor	16.3	16.2	22.1 dB	
	First	Second	Third	
Instrument Identification				

Results			
LAeq	60.6 dB		
LAE	90.1 dB		
EA	114.905 μPa²h		
LApk (max)	2024-04-19 08:56:53	91.6 dB	
LASmax	2024-04-19 08:52:49	73.7 dB	
LASmin	2024-04-19 08:51:45	47.4 dB	
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 60.0 dB	18	182.6 s
LAS > 70.0 dB	11	42.9 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	60.6	60.6	-99.9	60.6	60.6	-99.9	-99.9	dB

LCeq	72.6 dB
LAeq	60.6 dB
LCeq - LAeq	12.0 dB
LAlaq	63.1 dB
LAeq	60.6 dB
LAlaq - LAeq	2.5 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
60.6		72.6			
73.7	2024/04/19 8:52:49				
47.4	2024/04/19 8:51:45				
91.6	2024/04/19 8:56:53				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles	
LA 5.00	68.4 dB
LA 10.00	63.0 dB
LA 33.30	56.3 dB
LA 50.00	54.1 dB
LA 66.60	52.5 dB
LA 90.00	50.3 dB

Summary	
File Name on Meter	LxT_Data.008.s
File Name on PC	LxTse_0003829-20240419 092134-LxT_Data.008.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2024-04-19 09:21:34
Stop	2024-04-19 09:36:39
Duration	00:15:05.7
Run Time	00:15:05.0
Pause	00:00:00.7
Pre-Calibration	2024-04-19 08:35:08
Post-Calibration	None
Calibration Deviation	---

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.1 dB			
	A	C	Z	
Under Range Peak	78.4	75.4	80.4 dB	
Under Range Limit	26.2	25.3	32.2 dB	
Noise Floor	16.3	16.2	22.1 dB	
	First	Second	Third	
Instrument Identification				

Results			
LAeq	62.6 dB		
LAE	92.2 dB		
EA	182.981 μPa²h		
LApk (max)	2024-04-19 09:23:51	103.1 dB	
LASmax	2024-04-19 09:23:51	83.4 dB	
LASmin	2024-04-19 09:23:00	52.0 dB	
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 60.0 dB	39	266.5 s
LAS > 70.0 dB	6	47.8 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	62.6	62.6	-99.9	62.6	62.6	-99.9	-99.9	dB

LCeq	73.0 dB
LAeq	62.6 dB
LCeq - LAeq	10.4 dB
LAlaq	67.3 dB
LAeq	62.6 dB
LAlaq - LAeq	4.7 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	62.6		73.0			
LS(max)	83.4	2024/04/19 9:23:51				
LS(min)	52.0	2024/04/19 9:23:00				
Lpk(max)	103.1	2024/04/19 9:23:51				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles	
LA 5.00	69.1 dB
LA 10.00	64.2 dB
LA 33.30	58.0 dB
LA 50.00	56.2 dB
LA 66.60	55.0 dB
LA 90.00	53.5 dB

ATTACHMENT 2

Pump Specifications

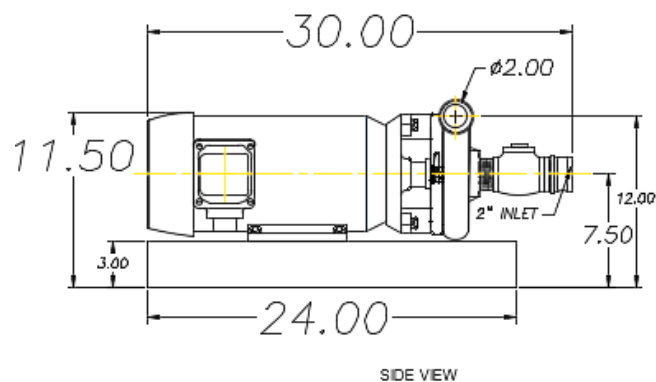


PE-5HP PUMP

Product Specification Sheet

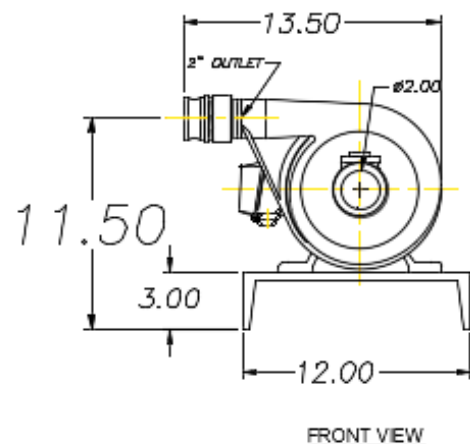
DESCRIPTION

- Pure Effect's PE-5HP-PUMP is a close-coupled, end-suction pump. It is constructed of cast iron, with unique back pull-out design that permits access to the impeller without disturbing the piping.
- Ideal for applications requiring high performance, easy maintenance and moderate initial cost.



FEATURES

- Four position discharge
- Premium-grade motors
- Motor bracket
- Maintenance-free shaft seal
- Replaceable slip-on shaft sleeve
- Replaceable bronze wear ring
- Superior impeller
- Heavy-duty volute case
- Multiple taps
- Durable finish



TECHNICAL

- 5 HP pump
- Flow max: 135 gpm @ 90' TDH, 1.5" discharge
- Motor: TEFC, 3450 rpm @ 60 hz
- Impeller dia: 5.5"
- Electrical: single phase, 230V, 20 amps, or 3-phase, 230V 12 amps

Adhere to all applicable health & safety regulations when using this product.

ATTACHMENT 3

Mechanical Equipment Specifications



Product Data

WeatherMaker® Single Packaged Rooftop

7.5 to 15 Nominal Tons

ecoblue™  technology



48/50FC**08, 09, 12, 14, 16

48FC: Single-Package Gas Heating/Electric Cooling Rooftop Units
50FC: Electric Cooling Rooftop Units with Optional Electric Heat
with Puron® Refrigerant (R-410A) and EcoBlue Technology

The New Carrier WeatherMaker® rooftop units (RTU) with EcoBlue™ Technology were designed by customers with integrated new technology to provide value added benefits never seen in this type of equipment before.

New major design features include:

- Patented, industry's first efficient indoor fan system using Vane Axial fan with electric commutated variable speed motor. As compared to today's typically used belt drive with forward curve fans, system provides reliable operation with:
 - 75% fewer moving parts
 - No fan belts, pulleys, shaft, and shaft bearings
 - 40% more efficient than traditional belt drive forward curve fans
 - Slow ramp up capability for better sound and comfort control
 - Internal protection from phase reversal and phase loss situations
 - High external static capability
 - Slide out blower assembly design
- Reliable and highly safety protected 2 stage cooling with tandem scroll compressors technology, fully active evaporator coil, and mixed air temperature protection on all models
- New unit control board with intuitive indoor fan that uses simple dial and switch adjustments
- Reliable copper tube/aluminum fin condenser coil with 5/16 in. tubing to help reduce refrigerant charge and reduce weight versus prior designs

48/50FC WeatherMaker® units up to 15 tons are specifically designed to fit on Carrier roof curbs that were installed back to 1989, which makes replacement easy and eliminates the need for curb adapters, changing utility connections or supporting curb overhang situations.

2 speed staged air volume (SAV) indoor fan speed control helps deliver IEERs up to 15.0. All models are capable of either vertical or horizontal airflow without dedicated models or field install kits. The 16 size models require a field installed supply air kit.

With “no-strip” screw collars, handled access panels, and more, the unit is easy to install, easy to maintain, and easy to use. Your new 7.5 to 15 ton Carrier WeatherMaker rooftop unit (RTU) provides optimum comfort and control from a packaged rooftop.

