Harley Knox Commerce Center

NOISE IMPACT ANALYSIS

CITY OF PERRIS

PREPARED BY:

Bill Lawson, PE, INCE
blawson@urbanxroads.com
(949) 584-3148

APRIL 1, 2022

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
LUCP	Land Use Compatibility Plan
MARB/IPA	March Air Reserve Base/Inland Port Airport
mph	Miles per hour
OPR	Office of Planning and Research
PVCC SP	Perris Valley Commerce Center Specific Plan
PPV	Peak particle velocity
Project	Harley Knox Commerce Center
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Harley Knox Commerce Center development ("Project"). The Project is proposed to consist of a 156,780-square-foot (sf) warehouse building.[1] The proposed Project site is located within the Perris Valley Commerce Center Specific Plan (PVCC SP) planning area. At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown, and therefore, this noise study includes a conservative analysis of the proposed Project uses.

This study has been prepared to satisfy applicable City of Perris standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA based on the significance criteria in Section 4 of this report.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Significance Findings	
	Unmitigated	Mitigated
Off-Site Traffic Noise	*Less Than Significant*	-
Operational Noise (Without Screenwall)[1]	*Less Than Significant*	-
Operational Noise (With Screenwall)	*Less Than Significant*	-
Construction Noise (Without Temp. Barrier)[1]	*Less Than Significant*	-
Construction Noise (With Temp. Barrier)	*Less Than Significant*	-
Construction Vibration	*Less Than Significant*	-

[1] Without Screenwall/Temporary Barrier Project construction noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

[1] The currently proposed Project is less square footage however, for the purpose of this analysis, we have conservatively evaluated the site plan representing 156,780 sf.

This page intentionally left blank

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Harley Knox Commerce Center ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Harley Knox Commerce Center site is located at 220-280 East Nance Street east of Jason Court and north of Nance Street, within the City of Perris' PVCC SP as shown on Exhibit 1-A. The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located approximately 1.5 miles northwest of the Project site boundary. According to the City of Perris General Plan, the Project site is located within the PVCC SP area. As per the PVCC SP, the Project site is designated for Light Industrial uses. The Light Industrial designation provides for light industrial uses and related activities including manufacturing, research, warehouse and distribution, assembly of non-hazardous materials and retail related to manufacturing (2). The Project site is located adjacent to the following uses:

North: Non-conforming residential land use with truck staging yard.
South: Truck staging yard with a single non-conforming residence.
East: Industrial warehouse building.
West: Vacant with a single non-conforming residence.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates a preliminary site plan for the Project. The Project is proposed to consist of a 156,780-square-foot (sf) warehouse building. The currently proposed Project is less square footage however, for the purpose of this analysis, we have conservatively evaluated the site plan representing 156,780 sf. In addition, the Project will provide off-site street and storm drain improvements on Nance Street extending from the Project Site to Redlands Avenue. The Project is anticipated to be constructed in a single phase by the year 2022. At the time this study was prepared the future tenants of the proposed Project were unknown. It is expected that the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site. To present a conservative approach, this report assumes the Project will operate 24-hours daily for seven days per week.

EXHIBIT 1-A: LOCATION MAP

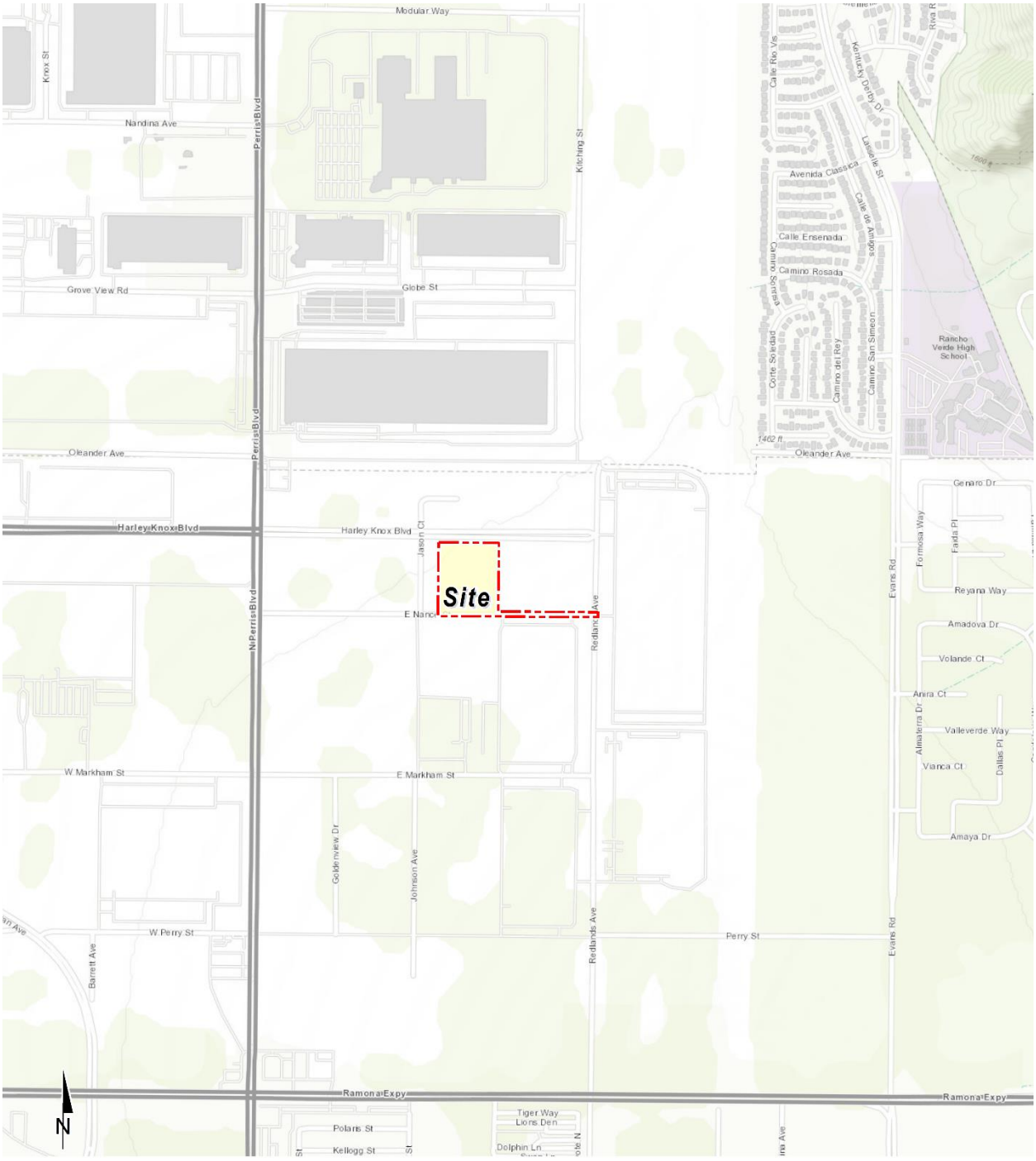
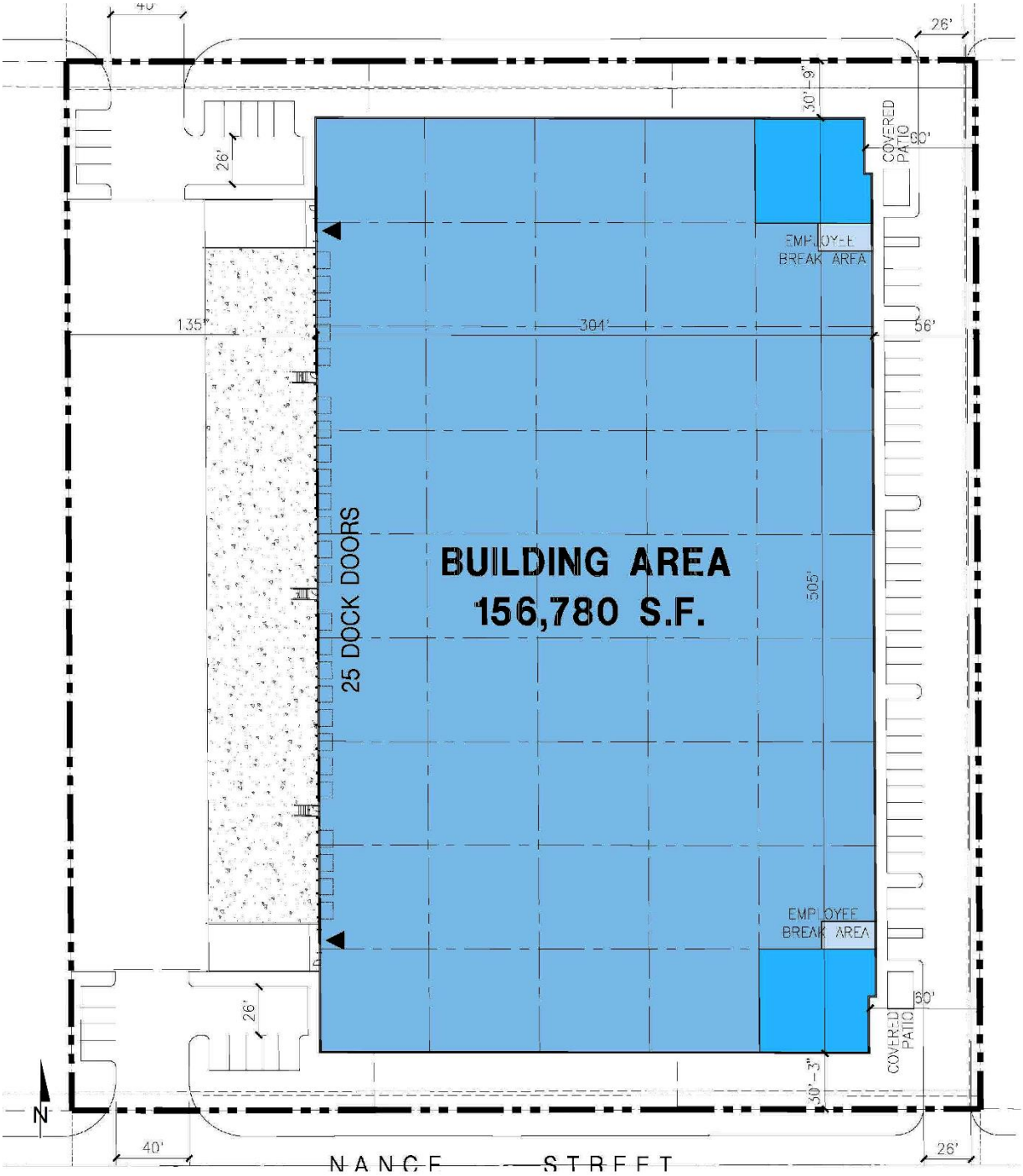


EXHIBIT 1-B: SITE PLAN



This page intentionally left blank

2 FUNDAMENTALS

For consistency with the PVCC SP EIR, the following noise fundamentals discussion was taken from the EIR, Section 4.9 Noise, Page 4.9-2: (3)

The PVCC SP EIR defines noise *as unwanted or objectionable sound. The effect of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment. The unit of measurement used to describe a noise level is the decibel (dB). However, since the human ear is not equally sensitive to all frequencies within the sound spectrum, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA. Decibels are measured on a logarithmic scale which quantifies sound intensity in a manner that is similar to the Richter scale used for earthquake magnitudes. In the case of noise, a doubling of the energy from a noise source, such as the doubling of a traffic volume, would increase the noise level by 3 dBA; a halving of the energy would result in a 3 dBA decrease.*

The PVCC SP EIR further states that *average noise levels over a period of minutes or hours are usually expressed as dB L_{eq} or the equivalent noise level for that period of time. For example, $L_{eq(3)}$ would represent a three hour average. When no time-period is specified, a one-hour average is assumed. Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (Ldn). CNEL is a 24-hour weighted average measure of community noise. The computation of CNEL adds 5 dBA to the average hourly noise levels between 7 p.m. and 10 p.m. (evening hours), and 10 dBA to the average hourly noise levels between 10p.m. to 7 a.m. (nighttime hours). This weighting accounts for the increased human sensitivity to noise in the evening and nighttime hours. Ldn is a very similar 24-hour weighted average which weighs only the nighttime hours and not the evening hours. CNEL is normally about 1 dB higher than Ldn for typical traffic and other community noise levels.*

This page intentionally left blank

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (4) The purpose of the Noise and Safety Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 CITY OF PERRIS GENERAL PLAN NOISE ELEMENT

The City of Perris has adopted a Noise Element of the General Plan (5) to control and abate environmental noise, and to protect the citizens of Perris from excessive exposure to noise. The Noise Element specifies the maximum allowable unmitigated exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies noise polices and implementation measures designed to protect, create, and maintain an environment free from noise that may jeopardize the health or welfare of sensitive receptors, or degrade quality of life.

The noise standards identified in the City of Perris General Plan are guidelines to evaluate the acceptability of the transportation related noise level impacts. These standards are based on the Governor's Office of Planning and Research (OPR) and are used to assess the long-term traffic noise impacts on land uses. According to the City's Land Use Compatibility for Community Noise Exposure (Exhibit N-1), noise-sensitive land uses such as single-family residences are *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 65 dBA CNEL. Industrial uses, such as the Project, are considered *normally acceptable* with exterior noise levels of up to 70 dBA CNEL, and *conditionally acceptable* with exterior noise levels between 70 to 80 dBA CNEL. (5)

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Harley Knox Commerce Center, operational noise such as the expected loading dock activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity are typically evaluated against standards established under a City's Municipal Code. The City of Perris Municipal Code, Chapter 7.34 *Noise Control*, Section 7.34.040, establishes the permissible noise level at any point on the property line of the affected residential receivers. Therefore, for residential properties, the exterior noise level shall not exceed a maximum noise level of 80 dBA L_{max} during daytime hours (7:01 a.m. to 10:00 p.m.) and shall not exceed a maximum noise level of 60 dBA L_{max} during the nighttime hours (10:01 p.m. to 7:00 a.m.), as shown on Table 3-1. (6) The City of Perris Municipal Code is included in Appendix 3.1.

