HELIX Environmental Planning

Ramona-Indian Warehouse Project

Acoustical Analysis Report

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Prepared for:

JM Realty Group, Inc.
3535 Inland Empire Boulevard
Ontario, CA 91764

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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ACRONYMS AND ABBREVIATIONS

ADT	average daily trips
ALUCP	Airport Land Use Compatibility Plan
ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Perris
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
EIR	Environmental Impact Report
hp	horsepower
HVAC	heating, ventilation, and air conditioning
Hz	Hertz
kHz	kilohertz
L_{DN}	Day-Night sound level
L_{EQ}	time-averaged noise level
L_{MAX}	maximum noise level
MARB/IPA	March Air Reserve Base/Inland Port Airport
mph	miles per hour
mPa	micro Pascal
NSLU	noise sensitive land use
PPV	peak particle velocity
PVCCSP	Perris Valley Commercial Center Specific Plan
RCNM	Roadway Construction Noise Model
SF	square feet
SPL	sound pressure level
STC	Sound Transmission Class
S_{WL}	Sound Power Level
TNM	Traffic Noise Model
USDOT	U.S. Department of Transportation

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EXECUTIVE SUMMARY

This report assesses potential construction and operational noise impacts associated with the Ramona-Indian Warehouse Project (project) located in the Perris Valley Commerce Center Specific Plan area in the City of Perris, (City) California. The project proposes the development 232,575 square foot (SF) building that would include a warehouse and office space. The project would also provide parking areas and driveways, a pad for future commercial development, storm drains and a water quality management retention basin. The project would be located on an existing, vacant 15-acre site.

Anticipated construction activities would generate temporary elevated noise levels for the nearby nonconforming residential use to the north. The use of construction equipment and construction haul trucks is not anticipated to exceed City noise ordinance limits, and no project-specific mitigation is required. The project would be required to implement the Perris Valley Commercial Center Specific Plan Environmental Impact Report (PVVCSP EIR) mitigation measure MM Noise 1 through 4 to reduce construction-generated noise.

Operational noise would be generated by delivery trucks and ventilation equipment on the project's rooftop but would not exceed noise thresholds. Additionally, noise generated by project traffic would not increase noise levels on nearby roadways by significant amounts. Impacts would therefore be less than significant for the project's warehouse components.

The extent of noise generated by future hotel operations is not known at this time. Mitigation Measure NOI-1 would be required to analyze operational noise when project plans become available and would require the implementation of noise attenuation features.

The exterior southern façades of the proposed building would be used for office space and would be exposed to noise less than 65 dBA Community Noise Equivalent Level (CNEL) and would be compatible with the General Plan. The proposed hotel would be located outside the 60 dBA CNEL contour and would also be compatible with the General Plan requirements.

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1.0 INTRODUCTION

This report assesses the potential noise impacts that would be associated with construction noise, operational noise, and project-generated traffic noise for the Ramona-Indian Project (project). The analysis includes a description of existing conditions in the project vicinity, an assessment of potential impacts associated with project construction, and an evaluation of project operational impacts. Analysis within this report addresses the relevant issues listed in Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

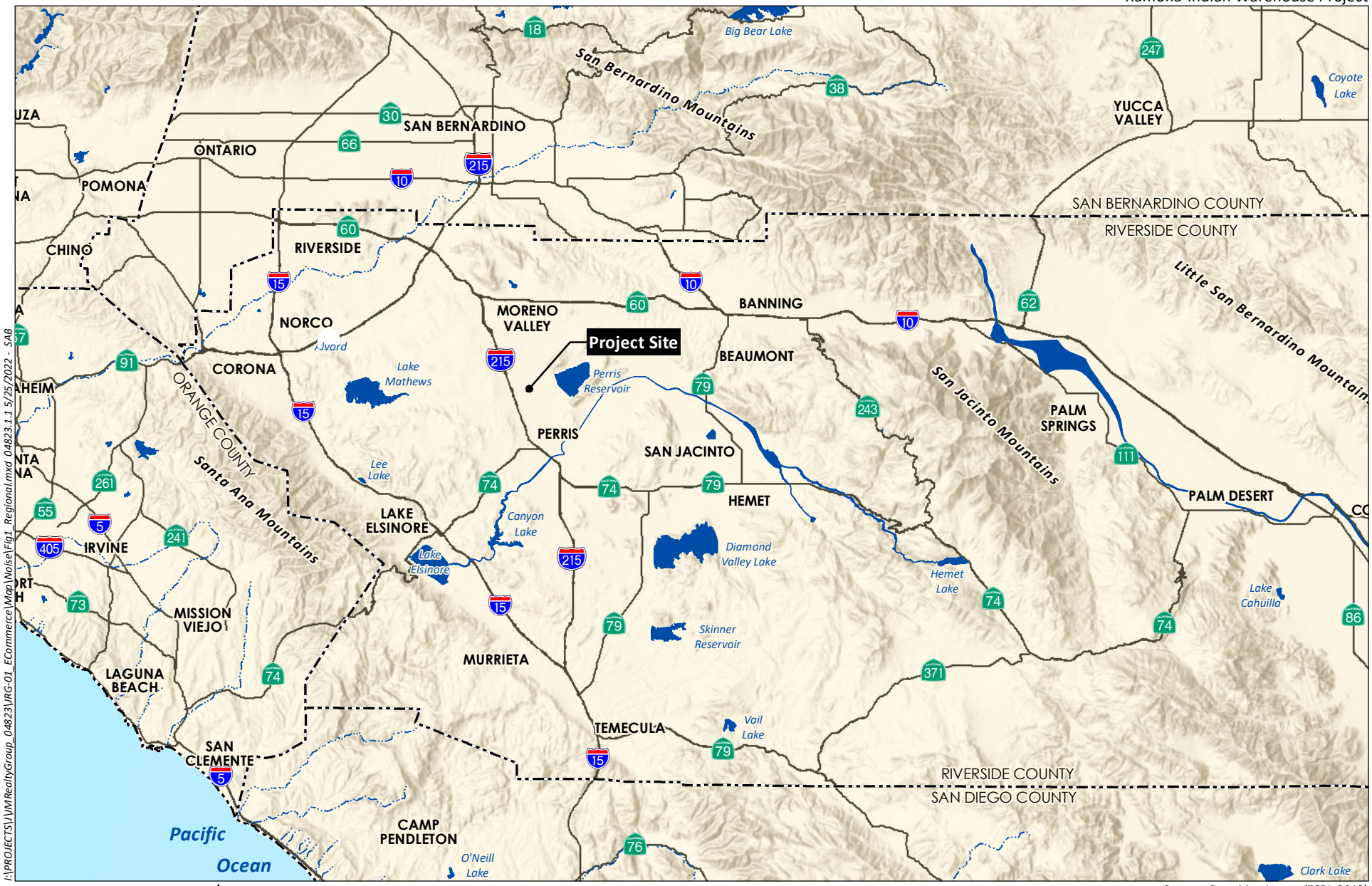
1.1 PROJECT LOCATION

The project is located in the City of Perris (City) in western Riverside County (Figure 1, *Regional Location*). The approximately 15-acre project site is located within Assessor's Parcel Number 302-060-041, northwest of the intersection of Perris Boulevard and the Ramona Expressway (Figure 2, *Aerial Photo)*.

1.2 PROJECT DESCRIPTION

Phase 1 of the project would develop a 232,575 square feet (SF) non-refrigerated, multi-tenant distribution building (warehouse) that includes 10,000 SF of internal office space, parking areas, and driveways, a pad for future commercial development, storm drains and a water quality management retention basin, all on approximately 15 acres at the northeast corner of Indian Avenue and Ramona Expressway. The warehouse would include 39 loading docks. The parking area would include 215 auto/light truck stalls, and 52 truck/trailer stalls. The storm drain system would include construction of the storm drain Line E within the project site. The Project would include roadway improvements for Ramona Expressway, Indian Avenue, and Perris Boulevard. Additional improvements would include landscaping, screen walls and fencing, and lighting. Screen walls include a 12-foot concrete wall along each side of the entrances to the delivery area. Refer to Figure 3, *Site Plan*, for Project components.