Value-added features include:

- optional Humidi-MiZer® adaptive dehumidification system for improved part load humidity performance
- SystemVu™ intuitive intelligent controls option that provides:
 - Large full text — multi line display
 - USB Flash Port for data transfer
 - Built in iVu®, CCN and BACnet¹
 - Read refrigerant pressures from display – no gauges
 - Quick LED Status — Run, Alert, Fault
 - Conventional thermostat or sensor capabilities
 - Historical component runtime and starts

- Supply air tempering
- Navigator™ and Network Service Tool compatible
- single point gas and electrical connections
- 7.5 to 15 ton models use fixed TXV refrigerant metering devices
- Scroll compressors with internal line-break overload protection
- Units come with an easy access tool-less filter door. Filter track tilts out for filter removal and replacement. All filters are the same size in each unit

Installation ease

All WeatherMaker units are field-convertible to horizontal airflow, which makes it easy to adjust to unexpected job-site complications. Lighter units make for easy replacement and aid in the structural approval process. Units have simple, fast plug-in connections to the standard integrated unit control board (UCB). Clearly labeled connections points to reduce installation time. Also, a large control box provides room to work and room to mount Carrier accessory controls.

Easy to maintain

With the new EcoBlue Vane Axial fan system and direct drive ECM motor, there is no longer a need to adjust or replace belts or pulleys as in past designs. This frees up maintenance, installation and commissioning time.

Easy access handles by Carrier provide quick and easy access to all normally serviced components. Our “no-strip” screw system has superior holding power and guides screws into position while preventing the screw from stripping the unit's metal.

Sloped, corrosion resistant composite drain pan sheds water; and won't rust.

1. BACnet is a trademark of ASHARE.

Table of contents

	Page
Features/Benefits	2
Model Number Nomenclature	4
Capacity Ratings	6
Physical Data	10
Options and Accessories	14
Base Unit Dimensions	19
Accessory Dimensions	37
Performance Data	39
Fan Data	61
Electrical Data	102
Typical Wiring Diagrams	131
Sequence of Operation	149
Application Data	151
Guide Specifications	153

Features/Benefits (cont)



Easy to use

The newly re-designed Unit Control Board by Carrier puts all connections and troubleshooting points in one convenient place. Most low voltage connections are made to the same board and make it easy to access it. Setting up the fan is simple by an intuitive switch and rotary dial arrangement. Carrier rooftops have high and low pressure switches, a new mixed air temperature switch, a filter drier, and 2-in. filters standard.

EcoBlue™ Technology

Direct drive EcoBlue Technology indoor fan system uses Vane Axial fan design and electrically commutated motors.

This new Vane Axial design over past belt drive systems has 75% fewer moving parts, uses up to 40% less energy and has no fan belts, blower bearings and shaft. Full fan and motor assembly

also slides out for easier maintenance and service.

Streamlined control and integration

Carrier controllers make connecting WeatherMaker® rooftops into existing building automation systems easy. The units are compatible with conventional thermostat controls or SystemVu™ controls for greater comfort, diagnostics and building network integration.

Operating efficiency and flexibility

These 48/50FC packaged rooftops meet the Department of Energy (DOE) 2023 efficiency standard, as well as the latest ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 90.1 and IECC¹ (International Energy Conservation Code) minimum IEER efficiency requirements.

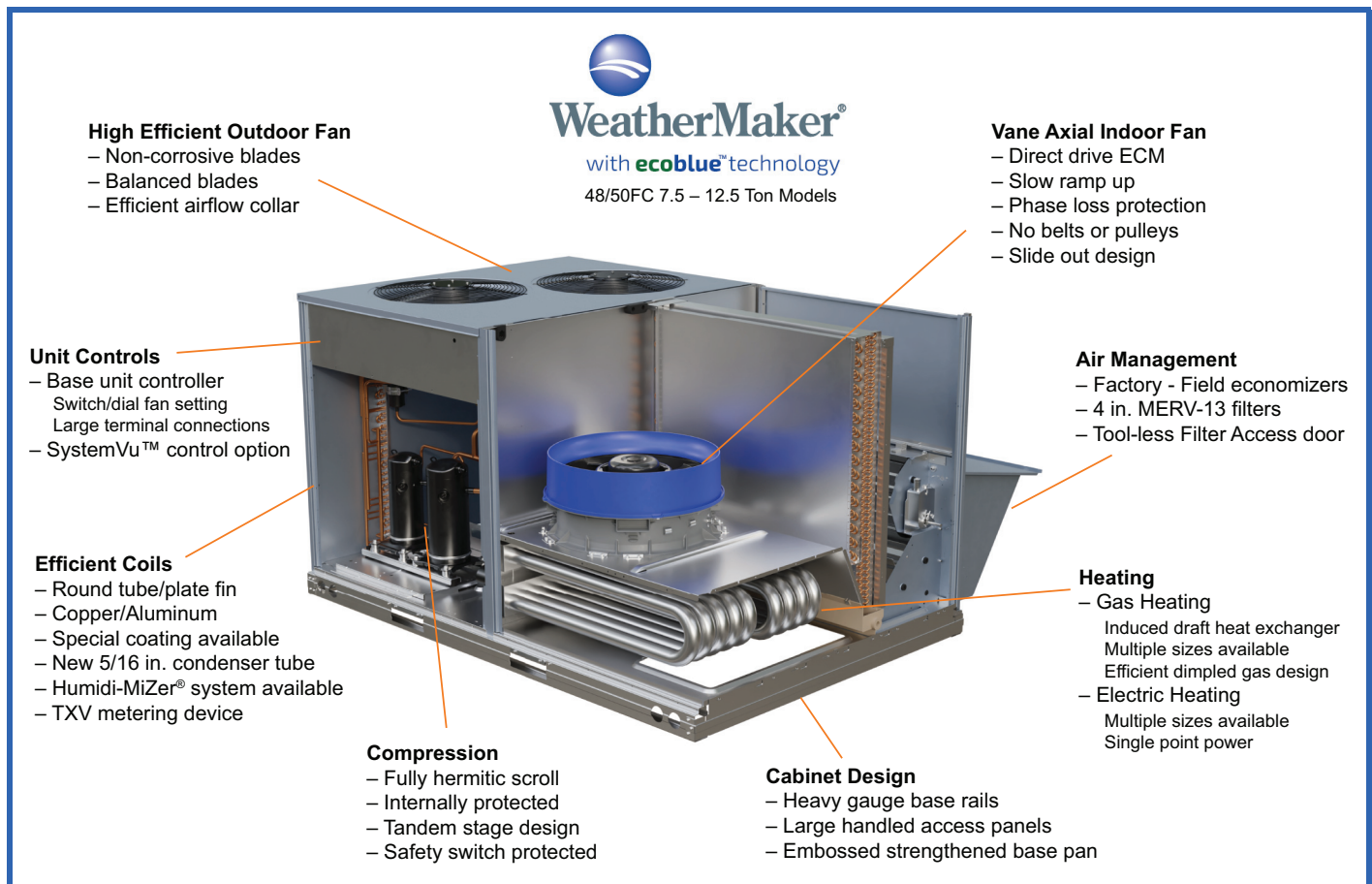
Field convertible airflow

All WeatherMaker 7.5 to 15 ton units are field-convertible to horizontal airflow, which makes it easy to adjust to unexpected job-site. 15 ton models require a simple supply duct cover kit to field convert from factory vertical to horizontal.

Comfort control

Carrier's patented Humidi-MiZer® adaptive dehumidification system is an all-inclusive factory-installed option on gas heating/electric cooling and electric cooling/electric heat models. This system provides reliable, flexible operation to meet indoor part load sensible and latent requirements as well as multiple gas heat and electric heat sized to fit an array of applications.