Additional exterior noise level standards are identified in the City of Perris General Plan Noise Element Implementation Measure V.A.1 which requires that new industrial facilities within 160 feet of the property line of existing noise-sensitive land uses must demonstrate compliance with a 60 dBA CNEL exterior noise level standard. Table 3-1 shows the Municipal Code and General Plan standards used in this analysis to evaluate the potential operational noise levels from the Project.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land Use	Time Period	Noise Level Standard (dBA)
City of Perris	Residential[1]	Daytime (7:01 a.m. - 10:00 p.m.)	80 dBA L_{max}
		Nighttime (10:01 p.m. - 7:00 a.m.)	60 dBA L_{max}
	Within 160 Feet of PL[2]	24-Hours	60 dBA CNEL

[1] Source: City of Perris Municipal Code, Sections 7.34.040 & 7.34.050 (Appendix 3.1).
[2] Source: City of Perris General Plan Noise Element, Implementation Measure V.A.1.

3.4 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Harley Knox Commerce Center site, noise from construction activities is typically evaluated against standards established under a City's Municipal Code. The City of Perris Municipal Code, Section 7.34.060, identifies the City's construction noise standards and permitted hours of construction activity (refer to Table 3-2). Further, the City of Perris Municipal Code, Section 7.34.060, noise level standard of 80 dBA L_{max} shall apply to the residential zones located in the City of Perris. (6)

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

Jurisdiction	Permitted Hours of Construction Activity	Construction Noise Level Standard
City of Perris[1]	7:00 a.m. to 7:00 p.m. on any day except Sundays and legal holidays (with the exception of Columbus Day and Washington's birthday).	80 dBA L_{max}

[1] Source: City of Perris Municipal Code, Section 7.34.060 (Appendix 3.1).

3.5 CONSTRUCTION VIBRATION STANDARDS

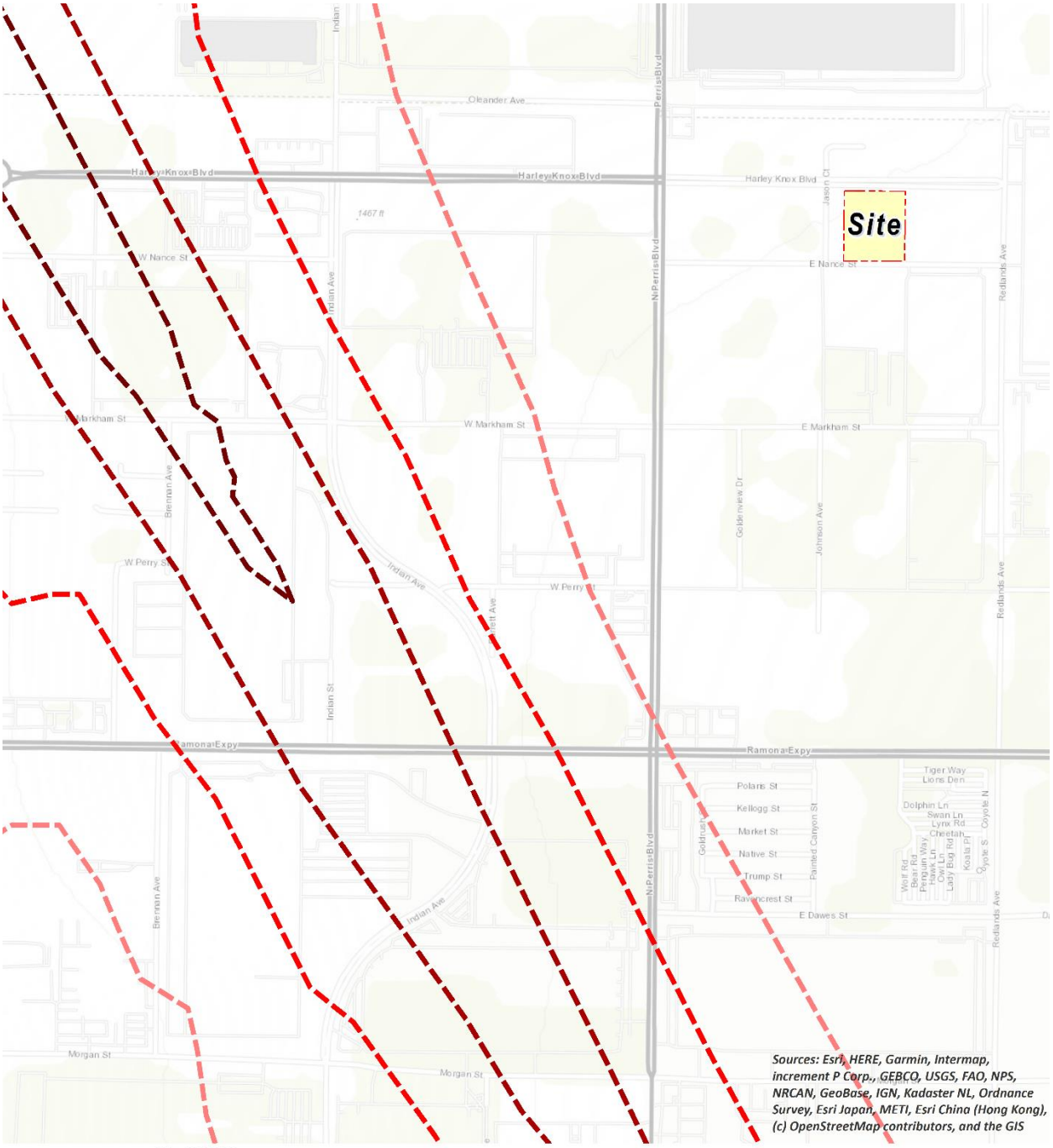
According to the PVCC SP EIR, a major concern with regard to construction vibration is building damage. Consequently, construction vibration is generally assessed in terms of peak particle velocity (PPV). The United States Department of Transportation Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, buildings can be exposed to ground-borne vibration levels of 0.5 PPV without experiencing structural damage.

3.6 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located approximately 1.5 miles northwest of the Project site. The *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan* (MARB/IPA LUCP) includes the policies for determining the land use compatibility of the Project. (7) The MARB/IPA, Map MA-1, indicates that the Project site is located within Compatibility Zone D, and the Table MA-1 Compatibility Zone Factors indicates that this area is considered to have a *moderate to low* noise impact, and is mostly within 55 dBA CNEL noise level contour boundaries. Further, the Basic Compatibility Criteria, listed in Table MA-2 of the MARB/IPA LUCP identifies no prohibited uses other than those that would pose a safety risk due to building height. (7) The MARB/IPA LUCP does not identify industrial-use specific noise compatibility standards, and therefore, the Governor's Office of Planning and Research (OPR) Land Use Compatibility for Community Noise Exposure, previously discussed in Section 3.3, is used to assess potential aircraft-related noise levels at the Project site. The OPR guidelines indicate that industrial uses, such as the Project, are considered *normally acceptable* with exterior noise levels of up to 70 dBA CNEL. (4)

The noise contour boundaries of MARB/IPA are presented on Exhibit 3-A of this report and show that the Project is considered *normally acceptable* land use since it is located outside the 70 dBA CNEL noise level contour. Notably, the Project is not within the 55 dBA CNEL noise level contour boundary. Further, Table MA-2 indicates that no uses are prohibited in this area except for those which would pose hazards to flights.

EXHIBIT 3-A: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

Unmitigated Airport Noise Contour Boundaries

55 dBA CNEL
60 dBA CNEL
65 dBA CNEL
70 dBA CNEL
75 dBA CNEL

N

Source: Riverside County Airport Land Use Compatibility Plan, MA-4

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. 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?

While the City of Perris General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearest public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The closest airport which would require additional noise analysis under CEQA Appendix G Guideline C is the MARB/IPA. As previously described in Section 3.7, the Project is in Compatibility Zone D, and Table MA-1 of the MARB/IPA LUCP indicates that the noise impact is considered to have a *moderate to low* noise impact, and Table MA-2 indicates that no uses are prohibited in this area except for those which would pose hazards to flights. Therefore, the potential impacts under CEQA Appendix G Guideline C are *less than significant* and are not further analyzed in this noise study.

4.2 PVCC SP EIR THRESHOLDS

As identified in the PVCC SP EIR, sensitive receivers are areas where humans are participating in activities that may be subject to the stress of significant interference from noise and often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. Other receivers include office and industrial buildings, which are not considered as sensitive as single-family homes, but are still protected by City of Perris land use compatibility standards, as discussed below.

Noise level increases at nearest receiver locations resulting from the Project are evaluated based on the PVCC SP EIR Thresholds described below at nearest sensitive receiver locations. Further, CEQA requires that consideration be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (8)

According to the PVCC SP EIR, *there is no official "industry standard" of determining significance of noise impacts. However, typically, a jurisdiction will identify either 3 dBA or 5 dBA increase as being the threshold because these levels represent varying levels of perceived noise increases.* The PVCC SP EIR indicates that a 5 dBA noise level increase is considered *discernable to most people in an exterior environment* when the resulting noise levels are below 60 dBA. Further, it identifies a 3 dBA increase threshold when the noise levels already exceed 60 dBA. In addition, according to the PVCC SP EIR, an increase of 5 dBA or more above without Project noise levels is considered a significant impact at all other sensitive land uses. (3)

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	**Nighttime**
Off-Site	if resulting noise level is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	if resulting noise level is > 60 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	At residential land use[1]	80 dBA L_{max}	60 dBA L_{max}
	Within 160 Feet of residential use[2]	60 dBA CNEL	
	if resulting noise level is < 60 dBA L_{eq}[3]	≥ 5 dBA L_{eq} Project increase	
	if resulting noise level is > 60 dBA L_{eq}[3]	≥ 3 dBA L_{eq} Project increase	
Construction	Noise Level Threshold[4]	80 dBA L_{max}	
	Vibration Level Threshold[5]	0.5 PPV (in/sec)	

[1] City of Perris Municipal Code, Section 7.34.040 (Appendix 3.1).
[2] City of Perris General Plan Noise Element, Implementation Measure V.A.1.
[3] PVCC SP EIR, Page 4.9-20.
[4] City of Perris Municipal Code, Section 7.34.060 (Appendix 3.1).
[5] PVCC SP EIR, Page 4.9-27.
"Daytime" = 7:01 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Tuesday, May 11, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (9)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (10) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (11)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (11) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearest sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:01 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:00 a.m.) noise levels at each noise level measurement location consistent with the City of Perris Municipal Code. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located north of the project site on Harley Knox Blvd along the fence line for the facility located at 225 Jason Ct.	61.3	62.5	68.9
L2	Located southeast of the project site on Nance Street near residence located at 280 E Nance Street.	60.1	57.3	64.4
L3	Located in the eastern portion of the project site.	51.1	48.9	56.1
L4	Located southwest of the project site adjacent to the residence located at 115 E Nance Street.	54.4	53.3	60.3

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network (i.e., Harley Knox Boulevard, Redlands Avenue, Nance Street, and local roads). This includes the auto and heavy truck activities near the noise level measurement locations. Additional background noise sources

in the Project study area include aircraft overflight noise from the MARB/IPA. The 24-hour existing noise level measurements are shown on Table 5-1.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

This page intentionally left blank

6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model FHWA-RD-77-108. (12) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (13) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (14)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies two study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications according to the City of Perris *General Plan Circulation Element*, and the posted vehicle speeds. According to the *Harley Knox Commerce Center (DPR 21-00006) Trip Generation Assessment* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 272 trip-ends per day (actual vehicles). (15) The Project trip generation includes 176 passenger cars and 96 truck trip-ends per day from the proposed building within the Project site. The existing ADT volumes used in this study presented on Table 6-2 were taken from the *IDI Rider 2 and 4 High Cube Warehouse and Perris Valley Storm Drain Channel Improvement Project Traffic Impact Analysis (TIA)* prepared by Urban Crossroads, Inc.

This noise study relies on the net Project trips to accurately account for the effect of individual passenger cars and truck trips on the study area roadway network. Consistent with the TIA, the off-site traffic noise analysis maintains a peak hour to average daily traffic (peak-to-daily) relationship of approximately 6.83%. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Planned Land Use (Existing if Different)[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Posted Speed Limit (mph)
7	Redlands Av.	s/o Harley Knox Bl.	Light Industrial	47'	40
15	Harley Knox Bl.	e/o Perris Bl.	Commercial (Non-Conforming Res.)	64'	45

[1] Sources: Perris Valley Commerce Center Land Use Plan and Nearmap aerial imagery.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the General Plan Circulation Element. "Res." = Residential

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes	
			Existing	
			Without Project[1]	With Project[2]
7	Redlands Av.	s/o Harley Knox Bl.	4,829	5,101
15	Harley Knox Bl.	e/o Perris Bl.	4,906	5,178

[1] IDI Rider 2 and 4 High Cube Warehouse and Perris Valley Storm Drain Channel Improvement Project Traffic Impact Analysis, Urban Crossroads, Inc.
[2] Harley Knox Commerce Center Trip Generation Assessment, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	68.17%	12.26%	19.57%	100.00%
Medium Trucks	69.75%	8.81%	21.44%	100.00%
Heavy Trucks	58.32%	5.05%	36.63%	100.00%

[1] Based on existing ADT counts by vehicle type taken on 5/24/2018 on Perris Boulevard north of Rider Street. All values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. The daily Project automobile and truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project automobile and truck trip distribution percentages documented in the *TIA*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used in the without Project traffic scenario, and Table 6-5 shows the vehicle mix used for the with Project traffic scenarios.

TABLE 6-4: WITHOUT PROJECT CONDITIONS VEHICLE MIX

Classification	Total Daily % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	91.21%	6.78%	2.01%	100.00%

[1] Based on existing ADT counts by vehicle type taken on 5/24/2018 on Perris Boulevard north of Rider Street (Project Traffic Impact Analysis, Urban Crossroads, Inc.). All values rounded to the nearest one-hundredth.

