Rider & Patterson Business Center (PPT220004)

NOISE AND VIBRATION ANALYSIS

COUNTY OF RIVERSIDE

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Rider & Patterson Business 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 noise exposure and the necessary noise mitigation measures for the proposed Rider & Patterson Business Center development ("Project"). The Project site is located on the southwest corner of Patterson Avenue and Rider Street in the County of Riverside. The Project is proposed to consist of the development of a 591,203 square foot (sf) warehouse building and two single family detached residential lots to be located on the existing Swallow Hills Circle. This noise study has been prepared to satisfy applicable County of Riverside standards and thresholds of significance based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Potentially Significant*	*Significant and Unavoidable*
Operational Noise	9	*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Nighttime Concrete Pour		*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Rider & Patterson Business 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 Project is located on the southwest corner of Patterson Avenue and Rider Street in the County of Riverside, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The proposed Project by Western RealCo consists of applications for a General Plan Amendment (GPA220003), Change of Zone (CZ2200003), Tentative Parcel Map (TPM38337) and a Plot Plan (PPT220004) for a ±40.88-acre property located at the southwest corner of Rider Street and Patterson Avenue in the Mead Valley community of unincorporated Riverside County. GPA220003 is a proposal to change the General Plan land use designation of ±36.0 acres of the property from "Community Development – Medium Density Residential (CD-MDR)" to "Community Development – Light Industrial (LI)." CZ2200003 is a proposal to change the zoning classification of ±36.0 acres of the property from "One-Family Dwellings (R-1)," "Light Agriculture (A-1-1)," and "Rural Residential (R-R-1)" to "Industrial Park (I-P)." TPM38337 is a proposal to consolidate the existing eight parcels into one ±36.0-acre parcel (Parcel 1), three residential parcels (Lot A (±1.16 acres), Lot C (±0.21 acres), and Lot E (±0.23 acres), and two parcels to accommodate roadway cul-de-sacs (Lot B [±0.23 acres]; Wildwood Lane) and Lot D (± 0.20 acres; Sunny Canyon Street)).

The remaining site acreage (±2.85 acres) would be dedicated to the County for public road improvements along the Project site's frontages with Rider Street, Patterson Avenue, and Walnut Street. PPT220004 is a proposal to entitle Parcel 1 for development with a 591,203 square foot (sf) shell building, which would include 7,300-sf of ground floor office space, 7,300-sf of mezzanine office space, and 576,603-sf of warehouse space, as shown on Exhibit 1-B. Per the proposed Parking Plan, a total of 364 parking stalls, approximately 591,203-sf, will be provided on site. A total of 84 truck docking doors are proposed, positioned on the northern and southern sides of the building. Approximately 6.0 acres of Parcel 1 along the western parcel boundary would consist of a landscaped berm forming a buffer between the proposed building and an existing residential community to the west. Frontage improvements would occur along Patterson Avenue, Walnut Street, and Rider Street, with a sidewalk and community trail proposed along Patterson Avenue and Walnut Street and a sidewalk proposed along Rider Street. Construction of the Project is expected to commence in February 2024 and would last through August 2025. The anticipated Project opening year is 2025. The Project does not propose a cold storage use

and therefore is not expected to generate Transport Refrigeration Units (TRUs). The associated APNs, land use and zoning designation for the Project are as follows:

- 317-210-018 on 32.53 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-210-006 on 1.23 acres has an existing General Plan Land Use designation of MDR and zoning designation of A-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-210-011 on 1.46 acres has an existing General Plan Land Use designation of MDR and zoning designation of A-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-210-010 on 2.00 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-210-024 on 0.38 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-210-008 on 1.05 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1-1. The Project proposes a General Plan Land Use designation of LI and zoning designation of IP.
- 317-120-023 on 0.39 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1. The Project does not propose a General Plan Land Use or zoning designation.
- 317-210-022 on 1.05 acres has an existing General Plan Land Use designation of MDR and zoning designation of R-1. The Project does not propose a General Plan Land Use or zoning designation.

The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements. This noise analysis is intended to describe the noise level impacts associated with the expected typical operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

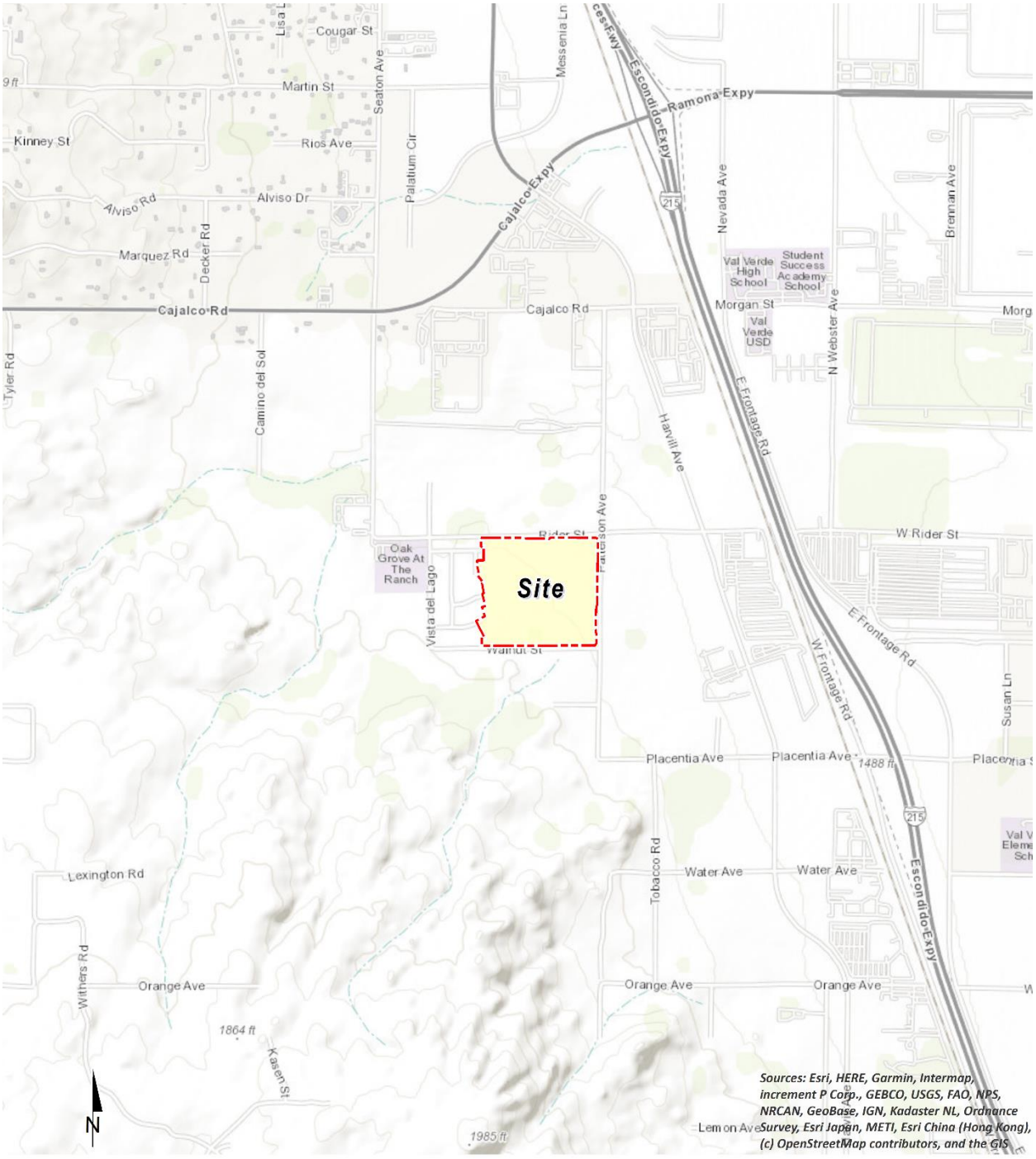
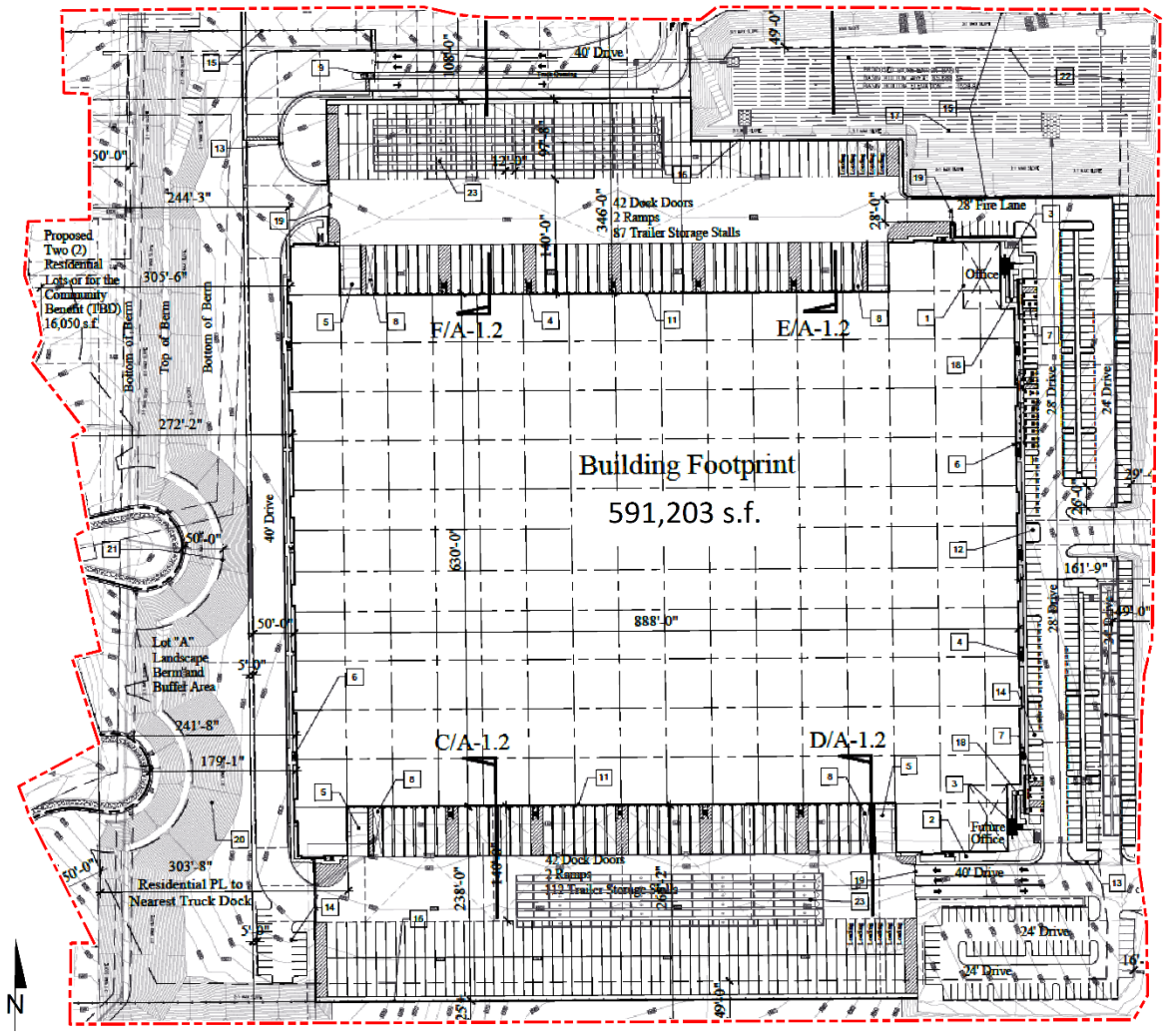