1. IECC is a registered trademark of the International Code Council, Inc.



Model number nomenclature



48FC MODEL NUMBER NOMENCLATURE

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	4	8	F	C	D	M	0	8	A	2	A	5	-	0	A	0	A	0

Unit Heat Type

48 - Gas Heat Packaged Rooftop

Model Series - WeatherMaker®

FC - Standard Efficiency (EcoBlue™ Technology)

Heat Options

D = Low Heat
E = Medium Heat
F = High Heat
S = Low Heat w/ Stainless Steel Exchanger
R = Medium Heat w/ Stainless Steel Exchanger
T = High Heat w/ Stainless Steel Exchanger

Refrig. Systems Options

M = Two Stage Cooling/One Circuit Models
N = Two Stage Cooling/One Circuit Models with Humidi-MiZer® System

Cooling Tons

08 = 7.5 tons
09 = 8.5 tons
12 = 10 tons
14 = 12.5 tons
16 = 15 tons

Sensor Options

A = None
B = RA Smoke Detector
C = SA Smoke Detector
D = RA + SA Smoke Detector
E = CO₂
F = RA Smoke Detector and CO₂
G = SA Smoke Detector and CO₂
H = RA + SA Smoke Detector and CO₂
J = Condensate Overflow Switch
K = Condensate Overflow Switch + RA Smoke Detectors
L = Condensate Overflow Switch + RA and SA Smoke Detectors
M = Condensate Overflow Switch + SA Smoke Detector
N = Condensate Overflow Switch + CO₂
P = Condensate Overflow Switch + RA Smoke Detector and CO₂
Q = Condensate Overflow Switch + SA Smoke Detector and CO₂
R = Condensate Overflow Switch + RA and SA Smoke Detector and CO₂

Indoor Fan Options

2 = Standard/Medium Static Option
3 = High Static Option
5 = Standard/Medium Static Option and Filter Status Switch
6 = High Static Option and Filter Status Switch

Coil Options – RTPF (Outdoor – Indoor – Hail Guard)

A = Al/Cu – Al/Cu
B = Precoat Al/Cu – Al/Cu
C = E-coat Al/Cu – Al/Cu
D = E-coat Al/Cu – E-coat Al/Cu
E = Cu/Cu – Al/Cu
F = Cu/Cu – Cu/Cu
M = Al/Cu – Al/Cu – Louvered Hail Guard
N = Precoat Al/Cu – Al/Cu – Louvered Hail Guard
P = E-coat Al/Cu – Al/Cu – Louvered Hail Guard
Q = E-coat Al/Cu – E-coat Al/Cu – Louvered Hail Guard
R = Cu/Cu – Al/Cu – Louvered Hail Guard
S = Cu/Cu – Cu/Cu – Louvered Hail Guard

Packaging Compliance

0 = Standard
1 = LTL

Electrical Options

A = None
C = Non-Fused Disconnect
D = Thru-The-Base Connections
F = Non-Fused Disconnect and Thru-The-Base Connections
N = Phase Monitor/Protection
Q = Phase Monitor/Protection and Non-Fused Disconnect
R = Phase Monitor/Protection and Thru-The-Base Connections
T = Phase Monitor/Protection with Non-Fused Disconnect and Thru-The-Base Connections
1 = High SCCR (Short Circuit Current Rating) Protection
2 = High SCCR Protection and Thru-The-Base Connections

Service Options

0 = None
1 = Unpowered Convenience Outlet
2 = Powered Convenience Outlet
3 = Hinged Access Panels
4 = Hinged Access Panels and Unpowered Convenience Outlet
5 = Hinged Access Panels and Powered Convenience Outlet
6 = 4" MERV 13 High Efficiency Filter Track
7 = Unpowered Convenience Outlet and 4" MERV 13 High Efficiency Filter Track
8 = Powered Convenience Outlet and 4" MERV 13 High Efficiency Filter Track
9 = Hinged Access Panels and 4" MERV 13 High Efficiency Filter Track
A = Hinged Access Panels, Unpowered Convenience Outlet and 4" MERV 13 High Efficiency Filter Track
B = Hinged Access Panels, Powered Convenience Outlet and 4" MERV 13 High Efficiency Filter Track

Intake / Exhaust Options

A = None
B = Temperature Economizer w/ Barometric Relief
F = Enthalpy Economizer w/ Barometric Relief
U = Temperature Ultra Low Leak Economizer w/ Barometric Relief
W = Enthalpy Ultra Low Leak Economizer w/ Barometric Relief

Base Unit Controls

0 = Electro-mechanical Controller
3 = SystemVu™ Controller
6 = Electro-mechanical Controller with W7220 Economizer Control. Can be used with EconoMi\$er X (w/ Fault Detection and Diagnostic)

Design Revision

- = Factory Design Revision

Voltage

1 = 575/3/60
5 = 208-230/3/60
6 = 460/3/60

Model number nomenclature (cont)



50FC MODEL NUMBER NOMENCLATURE

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	5	0	F	C	-	M	0	8	A	2	A	5	-	0	A	0	A	0

Unit Heat Type

50 – Cooling with Optional Electric Heat
Packaged Rooftop

Model Series - WeatherMaker®

FC – Standard Efficiency (EcoBlue™ Technology)

Heat Size

- = No heat
(Field Installed Available)

Refrig. Systems Options

M = Two Stage Cooling, Single Circuit
N = Two Stage Cooling, Single Circuit with
Humidi-MiZer® system

Cooling Tons

08 = 7.5 tons
09 = 8.5 tons
12 = 10.0 tons
14 = 12.5 tons
16 = 15 tons

Sensor Options

A = None
B = Return Air (RA) Smoke Detector
C = Supply Air (SA) Smoke Detector
D = RA + SA Smoke Detector
E = CO₂ Sensor
F = RA Smoke Detector and CO₂ Sensor
G = SA Smoke Detector and CO₂ Sensor
H = RA + SA Smoke Detector and CO₂ Sensor
J = Condensate Overflow Switch
K = Condensate Overflow Switch and RA Smoke Detector
L = Condensate Overflow Switch and RA and SA Smoke Detectors
M = Condensate Overflow Switch and SA Smoke Detector
N = Condensate Overflow Switch + CO₂
P = Condensate Overflow Switch + RA Smoke Detector and CO₂
Q = Condensate Overflow Switch + SA Smoke Detector and CO₂
R = Condensate Overflow Switch + RA and SA Smoke Detector and CO₂

Indoor Fan Options

2 = Standard/Medium Static Motor – Vane Axial EcoBlue
3 = High Static Motor – Vane Axial EcoBlue
5 = Standard/Medium Static Motor – Vane Axial EcoBlue and
Filter Status Switch
6 = High Static Motor – Vane Axial EcoBlue and Filter Status Switch

Coil Options – (Outdoor - Indoor - Hail Guard)

A = Al/Cu - Al/Cu
B = Precoat Al/Cu - Al/Cu
C = E-coat Al/Cu - Al/Cu
D = E-coat Al/Cu - E-coat Al/Cu
E = Cu/Cu - Al/Cu
F = Cu/Cu - Cu/Cu
M = Al/Cu - Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu - Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu - Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu - E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu - Al/Cu — Louvered Hail Guard
S = Cu/Cu - Cu/Cu — Louvered Hail Guard

Packaging & Seismic Compliance

0 = Standard
1 = LTL

Electrical Options

A = None
C = Non-Fused Disconnect
D = Thru-The-Base Connections
F = Non-Fused Disconnect and
Thru-The-Base Connections
N = Phase Monitor/Protection
Q = Phase Monitor/Protection
and Non-Fused Disconnect
R = Phase Monitor/Protection
and Thru-The-Base Connections
T = Phase Monitor/Protection with Non-Fused
Disconnect and Thru-The-Base Connections
1 = High SCCR (Short Circuit Current Rating)
Protection
2 = High SCCR Protection and Thru-The-Base
Connections

Service Options

0 = None
1 = Unpowered Convenience Outlet
2 = Powered Convenience Outlet
3 = Hinged Panels
4 = Hinged Panels and
Unpowered Convenience Outlet
5 = Hinged Access Panels and
Powered Convenience Outlet
6 = 4" MERV 13 High Efficiency Filter Track
7 = Unpowered Convenience Outlet and 4" MERV 13
High Efficiency Filter Track
8 = Powered Convenience Outlet and 4" MERV 13
High Efficiency Filter Track
9 = Hinged Access Panels and 4" MERV 13 High
Efficiency Filter Track
A = Hinged Access Panels, Unpowered Convenience
Outlet and 4" MERV 13 High Efficiency Filter Track
B = Hinged Access Panels, Powered Convenience
Outlet and 4" MERV 13 High Efficiency Filter Track

Intake / Exhaust Options

A = None
B = Temperature Economizer w/ Barometric Relief
F = Enthalpy Economizer w/ Barometric Relief
U = Temperature Ultra Low Leak Economizer
w/ Barometric Relief
W = Enthalpy Ultra Low Leak Economizer
w/ Barometric Relief

Base Unit Controls

0 = Electro-mechanical Controller
3 = SystemVu™ Controller
6 = Electro-mechanical Controller with W7220 Economizer
Control. Can be used with EconoMi\$er X (w/ Fault
Detection and Diagnostic)

Design Revision

- = Factory Design Revision

Voltage

1 = 575/3/60
5 = 208-230/3/60
6 = 460/3/60

48FC AHRI RATINGS

48FC UNIT	COOLING STAGES	NOMINAL CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR	AHRI RATING CFM
48FC*M08	2	7.5	86.0	7.7	11.2	15.0	2650
48FC*M09	2	8.5	98.0	8.8	11.2	15.0	3400
48FC*M12	2	10.0	118.0	10.7	11.0	15.0	3500
48FC*M14	2	12.5	132.0	12.9	10.2	15.0	3750
48FC*M16	2	15.0	174.0	16.1	10.8	14.5	5250

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio

NOTES:

1. Rated in accordance with AHRI Standards 340/360.
2. Rating are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
IEER Standard: A measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
3. All 48FC units comply with ASHRAE 90.1-2019 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2023 (Department of Energy) Energy Standard for minimum IEER requirements.
4. 48FC units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.