TABLE 6-5: EXISTING WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
7	Redlands Av.	s/o Harley Knox Bl.	89.79%	6.73%	3.47%	100.00%
15	Harley Knox Bl.	e/o Perris Bl.	91.22%	6.77%	2.01%	100.00%

[1] Derived from the Harley Knox Commerce Center Trip Generation Assessment, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

This page intentionally left blank

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, existing noise contours were developed based on the existing and existing with Project traffic volumes previously outlined in Section 6. Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic based on the PVCC SP EIR significance criteria discussed in Section 4. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-2 present a summary of the exterior traffic noise levels, without barrier attenuation, for the two nearby study area roadway segments analyzed for Existing, and Existing with Project conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Existing Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
7	Redlands Av.	s/o Harley Knox Bl.	Light Industrial	68.5	RW	80	173
15	Harley Knox Bl.	e/o Perris Bl.	Commercial (Non-Conforming Res.)	67.8	RW	99	214

[1] Sources: Perris Valley Commerce Center Land Use Plan and Nearmap aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Existing Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
7	Redlands Av.	s/o Harley Knox Bl.	Light Industrial	69.9	RW	99	213
15	Harley Knox Bl.	e/o Perris Bl.	Commercial (Non-Conforming Res.)	69.1	RW	120	259

[1] Sources: Perris Valley Commerce Center Land Use Plan and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT-RELATED TRAFFIC NOISE LEVEL CONTRIBUTIONS AND IMPACTS

An analysis of existing off-site traffic noise levels has been included in this report based on the traffic volumes identified Section 6. Consistent with other environmental reports prepared for the City of Perris, this analysis evaluates the off-site traffic noise impacts by comparing the Existing traffic volumes to the Existing with Project traffic volumes.

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 67.8 to 68.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows that the Existing with Project conditions will also range from 69.1 to 69.9 dBA CNEL. As shown on Table 7-3 the Project is expected to generate existing off-site traffic noise level increases ranging from 1.3 to 1.4 dBA CNEL.

Based on the 5 dBA CNEL increase significance criteria when noise levels at noise-sensitive land uses are below 60 dBA CNEL or the 3 dBA CNEL increase criteria when the noise levels already exceed 60 dBA CNEL, the study area roadway segments are shown to experience less than significant off-site traffic noise level increases due to the proposed Project truck trip distribution under Existing with Project conditions.

TABLE 7-3: EXISTING CONDITION WITH PROJECT TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Incremental Noise Level Increase Threshold[3]	
			Existing Ambient	Existing +Project	Project Increase		Limit	Exceeded?
7	Redlands Av.	s/o Harley Knox Bl.	68.5	69.9	1.4	No	n/a	No
15	Harley Knox Bl.	e/o Perris Bl.	67.8	69.1	1.3	Yes	3.0	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the nearest adjacent land use.
[2] "Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

8 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, four receiver locations in the vicinity of the Project site were identified. Distance is measured in a straight line from the project boundary to each receiver location. Receiver locations typically represent the nearest noise sensitive residential structures or areas of frequent human use adjacent the Project site boundary. However, the City of Perris noise standards apply to the property line of the affected residential receiver: not the residential building or the immediate area around the residential building. This requirement effectively places the noise sensitive receiver at the project boundary of the Harley Knox Commerce Center. However, it is unlikely that humans will be frequently occupying the areas abutting their property lines.

In addition, the existing residences adjacent to the Project site do not conform to the underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map. Therefore, these residences are considered an existing non-conforming use. Even though these existing non-conforming residences likely will ultimately be developed with land uses that are consistent with the underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map, for purposes of analysis they are considered sensitive noise receivers until such time they are unoccupied or no longer exist.

R1: Location R1 represents the property line of the existing non-conforming noise sensitive residence at 225 and 205 Jason Court, approximately 133 feet north of the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the property line of the existing non-conforming noise sensitive residence at 255 E Nance Street, approximately 20 feet south of the Project site. According to the applicant, it appears that this residence was recently purchased for redevelopment with industrial use. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the property line of the existing non-conforming noise sensitive residence at 203 Jason Court, approximately 10 feet west of the Project site. According to the applicant, it appears that this residence was recently purchased for redevelopment

with industrial use. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the property line of the existing non-conforming noise sensitive residence at 115 E Nance Street, approximately 673 feet southwest of the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS

9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Harley Knox Commerce Center Project. Exhibit 9-A identifies the representative noise source locations used to assess the operational noise levels. The operational noise analysis includes the planned 12-foot-high screen wall on the perimeter of the loading dock area in the event the adjacent non-conforming residences have not been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse and light industrial uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity.

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. Table 9-1 presents both the average hourly L_{eq} and the maximum permissible L_{max} reference noise levels. The average hour L_{eq} noise levels are used to calculate the 24-hour noise levels necessary to demonstrate compliance with the City of Perris 60 dBA CNEL exterior noise level standard for new industrial facilities within 160 feet of the property line of existing noise-sensitive land uses. In addition, the average hourly L_{eq} noise levels are used to describe the Project related operational noise level increases. The L_{max} reference noise levels shown on Table 9-1 are used to estimate the Project's maximum permissible exterior noise level consistent with the City's L_{max} noise level standards. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity all operating continuously. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter

was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (9)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

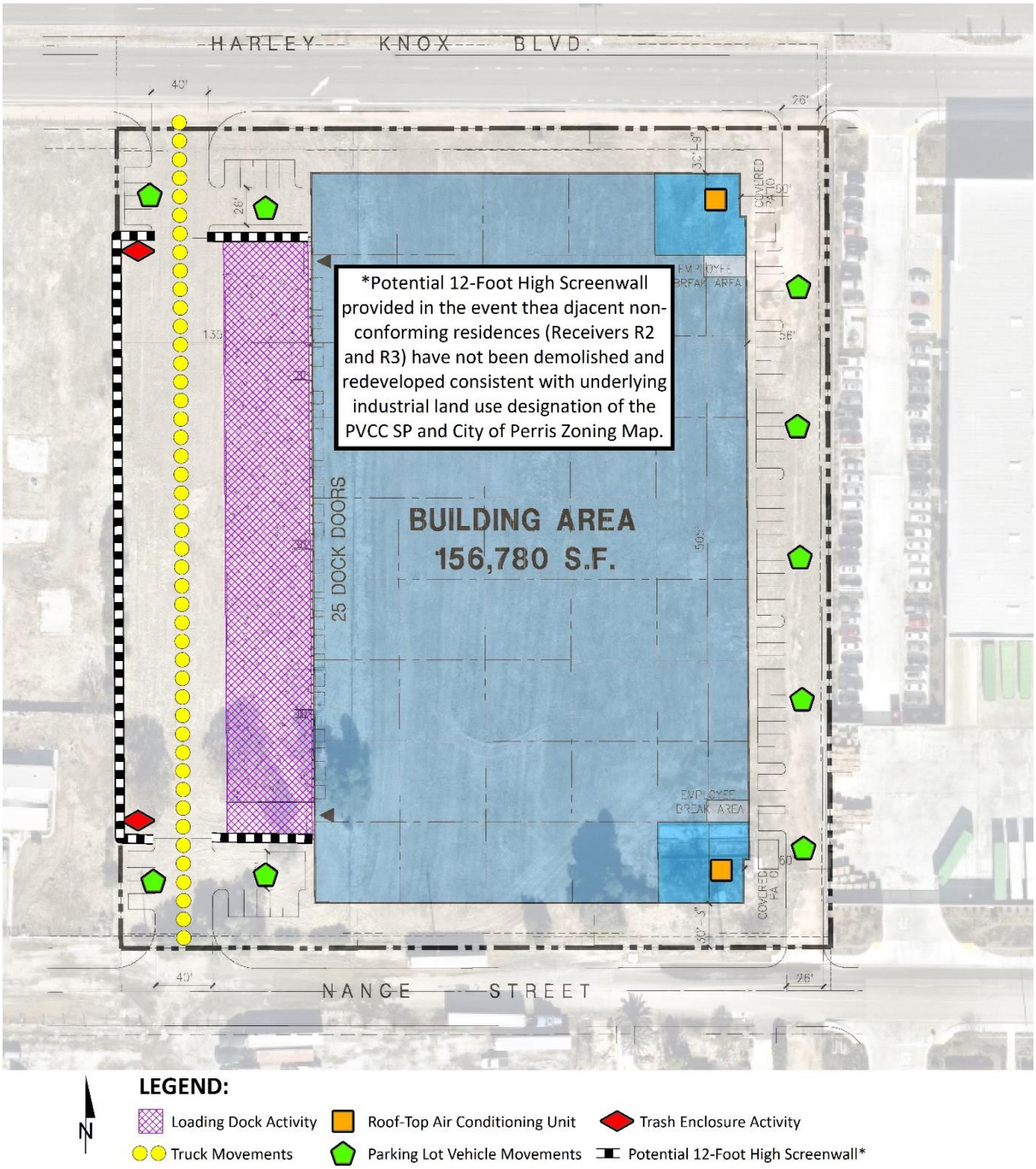


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[3]		Reference Noise Level (dBA L_{eq})		Reference Noise Level (dBA L_{max})	
		Day	Night	@ Ref. Dist.	@ 50 Feet	@ Ref. Dist.	@ 50 Feet
Loading Dock Activity	8'	60	60	67.2	62.8	75.6	71.2
Truck Movements	8'	-[4]	-[4]	64.0	58.0	79.1	73.1
Roof-Top Air Conditioning Units[2]	5'	39	28	77.2	57.2	77.7	57.7
Parking Lot Vehicle Movements	5'	60	60	66.6	56.1	70.2	59.7
Trash Enclosure Activity	5'	10	10	72.7	56.8	87.0	71.1

[1] As measured by Urban Crossroads, Inc.
[2] Lennox SCA120 series 10-ton model packaged air conditioning unit.
[3] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.
[4] Truck Movements are calculated based on the number of events by time of day (See Table 9-2).

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise activities associated with the Project. This includes trucks maneuvering, truck loading, truck unloading, backup alarms or beepers, truck docking, a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. To describe the warehouse loading dock activities, short-term reference noise level measurements were collected. The reference loading dock activity noise level measurement was taken over a fourteen-minute period and represents multiple noise sources taken from the center of activity generating a reference noise level of 71.2 dBA L_{max} at a uniform reference distance of 50 feet. At this measurement location, the noise sources associated with employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm or beeper.

9.2.3 TRUCK MOVEMENTS

An entry gate and truck movements reference noise level measurement were taken over a 15-minute period and represents multiple noise sources producing a reference noise level of 73.1 dBA L_{max} at 50 feet. The noise sources included at this measurement location account for the rattling and squeaking during normal opening and closing operations, the gate closure equipment, truck engines idling outside the entry gate, truck movements through the entry gate, and background truck court activities and forklift backup alarm noise.

Consistent with the *Harley Knox Commerce Center Trip Generation Assessment*, the Project is expected to generate a total of approximately 272 trip-ends per day (actual vehicles) and includes 96 truck trip-ends per day. (15) This noise study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network. Using the estimated number of truck trips in combination with time-of-day vehicle splits, the number of entry gate and truck movements by driveway location were calculated. As shown on Table 9-2, this information is then used to calculate the entry gate

and truck movements operational noise source activity based on the number of events by time of day.

TABLE 9-2: ENTRY GATE & TRUCK MOVEMENTS BY LOCATION

Truck Movement Location	Total Project Truck Trips[1]	Time of Day Vehicle Splits[2]			Truck Movements[3]		
		Day	Evening	Night	Day	Evening	Night
All Driveways	78	86.50%	2.70%	10.80%	83	3	10

[1] Total Project truck trips according to Table 2 of the Harley Knox Commerce Center Trip Generation Assessment.
[2] Estimated typical project truck trip distribution.
[3] Calculated time of day truck movements.

9.2.4 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units, reference noise level measurements were collected from Lennox SCA120 series 10-ton model packaged air conditioning unit. At a uniform reference distance of 50 feet, the roof-top air conditioning units generate a reference noise level of 57.7 dBA L_{max}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity a reference noise level of 59.7 dBA L_{max} at 50 feet is used. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces.

9.2.6 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project site. The measured reference noise level at the uniform 50-foot reference distance is 71.1 dBA L_{max} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for each of the Project buildings. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict the outdoor noise levels.

Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a noise level summary at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, truck movements, roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. The Project operational noise analysis without a 12-foot screenwall along the western property boundary assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map. The Project operational noise analysis with the potential 12-foot-high screen wall on the perimeter of the loading dock area is provided in the event the adjacent non-conforming residences have not yet been demolished and could be occupied.

9.4.1 PROJECT OPERATIONAL NOISE LEVELS WITHOUT SCREENWALL

Table 9-3 shows the Project operational noise levels without the 12-foot screenwall during the daytime hours of 7:01 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 55.1 to 56.8 dBA L_{max}. Appendix 9.1 includes the detailed noise model inputs and calculations under this condition.

TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS WITHOUT A SCREENWALL

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{max})			
	R1	R2	R3	R4
Loading Dock Activity	56.2	-[2]	-[2]	55.0
Truck Movements	38.0	-[2]	-[2]	32.0
Roof-Top Air Conditioning Units	33.5	-[2]	-[2]	23.1
Parking Lot Vehicle Movements	44.4	-[2]	-[2]	35.4
Trash Enclosure Activity	43.7	-[2]	-[2]	37.4
Total (All Noise Sources)	**56.8**	-[2]	-[2]	**55.1**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.
[2] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

Table 9-4 shows the Project operational noise levels during the nighttime hours of 10:01 p.m. to 7:00 a.m. without the 12-foot screenwall. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 55.1 to 56.7 dBA L_{max}. The minor differences between the daytime and nighttime noise levels are largely related to the duration of noise activity by the individual noise source activity (Table 9-1). While the individual noise source levels vary between the daytime and nighttime operational noise levels, the loading dock activity noise source levels effectively overshadows the other noise source activity.

TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS WITHOUT A SCREENWALL

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{max})			
	R1	R2	R3	R4
Loading Dock Activity	56.2	-[2]	-[2]	55.0
Truck Movements	29.3	-[2]	-[2]	23.2
Roof-Top Air Conditioning Units	31.1	-[2]	-[2]	20.7
Parking Lot Vehicle Movements	44.4	-[2]	-[2]	35.4
Trash Enclosure Activity	42.7	-[2]	-[2]	36.4
Total (All Noise Sources)	**56.7**	-[2]	-[2]	**55.1**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.
[2] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

9.4.2 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE WITHOUT A SCREENWALL

To demonstrate compliance with local noise regulations, the Project-only operational noise levels without the 12-foot screenwall are evaluated against exterior noise level thresholds based on the City of Perris L_{max} exterior noise level standards at the nearest noise-sensitive receiver locations. The Project operational noise analysis without the 12-foot screenwall assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map. Table 9-5 shows the operational noise levels associated with Harley Knox Commerce Center without the 12-foot screenwall will satisfy the City of Perris operational noise level standards at all the nearest receiver locations. Therefore, the operational noise impacts are considered *less than significant*.