EXHIBIT 1-B: SITE PLAN



2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). 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 and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The County of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of-sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

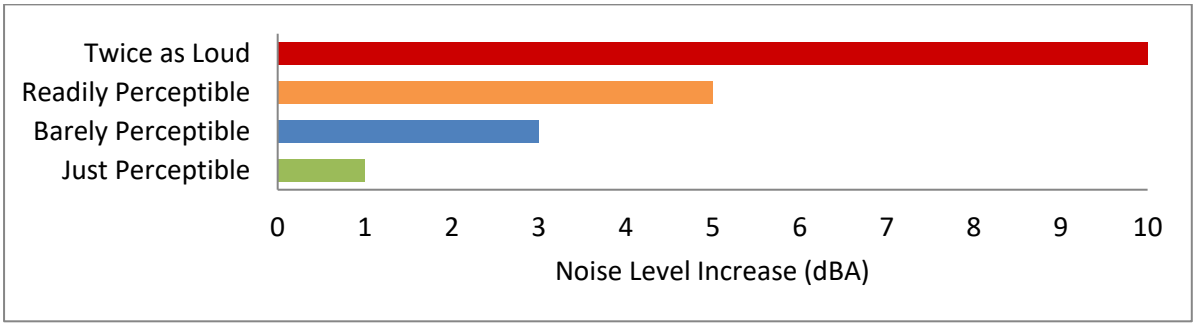
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



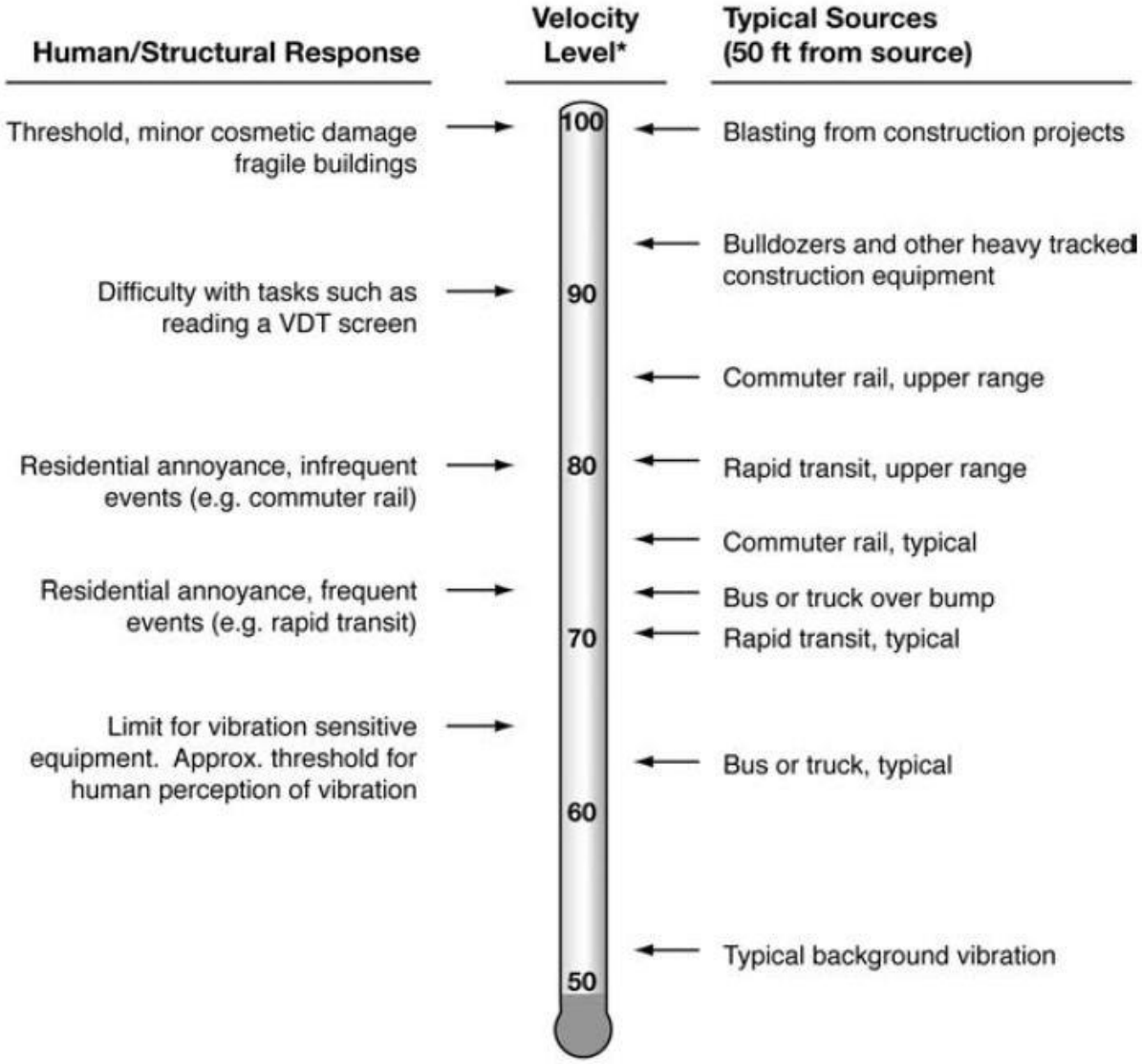
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (8) , vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

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). (9) The purpose of the Noise 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 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the County of Riverside from excessive exposure to noise. (10) The Noise Element specifies the maximum allowable 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 several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- *Schools*
- *Hospitals*
- *Rest Homes*
- *Long Term Care Facilities*
- *Mental Care Facilities*
- *Residential Uses*
- *Libraries*

- *Passive Recreation Uses*
- *Places of Worship*

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:

a. 45 dBA 9-minute L_{eq} between 10:00 p.m. and 7:00 a.m.;

b. 65 dBA 9-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the [County] for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

i. Temporary noise attenuation fences;

ii. Preferential location and equipment; and

iii. Use of current noise suppression technology and equipment.

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 dBA CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts for its residents (N 1.5), County of Riverside requires exterior noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. In addition, the County of Riverside had adopted an interior noise level limit of 45 dBA CNEL (N 14.1).

Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit to not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. To prevent high levels of construction noise from impacting noise-

sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. (10)

3.2.1 LAND USE COMPATIBILITY GUIDELINES

The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. The warehouse/industrial use of the Project is considered *normally acceptable* with unmitigated exterior noise levels of less than 70 dBA CNEL based on the *Industrial, Manufacturing, Utilities, Agriculture* land use compatibility criteria shown on Exhibit 3-A. Residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. For *conditionally acceptable* exterior noise levels, of up to 80 dBA CNEL for Project land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice*. (10)

3.3.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

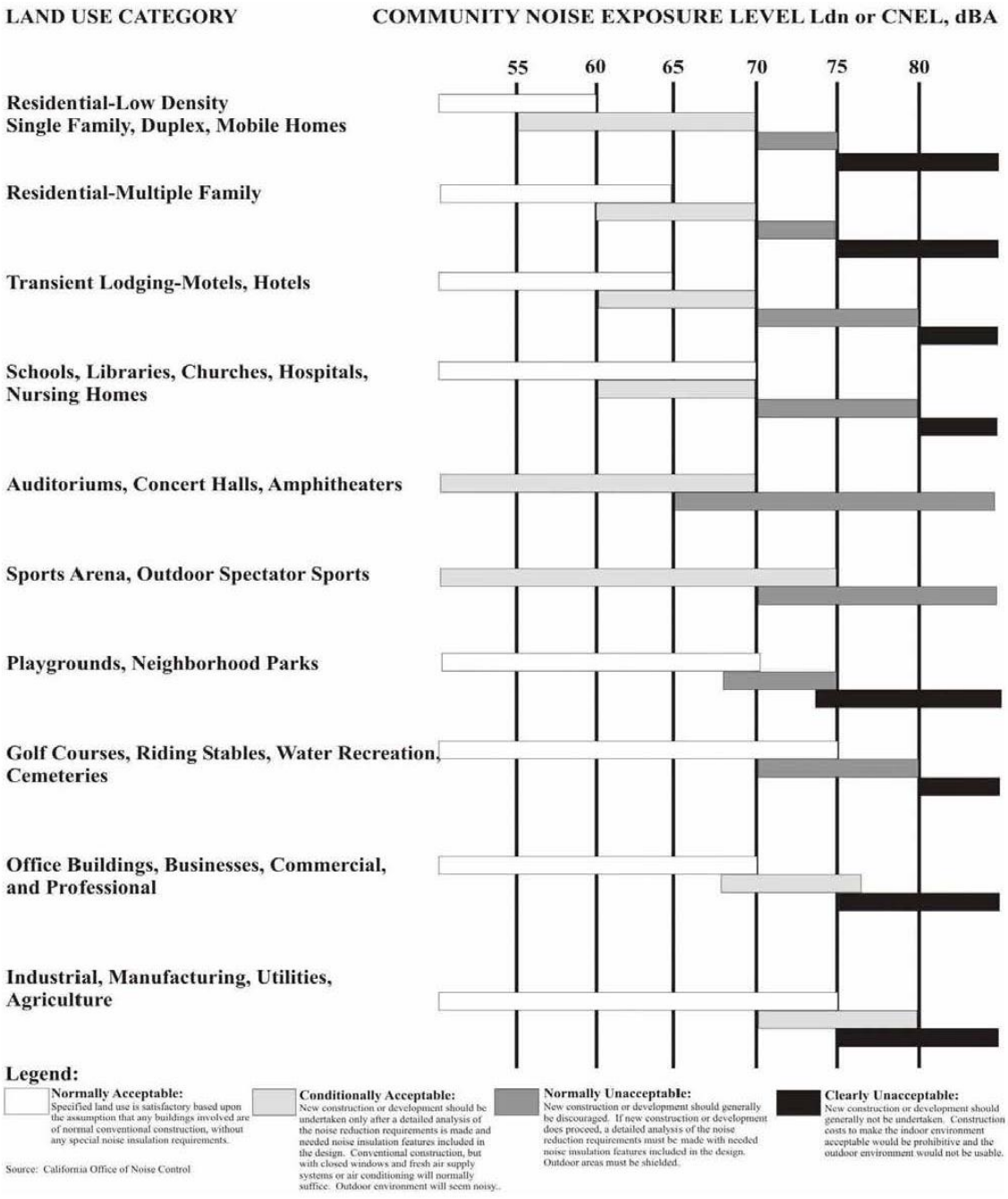
The County of Riverside has set stationary-source hourly average L_{eq} exterior noise limits to control loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements associated with the development of the proposed Rider & Patterson Business Center. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library or nursing home*, must not exceed the following worst-case noise levels.

Policy N 4.1 of the County of Riverside General Plan Noise Element sets a stationary-source average L_{eq} exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. (10)

The County of Riverside County Code Section 9.52.040 *General sound level standards* (included in Appendix 3.1) summarizing Ordinance No. 847 *Regulating Noise* identify lower, more restrictive exterior noise level standards, which for the purpose of this report, are used to evaluate potential Project-related operational noise level limits instead of the higher the General Plan exterior noise level standards previously identified. The County of Riverside County Code identifies residential exterior noise level limits of 55 dBA L_{eq} during the daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m., commercial exterior noise level limits of 65 dBA L_{eq} during the daytime hours, and 55 dBA L_{eq} during the noise-sensitive nighttime hours, and public facility exterior noise level limits

of 65 dBA L_{eq} during the daytime hours, and 45 dBA L_{eq} during the noise-sensitive nighttime hours. (11).

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



Source: County of Riverside General Plan Noise Element, Table N-1.

Based on several discussions with the County of Riverside Department of Environmental Health (DEH), Office of Industrial Hygiene (OIH), it is important to recognize that the County of Riverside County Code noise level standards, incorrectly identify maximum noise level (L_{max}) standards that should instead reflect the average L_{eq} noise levels. Moreover, the County of Riverside DEH OIH's April 15th, 2015, *Requirements for determining and mitigating, non-transportation noise source impacts to residential properties* also identifies operational (stationary-source) noise level limits using the L_{eq} metric, consistent with the direction of the County of Riverside General Plan guidelines and standards provided in the Noise Element. Therefore, this report has been prepared consistent with direction of the County of Riverside DEH OIH guidelines and standards using the average L_{eq} noise level metric for stationary-source (operational) noise level evaluation.

3.3 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the County of Riverside has established limits to the hours of construction activities. Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]) indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (11) Neither the County's General Plan nor County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use with a nighttime exterior construction noise level of 70 dBA L_{eq} (8 p. 179).

3.4 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration (8). To analyze vibration impacts originating from the operation and construction of the Rider & Patterson Business Center, vibration-generating activities are appropriately evaluated against standards established under the Municipal Code, if such

standards exist. However, the County of Riverside does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (12 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

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

The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 2 miles northeast of the Project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP) includes the policies for determining the land use compatibility of the Project. Policy 4.1.5 *Noise Exposure for Other Land Uses* of the RC ALUCP requires that land uses, demonstrate compatibility with the acceptable noise levels on Table 2B. The Table 2B *Supporting Compatibility Criteria: Noise* matrix is shown on Exhibit 3-B and indicates that the Project's industrial land uses experience *clearly acceptable* exterior noise levels below 60 dBA CNEL. *Normally acceptable* noise levels for industrial land uses range from 60 to 65 dBA CNEL. *Marginally acceptable* noise levels at industrial land uses range from 65 to 70 dBA CNEL. (12) According to Table 2B, the Project's single residential land use is considered *clearly acceptable* exterior noise levels below 55 dBA CNEL and *marginally acceptable* with exterior noise levels between 55-60 dBA CNEL.

The 70, 65 and 60 dBA CNEL noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study and are presented on Exhibit 3-C of this report. Based on the 2018 noise level contours for the MARB/IPA, the Project development area is located outside the 60 dBA CNEL noise level contour boundaries and the Project's industrial and residential land use is considered *clearly acceptable.*