50FC AHRI RATINGS

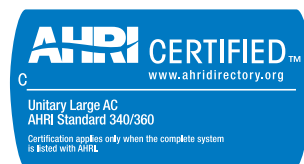
50FC UNIT	COOLING STAGES	NOMINAL CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR	AHRI RATING CFM
50FC*M08	2	7.5	86.0	7.5	11.4	15.2	2650
50FC*M09	2	8.5	98.0	8.6	11.4	15.2	3400
50FC*M12	2	10.0	118.0	10.5	11.2	15.2	3500
50FC*M14	2	12.5	133.0	12.8	10.4	15.2	3750
50FC*M16	2	15.0	174.0	15.8	11.0	14.7	5250

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio

NOTES:

1. Rated in accordance with AHRI Standards 340/360.
2. Rating are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
IEER Standard: A measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
3. All 50FC units comply with ASHRAE 90.1-2019 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2023 (Department of Energy) Energy Standard for minimum IEER requirements.
4. 50FC units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.



SOUND RATINGS TABLE

48/50FC UNIT	COOLING STAGES	OUTDOOR SOUND (dB) at 60 Hz								
		A-WEIGHTED	63	125	250	500	1000	2000	4000	8000
M08	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M09	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M12	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M14	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M16	2	87	87.0	85.2	84.6	84.9	82.8	78.4	75.3	72.9

LEGEND

dB — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI.

Sound Level

Table A2-20 summarizes predicted sound pressure levels for Model CB Boilers. Tables A2-21 through A2-25 give detailed octave band sound pressure levels for each boiler. These values are based on standard motors. Optional motor types and altitude conditions can increase sound levels.

Units

The units for the sound level tables are dBA (decibels, measured on the A-weighted scale) in reference to 0.0002 microbars (20 micro-Newtons per square meter). They are standardly referenced in specifying and reporting sound pressure levels on industrial equipment.

Test Method

The sound pressure levels in the above tables were obtained from tests in accordance with the "ABMA Test Code for the Measurement of Sound from Packages Boilers." In accordance with this code, the sound pressure levels reported were measured on the boiler centerline 4-1/2 feet vertically above the bottom of the base rails and 3 feet horizontally in front of the end of the blower motor or front surface of the electrical cabinet.

Sound Level Meter

The sound level meter used complies with ANSI S1.4, Type 1 (Precision). The readings are taken with the meter set for slow response.

Table A2-20. Sound Pressure Level Summary (50 - 800 hp)

BOILER HP	50	60	70	80	100	125A	125	150	200	250	300	350	400	500	600	700	750	800
HFO, dBA	79	79	79	79	81	82	83	83	83	88	88	89	83	83	83	85	87	88
LFO, dBA	78	78	78	78	79	79	81	82	81	86	86	85	80	82	82	82	83	84
HFG, dBA	77	77	78	78	78	79	81	80	82	84	86	86	82	82	82	85	86	87
LFG, dBA	72	73	74	75	75	75	78	77	78	81	82	83	80	81	81	82	83	84

NOTES:

1. Boiler No. followed by an "a" designates hot water boilers furnished in a smaller vessel size with additional tubes in the upper portion of the vessel.
2. Sound Pressure levels measured on boilers operating in various locations and expressed in dBA are as follows:

ABBREVIATIONS:

- HF = High Fire
LF = Low Fire
O = Oil
G = Gas

Table A2-21. Model CB Boiler Sound Pressure Level Details (40 hp)

FIRING RATE FUEL	SOUND LEVEL dBA	OCTAVE BAND SOUND PRESSURE LEVELS IN dB RE .0002 MICROBAR									
		31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
40HP ^A											
LFG	76	73	75	72	74	76	70	67	68	64	57
LFO	77	73	75	75	76	75	72	67	66	66	58
HFG	79	81	78	74	80	78	71	69	68	64	58
HFO	79	72	77	77	81	78	73	69	66	66	58

NOTE:

ABBREVIATIONS:
HF = High Fire

LF = Low Fire
O = Oil
G = Gas

A. The data shown above was taken on the 40 hp. Since the highest Sound Level is below 80 dBA, no additional 36" diameter Firetubes were tested. If Sound Level predictions are required for the 15 thru 30 hp, use the values shown for the 40 hp.

Table A2-22. Model CB Boiler Sound Pressure Level Details (50 - 125 hp)

FIRING RATE FUEL	SOUND LEVEL dBA	OCTAVE BAND SOUND PRESSURE LEVELS IN dB RE .0002 MICROBAR									
		31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
50 HP											
LFG	72	71	65	71	71	70	68	63	60	53	46
LFO	78	71	76	78	73	72	72	76	61	56	54
HFG	77	72	68	75	76	74	74	66	61	54	47
HFO	79	72	70	75	75	77	77	70	63	56	54
60 HP											
LFG	73	70	75	72	72	73	68	61	56	50	45
LFO	78	68	77	74	74	75	74	71	58	53	48
HFG	77	73	75	72	72	75	76	63	55	50	44
HFO	79	75	75	75	75	77	77	72	59	52	45
70 HP											
LFG	74	70	70	75	74	73	71	62	56	51	46
LFO	78	70	73	77	74	75	74	70	59	53	57
HFG	78	72	72	77	78	75	76	68	58	52	57
HFO	79	73	73	80	77	77	76	70	60	54	48
80 HP											
LFG	75	70	75	75	73	75	76	66	62	62	53
LFO	78	69	77	76	74	76	74	73	63	62	57
HFG	78	72	74	78	75	75	76	57	61	59	52
HFO	79	75	75	75	74	76	75	69	62	59	54
100 & 100A HP											
LFG	75	69	69	75	76	73	71	65	63	59	50
LFO	79	68	73	78	78	75	79	76	63	59	54
HFG	78	69	70	77	77	74	74	69	63	59	50
HFO	81	68	70	77	78	78	77	71	64	59	57
125A HP											
LFG	75	69	70	76	78	73	71	65	63	59	50
LFO	79	68	73	78	78	75	74	76	63	59	54
HFG	79	70	70	77	79	75	75	69	63	59	50
HFO	82	70	71	78	80	79	78	71	64	59	57

NOTES:

1. ABBREVIATIONS:

HF = High Fire

LF = Low Fire

O = Oil

G = Gas

2. Boiler HP followed by an "A" designates hot water boilers furnished in a smaller vessel size with additional tubes in the upper portion of the vessel.

Table A2-23. Model CB Boiler Sound Pressure Level Details (125 - 200 hp)

FIRING RATE FUEL	SOUND LEVEL dBA	OCTAVE BAND SOUND PRESSURE LEVELS IN dB RE .0002 MICROBAR									
		31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
125 HP											
LFG	78	76	70	78	80	80	73	65	58	56	51
LFO	81	80	75	82	82	81	77	74	67	63	60
HFG	81	79	73	87	78	80	76	71	64	57	51
HFO	83	78	78	89	79	82	81	77	64	70	58
150 & 175A HP											
LFG	77	75	70	78	76	77	72	67	63	58	55
LFO	82	76	68	80	78	79	75	71	66	60	58
HFG	80	71	72	82	76	80	76	71	64	58	52
HFO	83	70	71	83	79	82	77	73	65	60	55
200 HP											
LFG	78	74	74	78	79	79	72	65	58	54	50
LFO	81	76	74	79	77	81	75	71	62	60	55
HFG	82	77	76	82	79	81	78	72	62	55	50
HFO	83	76	76	81	78	82	79	73	66	59	53

NOTES:

1. ABBREVIATIONS:

HF = HighFire

LF = Low Fire

O = Oil

G = Gas

2. Boiler HP followed by an "A" designates hot water boilers furnished in a smaller vessel size with additional tubes in the upper portion of the vessel.