TABLE 9-5: OPERATIONAL NOISE LEVEL COMPLIANCE WITHOUT A SCREENWALL

Receiver Location[1]	Project Operational Noise Levels (dBA L_{max})[2]		Exterior Noise Level Standards (dBA L_{max})[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	56.8	56.7	80	60	No	No
R2	-[5]	-[5]	80	60	-[5]	-[5]
R3	-[5]	-[5]	80	60	-[5]	-[5]
R4	55.1	55.1	80	60	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-3 and 9-4.
[3] Exterior noise level standard as shown on Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.
[5] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

Consistent with the City of Perris General Plan Noise Element, Implementation Measure V.A.1, Project operational noise levels at nearest sensitive receiver locations cannot exceed 60 dBA CNEL. The CNEL metric is typically used to describe 24-hour transportation-related noise levels, however, the City of Perris General Plan Noise Element requires new industrial land use such as the Project to demonstrate compliance at any noise-sensitive land use within 160 feet of the Project site. Table 9-6 includes the evening and nighttime adjustments made to the operational noise levels during the applicable hours to convert the worst-case hourly operational noise levels (L_{eq}) to 24-hour CNELs.

TABLE 9-6: OPERATIONAL NOISE LEVEL COMPLIANCE (CNEL) WITHOUT A SCREENWALL

Receiver Location[1]	Project Operational Noise Levels[2]			Exterior Noise Level Standards (CNEL)[3]	Noise Level Standards Exceeded?[4]
	Daytime (dBA L_{eq})	Nighttime (dBA L_{eq})	24-Hour (CNEL)		
R1	46.6	45.9	52.7	60	No
R2	-[5]	-[5]	-[5]	-[5]	-[5]
R3	-[5]	-[5]	-[5]	-[5]	-[5]
R4	43.5	43.2	49.9	60	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise level calculations are included in Appendix 9.2.
[3] City of Perris General Plan Noise Element Implementation Measure V.A.1
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.
[5] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

The 24-hour noise level calculations without the 12-foot screenwall are included in Appendix 9.2. Table 9-6 indicates that the 24-hour noise levels associated with the Harley Knox Commerce Center at the nearest receiver locations are expected to range from 49.9 to 52.7 dBA CNEL. The Project-related operational noise levels without the screenwall shown on Table 9-6 will satisfy the City of Perris 60 dBA CNEL exterior noise level standards at the nearest receiver locations.

9.4.3 PROJECT OPERATIONAL NOISE LEVEL INCREASES WITHOUT A SCREENWALL

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources without the 12-foot screenwall. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (10) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 9-7 and 9-8. As indicated on Tables 9-7 and 9-8, the Project will contribute a daytime operational noise level increase of up to 0.3 dBA L_{eq} and a nighttime operational noise level increase of up to 0.4 dBA L_{eq} at the sensitive receiver locations. Since the Project-related operational noise level contributions would not exceed the significance criteria of 5 dBA when the without Project noise levels are below 60 dBA CNEL or 3 dBA when the without Project noise levels exceed 60 dBA CNEL, the increases at the sensitive receiver locations are considered *less than significant*.

TABLE 9-7: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES WITHOUT A SCREENWALL

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	46.6	L1	61.3	61.4	0.1	3	No
R2	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]
R3	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]
R4	43.5	L4	54.4	54.7	0.3	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-6.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.
[8] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

TABLE 9-8: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES WITHOUT A SCREENWALL

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	45.9	L1	62.5	62.6	0.1	3	No
R2	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]
R3	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]	-[8]
R4	43.2	L4	53.3	53.7	0.4	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-6.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.
[8] Project operational noise analysis assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

9.4.4 PROJECT OPERATIONAL NOISE LEVELS WITH A SCREENWALL

If the adjacent non-conforming residences have not yet been demolished when construction of the Project is initiated, the Project would include installation of a 12-foot-high screenwall on the perimeter of the loading dock area. Table 9-9 shows the Project operational noise levels during the daytime hours of 7:01 a.m. to 10:00 p.m. with the potential 12-foot-high screen wall on the perimeter of the loading dock area. With the screenwall, the daytime hourly noise levels at the off-site receiver locations are expected to range from 48.1 to 59.1 dBA L_{max}. Appendix 9.3 includes the detailed noise model inputs and calculations including the potential 12-foot-high screen wall.

TABLE 9-9: DAYTIME PROJECT OPERATIONAL NOISE LEVELS WITH A SCREENWALL

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{max})			
	R1	R2	R3	R4
Loading Dock Activity	56.2	37.9	58.4	50.5
Truck Movements	36.5	29.6	39.3	28.6
Roof-Top Air Conditioning Units	33.5	39.2	17.7	23.1
Parking Lot Vehicle Movements	44.4	46.8	42.5	34.6
Trash Enclosure Activity	38.2	32.3	50.0	26.4
Total (All Noise Sources)	**56.6**	**48.1**	**59.1**	**50.7**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.3.

Table 9-10 shows the Project operational noise levels with the 12-foot-high screenwall during the nighttime hours of 10:01 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 47.8 to 59.0 dBA L_{max}. The minor differences between the daytime and nighttime noise levels are largely related to the duration of noise activity by the individual noise source activity (Table 9-1). While the individual noise source levels vary between the daytime and nighttime operational noise levels, the loading dock activity noise source levels effectively overshadows the other noise source activity.

TABLE 9-10: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS WITH A SCREENWALL

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{max})			
	R1	R2	R3	R4
Loading Dock Activity	56.2	37.9	58.4	50.5
Truck Movements	27.8	20.9	30.6	19.9
Roof-Top Air Conditioning Units	31.1	36.8	15.3	20.7
Parking Lot Vehicle Movements	44.4	46.8	42.5	34.6
Trash Enclosure Activity	37.3	31.3	49.0	25.5
Total (All Noise Sources)	**56.5**	**47.8**	**59.0**	**50.6**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.3.

9.4.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE WITH A SCREENWALL

To demonstrate compliance with local noise regulations, the Project-only operational noise levels with the 12-foot-high screenwall are evaluated against exterior noise level thresholds based on the City of Perris L_{max} exterior noise level standards at the nearest noise-sensitive receiver locations. Table 9-11 shows the operational noise levels including the potential 12-foot-high screen wall associated with Harley Knox Commerce Center will satisfy the City of Perris operational noise level standards at all the nearest receiver locations. Therefore, the operational noise impacts with the screenwall are considered *less than significant*.

TABLE 9-11: OPERATIONAL NOISE LEVEL COMPLIANCE WITH A SCREENWALL

Receiver Location[1]	Project Operational Noise Levels (dBA L_{max})[2]		Exterior Noise Level Standards (dBA L_{max})[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	56.6	56.5	80	60	No	No
R2	48.1	47.8	80	60	No	No
R3	59.1	59.0	80	60	No	No
R4	50.7	50.6	80	60	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-9 and 9-11.
[3] Exterior noise level standard as shown on Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

Consistent with the City of Perris General Plan Noise Element, Implementation Measure V.A.1, Project operational noise levels at nearest sensitive receiver locations cannot exceed 60 dBA CNEL. The CNEL metric is typically used to describe 24-hour transportation-related noise levels, however, the City of Perris General Plan Noise Element requires new industrial land use such as the Project to demonstrate compliance at any noise-sensitive land use within 160 feet of the Project site. Table 9-12 includes the evening and nighttime adjustments made to the operational noise levels during the applicable hours to convert the worst-case hourly operational noise levels (L_{eq}) to 24-hour CNELs. The 24-hour noise level calculations are included in Appendix 9.4. Table 9-12 indicates that with the 12-foot-high screenwall the 24-hour noise levels associated with the Harley Knox Commerce Center at the nearest receiver locations are expected to range from 45.8 to 54.0 dBA CNEL. The Project-related operational noise levels shown on Table 9-12 will satisfy the City of Perris 60 dBA CNEL exterior noise level standards at the nearest receiver locations.

TABLE 9-12: OPERATIONAL NOISE LEVEL COMPLIANCE (CNEL) WITH A SCREENWALL

Receiver Location[1]	Project Operational Noise Levels[2]			Exterior Noise Level Standards (CNEL)[3]	Noise Level Standards Exceeded?[4]
	Daytime (dBA L_{eq})	Nighttime (dBA L_{eq})	24-Hour (CNEL)		
R1	46.3	45.8	52.6	60	No
R2	44.7	44.1	50.8	60	No
R3	47.9	47.3	54.0	60	No
R4	39.5	39.1	45.8	60	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise level calculations are included in Appendix 9.4.
[3] City of Perris General Plan Noise Element Implementation Measure V.A.1
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

9.4.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES WITH A SCREENWALL

To describe the Project operational noise level increases with a screenwall and assuming the residences are not demolished, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (10) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 9-13 and 9-14.

As indicated on Tables 9-13 and 9-14, with the 12-foot-high screenwall the Project will contribute a daytime operational noise level increase of up to 1.7 dBA L_{eq} and a nighttime operational noise level increase of up to 2.3 dBA L_{eq} at the sensitive receiver locations. Since the Project-related operational noise level contributions would not exceed the significance criteria of 5 dBA when the without Project noise levels are below 60 dBA CNEL or 3 dBA when the without Project noise levels exceed 60 dBA CNEL, the increases at the sensitive receiver locations are considered *less than significant*.

TABLE 9-13: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES WITH A SCREENWALL

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	46.3	L1	61.3	61.4	0.1	3	No
R2	44.7	L2	60.1	60.2	0.1	3	No
R3	47.9	L3	51.1	52.8	1.7	5	No
R4	39.5	L4	54.4	54.5	0.1	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-11.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-14: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES WITH A SCREENWALL

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	45.8	L1	62.5	62.6	0.1	3	No
R2	44.1	L2	57.3	57.5	0.2	5	No
R3	47.3	L3	48.9	51.2	2.3	5	No
R4	39.1	L4	53.3	53.5	0.2	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-11.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

This page intentionally left blank

10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source activity in relation to the nearest sensitive receiver locations previously described in Section 6. This includes the off-site street and storm drain improvements on Nance Street extending from the Project Site to Redlands Avenue. To prevent high levels of construction noise from impacting noise-sensitive land uses, City of Perris Municipal Code Section 7.34.060 limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. on any day except Sundays and legal holidays (with the exception of Columbus Day and Washington's birthday).

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when operating at the project site boundaries closest the nearest sensitive receiver locations can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

This construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (17) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment including reference L_{max} noise levels measured at 50 feet.

Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 85 dBA L_{max} when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 85 dBA L_{max} measured at 50 feet from the noise source to the receiver would be reduced to 79 dBA L_{max} at 100 feet from the source to the receiver and would be further reduced to 73 dBA L_{max} at 200 feet from the source to the receiver. Table 10-1 provides a summary of the construction reference noise levels expected with the Project construction activities.

EXHIBIT 10-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Construction Activity	Reference Noise Level @ 50 Feet (dBA L_{max})[1]	Highest Reference Noise Level (dBA L_{max})
Site Preparation	Crawler Tractors	82	82
	Rubber Tired Dozers	79	
Grading	Crawler Tractors	82	85
	Excavators	81	
	Graders	85	
	Rubber Tired Dozers	79	
	Graders	85	
Building Construction	Cranes	81	82
	Crawler Tractors	82	
	Rubber Tired Dozers	79	
	Generator Sets	73	
	Welders	74	
Paving	Pavers	77	80
	Hauling Trucks	76	
	Rollers	80	
Arch. Coating	Air Compressors	78	78

[1] FHWA's Roadway Construction Noise Model, January 2006.

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference RCNM L_{max} construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts with multiple pieces of equipment operating simultaneously at the nearest receiver locations were completed. The Project construction noise analysis describes on the highest noise level impacts when the equipment with the highest reference noise level operating at the closest point from the Project boundary including the off-site street and storm drain improvements on Nance Street extending from the Project Site to Redlands Avenue to each receiver location. The Project construction noise analysis without the temporary construction noise barriers assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map. The Project construction noise analysis includes the temporary 8-foot-high noise barrier as shown on Exhibit 10-A in the event the adjacent non-conforming residences have not yet been demolished.

10.3.1 CONSTRUCTION NOISE LEVELS WITHOUT TEMPORARY NOISE BARRIER

As shown on Table 10-2, the construction noise levels without a temporary noise barrier are expected to range from 61.0 to 76.7 dBA L_{max}, and the highest construction levels are expected to range from 68.0 to 76.7 dBA L_{max} at the nearest receiver locations. Appendix 10.1 includes the CadnaA construction noise model inputs without the temporary noise barrier.

TABLE 10-2: CONSTRUCTION NOISE LEVEL SUMMARY WITHOUT TEMPORARY NOISE BARRIER

Receiver Location[1]	Construction Noise Levels (dBA L_{max})					
	Site Preparation	Grading	Building Construction	Paving	Arch. Coating	Highest Levels[2]
R1	73.7	76.7	73.7	71.7	69.7	76.7
R2	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]
R3	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]
R4	65.0	68.0	65.0	63.0	61.0	68.0

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.
[3] Project construction noise analysis without a temporary noise barrier assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

10.3.2 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest noise sensitive receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{max} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis without a temporary noise barrier shows that the nearest receiver locations will satisfy the daytime 80 dBA L_{max} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE WITHOUT A TEMPORARY NOISE BARRIER

Receiver Location[1]	Construction Noise Levels (dBA L_{max})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	76.7	80	No
R2	-[5]	-[5]	-[5]
R3	-[5]	-[5]	-[5]
R4	68.0	80	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds are limited to the noise sensitive receiver locations (Section 3.4).
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?
[5] Project construction noise analysis without a temporary noise barrier assumes that the existing non-conforming noise sensitive receivers R2 and R3 have been demolished and redeveloped consistent with underlying industrial land use designation of the PVCC SP and City of Perris Zoning Map.