EXHIBIT 3-B: RC ALUCP SUPPORTING COMPATIBILITY CRITERIA: NOISE

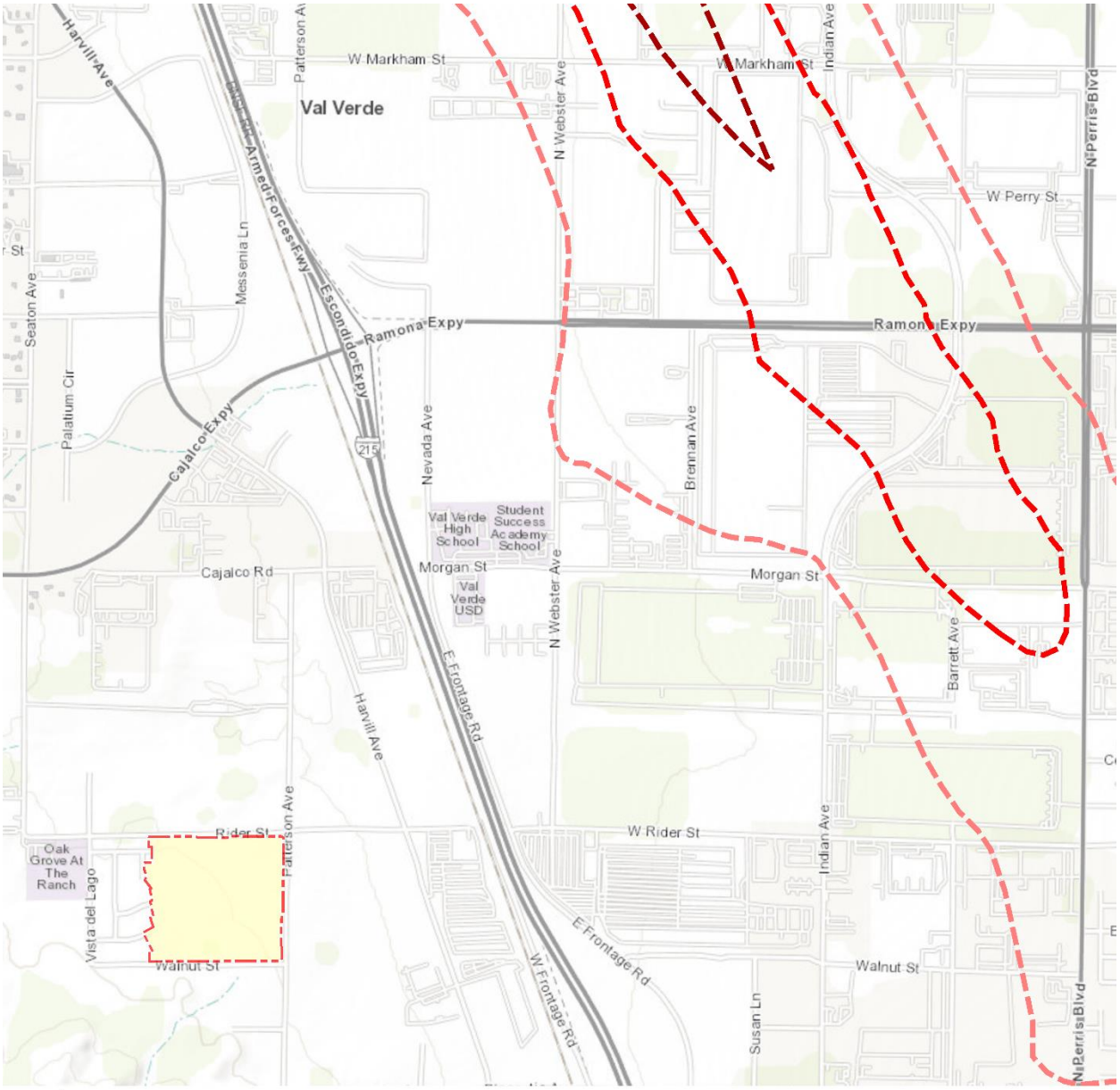
Land Use Category	CNEL (dB) 50–55	55–60	60–65	65–70	70–75
Residential *					
single-family, nursing homes, mobile homes	++	o	–	– –	– –
multi-family, apartments, condominiums	++	+	o	– –	– –
Public					
schools, libraries, hospitals	+	o	–	– –	– –
churches, auditoriums, concert halls	+	o	o	–	– –
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
offices, retail trade	++	+	o	o	–
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	–
parks, playgrounds, zoos	++	+	+	o	–
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	–
amphitheaters	+	o	–	– –	– –

Land Use Acceptability		Interpretation/Comments
++	*Clearly Acceptable*	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	*Normally Acceptable*	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o	*Marginally Acceptable*	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
–	*Normally Unacceptable*	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
– –	*Clearly Unacceptable*	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

* Subtract 5 dB for low-activity outlying airports (Chiriaco Summit and Desert Center)

Source: Riverside County Airport Land Use Compatibility Plan, Table 2B.

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



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?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline 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 a noise impact significant.* (13) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

4.1.1 NOISE-SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (14) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (13) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels

range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (15 p. 2_48).

4.1.2 NON-NOISE-SENSITIVE RECEIVERS

The County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land uses is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Exposure*. (10)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure normally acceptable* 70 dBA CNEL exterior noise level criteria.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.4, the vibration impacts originating from the construction of Rider & Patterson Business Center, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as “older residential structures” with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The closest airport which would require additional noise analysis under CEQA Appendix G Guideline C is the MARB/IPA. As previously indicated in Section 3.5, the noise contour boundaries

of MARB/IPA are presented on Exhibit 3-C of this report and shows that the Project's industrial and residential land uses are considered *normally acceptable* since the development area is located outside the 60 dBA CNEL contour. Therefore, the Project impacts are considered *less than significant,* and no further noise analysis is provided under CEQA Significance Criteria C.

4.4 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 that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive	Exterior Noise Level Standards[3]	55 dBA L_{eq}	45 dBA L_{eq}
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[4]	80 dBA L_{eq}	70 dBA L_{eq}
		Vibration Level Threshold[5]	0.3 PPV (in/sec)	

[1] FICON, 1992.
[2] County of Riverside General Plan Noise Element, Table N-1.
[3] County of Riverside General Plan Municipal Code, Section 9.52.040.
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at six 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 Wednesday, October 6th, 2022. 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 equivalent 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. (16)

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*. (2) 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*. (8)

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. (8) 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 nearby 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 equivalent or the energy average hourly 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 (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

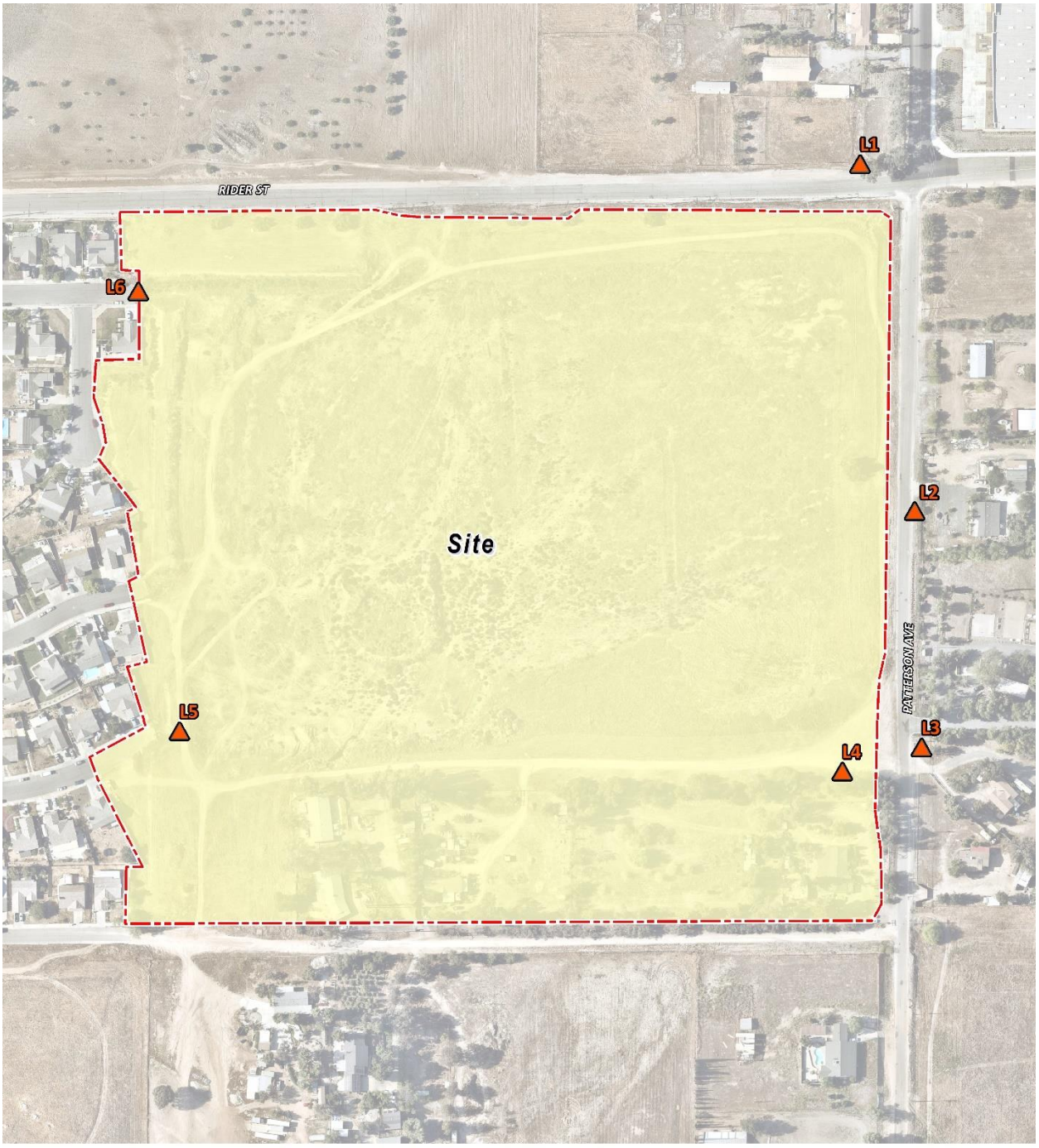
TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located north of the Project site near single-family residence at 19971 Patterson Avenue.	58.9	56.8	63.9
L2	Located east of the Project site near single-family residence at 20050 Patterson Avenue.	51.1	49.5	56.5
L3	Located southeast of the Project site near U-Turn for Christ at 20170 Patterson Avenue.	55.9	50.7	59.0
L4	Located south of the Project site near single-family residence at 20111 Patterson Avenue.	51.8	49.9	57.2
L5	Located west of the Project site near single-family residence at 23246 Sunny Canyon Street.	50.7	48.4	55.5
L6	Located west of the Project site near single-family residence at 23249 Norrisgrove Drive.	46.6	42.2	50.3