Phase 2 would develop a commercial pad on the 1.61 acres in the northeastern portion of the project site. Development of the commercial pad is not proposed as part of the project application; however, development of a 125-room hotel has been assumed as part of this environmental analysis. Until development of the commercial pad occurs, temporary staging activities may occur in this area to support construction of the light industrial uses described above.



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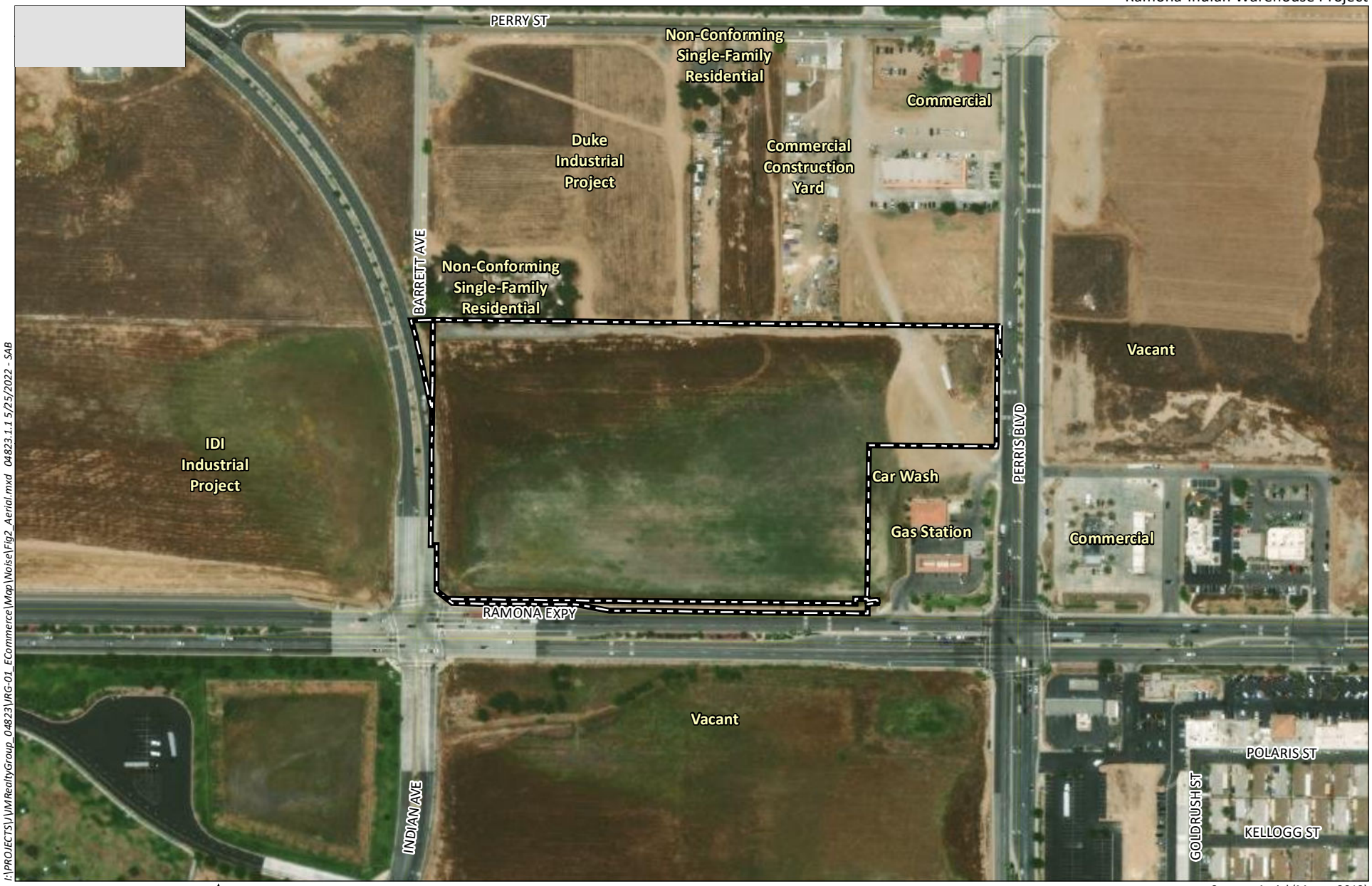
Regional Location

Figure 1



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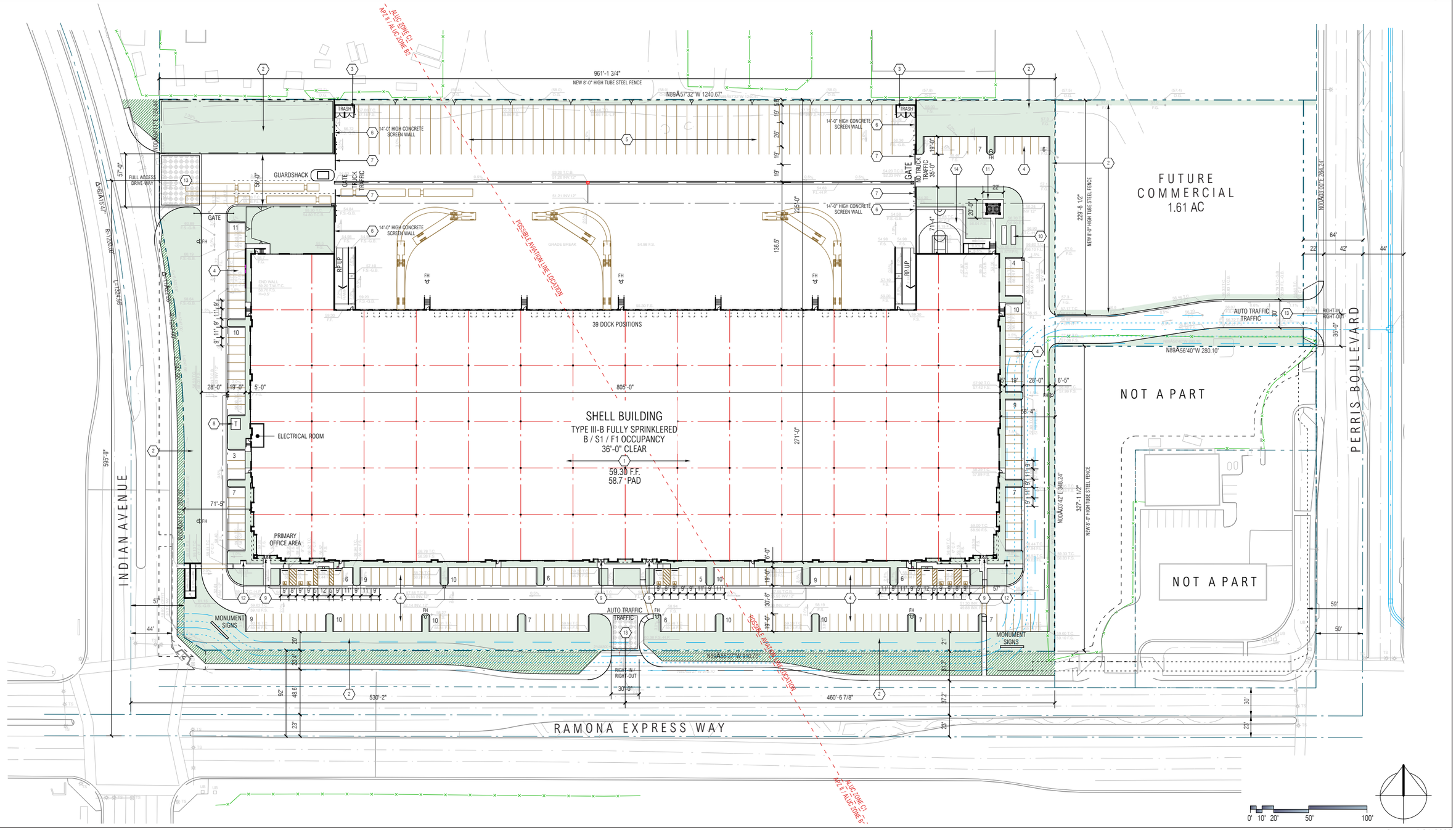
Source: Aerial (Maxar, 2019)

Aerial Photo

Figure 2



Source: RGA 2022

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Site Plan

Figure 3

2.0 ENVIRONMENTAL SETTING

2.1 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

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

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver contribute to the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

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

The amplitude of pressure waves generated by a sound source determines the loudness of that source. A logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA units. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 micro Pascals (mPa).