10.3.3 CONSTRUCTION NOISE LEVELS WITH A TEMPORARY NOISE BARRIER

As shown on Table 10-4, the construction noise levels with the temporary 8-foot-high noise barrier as shown on Exhibit 10-A are expected to range from 60.2 to 77.9 dBA L_{max}, and the highest construction levels are expected to range from 67.2 to 77.9 dBA L_{max} at the nearest receiver locations. Appendix 10.2 includes the mitigated CadnaA construction noise model inputs.

TABLE 10-4: CONSTRUCTION NOISE LEVEL SUMMARY WITH A TEMPORARY NOISE BARRIER

Receiver Location[1]	Construction Noise Levels (dBA L_{max})					
	Site Preparation	Grading	Building Construction	Paving	Arch. Coating	Highest Levels[2]
R1	73.7	76.7	73.7	71.7	69.7	76.7
R2	74.3	77.3	74.3	72.3	70.3	77.3
R3	74.9	77.9	74.9	72.9	70.9	77.9
R4	64.2	67.2	64.2	62.2	60.2	67.2

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations with a temporary noise barrier based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.2.

10.3.4 CONSTRUCTION NOISE LEVEL COMPLIANCE WITH A TEMPORARY NOISE BARRIER

To evaluate whether the Project with a temporary noise barrier will generate potentially significant short-term noise levels at nearest noise sensitive receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{max} is used as a reasonable threshold to assess the daytime construction noise level impacts. The mitigated construction noise analysis with the temporary 8-foot-high noise barrier as shown on Exhibit 10-A shows that the nearest receiver locations will satisfy the daytime 80 dBA L_{max} significance threshold during Project construction

activities as shown on Table 10-5. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 10-5: CONSTRUCTION NOISE LEVEL COMPLIANCE WITH A TEMPORARY NOISE BARRIER

Receiver Location[1]	Construction Noise Levels (dBA L_{max})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	76.7	80	No
R2	77.3	80	No
R3	77.9	80	No
R4	67.2	80	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 10-4.
[3] Construction noise level thresholds are limited to the noise sensitive receiver locations (Section 3.4).
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-6. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $L_{VdB}(D) = L_{VdB}(25\ ft) – 30\log(D/25)$

TABLE 10-6: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

10Using the vibration source level of construction equipment provided on Table 10-6 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration building damage impacts. Table 10-7 presents the expected Project related vibration levels at the nearby building structure locations. At distances ranging from 47 to 735 feet from the Project construction boundary to the receiver building locations, construction

vibration velocity levels are estimated to range from 0.001 to 0.035 PPV (in/sec). Based on maximum acceptable vibration threshold identified in the PVCC SP EIR (Page 4.9-27) of 0.5 PPV (in/sec), the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver building locations. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

In addition, the typical construction vibration levels are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries.

TABLE 10-7: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	256'	0.000	0.001	0.002	0.003	0.003	0.5	No
R2	78'	0.001	0.006	0.014	0.016	0.016	0.5	No
R3	47'	0.001	0.014	0.029	0.035	0.035	0.5	No
R4	735'	0.000	0.000	0.000	0.001	0.001	0.5	No

[1] Receiver locations are shown on Exhibit 10-A.
[2] Distance from Project construction boundary to the receiver building structure.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-4).
[4] PVCC SP EIR, Page 4.9-27.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

This page intentionally left blank

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2019.
2. **City of Perris.** Perris Valley Commerce Center Amendment No. 9. [Online] 2018. https://www.cityofperris.org/Home/ShowDocument?id=2647.
3. —. *Perris Valley Commerce Center Specific Plan Environmental Impact Report.* July 2011.
4. **Office of Planning and Research.** *State of California General Plan Guidelines.* 2019.
5. **City of Perris.** *General Plan Noise Element.* August 2005.
6. —. *Municipal Code, Chapter 7.34 Noise Control.*
7. **Riverside County Airport Land Use Commission.** *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan.* November 2014.
8. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
9. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
10. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
11. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
12. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
13. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
14. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
15. **Urban Crossroads, Inc.** *Harley Knox Commerce Center (DPR 21-00006) Trip Generation Assessment.* March 2022.
16. **Urban Crossroads, Inc.** *Harley Knox Commerce Center Trip Generation Assessment.* May 2021.
17. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

This page intentionally left blank

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Harley Knox Commerce Center Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
1133 Camelback #8329
Newport Beach, CA 92658
(949) 581-3148
blawson@urbanxroads.com

EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018
Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

This page intentionally left blank

APPENDIX 3.1:

CITY OF PERRIS MUNICIPAL CODE

This page intentionally left blank

CHAPTER 7.34. - NOISE CONTROL

Sec. 7.34.010. - Declaration of policy.

Excessive noise levels are detrimental to the health and safety of individuals. Noise is considered a public nuisance, and the city discourages unnecessary, excessive or annoying noises from all sources. Creating, maintaining, causing, or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by the provisions of the ordinance codified in this chapter is a public nuisance and shall be punishable as a misdemeanor.

(Code 1972, § 7.34.010; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.020. - Definitions.

(a) *General.* The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Ambient noise means the all-encompassing noise associated with a given environment usually being composed of sounds from many sources near and far. For the purpose of this chapter, ambient noise level is the level obtained when the noise level is averaged over a period of five minutes without inclusion of noise from isolated identifiable sources at the location and time of day near that at which a comparison is to be made.

Decibel (dB) means an intensity unit which denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio is ten times the common logarithm of this ratio.

Sound amplifying equipment means any machine or device for the amplification of the human voice, music or any other sound. The term "sound amplifying equipment" does not include standard vehicle radios when used and heard only by the occupants of the vehicle in which the vehicle radio is installed. The term "sound amplifying equipment," as used in this chapter, does not include warning devices on any vehicle used only for traffic safety purposes and shall not include communications equipment used by public or private utilities when restoring utility service following a public emergency or when doing work required to protect person or property from an imminent exposure to danger.

Sound level (noise level) in decibels is the value of a sound measurement using the "A" weighting network of a sound level meter. Slow response of the sound level meter needle shall be used except where the sound is impulsive or rapidly varying in nature, in which case, fast response shall be used.

Sound level meter means an instrument, including a microphone, an amplifier, an output meter and frequency weighting networks, for the measurement of sound levels, which satisfies the pertinent requirements in American National Standards Institute's specification S1.4-1971 or the most recent revision for type S-2A general purpose sound level meters.

(b) *Supplementary definitions of technical terms.* Definitions of technical terms not defined in this section shall be obtained from the American National Standards Institute's Acoustical Terminology S1-1971 or the most recent revision thereof.

(Code 1972, § 7.34.020; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.030. - Measurement methods.

(a) Sound shall be measured with a sound level meter as defined in section 7.34.020.

(b) Unless otherwise provided, outdoor measurements shall be taken with the microphone located at any point on the property line of the noise source but no closer than five feet from any wall or vertical obstruction and three to five feet above ground level whenever possible.

(c) Unless otherwise provided, indoor measurements shall be taken inside the structure with the microphone located at any point as follows:

(1) No less than three feet above floor level;

(2) No less than five feet from any wall or vertical obstruction; and

(3) Not under common possession and control with the building or portion of the building from which the sound is emanating.

(Code 1972, § 7.34.030; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.040. - Sound amplification.

No person shall amplify sound using sound amplifying equipment contrary to any of the following:

(1) The only amplified sound permitted shall be either music or the human voice, or both.

(2) The volume of amplified sound shall not exceed the noise levels set forth in this subsection when measured outdoors at or beyond the property line of the property from which the sound emanates.

Time Period	Maximum Noise Level
10:01 p.m.—7:00 a.m.	60 dBA
7:01 a.m.—10:00 p.m.	80 dBA

(Code 1972, § 7.34.040; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.050. - General prohibition.

(a) It unlawful for any person to willfully make, cause or suffer, or permit to be made or caused, any loud excessive or offensive noises or sounds which unreasonably disturb the peace and quiet of any residential neighborhood or which are physically annoying to persons of ordinary sensitivity or which are so harsh, prolonged or unnatural or unusual in their use, time or place as to occasion physical discomfort to the inhabitants of the city, or any section thereof. The standards for dBA noise level in section 7.34.040 shall apply to this section. To the extent that the noise created causes the noise level at the property line to exceed the ambient noise level by more than 1.0 decibels, it shall be presumed that the noise being created also is in violation of this section.

(b) The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists should include, but not be limited to, the following:

(1) The level of the noise;

(2) Whether the nature of the noise is usual or unusual;

(3) Whether the origin of the noise is natural or unnatural;

(4) The level of the ambient noise;

(5) The proximity of the noise to sleeping facilities;

(6) The nature and zoning of the area from which the noise emanates and the area where it is received;

(7) The time of day or night the noise occurs;

(8) The duration of the noise; and

(9) Whether the noise is recurrent, intermittent or constant.

(Code 1972, § 7.34.050; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.060. - Construction noise.

It is 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 in residential zones in the city.

(Code 1972, § 7.34.060; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.070. - Refuse vehicles and parking lot sweepers.

No person shall operate or permit to be operated a refuse compacting, processing or collection vehicle or parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the city.

(Code 1972, § 7.34.070; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.080. - Disturbing, excessive, offensive noises; declaration of certain acts constituting.

The following activities, among others, are declared to cause loud, disturbing, excessive or offensive noises in violation of this section and are unlawful, namely:

(1) *Horns, signaling devices, etc.* Unnecessary use or operation of horns, signaling devices or other similar devices on automobiles, motorcycles or any other vehicle.

(2) *Radios, television sets, phonographs, loud speaking amplifiers and similar devices.* The use or operation of any sound production or reproduction device, radio receiving set, musical instrument, drums, phonograph, television set, loudspeakers, sound amplifier, or other similar machine or device for the producing or reproducing of sound, in such a manner as to disturb the peace, quiet or comfort of any reasonable person of normal sensitivity in any area of the city is prohibited. This provision shall not apply to any participant in a licensed parade or to any person who has been otherwise duly authorized by the city to engage in such conduct.

(3) *Animals.*

a. The keeping or maintenance, or the permitting to be kept or maintained, upon any premises owned, occupied or controlled by any person of any animal or animals which by any frequent or long-continued noise shall cause annoyance or discomfort to a reasonable person of normal sensitiveness

in the vicinity.

b. The noise from any such animal or animals that disturbs two or more residents residing in separate residences adjacent to any part of the property on which the subject animal or animals are kept or maintained, or three or more residents residing in separate residences in close proximity to the property on which the subject animal or animals are kept or maintained, shall be prima facie evidence of a violation of this section.

(4) *Hospitals, schools, libraries, rest homes, long-term medical or mental care facilities.* To make loud, disturbing, excessive noises adjacent to a hospital, school, library, rest home or long-term medical or mental care facility, which noise unreasonably interferes with the workings of such institutions or which disturbs or unduly annoys occupants in said institutions.

(5) *Playing of radios on buses and trolleys.* The operation of any radio, phonograph or tape player on an urban transit bus or trolley so as to emit noise that is audible to any other person in the vehicle is prohibited.

(6) *Playing of radios, phonographs and other sound production or reproduction devices in public parks and public parking lots and streets adjacent thereto.* The operation of any radio, phonograph, television set or any other sound production or reproduction device in any public park or any public parking lot, or street adjacent to such park or beach, without the prior written approval of the city manager or the administrator, in such a manner that such radio, phonograph, television set or sound production or reproduction device emits a sound level exceeding those found in the table in section 7.34.040.

(7) *Leaf blowers.*

a. The term "leaf blower" means any portable, hand-held or backpack, engine-powered device with a nozzle that creates a directable airstream which is capable of and intended for moving leaves and light materials.

b. No person shall operate a leaf blower in any residential zoned area between the hours of 7:00 p.m. and 8:00 a.m. on weekdays and 5:00 p.m. and 9:00 a.m. on weekends or on legal holidays.

c. No person may operate any leaf blower at a sound level in excess of 80 decibels measured at a distance of 50 feet or greater from the point of noise origin.

d. Leaf blowers shall be equipped with functional mufflers and an approved sound limiting device required to ensure that the leaf blower is not capable of generating a sound level exceeding any limit prescribed in this section.

(Code 1972, § 7.34.080; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.090. - Burglar alarms.

(a) Audible burglar alarms for structures or motor vehicles are prohibited unless the operation of such burglar alarm can be terminated within 20 minutes of being activated.

(b) Notwithstanding the requirements of this provision, any member of the county sheriff's department, Perris Division, shall have the right to take such steps as may be reasonable and necessary to disconnect any such alarm installed in any building, dwelling or motor vehicle at any time during the period of its activation. On or after 30 days from the effective date of the ordinance codified in this chapter, any building, dwelling or motor vehicle upon which a burglar alarm has been installed shall prominently display the telephone number at which communication may be made with the owner of such building, dwelling or motor vehicle.

(Code 1972, § 7.34.090; Ord. No. 1082, § 2(part), 2000)

Sec. 7.34.100. - Motor vehicles.

(a) Off-highway.

(1) Except as otherwise provided for in this chapter, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on-highway motor vehicles as specified in the table for "45-mile-per-hour or less speed limits" contained in section 23130 of the California Vehicle Code and as corrected for distances set forth in subsection (a)(2) of this section.

(2) The maximum noise level as the on-highway vehicle passes may be measured at a distance of other than 50 feet from the centerline of travel, provided the measurement is further adjusted by adding algebraically the application correction as follows:

Distance (feet)	Correction (decibels)
25	−6
28	−5
32	−4
35	−3
40	−2
45	−1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5

100	+6

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations including the blowing of sirens and/or horns.