[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" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with County of Riverside Noise Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

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. (17) 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. (18) 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. (19)

6.1.1 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 the ten off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the County of Riverside General Plan Circulation Element, and the vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on the *Rider & Patterson Business Center Traffic Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios. (21)

- Existing (E)
- Existing plus Project (E+P)
- Existing plus Ambient Growth plus Cumulative (EAC) without Project Conditions
- Existing plus Ambient Growth plus Cumulative (EAPC) with Project Conditions
- Horizon Year (HY) without Project Conditions
- Horizon Year (HY) with Project Conditions

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic analysis.

Consistent with the *Rider & Patterson Business Center Traffic Analysis*, the Project is anticipated to generate a net total of 1,260 two-way trips per day (actual vehicles) that include 224 truck trips.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Classification[2]	Distance from Centerline to Receiving Land Use (Feet)	Vehicle Speed (mph)
1	Patterson Av.	n/o Placentia Av.	Sensitive	Secondary	87'	40
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	Major	59'	50
3	Harvill Av.	n/o Rider St.	Non-Sensitive	Major	59'	50
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	Major	59'	50
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	Major	59'	50
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	Expressway	92'	50
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	Expressway	92'	50
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	Expressway	92'	50
9	Rider St.	w/o Harvill Av.	Sensitive	Secondary	190'	40
10	Placentia Av.	w/o Harvill Av.	Sensitive	Secondary	80'	40

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to adjacent residential land uses.
[2] County of Riverside General Plan Circulation Element functional roadway classification.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing		EAC (2025)		HY (2045)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Patterson Av.	n/o Placentia Av.	277	737	277	737	294	754
2	Harvill Av.	n/o Cajalco Expy.	10,869	11,079	10,869	11,079	27,097	27,307
3	Harvill Av.	n/o Rider St.	8,718	9,285	8,718	9,285	18,726	19,293
4	Harvill Av.	n/o Placentia Av.	11,113	11,243	11,113	11,243	21,419	21,550
5	Harvill Av.	s/o Placentia Av.	11,318	11,442	11,318	11,442	25,261	25,385
6	Cajalco Expy.	w/o Harvill Av.	24,767	24,956	24,767	24,956	52,386	52,575
7	Cajalco Expy.	e/o Harvill Av.	27,644	27,812	27,644	27,812	70,471	70,639
8	Cajalco Expy.	e/o Harvill Av.	48,717	48,748	48,717	48,748	64,403	64,434
9	Rider St.	w/o Harvill Av.	1,709	2,406	1,709	2,406	1,965	2,662
10	Placentia Av.	w/o Harvill Av.	438	897	438	897	3,743	4,202

[1] Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.

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. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Rider & Patterson Business Center Traffic Analysis*. 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 for all without Project traffic scenarios, and Tables 6-5 to 6-7 show the vehicle mixes used for the with Project traffic scenarios.

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	77.53%	6.90%	15.57%	100.00%
Medium Trucks	87.61%	1.38%	11.01%	100.00%
Heavy Trucks	78.80%	2.83%	18.37%	100.00%

[1] Based on the February 8, 2022, 24-hour directional vehicle classification count collected on Harvill Avenue north of Rider Street (Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.)
"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.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	94.25%	2.50%	3.25%	100.00%

[1] Based on the February 8, 2022, 24-hour directional vehicle classification count collected on Harvill Avenue north of Rider Street (Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.)

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Patterson Av.	n/o Placentia Av.	91.75%	1.73%	6.51%	100.00%
2	Harvill Av.	n/o Cajalco Expy.	94.06%	2.49%	3.45%	100.00%
3	Harvill Av.	n/o Rider St.	93.52%	2.49%	3.99%	100.00%
4	Harvill Av.	n/o Placentia Av.	93.62%	2.56%	3.82%	100.00%
5	Harvill Av.	s/o Placentia Av.	94.32%	2.47%	3.21%	100.00%
6	Cajalco Expy.	w/o Harvill Av.	94.16%	2.50%	3.34%	100.00%
7	Cajalco Expy.	e/o Harvill Av.	94.17%	2.50%	3.33%	100.00%
8	Cajalco Expy.	e/o Harvill Av.	94.26%	2.50%	3.24%	100.00%
9	Rider St.	w/o Harvill Av.	88.47%	2.74%	8.79%	100.00%
10	Placentia Av.	w/o Harvill Av.	92.20%	1.87%	5.93%	100.00%

[1] Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EAC WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Patterson Av.	n/o Placentia Av.	91.81%	1.75%	6.44%	100.00%
2	Harvill Av.	n/o Cajalco Expy.	94.17%	2.50%	3.33%	100.00%
3	Harvill Av.	n/o Rider St.	93.90%	2.50%	3.61%	100.00%
4	Harvill Av.	n/o Placentia Av.	93.92%	2.53%	3.54%	100.00%
5	Harvill Av.	s/o Placentia Av.	94.28%	2.49%	3.23%	100.00%
6	Cajalco Expy.	w/o Harvill Av.	94.21%	2.50%	3.29%	100.00%
7	Cajalco Expy.	e/o Harvill Av.	94.22%	2.50%	3.28%	100.00%
8	Cajalco Expy.	e/o Harvill Av.	94.26%	2.50%	3.24%	100.00%
9	Rider St.	w/o Harvill Av.	89.03%	2.72%	8.25%	100.00%
10	Placentia Av.	w/o Harvill Av.	93.81%	2.37%	3.82%	100.00%

[1] Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: HY WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Patterson Av.	n/o Placentia Av.	91.84%	1.76%	6.39%	100.00%
2	Harvill Av.	n/o Cajalco Expy.	94.18%	2.50%	3.32%	100.00%
3	Harvill Av.	n/o Rider St.	93.92%	2.50%	3.59%	100.00%
4	Harvill Av.	n/o Placentia Av.	93.94%	2.53%	3.53%	100.00%
5	Harvill Av.	s/o Placentia Av.	94.28%	2.49%	3.23%	100.00%
6	Cajalco Expy.	w/o Harvill Av.	94.21%	2.50%	3.29%	100.00%
7	Cajalco Expy.	e/o Harvill Av.	94.22%	2.50%	3.28%	100.00%
8	Cajalco Expy.	e/o Harvill Av.	94.26%	2.50%	3.24%	100.00%
9	Rider St.	w/o Harvill Av.	89.15%	2.72%	8.13%	100.00%
10	Placentia Av.	w/o Harvill Av.	93.84%	2.37%	3.79%	100.00%

[1] Rider & Patterson Business Center Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *the Rider & Patterson Business Center Traffic Analysis* prepared by Urban Crossroads, Inc. (21) 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. 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 to 7-6 present a summary of the exterior traffic noise levels for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets for each traffic condition.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.5	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	70.4	63	135	290
3	Harvill Av.	n/o Rider St.	Non-Sensitive	69.4	RW	116	250
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	70.5	63	137	294
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	70.6	64	138	298
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	71.7	119	256	552
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	72.2	128	276	594
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	74.6	187	402	867
9	Rider St.	w/o Harvill Av.	Sensitive	52.2	RW	RW	RW
10	Placentia Av.	w/o Harvill Av.	Sensitive	52.0	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	55.6	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	70.6	65	139	300
3	Harvill Av.	n/o Rider St.	Non-Sensitive	70.1	60	130	280
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	70.9	68	146	314
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	70.6	64	139	299
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	71.8	121	260	560
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	72.2	130	279	602
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	74.6	187	402	867
9	Rider St.	w/o Harvill Av.	Sensitive	56.6	RW	RW	112
10	Placentia Av.	w/o Harvill Av.	Sensitive	56.7	RW	RW	RW

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EAC WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.7	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.3	115	248	533
3	Harvill Av.	n/o Rider St.	Non-Sensitive	72.7	90	194	417
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.3	98	212	456
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.0	110	236	509
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	74.9	196	422	910
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.2	239	515	1109
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	75.8	225	485	1044
9	Rider St.	w/o Harvill Av.	Sensitive	52.8	RW	RW	RW
10	Placentia Av.	w/o Harvill Av.	Sensitive	61.4	RW	RW	99