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.

2.2 GROUNDBORNE VIBRATION DESCRIPTORS AND TERMINOLOGY

Groundborne vibration consists of rapidly fluctuating motions or waves transmitted through the ground with an average motion of zero. Sources of groundborne vibrations include natural phenomena and anthropogenic causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the RMS velocity. The PPV is defined as the maximum instantaneous positive or negative peak

of the vibration wave. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints. Generally, a PPV of less than 0.08 in/sec does not produce perceptible vibration. At 0.12 PPV in/sec is the level at which there is a risk of architectural damage (e.g., cracking of plaster) to historical buildings and other vibration-sensitive structures and the level at which continuous vibration may become noticeable to building occupants. A level of 0.20 PPV in/sec is commonly used as a threshold for risk of architectural damage to non-engineered timber and masonry buildings (California Department of Transportation [Caltrans] 2013a).

2.3 NOISE AND VIBRATION SENSITIVE LAND USES

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, such as residential dwellings, schools, transient lodging (hotels), hospitals, educational facilities, and libraries. Industrial and commercial land uses are generally not considered sensitive to noise. Noise receptors are individual locations that may be affected by noise. The nearest NSLU is an existing non-conforming residence located adjacent to the project site to the north. Additional nearby NSLUs include residences along Perry Street, approximately 500 feet to the north, and a mobile home park located approximately 800 feet to the southeast.

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, hospitals, and university research operations (Caltrans 2013a) are considered "vibration-sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. In addition, excessive levels of ground-borne vibration of either a regular or an intermittent nature can result in annoyance to residential uses, schools or transient lodging. Land uses in the project area that are subject to annoyance from vibration include the residences to the north, described above.

2.4 REGULATORY FRAMEWORK

2.4.1 California Noise Control Act

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

2.4.2 City of Perris Municipal Code

Section 7.34.040 of the Perris Municipal Code limits exterior noise levels at nearby properties to a maximum noise level (L_{MAX}) of 80 dBA L_{MAX} from 7:01 a.m. to 10:00 p.m. and 60 dBA L_{MAX} from 10:01 p.m. to 7:00 a.m.

Section 7.34.060 of the City's Municipal Code Chapter states that is in unlawful for any person between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish,

excavate, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. Construction activity shall not exceed 80 dBA L_{MAX} in residential zones.

2.4.3 City of Perris General Plan Noise Element

The City General Plan Noise Element (City 2016) establishes noise compatibility guidelines for land uses and provides policies for new commercial and industrial facilities. Policy V.A states that new large-scale commercial or industrial facilities located within 160 feet of sensitive land uses shall mitigate noise impacts to attain an acceptable level. This policy is enforced through Implementation Measure V.A.1 states that an acoustical impact analysis is required to ensure that noise levels generated by the commercial or industrial facilities do not exceed 60 CNEL for those residential land uses within 160 feet of the project.

Exhibit N-1 of the City General Plan Noise Element (included in this report as Appendix A) shows that the land uses associated with commercial developments are normally acceptable when exposed to noise levels of 65 dBA CNEL and below. This land use is conditionally acceptable when exposed to noise levels of 75 dBA CNEL and below. Hotel uses are normally acceptable below 60 dBA CNEL and are conditionally acceptable when exposed to noise levels between 60 and 70 dBA CNEL.

2.4.4 Perris Valley Commercial Center Specific Plan

The Perris Valley Commercial Center Specific Plan (PVCCSP) Area covers the project site. An Environmental Impact Report (EIR) analyzed the environmental impacts resulting from implementation of development within the PVCCSP Area. Impacts relating to noise were addressed in the EIR and mitigation measures were implemented to ensure future development would not generate noise impacts. PVCCSP EIR mitigation measures MM Noise 1 through MM Noise 5 are listed below.

MM Noise 1 During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers consistent with manufacturer's standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

MM Noise 2 During construction, stationary construction equipment, stockpiling and vehicle staging areas will be placed a minimum of 446 feet away from the closet sensitive receptor.

MM Noise 3 No combustion-powered equipment, such as pumps or generators, shall be allowed to operate within 446 feet of any occupied residence unless the equipment is surrounded by a noise protection barrier.

MM Noise 4 Construction contractors of implementing development projects shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings.

MM Noise 5 New sensitive land uses, including residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries, to be located within the PVCC shall be protected from excessive noise, including existing and projected noise. Attenuation shall be provided to ensure that noise levels do not exceed an exterior

standard of 60 dBA (65 dBA is conditionally acceptable) in outdoor living areas and an interior standard of 45 dBA in all habitable rooms. Specifically, special consideration shall be given to land uses abutting Ramona Expressway from Redlands Avenue to Evans Road and from Evans Road to Bradley Road; Rider Street from Evans Road to Bradley Road; Placentia Avenue from Perris Boulevard to Redlands Avenue, from Redlands Avenue to Wilson Avenue, from Wilson Avenue to Murrieta Road, and from Murrieta Road to Evans Road; Perris Boulevard from Orange Avenue to Placentia Avenue and from San Michele Road to Krameria Avenue; and Redlands Avenue from Nuevo Road to Citrus Avenue, from Citrus Avenue to Orange Avenue and from Orange Avenue to Placentia Avenue.

2.5 EXISTING CONDITIONS

The project site is currently vacant with no existing buildings. The project site's land use designation and zoning is Specific Plan, under the Perris Valley Commerce Center Specific Plan. The Specific Plan land use designation for the Project site is designated Commercial.

2.5.1 Surrounding Land Uses

Surrounding uses include vacant undeveloped land to the south and west, nonconforming residential uses and vacant land uses to the north, and a gas station and convenience store to the east. Nearby land uses include warehouse distribution buildings, and commercial shopping center.

2.5.2 Existing Noise Conditions

2.5.2.1 Existing Noise Sources

Existing on-site noise is dominated by traffic noise due to the project's proximity to SR-52 and SR-163. The nearest airport, March Air Reserve Base/Inland Port Airport (MARB/IPA), is located approximately 1.5 miles to the north. The western portion of the project site is located within Zone B1, which is within the 60 CNEL contours as described by the March ARB Airport Land Use Compatibility Plan (ALUCP; Riverside County Airport Land Use Commission 2014).

2.5.2.2 General Site Survey

Four noise measurements (M1 through M4) were conducted during a site visit on October 15, 2020. Three of the noise measurements (M1, M3, and M4) included a traffic count to estimate the breakdown of heavy trucks (three or more axles), medium trucks (double tires/two axles), and automobiles on nearby roadways. Measurement M1 occurred in the northwest corner of the site and included a traffic count of Indian Avenue. Measurement M2 consisted of an ambient noise measurement located in the northwest portion of the site immediately south of the existing single-family home. Measurement M3 occurred at the southern boundary of the project site and included a traffic count of Ramona Expressway. Measurement M4 is located in the northeastern portion of the project site and included a traffic count of North Perris Boulevard. All measurements were taken at a height of 5 feet above the ground. The measured noise levels are shown in Table 1, *Noise Measurement Results.* Traffic counts for the timed measurement and the one-hour equivalent volume are shown in Table 2, *Recorded Traffic Volume and Vehicle Mix.* The site visit sheets are included in Appendix B, *Site Survey Measurement Sheets.* Measurement locations are shown on Figure 4, *Modeled Noise Receivers*.