(Code 1972, § 7.34.100; Ord. No. 1082, § 2(part), 2000)

APPENDIX 5.1:

STUDY AREA PHOTOS

This page intentionally left blank

24-Hour Noise Level Measurement Summary

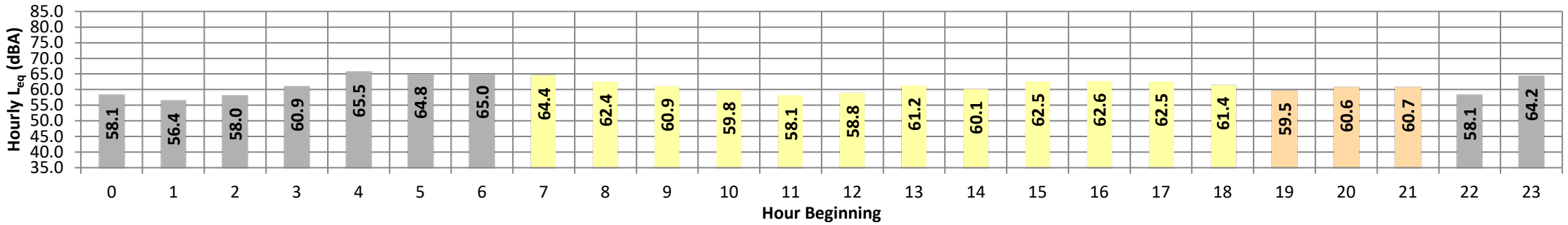
Date: Tuesday, May 11, 2021
Project: 220-280 EAST NANCE STREET

Location: L1 - Located north of the project site on Harley Knox Blvd along the fenceline for the facility located at 225 Jason Ct.

Meter: Piccolo II

JN: 14087
Analyst: S. Shami

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	58.1	70.6	42.5	70.2	69.3	66.2	63.3	54.0	48.3	43.5	43.1	42.7	58.1	10.0	68.1
	1	56.4	69.3	41.1	68.9	68.2	64.6	61.1	50.1	44.8	41.9	41.6	41.2	56.4	10.0	66.4
	2	58.0	69.7	42.9	69.4	68.8	66.3	63.5	53.1	47.5	43.9	43.5	43.0	58.0	10.0	68.0
	3	60.9	75.2	45.1	74.7	73.7	69.7	66.6	57.3	51.4	46.1	45.6	45.2	60.9	10.0	70.9
	4	65.5	82.2	48.9	81.4	79.2	74.5	71.9	64.5	58.2	50.8	49.7	49.1	65.5	10.0	75.5
	5	64.8	76.5	49.5	76.1	75.1	72.2	70.2	63.3	56.3	50.6	50.1	49.6	64.8	10.0	74.8
	6	65.0	79.1	44.0	78.2	76.7	72.2	68.9	60.7	54.3	45.8	44.8	44.2	65.0	10.0	75.0
Day	7	64.4	77.6	43.7	77.0	75.8	71.8	69.0	61.3	53.5	45.4	44.6	43.9	64.4	0.0	64.4
	8	62.4	74.7	44.1	74.3	73.4	70.1	67.5	59.5	52.0	45.7	45.0	44.4	62.4	0.0	62.4
	9	60.9	73.0	46.4	72.6	71.7	68.3	65.8	58.5	53.2	47.9	47.2	46.6	60.9	0.0	60.9
	10	59.8	72.0	46.1	71.6	70.8	67.3	64.4	57.2	52.0	47.2	46.7	46.3	59.8	0.0	59.8
	11	58.1	69.1	44.9	68.7	68.1	65.7	63.4	56.5	50.7	46.4	45.8	45.2	58.1	0.0	58.1
	12	58.8	76.9	43.0	76.4	75.5	71.8	67.4	56.4	49.4	44.4	43.8	43.1	58.8	0.0	58.8
	13	61.2	73.9	45.0	73.4	72.4	68.3	65.8	58.5	52.0	46.1	45.6	45.2	61.2	0.0	61.2
	14	60.1	72.5	43.6	72.1	71.2	67.7	64.9	56.7	49.7	44.7	44.2	43.7	60.1	0.0	60.1
	15	62.5	76.2	49.7	75.6	74.2	69.4	65.9	58.2	54.1	51.4	50.6	49.9	62.5	0.0	62.5
	16	62.6	76.4	47.1	75.8	74.6	70.9	67.8	59.3	53.8	48.6	47.8	47.3	62.6	0.0	62.6
	17	62.5	74.7	49.1	74.2	73.1	69.7	67.3	60.1	55.4	50.4	49.7	49.2	62.5	0.0	62.5
	18	61.4	76.9	49.4	76.4	75.2	71.0	67.9	59.8	55.2	50.7	50.1	49.5	61.4	0.0	61.4
Evening	19	59.5	81.4	49.1	79.9	77.9	72.1	65.3	57.8	53.8	50.3	49.8	49.2	59.5	5.0	64.5
	20	60.6	72.9	46.8	72.4	71.6	68.3	65.2	57.7	52.3	48.3	47.7	47.1	60.6	5.0	65.6
	21	60.7	72.8	46.0	72.4	71.6	68.3	65.4	57.7	52.7	47.3	46.7	46.1	60.7	5.0	65.7
Night	22	58.1	71.1	45.4	70.6	69.6	65.5	62.1	53.7	49.5	46.1	45.8	45.5	58.1	10.0	68.1
	23	64.2	80.1	42.5	79.0	77.2	67.6	63.2	53.7	47.2	43.2	42.9	42.6	64.2	10.0	74.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day (7am-7pm)	Min	58.1	69.1	43.0	68.7	68.1	65.7	63.4	56.4	49.4	44.4	43.8	43.1
	Max	64.4	77.6	49.7	77.0	75.8	71.8	69.0	61.3	55.4	51.4	50.6	49.9
Energy Average		61.5	Average:		74.0	73.0	69.3	66.4	58.5	52.6	47.4	46.8	46.2
Evening (7pm-10pm)	Min	59.5	72.8	46.0	72.4	71.6	68.3	65.2	57.7	52.3	47.3	46.7	46.1
	Max	60.7	81.4	49.1	79.9	77.9	72.1	65.4	57.8	53.8	50.3	49.8	49.2
Energy Average		60.3	Average:		74.9	73.7	69.6	65.3	57.7	52.9	48.6	48.0	47.5
Night (10pm-7am)	Min	56.4	69.3	41.1	68.9	68.2	64.6	61.1	50.1	44.8	41.9	41.6	41.2
	Max	65.5	82.2	49.5	81.4	79.2	74.5	71.9	64.5	58.2	50.8	50.1	49.6
Energy Average		62.5	Average:		74.3	73.1	68.8	65.7	56.7	50.8	45.8	45.2	44.8

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
61.8	61.3	62.5

24-Hour CNEL (dBA)
68.9

24-Hour Noise Level Measurement Summary

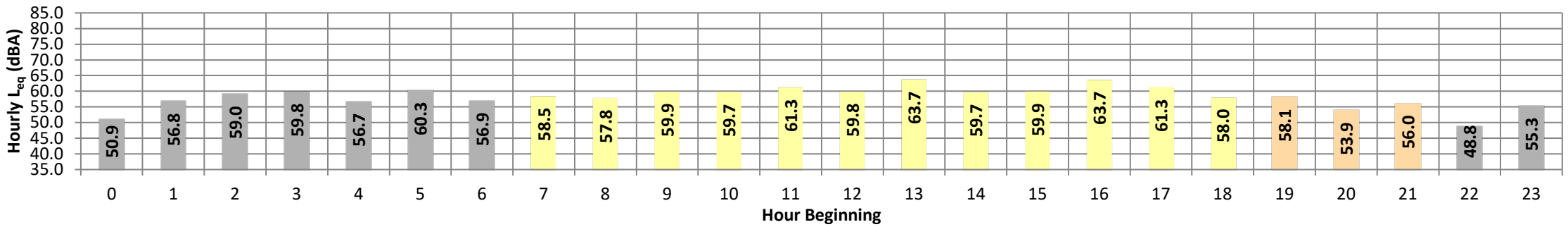
Date: Tuesday, May 18, 2021
Project: 220-280 EAST NANCE STREET

Location: L2 - Located southeast of the project site on Nance Street near residence located at 280 E Nance Street.

Meter: Piccolo II

JN: 14087
Analyst: S. Shami

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	50.9	62.2	43.0	61.6	60.9	59.0	56.0	47.5	45.7	43.8	43.4	43.1	50.9	10.0	60.9
	1	56.8	68.8	46.1	68.4	67.9	65.2	62.0	51.5	49.0	46.9	46.5	46.2	56.8	10.0	66.8
	2	59.0	69.4	48.8	68.7	68.2	66.2	64.9	57.5	52.9	49.6	49.3	49.0	59.0	10.0	69.0
	3	59.8	72.0	41.5	71.8	71.1	68.2	65.5	53.0	46.0	42.5	42.0	41.6	59.8	10.0	69.8
	4	56.7	69.4	42.4	69.1	68.2	65.3	61.6	49.7	46.1	43.3	42.9	42.6	56.7	10.0	66.7
	5	60.3	71.4	45.9	70.8	70.4	68.8	66.2	57.6	52.2	47.3	46.8	46.1	60.3	10.0	70.3
	6	56.9	67.6	45.0	67.3	66.9	65.4	62.8	54.0	49.6	46.1	45.7	45.2	56.9	10.0	66.9
Day	7	58.5	70.2	46.8	69.8	69.3	66.5	63.3	55.2	51.0	47.9	47.4	46.9	58.5	0.0	58.5
	8	57.8	70.7	46.9	69.9	69.1	65.9	61.7	53.8	50.0	47.8	47.4	47.1	57.8	0.0	57.8
	9	59.9	70.1	50.3	69.5	68.9	67.1	65.3	58.9	55.0	51.4	51.0	50.5	59.9	0.0	59.9
	10	59.7	71.8	49.6	71.3	70.5	68.0	65.7	58.3	54.1	50.6	50.2	49.9	59.7	0.0	59.7
	11	61.3	71.8	67.2	71.7	71.5	71.1	70.7	69.7	69.1	67.9	67.7	67.4	61.3	0.0	61.3
	12	59.8	69.7	55.9	69.3	68.7	66.7	65.1	60.0	58.1	56.6	56.3	56.0	59.8	0.0	59.8
	13	63.7	77.9	59.4	76.7	75.0	71.4	69.3	64.9	62.6	60.3	59.9	59.5	63.7	0.0	63.7
	14	59.7	68.2	56.8	67.8	67.4	65.9	64.5	61.2	59.6	57.3	57.1	56.9	59.7	0.0	59.7
	15	59.9	68.2	55.8	67.8	67.3	65.8	64.4	58.8	57.5	56.4	56.2	55.9	59.9	0.0	59.9
	16	63.7	76.4	61.0	75.4	73.6	70.0	69.0	64.8	63.7	61.6	61.4	61.1	63.7	0.0	63.7
	17	61.3	70.1	56.2	69.8	69.3	67.8	66.1	60.2	57.9	56.7	56.5	56.3	61.3	0.0	61.3
	18	58.0	61.6	56.5	61.3	61.0	59.9	59.2	58.2	57.7	57.0	56.8	56.6	58.0	0.0	58.0
Evening	19	58.1	65.7	55.1	65.3	64.9	63.1	61.3	57.5	56.6	55.7	55.4	55.2	58.1	5.0	63.1
	20	53.9	61.9	49.6	61.5	60.9	59.6	57.9	53.3	51.8	50.3	50.0	49.7	53.9	5.0	58.9
	21	56.0	65.9	46.6	65.4	64.9	63.7	61.6	54.6	50.5	47.6	47.2	46.7	56.0	5.0	61.0
Night	22	48.8	58.0	44.7	57.4	56.6	54.1	52.0	48.2	46.6	45.3	45.1	44.8	48.8	10.0	58.8
	23	55.3	64.3	45.2	63.9	63.4	62.6	61.5	54.4	50.3	46.4	45.9	45.4	55.3	10.0	65.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day (7am-7pm)	Min	57.8	61.6	46.8	61.3	61.0	59.9	59.2	53.8	50.0	47.8	47.4	46.9
	Max	63.7	77.9	67.2	76.7	75.0	71.4	70.7	69.7	69.1	67.9	67.7	67.4
Energy Average		60.7	Average:		70.0	69.3	67.2	65.4	60.3	58.0	55.9	55.7	55.3
Evening (7pm-10pm)	Min	53.9	61.9	46.6	61.5	60.9	59.6	57.9	53.3	50.5	47.6	47.2	46.7
	Max	58.1	65.9	55.1	65.4	64.9	63.7	61.6	57.5	56.6	55.7	55.4	55.2
Energy Average		56.3	Average:		64.1	63.6	62.1	60.3	55.1	53.0	51.2	50.9	50.6
Night (10pm-7am)	Min	48.8	58.0	41.5	57.4	56.6	54.1	52.0	47.5	45.7	42.5	42.0	41.6
	Max	60.3	72.0	48.8	71.8	71.1	68.8	66.2	57.6	52.9	49.6	49.3	49.0
Energy Average		57.3	Average:		66.6	65.9	63.9	61.4	52.6	48.7	45.7	45.3	44.9

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
59.2	60.1	57.3

24-Hour CNEL (dBA)

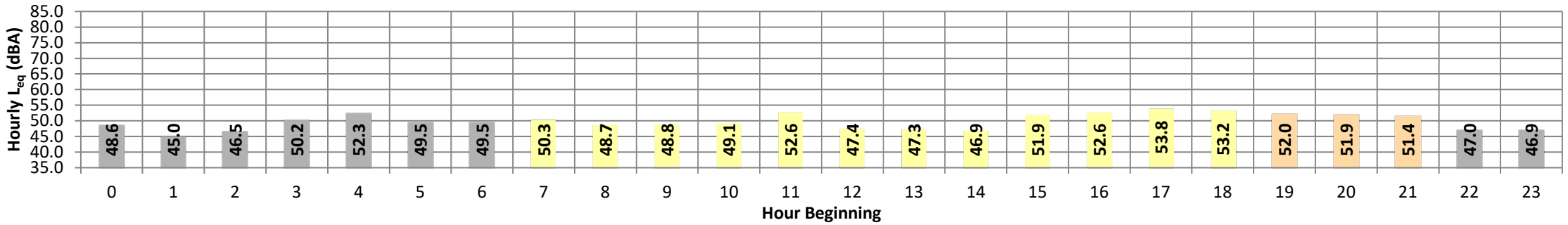
64.4

24-Hour Noise Level Measurement Summary

Date: Tuesday, May 11, 2021 *Location:* L3 - Located in the eastern portion of the project site. *Meter:* Piccolo II *JN:* 14087