Table A2-24. Model CB Boiler Sound Pressure Level Details (250 - 350 hp)

FIRING RATE FUEL	SOUND LEVEL dBA	OCTAVE BAND SOUND PRESSURE LEVELS IN dB RE .0002 MICROBAR									
		31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
250 HP											
LFG	81	72	81	85	84	82	75	68	60	56	53
LFO	86	76	87	87	85	84	82	73	70	76	68
HFG	84	78	85	84	84	84	79	72	62	55	50
HFO	88	79	84	84	84	85	86	74	68	67	65
300 HP											
LFG	82	75	74	80	83	83	78	71	65	58	53
LFO	86	80	77	80	84	82	81	75	75	77	72
HFG	86	77	78	84	87	85	82	77	67	60	53
HFO	88	82	80	84	85	85	83	79	72	67	69
350 HP											
LFG	83	75	78	87	86	83	78	70	58	55	
LFO	85	82	79	84	84	84	84	70	66	66	
HFG	86	78	79	87	85	84	84	72	65	61	
HFO	89	82	82	85	85	86	86	79	68	68	

NOTE:

ABBREVIATIONS:

HF = High Fire

LF = Low Fire

O = Oil

G = Gas

Table A2-25. Model CB Boiler Sound Pressure Level Details (400 - 800 hp)

FIRING RATE FUEL	SOUND LEVEL dBA	OCTAVE BAND SOUND PRESSURE LEVELS IN dB RE .0002 MICROBAR									
		31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
400 HP											
LFG	80	70	79	85	87	78	70	66	61	55	50
LFO	80	74	83	86	87	78	71	67	63	58	50
HFG	82	73	84	87	89	80	74	70	64	57	50
HFO	83	75	85	87	89	80	75	71	73	58	52
500 HP											
LFG	81	78	83	87	87	78	73	66	62	58	54
LFO	82	77	83	87	87	81	75	70	63	59	55
HFG	82	79	87	87	84	79	76	70	63	57	55
HFO	83	77	87	87	84	81	77	71	62	58	55
600 HP											
LFG	81	78	83	87	87	79	73	66	62	58	54
LFO	82	77	83	87	87	81	75	70	63	59	55
HFG	82	79	87	87	84	79	76	70	63	57	55
HFO	83	77	87	87	84	81	77	71	62	58	55
700 HP											
LFG	82	80	87	91	87	80	75	70	66	62	56
LFO	82	79	88	90	87	81	76	72	67	63	57
HFG	85	80	90	89	89	82	77	76	66	64	57
HFO	85	81	90	91	89	82	80	77	68	65	57
750 HP											
LFG	83	82	89	93	87	81	76	71	67	63	
LFO	83	80	90	92	87	82	77	73	68	64	
HFG	86	81	91	90	89	83	79	89	68	66	
HFO	87	82	91	92	89	83	81	80	70	68	
800 HP											
LFG	84	83	90	94	87	82	77	73	68	64	
LFO	84	82	91	93	87	82	78	74	68	65	
HFG	87	82	92	91	89	83	81	82	70	68	
HFO	88	83	92	92	89	83	82	83	71	70	

NOTE:
ABBREVIATIONS:
HF = High Fire
LF = Low Fire
O = Oil
G = Gas

Sound Pressure

On large size boilers, the need for auxiliary equipment, and the necessary interconnecting piping, make it impractical (and sometimes impossible) to provide a boiler testing environment that is suitable for obtaining the data needed to develop Sound Pressure Power levels.

Typical Values

Sound pressure levels (dBA) for identical boilers will vary between boiler rooms. In addition, variations will occur between different people using different sound meters on the same boiler. And finally, no two boilers can be expected to give precisely the same sound levels. For these reasons, we can only predict, but not guarantee, sound levels (dBA).

Octave Band

When predicting sound pressures in octave bands (e.g., dB at 125 Hz), even greater variations between boilers, between sound meters, and between operators can be expected. These larger variations in the low and high frequencies make octave band levels a less reliable method of reporting than A-scale

sound levels. (Since A-scale sound levels are dominated by mid-frequency sounds, the A-scale sound levels between two boilers can be in reasonable agreement even though the low and high frequencies of octave band measurement do not closely correspond).

ATTACHMENT 4

SoundPLAN Data – Construction Noise

9641.2 Chabad of Coronado
SoundPLAN Data - Construction

Source name	Reference	Noise	Corrections		
		Level dB(A)	Cwall dB(A)	CI dB(A)	CT dB(A)
Construction	Lw/unit	113.9	-	-	-

9641.2 Chabad of Coronado
SoundPLAN Data - Construction

No.	Coordinates		Noise
	X	Y	Level
	(meters)		dB(A)
1	483252.58	3616473.22	73.9
2	483243.59	3616477.88	75.1
3	483233.64	3616482.75	74.9
4	483225.49	3616486.66	73.8
5	483212.15	3616485.82	77.5
6	483208.45	3616477.14	78.9
7	483203.48	3616467.29	78.1
8	483202.10	3616437.45	71.5
9	483210.67	3616432.58	71.9
10	483222.74	3616426.87	71.7
11	483232.47	3616422.10	70.7
12	483268.03	3616435.44	69.8
13	483272.69	3616444.96	70.1
14	483278.51	3616456.61	69.5

ATTACHMENT 5

SoundPLAN Data – Dewatering Noise

9641.2 Chabad of Coronado
SoundPLAN Data - Dewatering

Source name	Reference	Noise	Corrections		
		Level dB(A)	Cwall dB(A)	CI dB(A)	CT dB(A)
Pump	Lw/unit	83.2	-	-	-

9641.2 Chabad of Coronado
SoundPLAN Data - Dewatering

No.	Coordinates		Noise
	X	Y	Level
	(meters)		dB(A)
1	483252.58	3616473.22	39.6
2	483243.59	3616477.88	40.9
3	483233.64	3616482.75	40.8
4	483225.49	3616486.66	39.5
5	483212.15	3616485.82	42.0
6	483208.45	3616477.14	43.2
7	483203.48	3616467.29	42.2
8	483202.10	3616437.45	35.1
9	483210.67	3616432.58	35.3
10	483222.74	3616426.87	35.3
11	483232.47	3616422.10	34.8
12	483268.03	3616435.44	35.3
13	483272.69	3616444.96	35.5
14	483278.51	3616456.61	35.2

ATTACHMENT 6

SoundPLAN Data – Vehicle Traffic Noise

9641.2 Chabad of Coronado
SoundPLAN Data - Vehicle Traffic

Station km	Traffic values						Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %		
	ADT Veh/24h	Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h						Speed km/h	
	10th Street		Traffic direction:		In entry direction								
0+000		1401 Total	-		90	47	20	-	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Automobiles	-		86	45	19	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Medium trucks	-		2	1	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Heavy trucks	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Buses	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Motorcycles	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+376	-	-	-	-	-	-	-						
C Avenue		Traffic direction:		In entry direction									
0+000		1401 Total	-		90	47	20	-	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Automobiles	-		86	45	19	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Medium trucks	-		2	1	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Heavy trucks	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Buses	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Motorcycles	-		1	0	0	40	none	-	-	Average (of DGAC and PCC)	0
0+000		1401 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+270	-	-	-	-	-	-	-						
Orange Avenue Northbound		Traffic direction:		In entry direction									
0+000		10710 Total	-		687	357	155	-	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Automobiles	-		653	339	147	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Medium trucks	-		14	7	3	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Heavy trucks	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Buses	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Motorcycles	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10710 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Total	-		667	347	150	-	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Automobiles	-		634	330	143	40	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Medium trucks	-		13	7	3	40	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Heavy trucks	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Buses	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Motorcycles	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+227		10395 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+395	-	-	-	-	-	-	-						
Orange Avenue Southbound		Traffic direction:		In entry direction									
0+000		10395 Total	-		667	347	150	-	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Automobiles	-		634	330	143	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Medium trucks	-		13	7	3	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Heavy trucks	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Buses	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Motorcycles	-		7	3	2	40	none	-	-	Average (of DGAC and PCC)	0
0+000		10395 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Total	-		687	357	155	-	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Automobiles	-		653	339	147	40	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Medium trucks	-		14	7	3	40	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Heavy trucks	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Buses	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Motorcycles	-		7	4	2	40	none	-	-	Average (of DGAC and PCC)	0
0+168		10710 Auxiliary vehicle	-	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+413	-	-	-	-	-	-	-						