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EAC WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	55.6	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.4	116	251	540
3	Harvill Av.	n/o Rider St.	Non-Sensitive	73.1	95	204	440
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.5	102	219	471
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.0	110	237	510
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	75.0	197	425	916
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.2	240	517	1114
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	75.8	225	485	1044
9	Rider St.	w/o Harvill Av.	Sensitive	56.8	RW	RW	116
10	Placentia Av.	w/o Harvill Av.	Sensitive	62.2	RW	RW	113

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: HY WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.9	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.6	119	256	551
3	Harvill Av.	n/o Rider St.	Non-Sensitive	73.0	93	200	431
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.5	102	219	471
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.3	113	244	526
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	75.1	203	436	940
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.4	247	532	1145
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.0	232	501	1079
9	Rider St.	w/o Harvill Av.	Sensitive	52.9	RW	RW	RW
10	Placentia Av.	w/o Harvill Av.	Sensitive	61.6	RW	RW	102

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: HY WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Patterson Av.	n/o Placentia Av.	Sensitive	55.7	RW	RW	RW
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.6	120	259	558
3	Harvill Av.	n/o Rider St.	Non-Sensitive	73.3	98	211	454
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.7	105	226	486
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.3	113	244	527
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	75.2	204	439	946
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.5	248	534	1151
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.0	232	501	1079
9	Rider St.	w/o Harvill Av.	Sensitive	56.8	RW	RW	117
10	Placentia Av.	w/o Harvill Av.	Sensitive	62.4	RW	RW	116

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2025 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 49.5 to 74.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 55.6 to 74.6 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level increases range from 0.0 to 6.1 dBA CNEL on the study area roadway segments. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Patterson Avenue north of Placentia Avenue (Segment #1).

Section 7.5 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would experience *less than significant* noise level increases due to the proposed with Project traffic conditions.

7.3 EAC TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Existing plus Ambient Growth Plus Cumulative (EAC) without Project conditions CNEL noise levels. The EAC without Project exterior noise levels range from 49.7 to 76.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the EAC with Project conditions will range from 55.6 to 76.2 dBA CNEL. Table 7-8 shows that the Project off-site traffic noise level increases range from 0.0 to 5.9 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Patterson Avenue north of Placentia Avenue (Segment #1).

Section 7.5 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would experience *less than significant* noise level increases due to the proposed with Project traffic conditions.

7.4 HY TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Horizon Year (HY) without Project conditions CNEL noise levels. The HY without Project exterior noise levels range from 49.9 to 76.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the HY with Project conditions will range from 55.7 to 76.5 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases range from 0.0 to 5.8 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Patterson Avenue north of Placentia Avenue (Segment #1).

Section 7.5 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would experience *less than significant* noise level increases due to the proposed with Project traffic conditions.

TABLE 7-7: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Increment	Limit	Exceeded?
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.5	55.6	6.1	5.0	**Yes**
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	70.4	70.6	0.2	3.0	No
3	Harvill Av.	n/o Rider St.	Non-Sensitive	69.4	70.1	0.7	n/a	No
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	70.5	70.9	0.4	3.0	No
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	70.6	70.6	0.0	3.0	No
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	71.7	71.8	0.1	3.0	No
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	72.2	72.2	0.0	3.0	No
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	74.6	74.6	0.0	3.0	No
9	Rider St.	w/o Harvill Av.	Sensitive	52.2	56.6	4.4	5.0	No
10	Placentia Av.	w/o Harvill Av.	Sensitive	52.0	56.7	4.7	5.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?
"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 70 dBA CNEL land use compatibility criteria.

TABLE 7-8: EAC WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Increment	Limit	Exceeded?
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.7	55.6	5.9	5.0	**Yes**
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.3	74.4	0.1	3.0	No
3	Harvill Av.	n/o Rider St.	Non-Sensitive	72.7	73.1	0.4	3.0	No
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.3	73.5	0.2	3.0	No
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.0	74.0	0.0	3.0	No
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	74.9	75.0	0.1	3.0	No
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.2	76.2	0.0	3.0	No
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	75.8	75.8	0.0	3.0	No
9	Rider St.	w/o Harvill Av.	Sensitive	52.8	56.8	4.0	5.0	No
10	Placentia Av.	w/o Harvill Av.	Sensitive	61.4	62.2	0.8	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?
"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 70 dBA CNEL land use compatibility criteria.

TABLE 7-9: HY WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Increment	Limit	Exceeded?
1	Patterson Av.	n/o Placentia Av.	Sensitive	49.9	55.7	5.8	5.0	**Yes**
2	Harvill Av.	n/o Cajalco Expy.	Non-Sensitive	74.6	74.6	0.0	3.0	No
3	Harvill Av.	n/o Rider St.	Non-Sensitive	73.0	73.3	0.3	3.0	No
4	Harvill Av.	n/o Placentia Av.	Non-Sensitive	73.5	73.7	0.2	3.0	No
5	Harvill Av.	s/o Placentia Av.	Non-Sensitive	74.3	74.3	0.0	3.0	No
6	Cajalco Expy.	w/o Harvill Av.	Non-Sensitive	75.1	75.2	0.1	3.0	No
7	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.4	76.5	0.1	3.0	No
8	Cajalco Expy.	e/o Harvill Av.	Non-Sensitive	76.0	76.0	0.0	3.0	No
9	Rider St.	w/o Harvill Av.	Sensitive	52.9	56.8	3.9	5.0	No
10	Placentia Av.	w/o Harvill Av.	Sensitive	61.6	62.4	0.8	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated from the centerline to the nearest receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?
"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 70 dBA CNEL land use compatibility criteria.

7.5 PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

The off-site traffic noise analysis recognizes that the Project would generate a noise level increase of up to 6.1 dBA CNEL on Patterson Avenue. This noise level increase affects three existing residences located at 19542, 19543 and 19972 Patterson Avenue and is largely due to the lack of existing traffic volume. The existing traffic noise levels on this segment are calculated at 49.5 dBA CNEL. The addition of near-term Project traffic is expected to increase the off-site traffic noise levels to 55.6 dBA CNEL resulting in a project incremental traffic noise level increase of 6.1 dBA CNEL. To reduce the *potentially significant* Project traffic noise level increases on the study area roadway segment (Segment #1), potential noise mitigation measures are identified in this analysis. Potential mitigation measures discussed below include rubberized asphalt hot mix pavement and off-site noise barriers for the existing noise sensitive residential land uses adjacent to impacted roadway segments.

7.5.1 RUBBERIZED ASPHALT

Due to the potential noise attenuation benefits, rubberized asphalt is considered as a mitigation measure for the off-site Project-related traffic noise level increases. To reduce traffic noise levels at the noise source, Caltrans research has shown that rubberized asphalt can provide noise attenuation of approximately 4 dBA for automobile traffic noise levels. (19) Changing the pavement type of a roadway has been shown to reduce the amount of tire/pavement noise produced at the source under both near-term and long-term conditions. Traffic noise is generated primarily by the interaction of the tires and pavement, the engine, and exhaust systems. For automobiles noise, as much as 75 to 90-percent of traffic noise is generated by the interaction of the tires and pavement, especially when traveling at higher and constant speeds. (3) According to research conducted by Caltrans (19) and(18) the Canadian Ministry of Transportation and Highways (20) a 4 dBA reduction in tire/pavement noise is attainable using rubberized asphalt under typical operating conditions.

The effectiveness of reducing traffic noise levels is higher on roadways with low percentages of heavy trucks, since the heavy truck engine and exhaust noise is not affected by rubberized alternative pavement due to the truck engine and exhaust stack height above the pavement itself. (19) Per Caltrans guidance a truck stack height is modeled using a height of 11.5 feet above the road. (5) (21) With the primary off-site traffic noise source consisting of heavy trucks with a stack height of 11.5 feet off the ground, the tire/pavement noise reduction benefits associated rubberized asphalt will be primarily limited to autos. While the off-site Project-related traffic noise level increases would theoretically be reduced with the 4 dBA reduction provided by rubberized asphalt, the reduction would not provide reliable benefits for the noise levels generated by heavy truck traffic. This is, as previously stated, due to the noise source height difference between automobiles and trucks.

While rubberized asphalt could provide some nominal noise reduction, this noise study recognizes that rubberized asphalt is only effective for in the reduction of tire-on-pavement noise at higher speeds and would not materially reduce primary truck-related noise sources (e.g., truck engine noise and exhaust stack noise). Since the use of rubberized asphalt would not materially

lower off-site traffic noise levels at potentially affected receptors, rubberized asphalt is not proposed as mitigation for the Project and the off-site Project-related traffic noise level increases at adjacent land uses would remain *significant.*

7.5.2 OFF-SITE NOISE BARRIERS

While noise barriers are commonly used to reduce the potential traffic noise levels from nearby transportation noise source activities, they are typically developed in coordination with new noise sensitive residential development or as part of a roadway widening project. Even though off-site noise barriers are typically not developed due to individual off-site projects that contribute to the cumulative off-site traffic noise levels off-site noise barriers were considered in this analysis as a potential traffic noise mitigation measure to reduce the Project-related impacts.