Project: 220-280 EAST NANCE STREET *Analyst:* S. Shami

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	48.6	56.8	42.9	56.3	55.8	53.9	52.6	48.8	46.5	43.9	43.4	43.1	48.6	10.0	58.6
	1	45.0	50.5	41.8	50.1	49.8	48.6	47.8	45.5	44.0	42.4	42.2	41.9	45.0	10.0	55.0
	2	46.5	53.1	42.6	52.7	52.3	51.3	50.4	46.6	44.7	43.2	43.0	42.7	46.5	10.0	56.5
	3	50.2	58.6	45.1	58.3	57.9	56.0	54.5	49.7	47.7	45.8	45.5	45.2	50.2	10.0	60.2
	4	52.3	61.3	46.8	61.0	60.5	58.0	56.6	51.6	49.4	47.5	47.2	46.9	52.3	10.0	62.3
	5	49.5	56.4	44.8	56.0	55.5	54.3	53.3	49.8	47.5	45.6	45.3	45.0	49.5	10.0	59.5
	6	49.5	58.2	42.9	57.9	57.4	56.0	54.2	48.9	46.9	43.9	43.5	43.1	49.5	10.0	59.5
Day	7	50.3	58.3	44.5	57.7	57.2	56.0	55.1	49.7	47.6	45.5	45.2	44.7	50.3	0.0	50.3
	8	48.7	56.3	42.8	55.9	55.3	53.7	52.2	49.3	46.7	44.0	43.5	43.1	48.7	0.0	48.7
	9	48.8	62.8	43.2	62.3	61.9	60.3	59.5	55.6	50.4	45.2	43.9	43.4	48.8	0.0	48.8
	10	49.1	56.4	44.5	55.9	55.4	54.3	53.8	51.4	48.8	45.4	45.0	44.6	49.1	0.0	49.1
	11	52.6	59.9	44.6	59.5	58.9	57.8	57.1	54.4	49.1	45.8	45.3	44.8	52.6	0.0	52.6
	12	47.4	54.4	43.2	54.0	53.6	52.4	51.2	47.4	45.8	44.1	43.7	43.3	47.4	0.0	47.4
	13	47.3	54.8	42.4	54.5	54.2	52.9	51.6	47.2	45.1	43.0	42.8	42.5	47.3	0.0	47.3
	14	46.9	52.1	43.5	51.7	51.3	50.3	49.7	47.5	46.0	44.3	44.0	43.6	46.9	0.0	46.9
	15	51.9	57.7	47.8	57.3	56.8	55.8	55.2	52.8	50.5	48.7	48.4	48.0	51.9	0.0	51.9
	16	52.6	59.5	46.0	59.1	58.7	57.6	56.8	53.2	50.6	47.2	46.7	46.2	52.6	0.0	52.6
	17	53.8	60.7	47.7	60.3	59.9	58.7	57.9	54.7	51.7	48.7	48.3	47.8	53.8	0.0	53.8
	18	53.2	60.1	47.8	59.6	59.1	57.8	56.6	54.0	51.6	49.0	48.6	48.0	53.2	0.0	53.2
Evening	19	52.0	59.5	47.6	58.9	58.0	56.0	54.6	52.4	50.9	48.6	48.2	47.8	52.0	5.0	57.0
	20	51.9	57.8	46.6	57.4	57.0	56.2	55.6	53.2	50.4	47.5	47.1	46.7	51.9	5.0	56.9
	21	51.4	58.0	45.2	57.6	57.2	56.2	55.5	52.4	49.8	46.3	45.8	45.4	51.4	5.0	56.4
Night	22	47.0	52.9	43.3	52.5	52.1	50.7	50.0	47.6	45.9	43.9	43.7	43.4	47.0	10.0	57.0
	23	46.9	55.4	42.8	54.9	54.3	51.5	49.4	46.8	45.2	43.5	43.2	42.9	46.9	10.0	56.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day (7am-7pm)	Min	46.9	52.1	42.4	51.7	51.3	50.3	49.7	47.2	45.1	43.0	42.8	42.5
	Max	53.8	62.8	47.8	62.3	61.9	60.3	59.5	55.6	51.7	49.0	48.6	48.0
Energy Average		50.9	Average:		57.3	56.9	55.6	54.7	51.4	48.7	45.9	45.4	45.0
Evening (7pm-10pm)	Min	51.4	57.8	45.2	57.4	57.0	56.0	54.6	52.4	49.8	46.3	45.8	45.4
	Max	52.0	59.5	47.6	58.9	58.0	56.2	55.6	53.2	50.9	48.6	48.2	47.8
Energy Average		51.8	Average:		58.0	57.4	56.1	55.2	52.7	50.3	47.5	47.0	46.6
Night (10pm-7am)	Min	45.0	50.5	41.8	50.1	49.8	48.6	47.8	45.5	44.0	42.4	42.2	41.9
	Max	52.3	61.3	46.8	61.0	60.5	58.0	56.6	51.6	49.4	47.5	47.2	46.9
Energy Average		48.9	Average:		55.5	55.1	53.4	52.1	48.4	46.4	44.4	44.1	43.8

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
50.4	51.1	48.9
24-Hour CNEL (dBA)		
56.1		

24-Hour Noise Level Measurement Summary

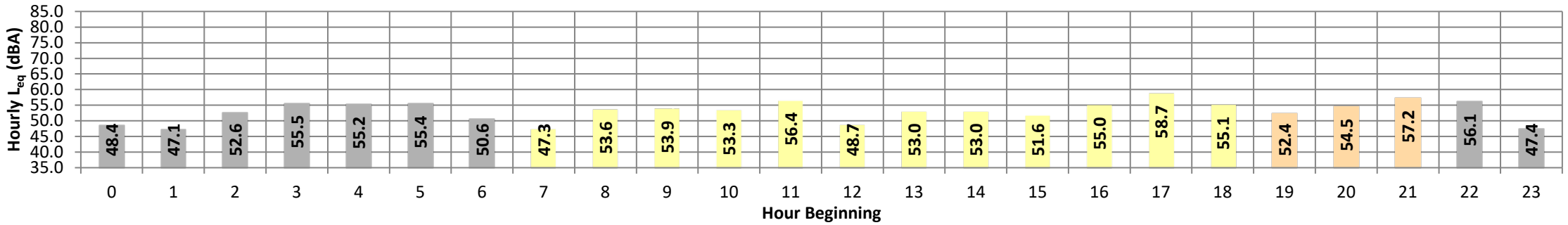
Date: Tuesday, May 11, 2021
Project: 220-280 EAST NANCE STREET

Location: L4 - Located southwest of the project site adjacent to the residence located at 115 E Nance Street.

Meter: Piccolo II

JN: 14087
Analyst: S. Shami

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	48.4	55.7	43.4	55.4	55.0	53.9	52.8	48.3	46.3	44.2	43.8	43.5	48.4	10.0	58.4
	1	47.1	53.4	43.2	52.7	52.3	50.8	50.1	47.8	46.0	43.9	43.6	43.3	47.1	10.0	57.1
	2	52.6	62.0	44.0	61.8	61.5	60.5	59.0	49.3	46.9	44.8	44.4	44.1	52.6	10.0	62.6
	3	55.5	64.2	47.0	64.0	63.8	63.3	62.1	53.6	49.9	47.6	47.4	47.1	55.5	10.0	65.5
	4	55.2	62.6	49.1	62.4	62.1	61.3	60.4	55.4	51.7	49.7	49.5	49.2	55.2	10.0	65.2
	5	55.4	64.0	48.1	63.8	63.5	62.4	61.0	54.7	51.1	49.0	48.6	48.2	55.4	10.0	65.4
	6	50.6	59.0	44.8	58.7	58.5	57.3	55.9	49.6	47.3	45.6	45.3	45.0	50.6	10.0	60.6
Day	7	47.3	54.2	43.9	53.7	53.1	51.5	50.5	47.3	46.1	44.6	44.3	44.0	47.3	0.0	47.3
	8	53.6	60.8	44.9	60.5	60.2	59.5	58.8	55.1	48.4	45.9	45.5	45.1	53.6	0.0	53.6
	9	53.9	69.4	46.9	68.7	68.1	66.3	64.5	58.1	53.6	47.9	47.4	47.0	53.9	0.0	53.9
	10	53.3	66.3	47.0	65.9	65.4	64.2	62.4	55.0	50.6	47.8	47.5	47.1	53.3	0.0	53.3
	11	56.4	67.3	47.0	66.9	66.5	65.1	63.5	56.4	51.9	48.1	47.6	47.1	56.4	0.0	56.4
	12	48.7	55.4	44.4	54.9	54.4	53.3	52.0	49.2	47.2	45.2	44.8	44.5	48.7	0.0	48.7
	13	53.0	64.0	44.5	63.8	63.3	60.7	58.0	49.3	46.9	45.1	44.8	44.6	53.0	0.0	53.0
	14	53.0	63.0	46.3	62.5	61.6	59.7	57.7	51.9	48.9	47.0	46.7	46.4	53.0	0.0	53.0
	15	51.6	61.6	45.3	61.1	60.3	57.4	55.5	51.1	48.5	46.0	45.8	45.4	51.6	0.0	51.6
	16	55.0	62.8	47.5	62.3	61.8	60.4	59.7	55.6	52.0	48.5	48.1	47.6	55.0	0.0	55.0
	17	58.7	66.9	49.0	66.5	66.1	65.1	64.0	59.6	54.5	50.1	49.7	49.2	58.7	0.0	58.7
	18	55.1	62.9	49.3	62.3	61.7	59.6	58.5	55.7	53.5	50.3	49.9	49.4	55.1	0.0	55.1
Evening	19	52.4	58.3	48.7	57.9	57.4	56.1	55.2	52.9	51.5	49.6	49.2	48.9	52.4	5.0	57.4
	20	54.5	61.4	47.5	61.1	60.7	59.7	58.7	55.8	51.9	48.6	48.1	47.6	54.5	5.0	59.5
	21	57.2	67.2	46.7	66.7	65.8	63.8	62.6	56.5	52.2	47.8	47.3	46.8	57.2	5.0	62.2
Night	22	56.1	62.1	51.9	61.9	61.8	61.0	60.0	57.3	54.4	52.3	52.2	52.0	56.1	10.0	66.1
	23	47.4	54.2	44.1	53.7	53.1	51.3	50.1	47.6	46.3	44.7	44.4	44.2	47.4	10.0	57.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day (7am-7pm)	Min	47.3	54.2	43.9	53.7	53.1	51.5	50.5	47.3	46.1	44.6	44.3	44.0
	Max	58.7	69.4	49.3	68.7	68.1	66.3	64.5	59.6	54.5	50.3	49.9	49.4
Energy Average		54.2	Average:		62.4	61.9	60.2	58.7	53.7	50.2	47.2	46.8	46.5
Evening (7pm-10pm)	Min	52.4	58.3	46.7	57.9	57.4	56.1	55.2	52.9	51.5	47.8	47.3	46.8
	Max	57.2	67.2	48.7	66.7	65.8	63.8	62.6	56.5	52.2	49.6	49.2	48.9
Energy Average		55.1	Average:		61.9	61.3	59.9	58.8	55.1	51.9	48.6	48.2	47.8
Night (10pm-7am)	Min	47.1	53.4	43.2	52.7	52.3	50.8	50.1	47.6	46.0	43.9	43.6	43.3
	Max	56.1	64.2	51.9	64.0	63.8	63.3	62.1	57.3	54.4	52.3	52.2	52.0
Energy Average		53.3	Average:		59.4	59.1	58.0	56.8	51.5	48.9	46.9	46.6	46.3

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
54.0	54.4	53.3

24-Hour CNEL (dBA)
60.3

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

This page intentionally left blank

JN:14087 Study Area Photos

L1_E
33, 51' 26.830000"117, 13' 11.320000"

L1_N
33, 51' 26.810000"117, 13' 11.350000"

L1_S
33, 51' 26.840000"117, 13' 11.320000"

L1_W
33, 51' 26.860000"117, 13' 11.350000"

L2_E (NEW)
33, 51' 19.480000"117, 13' 10.080000"

L2_N (NEW)
33, 51' 19.470000"117, 13' 10.050000"

JN:14087 Study Area Photos

L2_S (NEW)
33, 51' 19.480000"117, 13' 10.080000"

L2_W (NEW)
33, 51' 19.480000"117, 13' 10.050000"

L3_E
33, 51' 23.050000"117, 13' 10.630000"

L3_N
33, 51' 23.070000"117, 13' 10.580000"

L3_S
33, 51' 23.090000"117, 13' 10.580000"

L3_W
33, 51' 23.070000"117, 13' 10.520000"

JN:14087 Study Area Photos

L4_E
33, 51' 20.030000"117, 13' 20.190000"

L4_N
33, 51' 20.040000"117, 13' 20.110000"

L4_S
33, 51' 20.040000"117, 13' 20.130000"

L4_W
33, 51' 20.060000"117, 13' 20.130000"

This page intentionally left blank

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

This page intentionally left blank

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Redlands Av.
Road Segment: s/o Harley Knox Bl.

Project Name: Harley Knox
Job Number: 14087

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,829 vehicles
Peak Hour Percentage:	6.83%
Peak Hour Volume:	330 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	56 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	47.0 feet
Centerline Dist. to Observer:	47.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	68.2%	12.3%	19.6%	91.21%
Medium Trucks:	69.8%	8.8%	21.4%	6.78%
Heavy Trucks:	58.3%	5.1%	36.6%	2.01%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	38.079
Medium Trucks:	37.846
Heavy Trucks:	37.869

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-6.54	1.67	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	77.72	-17.83	1.71	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.10	1.71	-1.20	*-5.46*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.4	59.6	58.2	55.5	62.7	63.1
Medium Trucks:	60.4	59.7	56.7	55.8	62.9	63.2
Heavy Trucks:	60.4	58.9	54.3	58.1	64.6	64.7
Vehicle Noise:	65.2	64.2	61.5	61.4	68.3	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	77	167	360
CNEL:	37	80	173	373

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Harley Knox Bl.
Road Segment: e/o Perris Bl.