9641.2 Chabad of Coronado
SoundPLAN Data - Vehicle Traffic

No.	Coordinates		Floor	Height (meters)	Day dB(A)	Noise Level		Lden dB(A)
	X (meters)	Y (meters)				Evening dB(A)	Night dB(A)	
1	483210.63	3616459.06	1.FI	1.5	54.6	51.8	48.1	56.5
1	483210.63	3616459.06	2.FI	5.5	55.4	52.5	48.8	57.2
2	483222.19	3616453.31	1.FI	1.5	53.9	51.1	47.4	55.8
2	483222.19	3616453.31	2.FI	5.5	54.8	52.0	48.3	56.7
3	483234.00	3616447.31	1.FI	1.5	54.1	51.2	47.5	55.9
3	483234.00	3616447.31	2.FI	5.5	55.0	52.2	48.5	56.9
4	483243.83	3616442.80	1.FI	1.5	55.3	52.5	48.8	57.2
4	483243.83	3616442.80	2.FI	5.5	55.7	52.9	49.2	57.6
5	483248.22	3616450.96	1.FI	1.5	53.9	51.1	47.4	55.8
5	483248.22	3616450.96	2.FI	5.5	54.8	52.0	48.3	56.7
6	483251.62	3616457.76	1.FI	1.5	53.3	50.5	46.8	55.2
6	483251.62	3616457.76	2.FI	5.5	54.3	51.5	47.8	56.2
7	483256.38	3616467.60	1.FI	1.5	52.6	49.7	46.0	54.4
7	483256.38	3616467.60	2.FI	5.5	53.5	50.7	47.0	55.4
8	483246.18	3616472.79	1.FI	1.5	45.2	42.4	38.7	47.1
8	483246.18	3616472.79	2.FI	5.5	48.0	45.2	41.5	49.9
9	483234.31	3616478.36	1.FI	1.5	39.4	36.6	32.9	41.3
9	483234.31	3616478.36	2.FI	5.5	43.5	40.7	37.0	45.4
10	483222.19	3616483.92	1.FI	1.5	39.7	36.8	33.2	41.6
10	483222.19	3616483.92	2.FI	5.5	45.3	42.5	38.8	47.2
11	483216.31	3616478.05	1.FI	1.5	42.4	39.6	35.9	44.3
11	483216.31	3616478.05	2.FI	5.5	48.3	45.5	41.8	50.2
12	483211.61	3616468.89	1.FI	1.5	46.3	43.5	39.8	48.2
12	483211.61	3616468.89	2.FI	5.5	50.8	47.9	44.3	52.7

9641.2 Chabad of Coronado
SoundPLAN Data - Vehicle Traffic

Source name										Noise Level			
										Day dB(A)	Evening dB(A)	Night dB(A)	CNEL dB(A)
1	1.FI	54.6	51.8	48.1	56.5	0.0	0.0	0.0	0.0				
10th Street										53.3	50.5	46.8	55.2
C Avenue										41.4	38.6	34.9	43.3
Orange Avenue Northbound										45.4	42.6	39.0	47.3
Orange Avenue Southbound										44.2	41.4	37.7	46.1
1	2.FI	55.4	52.5	48.8	57.2	0.0	0.0	0.0	0.0				
10th Street										53.8	51.0	47.3	55.7
C Avenue										42.4	39.6	35.9	44.3
Orange Avenue Northbound										46.7	43.9	40.2	48.6
Orange Avenue Southbound										45.8	42.9	39.3	47.7
2	1.FI	53.9	51.1	47.4	55.8	0.0	0.0	0.0	0.0				
10th Street										52.1	49.3	45.6	54.0
C Avenue										43.9	41.1	37.4	45.8
Orange Avenue Northbound										45.0	42.1	38.5	46.9
Orange Avenue Southbound										44.0	41.2	37.6	46.0
2	2.FI	54.8	52.0	48.3	56.7	0.0	0.0	0.0	0.0				
10th Street										52.8	49.9	46.2	54.6
C Avenue										45.5	42.6	38.9	47.3
Orange Avenue Northbound										46.3	43.4	39.8	48.2
Orange Avenue Southbound										45.5	42.6	39.0	47.4
3	1.FI	54.1	51.2	47.5	55.9	0.0	0.0	0.0	0.0				
10th Street										52.1	49.3	45.6	54.0
C Avenue										47.3	44.5	40.8	49.2
Orange Avenue Northbound										43.3	40.4	36.8	45.2
Orange Avenue Southbound										42.4	39.5	35.9	44.3
3	2.FI	55.0	52.2	48.5	56.9	0.0	0.0	0.0	0.0				
10th Street										52.7	49.9	46.2	54.6
C Avenue										48.9	46.0	42.3	50.7
Orange Avenue Northbound										44.7	41.9	38.3	46.6
Orange Avenue Southbound										44.1	41.3	37.6	46.0
4	1.FI	55.3	52.5	48.8	57.2	0.0	0.0	0.0	0.0				
10th Street										51.8	49.0	45.3	53.7
C Avenue										51.5	48.7	45.0	53.4
Orange Avenue Northbound										43.8	40.9	37.3	45.7
Orange Avenue Southbound										42.9	40.1	36.5	44.8
4	2.FI	55.7	52.9	49.2	57.6	0.0	0.0	0.0	0.0				
10th Street										52.2	49.4	45.7	54.1
C Avenue										51.9	49.1	45.4	53.8
Orange Avenue Northbound										44.6	41.8	38.2	46.5
Orange Avenue Southbound										43.9	41.1	37.4	45.8
5	1.FI	53.9	51.1	47.4	55.8	0.0	0.0	0.0	0.0				
10th Street										48.0	45.2	41.5	49.9
C Avenue										51.9	49.1	45.3	53.8
Orange Avenue Northbound										42.0	39.2	35.5	43.9
Orange Avenue Southbound										41.2	38.3	34.7	43.1
5	2.FI	54.8	52.0	48.3	56.7	0.0	0.0	0.0	0.0				
10th Street										49.6	46.7	43.0	51.4
C Avenue										52.5	49.7	46.0	54.4
Orange Avenue Northbound										42.8	40.0	36.3	44.7
Orange Avenue Southbound										42.1	39.2	35.6	44.0
6	1.FI	53.3	50.5	46.8	55.2	0.0	0.0	0.0	0.0				
10th Street										45.8	43.0	39.3	47.7
C Avenue										52.0	49.2	45.5	53.9
Orange Avenue Northbound										39.3	36.5	32.9	41.3
Orange Avenue Southbound										38.6	35.8	32.1	40.5
6	2.FI	54.3	51.5	47.8	56.2	0.0	0.0	0.0	0.0				
10th Street										47.5	44.6	40.9	49.3
C Avenue										52.9	50.1	46.3	54.7
Orange Avenue Northbound										40.0	37.1	33.5	41.9
Orange Avenue Southbound										39.4	36.6	33.0	41.3