Table 1
NOISE MEASUREMENT RESULTS

Measurement	Location	Conditions	Time	dBA L_{EQ}	Notes
M1 – Traffic	Northwest corner of the site, with a traffic count on Indian Avenue.	99°F, 4 mph wind, 11 percent humidity, sunny	1:07 p.m. to 1:22 p.m.	68.1	Ambient nature sounds and traffic noise from Indian Avenue and Ramona Expressway.
M2 – Ambient	Northwest portion of project site, south of adjacent off-site residence.	99°F, 5 mph wind, 9 percent humidity, sunny	1:30 p.m. to 1:40 p.m.	53.8	Ambient nature sounds and traffic noise from Indian Avenue and Ramona Expressway.
M3 – Traffic	Southern boundary of the project site, with a traffic count on Ramona Expressway.	99°F, 7 mph wind, 9 percent humidity, sunny	1:51 p.m. to 2:07 p.m.	69.9	Ambient nature sounds and traffic noise from Ramona Expressway. Measurement paused for less than a minute for jet flyover at 2:02 p.m., resumed at 2:02 p.m.
M4 – Traffic	Northeastern corner of the project site, with a traffic count on North Perris Boulevard.	99°F, 9 mph wind, 10 percent humidity, sunny	2:28 p.m. to 2:43 p.m.	68.6	Ambient nature sounds and traffic noise from North Perris Boulevard and Ramona Expressway. Measurement paused for less than a minute for ambulance with sirens on North Perris Boulevard at 2:42 p.m., resumed 2:42 p.m.

dBA = A-weighted decibel; LEQ = time-averaged noise level

Table 2
RECORDED TRAFFIC VOLUME AND VEHICLE MIX

Measurement	Roadway	Traffic	Autos	MT[1]	HT[2]
M1	Indian Avenue	15-minute count	96	3	8
		One-hour equivalent	384	12	32
		Percent	89.7%	2.8%	7.5%
M3	Ramona Expressway	15-minute count	610	14	16
		One-hour equivalent	2,560	56	64
		Percent	95.5%	2.1%	2.4%
M4	North Perris Boulevard	15-minute count	517	9	12
		One-hour equivalent	2,068	36	48
		Percent	96.1%	1.7%	2.2%

[1] Medium Trucks (double tires/two axles)

[2] Heavy Trucks (three or more axles)

Source: Aerial (Maxar, 2019)

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Modeled Noise Receivers

Figure 4

3.0 METHODOLOGY, ASSUMPTIONS, AND THRESHOLDS

3.1 EQUIPMENT AND METHODOLOGY

3.1.1 Ambient Noise Survey

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

- Larson Davis 831 Sound Level Meter
- Larson Davis Model CAL250 Calibrator
- Windscreen and tripod for the sound level meter
- Digital camera

The sound-level meters were field-calibrated immediately prior to the noise measurement to ensure accuracy. All measurements were made with meters that conform to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.4-1983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

3.1.2 Noise Modeling Software

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

Modeling of the exterior noise environment for this report was accomplished using two computer noise models: Computer Aided Noise Abatement (CadnaA) version 4.5 and Traffic Noise Model (TNM) version 2020. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed CadnaA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. CadnaA traffic noise prediction is based on the data and methodology used in the TNM. TNM was released in February 2004 by the U.S. Department of Transportation (USDOT) and calculates the daytime average hourly L_{EQ} from three-dimensional model inputs and traffic data (California Department of Transportation [Caltrans] 2004). Computer Aided Design plans provided by the project applicant were inputted into the models. Input variables included road alignment, elevation, lane configuration, area topography, existing and planned noise control features, projected traffic volumes, estimated truck composition percentages, and vehicle speeds.

The one-hour L_{EQ} noise level is calculated utilizing peak-hour traffic. Peak hour L_{EQ} can be converted to CNEL using the following equation, where $L_{EQ}(h)pk$ is the peak hour L_{EQ}, P is the peak hour volume percentage of the average daily trips (ADT), d and e are divisions of the daytime fraction of ADT to account for daytime and evening hours, and N is the nighttime fraction of ADT:

$$CNEL = L_{EQ}(h)pk + 10\log10\ 4.17/P + 10\log10(d + 4.77e + 10N)$$

The model-calculated one-hour L_{EQ} noise output is therefore approximately equal to the CNEL (Caltrans 2013a).

3.2 ASSUMPTIONS

3.2.1 Construction

Construction activities would include site preparation, grading, installation of underground utilities, building construction, paving, and architectural coating (e.g., painting). The project would not require demolition, as the site is currently vacant and undeveloped. Grading would result in approximately 28,823 cubic yards (CY) of cut and 12,981 CY of fill, resulting in 15,841 CY of total soil import required. Approximately 1,976 haul trips would be required for soil import, or 94 trips for each of the 21 days during the grading phase. (HELIX 2022). Assuming an 8-hour construction day, 11 truck trips, or 22 truck passes would occur each hour.

3.2.2 Operation

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

3.2.2.1 Delivery Trucks

Operation of the project would involve diesel-powered heavy trucks for the delivery of goods to the project site and it would be operational for 24 hours a day. According to Table 4-2 of the project's traffic study, 142 truck trips would occur each day, with 7 truck trips during the peak hour entering and exiting the site (Urban Crossroads 2022). Because the exact schedule and docking locations for a given day cannot be determined, it is conservatively assumed that three trucks each hour would be attempting to use the loading docks within the project's northwestern corner closest to the off-site nonconforming residence. Noise sources associated with the delivery trucks would include the truck's diesel engine and backup alarm.

The loading docks would be located on the northern side of the proposed building. The delivery trucks would travel southbound along Indian Avenue, enter the site via the western gate, and reverse towards an individual loading dock. The project would provide a parking area for trucks along the project's northern boundary. Noise from a heavy truck entering the parking lot was determined using the default heavy truck noise in the CadnaA software.

Typical backup alarms generate a noise level of 109.7 dBA at four feet at a single frequency of one kHz. The backup alarm is assumed to be mounted on the back of the truck at a height of 3 feet.

3.2.2.2 Heating, Ventilation, and Air Conditioning (HVAC) Units

The project would use commercial-sized HVAC units located on the rooftop of the building. Specific planning data for the future HVAC systems is not available at this stage of project design. For the purposes of this analysis, the specifications for Carrier 50PG 12-ton HVAC units, which have a sound power level (S_{WL}) of 80.0 dBA, are used to analyze the noise impacts from the proposed project's units. The manufacturer's noise data for the HVAC units is provided below in Table 3, *Condenser Noise Data*; more detailed data can be found in Appendix C, *Carrier 50PG Condenser Data*.

Table 3
CONDENSER NOISE DATA

63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Overall Noise Level in A-weighted Scale (dBA)[1]
90.4	83.1	80.9	77.8	75.2	70.0	66.1	57.6	80.0

[1] Sound Power Levels (S_{WL})
Noise levels in decibels (dB) measured at octave frequencies
Hz = Hertz; kHz = kilohertz

3.2.2.3 Vehicular Traffic

Existing traffic data for the roadways in the project vicinity are based on volumes provided by the project's traffic study (Urban Crossroads 2022). Trip generation rates and trip distribution are also provided in the study. Speed limits for nearby roadways were used in the modeling to calculate existing and future noise levels. The closest NSLU to roadways affected by project traffic is the existing nonconforming residence north of the project approximately 100 feet from the centerline of Indian Avenue. All the project's truck traffic would pass this location prior to entering the site for loading and unloading. According to Exhibit 4-1 of the project's traffic study, 15 percent of warehouse passenger cars entering the project and 10 percent of cars exiting the project would pass by this nonconforming residence on a given day, and 40 percent of hotel traffic entering the project and 60 percent of hotel traffic leaving the project would use the same route. Table 4, *Existing + Project Traffic Volumes*, shows the ADT for this roadway segment.