Project Name: Harley Knox
Job Number: 14087

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,906 vehicles
Peak Hour Percentage:	6.83%
Peak Hour Volume:	335 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	68.2%	12.3%	19.6%	91.21%
Medium Trucks:	69.8%	8.8%	21.4%	6.78%
Heavy Trucks:	58.3%	5.1%	36.6%	2.01%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	50.210
Medium Trucks:	50.033
Heavy Trucks:	50.050

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-6.99	-0.13	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-18.27	-0.11	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-23.55	-0.11	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	59.3	57.9	55.2	62.4	62.8
Medium Trucks:	59.9	59.2	56.2	55.3	62.4	62.7
Heavy Trucks:	59.4	57.9	53.3	57.1	63.6	63.7
Vehicle Noise:	64.6	63.6	61.0	60.7	67.6	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	206	443
CNEL:	46	99	214	460

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Redlands Av.
Road Segment: s/o Harley Knox Bl.

Project Name: Harley Knox
Job Number: 14087

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,107 vehicles
Peak Hour Percentage:	6.83%
Peak Hour Volume:	349 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	56 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	47.0 feet
Centerline Dist. to Observer:	47.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	68.2%	12.3%	19.6%	90.16%
Medium Trucks:	69.8%	8.8%	21.4%	6.69%
Heavy Trucks:	58.3%	5.1%	36.6%	3.16%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	38.079
Medium Trucks:	37.846
Heavy Trucks:	37.869

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-6.35	1.67	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	77.72	-17.65	1.71	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-20.91	1.71	-1.20	*-5.46*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	59.8	58.4	55.7	62.9	63.3
Medium Trucks:	60.6	59.9	56.9	56.0	63.1	63.4
Heavy Trucks:	62.6	61.1	56.5	60.3	66.8	66.9
Vehicle Noise:	66.1	65.1	62.1	62.7	69.4	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	93	200	430
CNEL:	44	96	206	444

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Harley Knox Bl.
Road Segment: e/o Perris Bl.

Project Name: Harley Knox
Job Number: 14087

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,184 vehicles
Peak Hour Percentage:	6.83%
Peak Hour Volume:	354 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	80 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	68.2%	12.3%	19.6%	90.17%
Medium Trucks:	69.8%	8.8%	21.4%	6.69%
Heavy Trucks:	58.3%	5.1%	36.6%	3.14%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	50.210
Medium Trucks:	50.033
Heavy Trucks:	50.050

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-6.80	-0.13	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-18.09	-0.11	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-21.38	-0.11	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.3	59.5	58.1	55.4	62.6	63.0
Medium Trucks:	60.0	59.3	56.4	55.5	62.6	62.8
Heavy Trucks:	61.6	60.1	55.5	59.3	65.7	65.9
Vehicle Noise:	65.5	64.4	61.6	61.9	68.7	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	113	243	523
CNEL:	54	117	251	541

APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS WITHOUT SCREENWALL

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_No Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	56.8	56.7	63.3	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	48.3	48.0	54.7	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	71.1	70.9	77.6	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	55.2	55.1	61.8	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	89.4	89.4	89.4	Lw	89.4		585.00	0.00	252.00	0.0	5.00	g	6267234.82	2256827.69	50.00
POINTSOURCE		AC02	89.4	89.4	89.4	Lw	89.4		585.00	0.00	252.00	0.0	5.00	g	6267238.65	2256362.11	50.00
POINTSOURCE		PARK01	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266844.40	2256354.47	5.00
POINTSOURCE		PARK02	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266922.11	2256358.93	5.00
POINTSOURCE		PARK03	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267295.97	2256377.40	5.00
POINTSOURCE		PARK04	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267294.69	2256480.58	5.00
POINTSOURCE		PARK05	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267293.42	2256579.30	5.00
POINTSOURCE		PARK06	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267291.51	2256670.37	5.00
POINTSOURCE		PARK07	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267292.15	2256767.18	5.00
POINTSOURCE		PARK08	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266922.11	2256821.96	5.00
POINTSOURCE		PARK09	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266841.86	2256830.87	5.00
POINTSOURCE		TRASH01	102.8	102.8	102.8	Lw	102.8		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256792.02	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH02	102.8	102.8	102.8	Lw	102.8		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256396.51	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY	92.1	76.9	83.4	69.7	54.4	61.0	PWL-Pt	91.4					67.0	2.0	9.0	6.2	8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6266862.24	2256881.82	8.00	0.00
					6266865.42	2256306.07	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	115.7	115.7	115.7	82.1	82.1	82.1	Lw	115.7					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6266951.40	2256801.57	8.00	0.00
					6266954.59	2256383.77	8.00	0.00
					6266895.36	2256384.41	8.00	0.00
					6266892.81	2256801.57	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
			left	right		horz.	vert.	Begin	End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6266953.31	2256847.43	45.00	0.00
								6267252.02	2256846.79	45.00	0.00
								6267250.75	2256816.22	45.00	0.00
								6267256.48	2256816.22	45.00	0.00
								6267257.12	2256371.03	45.00	0.00
								6267252.66	2256369.76	45.00	0.00
								6267255.20	2256339.19	45.00	0.00
								6266956.50	2256339.82	45.00	0.00

APPENDIX 9.2:

24-HOUR CADNAA OPERATIONAL NOISE MODEL INPUTS WITHOUT SCREENWALL

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_CNEL_No Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	46.6	45.9	52.7	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	44.7	44.1	50.8	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	59.5	58.9	65.6	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	43.5	43.2	49.9	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6267234.82	2256827.69	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6267238.65	2256362.11	50.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266844.40	2256354.47	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266922.11	2256358.93	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267295.97	2256377.40	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267294.69	2256480.58	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267293.42	2256579.30	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267291.51	2256670.37	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267292.15	2256767.18	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266922.11	2256821.96	5.00
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266841.86	2256830.87	5.00
POINTSOURCE		TRASH01	88.5	88.5	88.5	Lw	88.5		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256792.02	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH02	88.5	88.5	88.5	Lw	88.5		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256396.51	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY	92.1	76.9	83.4	69.7	54.4	61.0	PWL-Pt	91.4					67.0	2.0	9.0	6.2	8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6266862.24	2256881.82	8.00	0.00
					6266865.42	2256306.07	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	103.4	103.4	103.4	69.8	69.8	69.8	Lw	103.4					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6266951.40	2256801.57	8.00	0.00
					6266954.59	2256383.77	8.00	0.00
					6266895.36	2256384.41	8.00	0.00
					6266892.81	2256801.57	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
			left	right		horz.	vert.	Begin	End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6266953.31	2256847.43	45.00	0.00
								6267252.02	2256846.79	45.00	0.00
								6267250.75	2256816.22	45.00	0.00
								6267256.48	2256816.22	45.00	0.00
								6267257.12	2256371.03	45.00	0.00
								6267252.66	2256369.76	45.00	0.00
								6267255.20	2256339.19	45.00	0.00
								6266956.50	2256339.82	45.00	0.00

APPENDIX 9.3:

CADNAA OPERATIONAL NOISE MODEL INPUTS WITH SCREENWALL

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_With Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	56.6	56.5	63.2	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	48.1	47.8	54.5	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	59.2	59.0	65.7	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	50.7	50.7	57.3	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	89.4	89.4	89.4	Lw	89.4		585.00	0.00	252.00	0.0	5.00	g	6267234.82	2256827.69	50.00
POINTSOURCE		AC02	89.4	89.4	89.4	Lw	89.4		585.00	0.00	252.00	0.0	5.00	g	6267238.65	2256362.11	50.00
POINTSOURCE		PARK01	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266844.40	2256354.47	5.00
POINTSOURCE		PARK02	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266922.11	2256358.93	5.00
POINTSOURCE		PARK03	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267295.97	2256377.40	5.00
POINTSOURCE		PARK04	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267294.69	2256480.58	5.00
POINTSOURCE		PARK05	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267293.42	2256579.30	5.00
POINTSOURCE		PARK06	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267291.51	2256670.37	5.00
POINTSOURCE		PARK07	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6267292.15	2256767.18	5.00
POINTSOURCE		PARK08	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266922.11	2256821.96	5.00
POINTSOURCE		PARK09	91.4	91.4	91.4	Lw	91.4					0.0	5.00	a	6266841.86	2256830.87	5.00
POINTSOURCE		TRASH01	102.8	102.8	102.8	Lw	102.8		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256792.02	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH02	102.8	102.8	102.8	Lw	102.8		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256396.51	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY	92.1	76.9	83.4	69.7	54.4	61.0	PWL-Pt	91.4					67.0	2.0	9.0	6.2	8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a		6266862.24	2256881.82	8.00	0.00
				6266865.42	2256306.07	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	115.7	115.7	115.7	82.1	82.1	82.1	Lw	115.7					8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a		6266951.40	2256801.57	8.00	0.00
				6266954.59	2256383.77	8.00	0.00
				6266895.36	2256384.41	8.00	0.00
				6266892.81	2256801.57	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						12.00	a		6266951.40	2256801.57	12.00	0.00
											6266881.59	2256801.79	12.00	0.00
BARRIEREXISTING		0						12.00	a		6266844.02	2256383.35	12.00	0.00
											6266821.09	2256383.99	12.00	0.00
											6266818.60	2256802.43	12.00	0.00
											6266845.29	2256802.43	12.00	0.00
BARRIEREXISTING		0						12.00	a		6266884.78	2256384.62	12.00	0.00
											6266954.59	2256383.77	12.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6266953.31	2256847.43	45.00	0.00
								6267252.02	2256846.79	45.00	0.00
								6267250.75	2256816.22	45.00	0.00
								6267256.48	2256816.22	45.00	0.00
								6267257.12	2256371.03	45.00	0.00
								6267252.66	2256369.76	45.00	0.00
								6267255.20	2256339.19	45.00	0.00
								6266956.50	2256339.82	45.00	0.00

APPENDIX 9.4:

24-HOUR CADNAA OPERATIONAL NOISE MODEL INPUTS WITH SCREENWALL

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_CNEL_With Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	46.3	45.8	52.6	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	44.7	44.1	50.8	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	47.9	47.3	54.0	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	39.5	39.1	45.8	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6267234.82	2256827.69	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6267238.65	2256362.11	50.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266844.40	2256354.47	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266922.11	2256358.93	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267295.97	2256377.40	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267294.69	2256480.58	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267293.42	2256579.30	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267291.51	2256670.37	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6267292.15	2256767.18	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266922.11	2256821.96	5.00
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6266841.86	2256830.87	5.00
POINTSOURCE		TRASH01	88.5	88.5	88.5	Lw	88.5		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256792.02	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH02	88.5	88.5	88.5	Lw	88.5		150.00	0.00	90.00	0.0	5.00	a	6266833.58	2256396.51	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY	92.1	76.9	83.4	69.7	54.4	61.0	PWL-Pt	91.4					67.0	2.0	9.0	6.2	8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a		6266862.24	2256881.82	8.00	0.00
				6266865.42	2256306.07	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	103.4	103.4	103.4	69.8	69.8	69.8	Lw	103.4					8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a		6266951.40	2256801.57	8.00	0.00
				6266954.59	2256383.77	8.00	0.00
				6266895.36	2256384.41	8.00	0.00
				6266892.81	2256801.57	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						12.00	a		6266951.40	2256801.57	12.00	0.00
											6266881.59	2256801.79	12.00	0.00
BARRIEREXISTING		0						12.00	a		6266844.02	2256383.35	12.00	0.00
											6266821.09	2256383.99	12.00	0.00
											6266818.60	2256802.43	12.00	0.00
											6266845.29	2256802.43	12.00	0.00
BARRIEREXISTING		0						12.00	a		6266884.78	2256384.62	12.00	0.00
											6266954.59	2256383.77	12.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6266953.31	2256847.43	45.00	0.00
								6267252.02	2256846.79	45.00	0.00
								6267250.75	2256816.22	45.00	0.00
								6267256.48	2256816.22	45.00	0.00
								6267257.12	2256371.03	45.00	0.00
								6267252.66	2256369.76	45.00	0.00
								6267255.20	2256339.19	45.00	0.00
								6266956.50	2256339.82	45.00	0.00

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS WITHOUT TEMPORARY BARRIER

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_Construction_No Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	76.7	76.7	83.4	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	82.4	82.4	89.1	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	83.8	83.8	90.5	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	68.0	68.0	74.7	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
LIMITS		LIMITS00001	129.9	129.9	129.9	85.0	85.0	85.0	Lw"	85					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LIMITS	8.00	a			6266823.26	2256876.59	8.00	0.00
					6267318.26	2256872.37	8.00	0.00
					6267311.95	2256306.31	8.00	0.00
					6268137.12	2256299.34	8.00	0.00
					6268136.68	2256259.34	8.00	0.00
					6266816.48	2256270.50	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
			left	right		horz.	vert.	Begin	End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

APPENDIX 10.2:

CADNAA CONSTRUCTION NOISE MODEL INPUTS WITH TEMPORARY NOISE BARRIER

This page intentionally left blank

14087 - Harley Knox Commerce Center

CadnaA Noise Prediction Model: 14087_05_Construction_With Wall.cna
Date: 28.06.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	76.7	76.7	83.4	80.0	60.0	0.0				5.00	a	6267019.46	2257008.01	5.00
RECEIVERS		R2	77.3	77.3	84.0	80.0	60.0	0.0				5.00	a	6267224.08	2256247.52	5.00
RECEIVERS		R3	77.9	77.9	84.6	80.0	60.0	0.0				5.00	a	6266807.98	2256428.38	5.00
RECEIVERS		R4	67.2	67.2	73.9	80.0	60.0	0.0				5.00	a	6266153.90	2256151.11	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
LIMITS		LIMITS00001	129.9	129.9	129.9	85.0	85.0	85.0	Lw''	85					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LIMITS	8.00	a			6266823.26	2256876.59	8.00	0.00
					6267318.26	2256872.37	8.00	0.00
					6267311.95	2256306.31	8.00	0.00
					6268137.12	2256299.34	8.00	0.00
					6268136.68	2256259.34	8.00	0.00
					6266816.48	2256270.50	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIERTEMP		0						8.00	a		6266818.72	2256470.39	8.00	0.00
											6266817.60	2256369.87	8.00	0.00
BARRIERTEMP		0						8.00	a		6267149.40	2256267.44	8.00	0.00
											6267300.30	2256265.75	8.00	0.00