9641.2 Chabad of Coronado
SoundPLAN Data - Vehicle Traffic

7	1.FI	52.6	49.7	46.0	54.4	0.0	0.0	0.0	0.0				
10th Street										43.1	40.2	36.5	44.9
C Avenue										51.7	48.9	45.2	53.6
Orange Avenue Northbound										38.3	35.4	31.8	40.2
Orange Avenue Southbound										37.6	34.8	31.1	39.5
7	2.FI	53.5	50.7	47.0	55.4	0.0	0.0	0.0	0.0				
10th Street										44.6	41.8	38.1	46.5
C Avenue										52.5	49.7	46.0	54.4
Orange Avenue Northbound										39.4	36.6	33.0	41.3
Orange Avenue Southbound										39.0	36.2	32.6	40.9
8	1.FI	45.2	42.4	38.7	47.1	0.0	0.0	0.0	0.0				
10th Street										30.8	27.9	24.2	32.6
C Avenue										44.9	42.0	38.3	46.7
Orange Avenue Northbound										28.2	25.4	21.8	30.1
Orange Avenue Southbound										29.1	26.2	22.6	31.0
8	2.FI	48.0	45.2	41.5	49.9	0.0	0.0	0.0	0.0				
10th Street										33.2	30.4	26.6	35.0
C Avenue										47.6	44.8	41.0	49.5
Orange Avenue Northbound										32.0	29.1	25.5	33.9
Orange Avenue Southbound										33.6	30.7	27.1	35.5
9	1.FI	39.4	36.6	32.9	41.3	0.0	0.0	0.0	0.0				
10th Street										23.3	20.5	16.7	25.2
C Avenue										37.9	35.1	31.4	39.8
Orange Avenue Northbound										30.4	27.5	23.9	32.3
Orange Avenue Southbound										31.0	28.1	24.5	32.9
9	2.FI	43.5	40.7	37.0	45.4	0.0	0.0	0.0	0.0				
10th Street										29.8	27.0	23.3	31.7
C Avenue										41.0	38.2	34.5	42.9
Orange Avenue Northbound										35.8	33.0	29.4	37.7
Orange Avenue Southbound										36.9	34.1	30.4	38.8
10	1.FI	39.7	36.8	33.2	41.6	0.0	0.0	0.0	0.0				
10th Street										35.3	32.5	28.8	37.2
C Avenue										32.9	30.0	26.3	34.7
Orange Avenue Northbound										33.0	30.2	26.6	34.9
Orange Avenue Southbound										32.9	30.0	26.4	34.8
10	2.FI	45.3	42.5	38.8	47.2	0.0	0.0	0.0	0.0				
10th Street										39.0	36.2	32.5	40.9
C Avenue										35.4	32.6	28.9	37.3
Orange Avenue Northbound										40.4	37.6	33.9	42.3
Orange Avenue Southbound										40.6	37.7	34.1	42.5
11	1.FI	42.4	39.6	35.9	44.3	0.0	0.0	0.0	0.0				
10th Street										40.8	37.9	34.2	42.6
C Avenue										22.3	19.4	15.7	24.1
Orange Avenue Northbound										34.3	31.4	27.8	36.2
Orange Avenue Southbound										34.1	31.3	27.7	36.0
11	2.FI	48.3	45.5	41.8	50.2	0.0	0.0	0.0	0.0				
10th Street										44.3	41.5	37.8	46.2
C Avenue										22.7	19.9	16.2	24.6
Orange Avenue Northbound										43.0	40.1	36.5	44.9
Orange Avenue Southbound										43.2	40.3	36.7	45.1
12	1.FI	46.3	43.5	39.8	48.2	0.0	0.0	0.0	0.0				
10th Street										45.6	42.8	39.1	47.5
C Avenue										26.7	23.9	20.2	28.6
Orange Avenue Northbound										34.8	31.9	28.3	36.7
Orange Avenue Southbound										34.5	31.7	28.0	36.4
12	2.FI	50.8	47.9	44.3	52.7	0.0	0.0	0.0	0.0				
10th Street										48.0	45.1	41.4	49.8
C Avenue										22.8	20.0	16.3	24.7
Orange Avenue Northbound										44.6	41.8	38.1	46.5
Orange Avenue Southbound										44.4	41.6	37.9	46.3

ATTACHMENT 7

FHWA RD-66-108 Off-Site Traffic Noise

FHWA RD-77-108
Traffic Noise Prediction Model

Data Input Sheet

Project Name : Chabad of Coronado
Project Number : 9641.2
Modeled Condition : Without Project

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
1	Orange Avenue	North of 10th Street	20,800	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
2	Orange Avenue	South of 10th Street	21,400	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
3	10th Street		1,400	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
4	C Avenue		1,400	25	50	98.00	1.00	1.00	77.00	10.00	13.00	

FHWA RD-77-108
Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Chabad of Coronado
Project Number : 9641.2
Modeled Condition : Without Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard					Distance to Traffic Noise Level Contours, Feet				
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Orange Avenue	North of 10th Street	63.5	55.2	62.8	66.5	7	22	71	223	706	2,233
2	Orange Avenue	South of 10th Street	63.6	55.3	62.9	66.6	7	23	72	229	723	2,285
3	10th Street		51.8	43.5	51.1	54.8	0	2	5	15	48	151
4	C Avenue		51.8	43.5	51.1	54.8	0	2	5	15	48	151

FHWA RD-77-108
Traffic Noise Prediction Model

Data Input Sheet

Project Name : Chabad of Coronado
Project Number : 9641.2
Modeled Condition : With Project

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
Regular Operations												
1	Orange Avenue	North of 10th Street	20,848	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
2	Orange Avenue	South of 10th Street	21,448	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
3	10th Street		1,448	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
4	C Avenue		1,448	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
Special Event												
1	Orange Avenue	North of 10th Street	20,904	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
2	Orange Avenue	South of 10th Street	21,504	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
3	10th Street		1,504	25	50	98.00	1.00	1.00	77.00	10.00	13.00	
4	C Avenue		1,504	25	50	98.00	1.00	1.00	77.00	10.00	13.00	

FHWA RD-77-108
Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Chabad of Coronado
Project Number : 9641.2
Modeled Condition : With Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard					Distance to Traffic Noise Level Contours, Feet				
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
Regular Operations												
1	Orange Avenue	North of 10th Street	63.5	55.2	62.8	66.5	7	22	71	223	706	2,233
2	Orange Avenue	South of 10th Street	63.6	55.3	62.9	66.6	7	23	72	229	723	2,285
3	10th Street		51.9	43.6	51.2	54.9	0	2	5	15	49	155
4	C Avenue		51.9	43.6	51.2	54.9	0	2	5	15	49	155
Special Event												
1	Orange Avenue	North of 10th Street	63.5	55.2	62.8	66.5	7	22	71	223	706	2,233
2	Orange Avenue	South of 10th Street	63.6	55.3	63.0	66.6	7	23	72	229	723	2,285
3	10th Street		52.1	43.8	51.4	55.1	1	2	5	16	51	162
4	C Avenue		52.1	43.8	51.4	55.1	1	2	5	16	51	162

ATTACHMENT 8

SoundPLAN Data – Operational Noise

9641.2 Chabad of Coronado
SoundPLAN Data - Operation

Source name	Reference	Level	Frequency spectrum [dB(A)]																											Corrections				
				31	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1	1.3	1.6	2	2.5	3.2	4	5	6.3	8	10	12.5	16	Cwall	CI	CT
			dB(A)	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	kHz	dB(A)	dB(A)
Boiler	Lw/unit	Leq1	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
Boiler		Leq2	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
Boiler		Leq3	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
AC1	Lw/unit	Leq1	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC1		Leq2	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC1		Leq3	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC2	Lw/unit	Leq1	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC2		Leq2	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC2		Leq3	78.5	-	-	-	59.4	63.1	65.6	68.6	71.3	69.6	71.9	73.9	71.2	72.8	74.1	71.6	72.4	73	69	69.2	69.3	64	63.8	63.3	59.2	58.2	-	-	-	-	-	-
AC3	Lw/unit	Leq1	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
AC3		Leq2	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
AC3		Leq3	82.4	30.6	35.4	40.8	44.8	48.5	63.9	66.9	69.6	68.1	70.4	72.4	77.2	78.8	80.1	76.2	77	77.6	74	74.2	74.3	66.2	66	65.6	59.9	58.9	57.5	50.7	48.4	-	-	-
Music	Lw/unit	Leq1	93.6	-	-	-	-	-	67.4	69.9	74.7	78.4	76.5	79.5	81.2	84.8	87.8	86.1	83	82	81.6	75.9	72.9	71.2	69.8	62.7	46.5	45	45	-	-	-	-	-
Music		Leq2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Music		Leq3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Outdoor Gathering	Lw/unit	Leq1	79																													-	-	-
Outdoor Gathering		Leq2	79																													-	-	-
Outdoor Gathering		Leq3	-																														-	-