Table 4
EXISTING + PROJECT TRAFFIC VOLUMES

Roadway Segment	Existing ADT	Project[1] ADT	Existing + Project ADT
Indian Avenue			
North of Project Driveway	4,850	675	5,525

Source: Urban Crossroads 2022
[1] Project traffic is based on 1,260 daily passenger vehicle trips and 142 daily heavy truck trips. Using the distribution percentages, the project would add 533 passenger vehicles and 142 heavy trucks to this roadway segment.
ADT = Average Daily Trips

3.3 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

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

Threshold 1: *Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the City General Plan or noise ordinance.*

Per the City General Plan Noise Element, mitigation would be required if a commercial or industrial project is located within 160 feet of a sensitive land use and the noise levels generated by the project would exceed 60 CNEL at the sensitive land use.

For traffic-related noise, impacts are considered significant in areas where existing traffic noise at NSLUs exceeds 60 CNEL and implementation of the project would result in an increase of the noise level by 3 CNEL or more, or where existing traffic noise is less than 60 CNEL and implementation of the project results in an increase of 5 CNEL or more.

Construction activity would be considered significant for nearby residences if it occurs outside the hours of 7:00 a.m. and 7:00 p.m. or on Sundays or applicable legal holidays as stated in the City Municipal Code. Additionally, construction noise would be significant if it exceeds 80 dBA L_{MAX} outside the project.

Threshold 2: *Generate excessive ground-borne vibration or ground-borne noise levels.*

Excessive ground-borne vibration would occur if construction-related ground-borne vibration exceeds the "strongly perceptible" vibration annoyance potential criteria for human receptors of 0.1 inch per second peak particle velocity (PPV) or the damage potential criteria to relatively old residential structures 0.5 inch per second PPV for continuous/frequent intermittent construction sources (such as impact pile drivers, vibratory pile drivers, and vibratory compaction equipment), as specific by Caltrans (2020).

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

Excessive noise exposure is defined as noise levels that exceed the standards in the City General Plan Noise Element for the associated land use.

4.0 IMPACTS

4.1 ISSUE 1: EXCESSIVE NOISE LEVELS

Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the City General Plan or noise ordinance.

4.1.1 Temporary Construction Noise

Construction of the project would require site clearing, grading, installation of underground utilities/infrastructure, construction of new buildings, paving, and architectural coating. The magnitude of the noise impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction would generate elevated noise levels that may disrupt the nearby nonconforming residences to the north and the mobile homes southeast of the project site. Construction equipment would be continuously moving across the site, and equipment is not anticipated to be located at a single location during a typical workday. Therefore, construction equipment is modeled at an average distance of 100 feet from the nearest NSLUs to the north of the project. Table 5, *Construction Equipment Noise Levels*, provides the 100-foot distance noise levels for equipment anticipated to be used for general construction activities.

Table 5
CONSTRUCTION EQUIPMENT NOISE LEVELS

Unit	Percent Operating Time	L_{MAX} at 100 feet	dBA L_{EQ} at 100 feet
Backhoe	40	71.5	67.6
Compactor	20	77.2	70.2
Compressor	40	71.6	67.7
Concrete Mixer Truck	40	72.8	68.8
Concrete Pump Truck	20	75.4	68.4
Crane	16	74.6	66.6
Dozer	40	75.6	71.7
Dump Truck	50	70.4	66.5
Excavator	40	74.7	70.7
Front End Loader	40	73.1	69.1
Paver	50	71.2	68.2
Roller	20	74.0	67.0
Excavator/Loader/Dump Truck	40	74.7	73.9

Source: RCNM; USDOT 2008
L_{MAX} = maximum noise level; dBA = A-weighted decibel; L_{EQ} = equivalent sound level

Construction equipment would not all operate at the same time or location and would not be in constant use during the 8-hour operating day. Further, not all the pieces of equipment included in Table 5 would be used within 100 feet of the off-site residences. A dozer and an excavator may be working on the site simultaneously but would not be working near one another at a given time due to the nature of their respective operations. An excavator, loader, and dump truck were analyzed together for construction noise impacts due to their likelihood of being used in conjunction with one another.

Based on these assumptions, grading operations using an excavator, loader, and dump truck at the nearest NSLU would be 74.7 dBA L_{MAX} at 100 feet (see Appendix D, Construction Noise Modeling Outputs). At 700 feet (the distance to the off-site residences along Perry Street), equipment noise would be 57.8 dBA L_{MAX}. At 1,000 feet (the distance to the off-site mobile home park), noise from this equipment would be 54.7 dBA L_{EQ}. Noise levels due to construction would not exceed the 80 dBA L_{MAX} limits set by the municipal code at any nearby NSLUs. Impacts would be less than significant.

Although impacts from construction noise are anticipated to be less than significant, the project would be required to comply with PVCCSP EIR mitigation measures MM Noise 1 through MM Noise 3, which limit noise generated by construction equipment.

4.1.2 Construction Traffic Noise

As stated in Section 3.2.1, construction traffic would result in 22 hourly haul truck passes during the grading period. The closest NSLU to the project site is a non-conforming residence north of the project site, approximately 100 feet from Indian Avenue. As shown in Table 5, this segment of Indian Avenue carries 4,850 vehicle trips per day. An additional 22 trips per hour would temporarily increase the hourly noise level along that roadway from 58.7 dBA to 59.9 dBA. This would not exceed the 80 dBA L_{MAX} limits set by the municipal code. Although noise levels would increase temporarily during the 21-day grading phase, impacts would be less than significant.

Although impacts from construction traffic are anticipated to be less than significant, the project would be required to comply with PVCCSP EIR mitigation measure MM Noise 4, which routes haul trips away from NSLUs such as residential dwellings.

4.1.3 Warehouse Operational Noise Generation

The proposed loading dock area and HVAC units would generate elevated noise levels compared to existing conditions. The primary noise sources are described in detail in Section 3.2.2.

The nearest noise-sensitive land uses to these operations is the nonconforming residence to the north. Due to its location within 160 feet of the project, noise levels generated by the project's operations would be significant if they exceed 60 dBA CNEL at the residence.

Operation of all noise-generating components was modeled using CadnaA. Four receivers were modeled to represent locations within the nonconforming residence's property to the north (R1 through R4). These receivers are depicted in Figure 4. Modeling of the proposed site plan included the 12-foot concrete wall proposed along each side of the entrance gate and all operational noise sources. The modeled hourly noise levels were converted to CNEL to compare to the General Plan threshold. As a conservative estimate, the modeled hourly noise levels were assumed to occur during each hour of operation. The resulting noise level results are shown in Table 6, *Operational Noise Levels without Mitigation*.

Table 6
OPERATIONAL NOISE LEVELS WITHOUT MITIGATION

Receiver Number	Modeled Noise Levels (dBA L_{EQ})	Modeled Noise Levels in CNEL	Exceed 60 dBA CNEL?
R1	43.6	50.3	No
R2	43.7	50.4	No
R3	45.2	51.9	No
R4	44.7	51.4	No

Note: Modeling includes proposed 12-foot CMU wall along each side of the entrance gates and a 3-foot architectural parapet.

Noise levels from the warehouse's operational sources would not exceed the limits for residences in the vicinity of the project at any of the receivers. Impacts would be less than significant.

4.1.4 Hotel Operational Noise

At this stage in Project design, the exact location and layout of the proposed hotel is not known. A hotel's noise sources are anticipated to include HVAC units for heating and cooling of the hotel's rooms and common spaces. Because the exact location, size, and noise output of the future HVAC system is not known, impacts from noise generated by the hotel component of the Project are conservatively assessed as significant. Mitigation measure NOI-1 would be required to ensure that noise levels from the hotel are reduced to a less than significant level.