Off-site noise barriers are estimated to provide a *readily perceptible* 5 dBA reduction which, according to the FHWA, is *simple* to attain when blocking the line-of-sight from the noise source to the receiver. (5) Caltrans guidance in the Highway Design Manual, Section 1102.3 (21), indicates that for design purposes, *the noise barrier should intercept the line of sight from the exhaust stack of a truck to the receptor*, and an 11.5-foot-high truck stack height is assumed to represent the truck engine and exhaust noise source. (21) Therefore, any exterior noise barriers at receiving noise sensitive land uses experiencing Project-related traffic noise level increases would need to be high enough and long enough to block the line-of-sight from the noise source (at 11.5 feet high per Caltrans) to the receiver (at 5 feet high per FHWA guidance) in order to provide a 5 dBA reduction per FHWA guidance it is not practical to construct 11.5 foot-high barriers at off-site locations along the study area roadway segments.

Additionally, arguably such barriers would block views from area land uses and would result in aesthetic and visual impacts affecting passersby that would off-set any noise attenuation benefits that may result from such walls. Lastly, the Applicant cannot autonomously construct off-site walls or other features at properties owned or controlled by others. As such, off-site noise barriers would not be feasible and would not lower the off-site traffic noise levels below a level of significance, and therefore, noise barriers are not proposed as mitigation for the Project.

7.6.3 SIGNIFICANT OFF-SITE TRAFFIC NOISE IMPACTS

Both rubberized asphalt and off-site noise barriers are considered as potential noise mitigation measures to reduce the *potentially significant* off-site traffic noise level increases shown on Tables 7-7 to 7-9. However, due to the reasons outlined about neither form of mitigation is recommended for implementation since they would not eliminate the off-site traffic noise level increases at the adjacent land uses to the impacted roadway segments. Therefore, the Project-related off-site traffic noise level increases at adjacent noise-sensitive land uses are considered a *significant and unavoidable* impact.

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, six receiver locations in the vicinity of the Project site were identified. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing residence at 19971 Patterson Avenue, approximately 208 feet north of the Project site. R1 is placed in the private outdoor living areas (backyard) facing 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 existing residence at 20050 Patterson Avenue, approximately 155 feet east of the Project site. R2 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

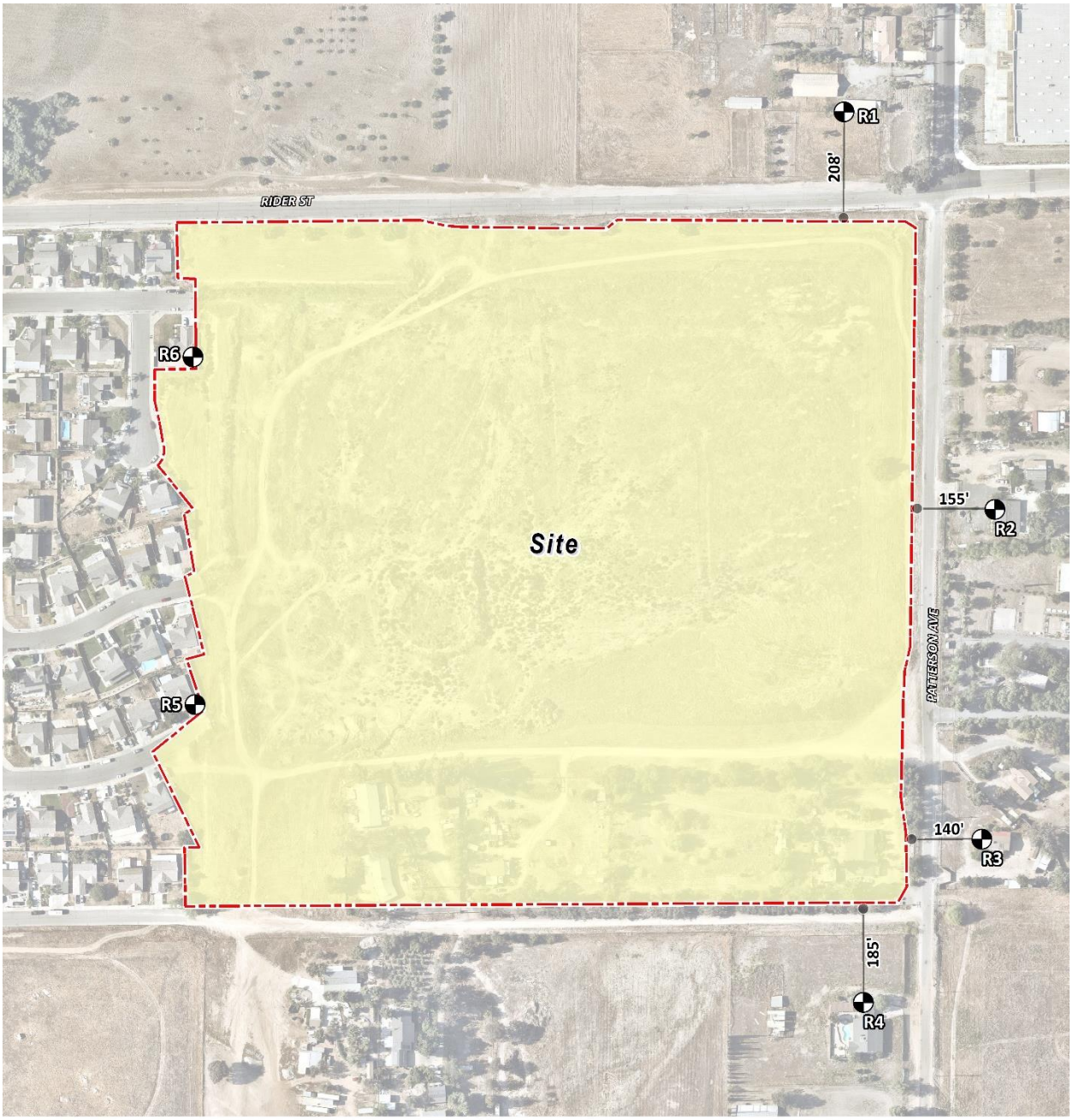
R3: Location R3 represents the existing residence at 20210 Patterson Avenue, approximately 140 feet east of the Project site. R3 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing residence at 20281 Patterson Avenue, approximately 185 feet south of the Project site. R4 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R5: Location R5 represents the existing residence at 23246 Sunny Canyon Street located immediately adjacent to the southwestern portion of the site boundary. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

R6: Location R6 represents the existing residence at 23249 Norrisgrove Avenue located immediately adjacent to the northwestern portion of the site boundary. A 24-hour noise measurement was taken near this location, L6, to describe the existing ambient noise environment.

EXHIBIT 8-A: 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 Rider & Patterson Business Center Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels. The operational noise analysis includes the planned berm west of the loading dock areas for the warehouse building. The berm shown on Exhibit 9-A is designed for screening, privacy, noise control, and security.

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. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed building, 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, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements.

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. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements all operating at the same time. 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 precision 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. (16)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