9641.2 Chabad of Coronado
SoundPLAN Data - Operation

No.	Coordinates		Floor	Height (meters)	Noise Level		
	X (meters)	Y (meters)			Special Event with Amplified Music dB(A)	Event without Amplified Music dB(A)	Rooftop Equipment Only dB(A)
1	483252.58	3616473.22	1.FI	1.5	45	43	33
1	483252.58	3616473.22	2.FI	4.5	50	49	37
2	483243.59	3616477.88	1.FI	1.5	44	37	36
2	483243.59	3616477.88	2.FI	4.5	46	42	40
3	483233.64	3616482.75	1.FI	1.5	40	38	38
3	483233.64	3616482.75	2.FI	4.5	43	42	42
4	483225.49	3616486.66	1.FI	1.5	41	40	40
4	483225.49	3616486.66	2.FI	4.5	43	43	43
5	483212.15	3616485.82	1.FI	1.5	38	38	38
6	483208.45	3616477.14	1.FI	1.5	33	31	31
7	483203.48	3616467.29	1.FI	1.5	33	31	31
8	483202.10	3616437.45	1.FI	1.5	35	34	34
9	483210.67	3616432.58	1.FI	1.5	38	37	36
10	483222.74	3616426.87	1.FI	1.5	40	38	37
11	483232.47	3616422.10	1.FI	1.5	40	38	35
12	483268.03	3616435.44	1.FI	1.5	41	40	30
13	483272.69	3616444.96	1.FI	1.5	42	41	30
14	483278.51	3616456.61	1.FI	1.5	41	40	30

Source name										Noise Level		
										Special Event with Amplified Music	Event without Amplified Music	Rooftop Equipment Only
										dB(A)	dB(A)	dB(A)
1	1.FI	45.1	43.0	33.1	0.0	0.0	0.0	0.0	0.0			
AC1										27.1	27.1	27.1
AC2										26.8	26.8	26.8
AC3										27.8	27.8	27.8
Boiler										26.1	26.1	26.1
Music										40.9	-	-
Outdoor Gathering										42.6	42.6	-
1	2.FI	49.5	48.7	36.8	0.0	0.0	0.0	0.0	0.0			
AC1										30.5	30.5	30.5
AC2										30.2	30.2	30.2
AC3										31.9	31.9	31.9
Boiler										30.3	30.3	30.3
Music										41.9	-	-
Outdoor Gathering										48.4	48.4	-
2	1.FI	44.4	37.1	36.3	0.0	0.0	0.0	0.0	0.0			
AC1										30.6	30.6	30.6
AC2										30.4	30.4	30.4
AC3										31.4	31.4	31.4
Boiler										28.0	28.0	28.0
Music										43.6	-	-
Outdoor Gathering										29.5	29.5	-
2	2.FI	46.0	41.5	40.0	0.0	0.0	0.0	0.0	0.0			
AC1										34.1	34.1	34.1
AC2										33.9	33.9	33.9
AC3										35.2	35.2	35.2
Boiler										32.1	32.1	32.1
Music										44.1	-	-
Outdoor Gathering										36.4	36.4	-
3	1.FI	39.7	38.1	38.0	0.0	0.0	0.0	0.0	0.0			
AC1										30.9	30.9	30.9
AC2										31.1	31.1	31.1
AC3										34.8	34.8	34.8
Boiler										29.2	29.2	29.2
Music										34.5	-	-
Outdoor Gathering										20.6	20.6	-
3	2.FI	42.9	42.2	42.0	0.0	0.0	0.0	0.0	0.0			
AC1										34.7	34.7	34.7
AC2										35.3	35.3	35.3
AC3										38.8	38.8	38.8
Boiler										33.3	33.3	33.3
Music										34.8	-	-
Outdoor Gathering										28.2	28.2	-
4	1.FI	40.5	39.9	39.8	0.0	0.0	0.0	0.0	0.0			
AC1										31.4	31.4	31.4
AC2										33.0	33.0	33.0
AC3										36.6	36.6	36.6
Boiler										32.5	32.5	32.5
Music										31.6	-	-
Outdoor Gathering										17.1	17.1	-
4	2.FI	43.0	42.6	42.6	0.0	0.0	0.0	0.0	0.0			
AC1										34.1	34.1	34.1
AC2										35.4	35.4	35.4
AC3										38.8	38.8	38.8
Boiler										36.5	36.5	36.5
Music										32.0	-	-
Outdoor Gathering										24.2	24.2	-
5	1.FI	38.0	37.5	37.5	0.0	0.0	0.0	0.0	0.0			
AC1										30.6	30.6	30.6
AC2										31.0	31.0	31.0
AC3										34.4	34.4	34.4
Boiler										26.2	26.2	26.2
Music										28.7	-	-
Outdoor Gathering										15.4	15.4	-

6	1.FI	33.0	31.0	30.9	0.0	0.0	0.0	0.0	0.0			
AC1										24.1	24.1	24.1
AC2										24.5	24.5	24.5
AC3										26.0	26.0	26.0
Boiler										24.6	24.6	24.6
Music										28.7	-	-
Outdoor Gathering										14.5	14.5	-
7	1.FI	32.5	30.7	30.7	0.0	0.0	0.0	0.0	0.0			
AC1										24.2	24.2	24.2
AC2										24.4	24.4	24.4
AC3										25.6	25.6	25.6
Boiler										24.2	24.2	24.2
Music										27.7	-	-
Outdoor Gathering										14.0	14.0	-
8	1.FI	35.0	34.4	34.0	0.0	0.0	0.0	0.0	0.0			
AC1										25.5	25.5	25.5
AC2										25.5	25.5	25.5
AC3										25.1	25.1	25.1
Boiler										31.6	31.6	31.6
Music										26.7	-	-
Outdoor Gathering										23.9	23.9	-
9	1.FI	37.8	36.9	36.3	0.0	0.0	0.0	0.0	0.0			
AC1										28.0	28.0	28.0
AC2										28.0	28.0	28.0
AC3										31.0	31.0	31.0
Boiler										32.5	32.5	32.5
Music										30.6	-	-
Outdoor Gathering										27.8	27.8	-
10	1.FI	39.6	38.4	36.6	0.0	0.0	0.0	0.0	0.0			
AC1										27.6	27.6	27.6
AC2										27.4	27.4	27.4
AC3										30.7	30.7	30.7
Boiler										33.6	33.6	33.6
Music										33.4	-	-
Outdoor Gathering										33.5	33.5	-
11	1.FI	40.0	38.3	35.4	0.0	0.0	0.0	0.0	0.0			
AC1										25.7	25.7	25.7
AC2										26.9	26.9	26.9
AC3										30.2	30.2	30.2
Boiler										31.9	31.9	31.9
Music										35.0	-	-
Outdoor Gathering										35.1	35.1	-
12	1.FI	40.8	39.8	30.3	0.0	0.0	0.0	0.0	0.0			
AC1										23.4	23.4	23.4
AC2										23.7	23.7	23.7
AC3										25.5	25.5	25.5
Boiler										24.2	24.2	24.2
Music										33.9	-	-
Outdoor Gathering										39.2	39.2	-
13	1.FI	41.6	40.7	29.9	0.0	0.0	0.0	0.0	0.0			
AC1										23.8	23.8	23.8
AC2										23.8	23.8	23.8
AC3										23.9	23.9	23.9
Boiler										24.3	24.3	24.3
Music										34.2	-	-
Outdoor Gathering										40.3	40.3	-
14	1.FI	41.1	40.1	29.9	0.0	0.0	0.0	0.0	0.0			
AC1										22.7	22.7	22.7
AC2										22.4	22.4	22.4
AC3										24.2	24.2	24.2
Boiler										25.6	25.6	25.6
Music										34.1	-	-
Outdoor Gathering										39.6	39.6	-