NOI-1 **Hotel Acoustic Analysis**. Noise levels from operational noise generated by the project's hotel component shall not exceed 60 dBA CNEL when measured at nearby sensitive land uses

(including residences). When plans for the hotel component become available, an acoustic analysis shall be performed for the hotel's operational noise sources. This includes, but is not limited to, HVAC units and emergency generators. If the analysis determines that noise levels would exceed noise limits, noise reduction measures will be implemented as part of the hotel design. These noise reduction measures may include architectural parapets, or on-site sound barriers (wall).

If a barrier is used to shield noise for nearby NSLUs, it shall be located between the noise source and noise-sensitive receptor. The barrier must be solid. It can be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot. The barrier must be an adequate height to break the line-of-sight between the noise source and receptor.

4.1.5 Operational Off-site Transportation Noise Generation

The project would generate vehicular traffic along nearby roadways. Project traffic utilizing Indian Avenue would have the potential to result in increased noise levels at the existing nonconforming residence immediately north of the project. TNM software was used to calculate the noise contour distances for Existing and Existing + Project conditions along Indian Avenue. As noted in the assumptions, Existing and Existing + Project traffic noise levels presented in this analysis are based on traffic volumes provided in the project's traffic study (Urban Crossroads 2022). Refer to Table 6 for the forecasted ADT data for existing and project-added traffic volumes.

The off-site roadway modeling represents a conservative analysis that does not consider topography or attenuation provided by existing structures. The results of this analysis are shown below in Table 7, *Off-site Traffic Noise Levels.*

Table 7
OFF-SITE TRAFFIC NOISE LEVELS

Roadway Segment	Distance to Nearest NSLU	CNEL at Distance to Nearest NSLU (Existing)	CNEL at Distance to Nearest NSLU (Existing + Project)	CNEL at Distance to Nearest NSLU Change from Existing	Direct Impact[1]
Indian Avenue					
North of Project	100 feet	58.7	59.7	+1.0	No

[1] A direct impact to off-site NSLUs would occur when existing noise levels are less than 60 CNEL and the project increases noise levels by 5 CNEL or more.

NSLU = noise sensitive land use; CNEL = Community Noise Equivalent Level

Impacts would be significant when existing noise levels are less than 60 CNEL and the project increases noise levels by 5 CNEL or more. As shown in Table 7, noise levels would increase by 1 CNEL for the nearby residence along Indian Avenue. This increase would not be a perceptible increase and noise impacts from project-generated traffic would be less than significant. Project traffic for other roadways in the project vicinity would be less than those analyzed for this segment of Indian Avenue and would be

on roadways with higher existing volumes. Therefore, noise increases from project traffic on all nearby roadways would be less than significant.

4.2 ISSUE 2: EXCESSIVE VIBRATION

4.2.1 Construction Vibration

Construction activities known to generate excessive ground-borne vibration, such as pile driving, would not be conducted by the project. A possible source of vibration during general project construction activities would be a vibratory roller used for gravel or pavement compaction. A vibratory roller could be used up to 100 feet from the closest off-site structure (gas station to the east). A vibratory roller would create approximately 0.210 inch per second PPV at 25 feet (Caltrans 2013b). A 0.210 inch per second PPV vibration level would equal 0.046 inch per second PPV at a distance of 100 feet.[1] This would be lower than what is considered a "strongly perceptible" level for humans of 0.1 inches per second PPV, and lower than the structural damage threshold of 0.5 inches per second PPV for continuous/frequent intermittent construction sources. Therefore, although a vibratory roller may be perceptible to nearby human receptors, temporary impacts associated with the roller (and other potential equipment) would be less than significant.

4.2.2 Operational Vibration

Land uses that may generate substantial operational vibration include heavy industrial or mining operations that would require the use of vibratory equipment. The proposed warehouse land use does not include equipment that would generate substantial vibration. Therefore, operational vibration impacts are less than significant.

4.3 ISSUE 3: AIRPORT NOISE EXPOSURE

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

The nearest airports to the proposed Project site are the Perris Valley Airport and the March ARB. According to the ALUCP for Perris Valley Airport, the Project site is not located within the Airport Influence Area Boundary (Riverside County 2010). However, the proposed Project is located within the limits of the March ARB ALUCP. The eastern portions of the Project site fall within the March ARB's CNEL noise contours above 60 dBA CNEL but below 65 dBA CNEL.

The City General Plan states that office uses are normally compatible up to 65 dBA CNEL and conditionally compatible up to 70 dBA CNEL. The Project would provide office areas along the south-facing side of the building. The project's office components would be located outside the 65 dBA CNEL contour and would therefore be compatible with the General Plan. Hotel uses would be normally compatible up to 60 dBA CNEL and conditionally compatible up to 70 dBA CNEL. The hotel portion of the

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

project would be located outside the 60 dBA CNEL contour and would therefore be compatible with the General Plan as it relates to airport noise exposure.

PVCCSP EIR MM Noise 5 would require new noise-sensitive land uses, such as the hotel, to ensure that exterior noise levels do not exceed 60 dBA and interior noise levels do not exceed 45 dBA. This measure would apply to the hotel use and would account for noise generated by nearby roadways, such as Ramona Expressway and Perris Boulevard.

5.0 LIST OF PREPARERS

Kristen Garcia	Acoustic Analyst
Jason Runyan	Acoustic Analyst
Joanne M. Dramko, AICP	Principal Noise Specialist, QA/QC
Yara Fisher	Project Manager

6.0 REFERENCES

California Department of Transportation (Caltrans). 2013a. Transportation and Construction Vibration Guidance Manual, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. September. Available at: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

2013b. Technical Noise Supplement (TeNS) to the Traffic Noise Protocol. September. Available at: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf.

Perris, City of (City). 2016. City of Perris General Plan. August 30.

2014. Perris Municipal Code for the City of Perris, California. July 8.

Riverside County Airport Land Use Commission. 2010. Riverside County Airport Land Use Compatibility Plan. December

2014. March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan. November 13.

Urban Crossroads. 2022. Ramona-Indian Warehouse Project Traffic Analysis. May 23.

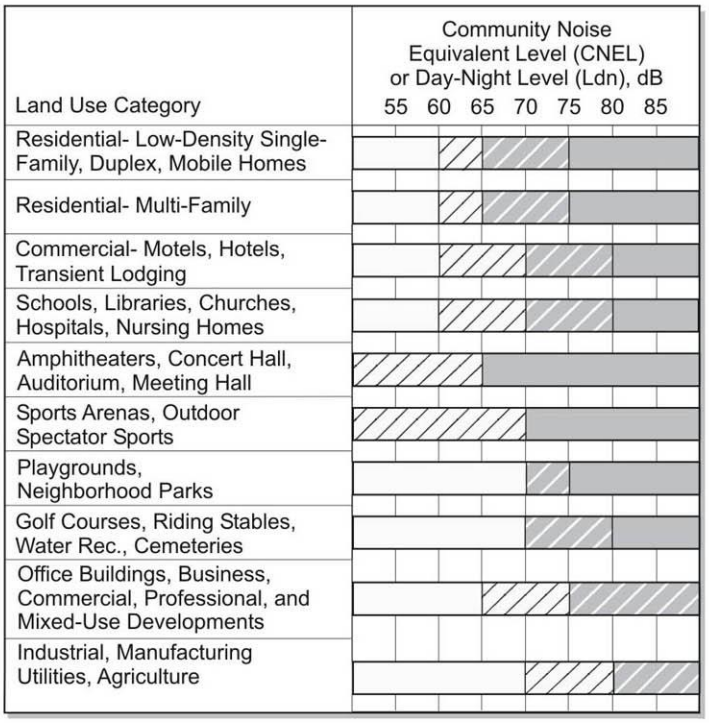
U.S. Department of Transportation (USDOT). 2008. Roadway Construction Noise Model Version 1.1. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/.

Appendix A

Exhibit N-1 of the City General Plan Noise Element

The following section contains content that was obtained from a third party and may not achieve the same level of Americans with Disabilities Act (ADA) and Section 508 accessibility as other parts of this document.

Exhibit N-1: Land Use/Noise Compatibility Guidelines



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable
Specific land use is satisfactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Clearly Unacceptable
New construction or development should generally not be undertaken.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

Source: State of California, Department of Health, City of Monterey Park.

Appendix B

Site Survey Measurement Sheets

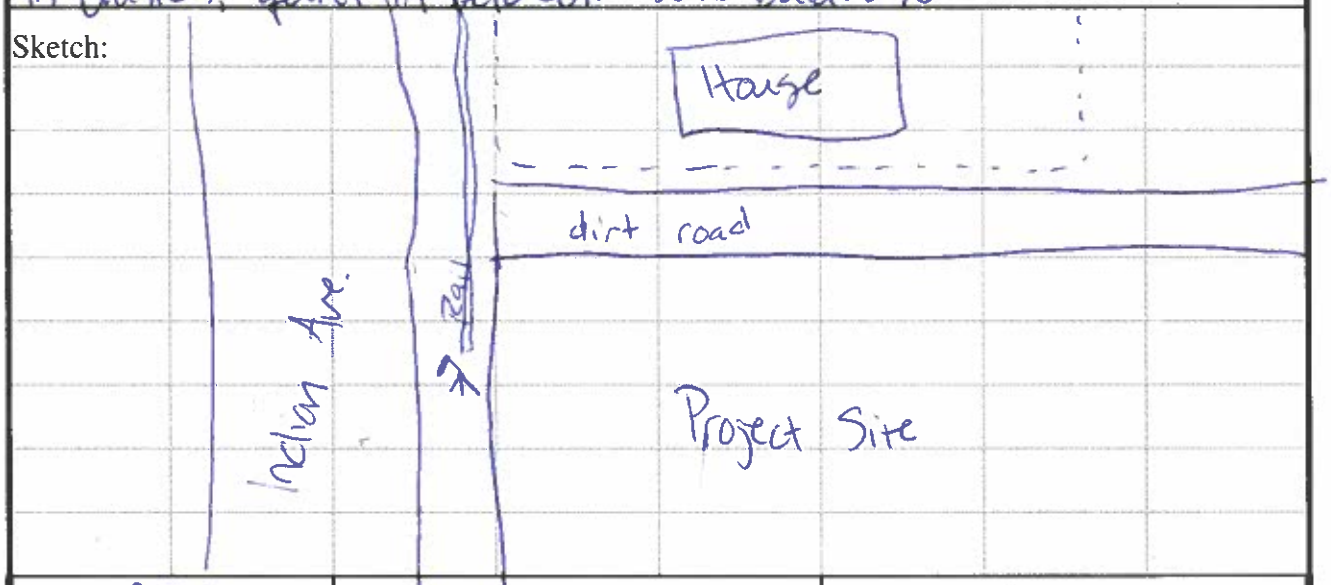
The following section contains content that was obtained from a third party and may not achieve the same level of Americans with Disabilities Act (ADA) and Section 508 accessibility as other parts of this document.

Site Survey

Job # [redacted] SRG 01	Project Name: Ramona Commerce Park		
Date: 10/15/20	Site #: 1 (NW Corner)	Engineer: Kristen Garcia	
Address: Ramona Expressway, Perris, CA 92571			
Meter: LD831	Serial #: 1890	Calibrator: CA250	Serial #: 2621

Notes: Sunny, hot, windy. Ambient nature sounds. Noise primarily from traffic on Indian Ave. & Ramona Expy. Cars come by in clusters, quiet in between. 831_Data.270

Sketch:



Temp: 99 °F	Wind Spd: NW 4	mph	Humidity: 11	%	
Start of Measurement: 1:07 pm	End of Measurement: 1:22 pm		68.1	dBA L_{EQ}	

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)
𝍸 𝍸 𝍸 ||||	|||	𝍸 |||
Total = 96	Total = 3	Total = 8

Noise Measurement for Information Only

No Through Roadways

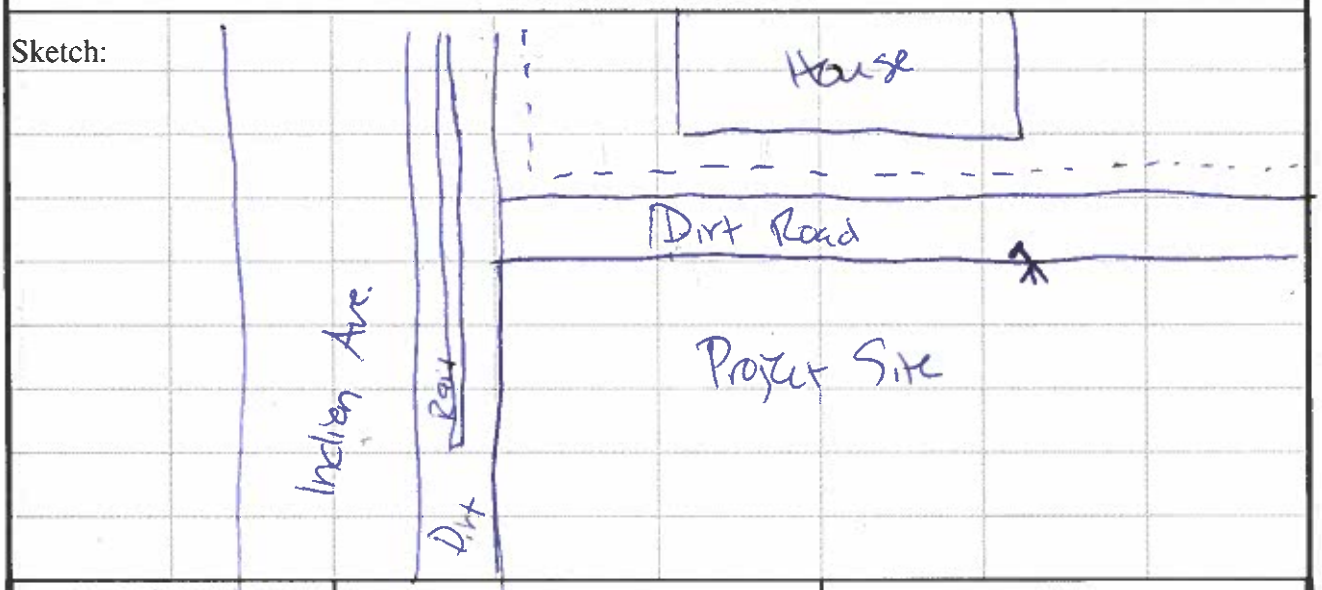
No Calibration Analysis Will Be Provided

Site Survey

Job # JRG-01	Project Name: Ramona Commerce ~~Center~~ Park		
Date: 10/15/20	Site #: 2 (N. by house)	Engineer: Kristen Garcia	
Address: Ramona Expressway, Perris, CA 92571			
Meter: LD 831	Serial #: 1890	Calibrator: CA250	Serial #: 2621

Notes: Sunny, hot. Ambient noise sounds. Noise primarily from traffic on Indian Ave. + Ramona Expwy. 831-Data.271

Sketch:



Temp: 99° F	Wind Spd: NNW 5 mph	Humidity: 9 %
Start of Measurement: 1:30 pm	End of Measurement: 1:40 pm	53.8 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

Job # JRG-01	Project Name: Ramona Commerce Park

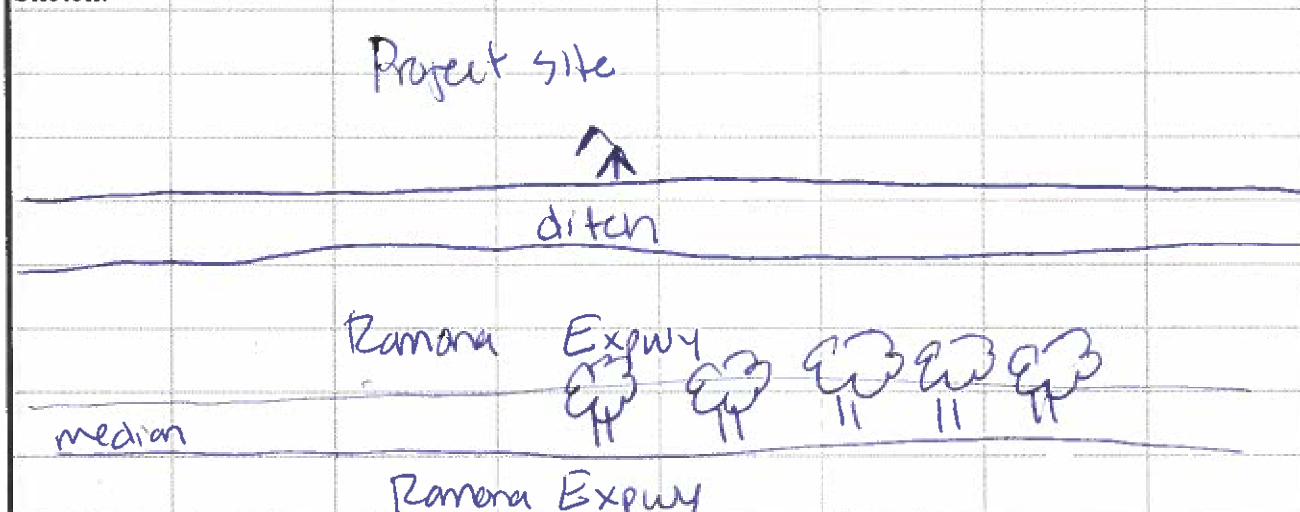
Date: 10/15/20	Site #: 3 (South border)	Engineer: Kristen Garcia

Address: Ramona Expressway, Perris, CA 92571

Meter: LD831	Serial #: 1890	Calibrator: CA250	Serial #: 2621

Notes: Sunny, hot. Slight breeze. Ambient nature sounds. Noise primarily from traffic on Ramona Expwy. Paused for jet at 2:02 pm, resumed 2:02 pm 831- Data. 272

Sketch:



Temp: 99° F	Wind Spd: NW 7 mph	Humidity: 9 %

Start of Measurement: 1:51 pm	End of Measurement: 2:07 pm	69.9 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)
Total = 610	Total = 14	Total = 16

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

Job # JRG-01	Project Name: Ramona Commerce Park

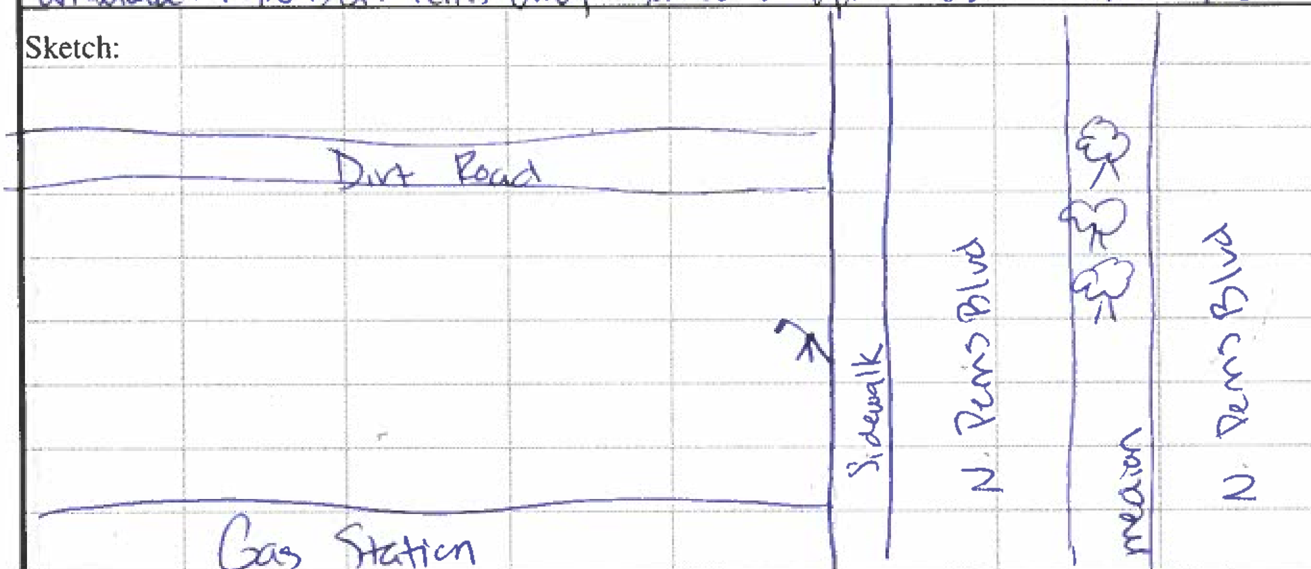
Date: 10/15/20	Site #: 4 (NE)	Engineer: Kristen Garcia

Address: Ramona Expressway, Perris, CA 92571

Meter: LD831	Serial #: 1890	Calibrator: CA250	Serial #: 2621

Notes: Sunny, hot. Ambient nature sounds. Noise primarily from traffic on N. Perris Blvd. + Ramona Expwy. Paused at 2:42pm for ambulance w/ sirens on Perris Blvd, resumed 2:42pm 831-Data.273

Sketch:



Temp: 99°F	Wind Spd: NNW 9 mph	Humidity: 10 %

Start of Measurement: 2:28 pm	End of Measurement: 2:43 pm	68.6 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)
Total = 517	Total = 9	Total = 12

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Appendix C

Carrier 50PG Condenser Data

The following section contains content that was obtained from a third party and may not achieve the same level of Americans with Disabilities Act (ADA) and Section 508 accessibility as other parts of this document.

50PG03–28
Ultra High Efficiency Single Package Electric Cooling with Optional Electric Heat Commercial Rooftop Units with PURON® (R–410A) Refrigerant, Optional EnergyX™ (Energy Recovery Ventilator)

Carrier®
Turn to the Experts.℠

Product Data

CENTURION

EnergyX model shown

DEALER DESIGN AWARDS
theNEWS | GOLD

BUILDINGS magazine
Editors' Choice
TOP 100 PRODUCTS
2005

Puron
the environmentally sound refrigerant

Operation Air Quantity Limits

50PG03-16 Units

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

50PG20-28 Units

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

Outdoor Sound Power (Total Unit)

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

LEGEND

db – Decibel

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

Outdoor Sound Power (Total Unit)
with High CFM EnergyX

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

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

PHYSICAL DATA

50PG03-07

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

LEGEND

TXV – Thermostatic Expansion Valve

*Aluminum evaporator coil/aluminum condenser coil.

† Single phase/three phase

Appendix D

Construction Noise Modeling Outputs

The following section contains content that was obtained from a third party and may not achieve the same level of Americans with Disabilities Act (ADA) and Section 508 accessibility as other parts of this document.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/7/2021
Case Description:

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential	Residential	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	100	0
Compactor (ground)	No	20		83.2	100	0
Compressor (air)	No	40		77.7	100	0
Concrete Mixer Truck	No	40		78.8	100	0
Concrete Pump Truck	No	20		81.4	100	0
Dozer	No	40		81.7	100	0
Dump Truck	No	40		76.5	100	0
Excavator	No	40		80.7	100	0
Front End Loader	No	40		79.1	100	0
Paver	No	50		77.2	100	0
Roller	No	20		80	100	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Backhoe	71.5	67.6	N/A	N/A	N/A	N/A
Compactor (ground)	77.2	70.2	N/A	N/A	N/A	N/A
Compressor (air)	71.6	67.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck	72.8	68.8	N/A	N/A	N/A	N/A
Concrete Pump Truck	75.4	68.4	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A
Dump Truck	70.4	66.5	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A
Roller	74	67	N/A	N/A	N/A	N/A
Total	77.2	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.