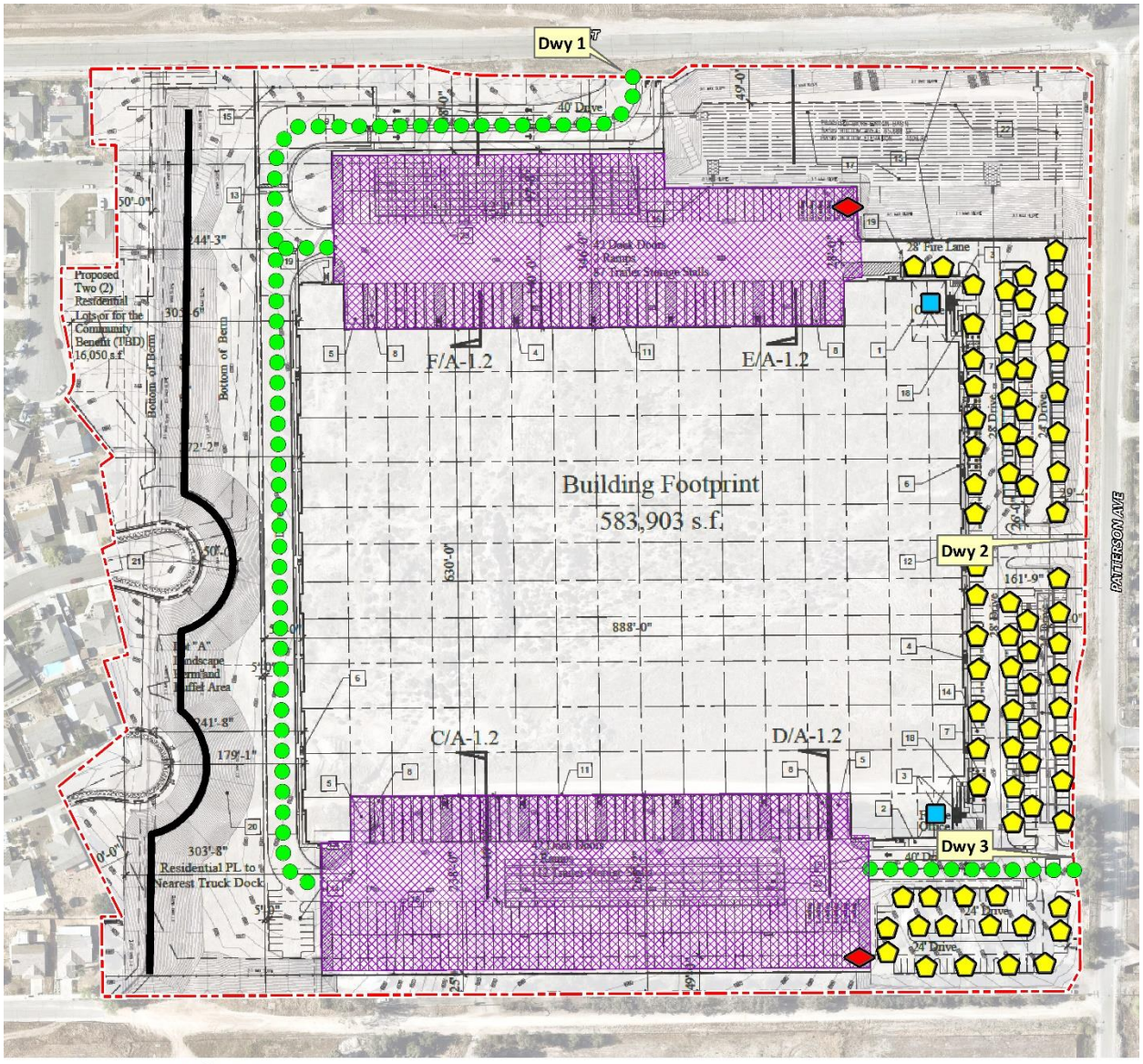


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./ Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[3]
		Day	Night		
Loading Dock Activity	8'	60	60	62.8	103.4
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	30	57.3	89.0
Parking Lot Vehicle Movements	5'	60	60	52.6	81.1
Truck Movements	8'	60	60	59.8	93.2

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes 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. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck. Loading dock activity is estimated during all the daytime, evening, and nighttime hours.

9.2.4 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. 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 peak 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 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, and 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 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building.

9.2.6 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of an Amazon warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 52.6 dBA L_{eq}. 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 in combination with car doors opening and closing.

9.2.7 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represents multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

Consistent with the *Rider & Patterson Business Center Trip Generation Assessment* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 224 truck trips per day. (21) Using the estimated number of truck trips in combination with time-of-day vehicle splits, the number of truck movements were calculated at each driveway location. As shown on Table 9-2, this information is then used to calculate the truck movements noise source activity based on the number of events by time of day.

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

Entry Gate & Truck Movement Location[1]	Total Project Truck Trips[2]	Trip Dist.[3]	Truck Trips by Location[4]	Time of Day Vehicle Splits[5]			Truck Movements[6]		
				Day	Evening	Night	Day	Evening	Night
Driveway 1	224	60%	134	78.80%	2.83%	18.37%	106	4	25
Driveway 3	224	40%	90	78.80%	2.83%	18.37%	71	3	16

[1] Driveway locations as shown on the Site Plan Exhibit 9-A.
[2] Total Project truck trips according to Table 4-2 of the Rider and Patterson Traffic Analysis.
[3] Project truck trip distribution according to Exhibit 4-1 of the Rider and Patterson Traffic Analysis.
[4] Calculated trip trucks per location represents the product of the total project truck trips by and the trip distribution.
[5] Heavy truck time of day vehicle splits as shown on Table 6-3.
[6] Calculated time of day entry gate and truck movements by location.

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 outdoor noise levels.

Using the ISO 9613-2 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 summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 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 CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs including the planned berm used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements, 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. Table 9-3 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 37.2 to 45.5 dBA L_{eq}.

TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Loading Dock Activity	43.5	26.3	39.5	41.1	32.2	39.2
Roof-Top Air Conditioning Units	27.6	30.9	31.3	30.0	19.5	21.5
Trash Enclosure Activity	33.6	23.3	28.7	31.4	13.5	20.7
Parking Lot Vehicle Movements	34.6	44.5	41.7	38.3	16.2	18.9
Truck Movements	34.4	26.2	39.7	34.5	35.3	38.6
Total (All Noise Sources)	**44.9**	**44.8**	**45.5**	**44.0**	**37.2**	**42.0**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Table 9-4 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 34.1 to 44.7 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.

TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Loading Dock Activity	43.5	26.3	39.5	41.1	32.2	39.2
Roof-Top Air Conditioning Units	25.2	28.5	28.9	27.6	17.1	19.1
Trash Enclosure Activity	29.6	19.4	24.8	27.4	9.5	16.8
Parking Lot Vehicle Movements	34.6	44.5	41.7	38.3	16.2	18.9
Truck Movements	28.1	19.7	33.3	28.1	29.0	32.3
Total (All Noise Sources)	**44.3**	**44.7**	**44.3**	**43.3**	**34.1**	**40.1**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of Riverside exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-5 shows the operational noise levels associated with Rider & Patterson Business Center Project will not exceed the County of Riverside daytime and nighttime exterior noise level standards. Therefore,

the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-5: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	44.3	44.3	55	45	No	No
R2	44.7	44.7	55	45	No	No
R3	44.3	44.3	55	45	No	No
R4	43.3	43.3	55	45	No	No
R5	34.1	34.1	55	45	No	No
R6	40.1	40.1	55	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed operational noise level calculations are included in Appendix 9.1.
[3] Exterior noise level standards, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby 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. (2) 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 daytime and nighttime ambient conditions are presented on Tables 9-6 and 9-7, respectively. As indicated on Tables 9-6, the Project will generate a daytime operational noise level increase ranging from 0.1 to 0.9 dBA L_{eq} at the nearest receiver locations. Table 9-7 shows that the Project will generate a nighttime operational noise level increases ranging from 0.2 to 2.1 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1, and, therefore, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-6: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

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	44.3	L1	58.9	59.0	0.1	5.0	No
R2	44.7	L2	51.1	52.0	0.9	5.0	No
R3	44.3	L3	55.9	56.2	0.3	5.0	No
R4	43.3	L4	51.8	52.4	0.6	5.0	No
R5	34.1	L5	50.7	50.8	0.1	5.0	No
R6	40.1	L6	46.6	47.5	0.9	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-3.
[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 9-7: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

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	44.3	L1	56.8	57.0	0.2	5.0	No
R2	44.7	L2	49.5	50.7	1.2	5.0	No
R3	44.3	L3	50.7	51.6	0.9	5.0	No
R4	43.3	L4	49.9	50.8	0.9	5.0	No
R5	34.1	L5	48.4	48.6	0.2	5.0	No
R6	40.1	L6	42.2	44.3	2.1	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-4.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime 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.

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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 including the site adjacent roadway improvements in relation to the nearest sensitive receiver locations previously described in Section 8. To support the Project development, off-site street widening, and storm drain construction activity will take place on Rider Street, Patterson Avenue and Walnut Street. The off-site improvements will be installed within the existing public right-of-way (ROW) with construction activities moving linearly along a proposed alignment. It is expected that the off-site construction activities would not take place at one location for the entire duration of construction. Construction noise from this off-site work would, therefore, be relatively short term and the noise levels would be reduced as construction work moves linearly along the existing public ROW and farther from sensitive uses.

According to Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (11) In addition, neither the County of Riverside General Plan or County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual is used for analysis of daytime construction impacts. The FTA considers a daytime exterior construction noise level of 80 dBA Leq as a reasonable threshold for noise sensitive residential land use with a nighttime exterior construction noise level of 70 dBA Leq (8 p. 179).

10.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, 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. (21) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 10-2, the construction noise levels are expected to range from 57.9 to 76.1 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]	Combined Sound Power Level (PWL)[3]
Demolition	Demolition Equipment	82	83	115
	Backhoes	74		
	Hauling Trucks	72		
Site Preparation	Crawler Tractors	78	80	112
	Hauling Trucks	72		
	Rubber Tired Dozers	75		
Grading	Graders	81	83	115
	Excavators	77		
	Compactors	76		
Building Construction	Cranes	73	81	113
	Tractors	80		
	Welders	70		
Paving	Pavers	74	83	115
	Paving Equipment	82		
	Rollers	73		
Architectural Coating	Cranes	73	77	109
	Air Compressors	74		
	Generator Sets	70		

[1] FHWA Roadway Construction Noise Model (RCNM).
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calibrated using the CadnaA noise model at the reference distance to the noise source.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	65.0	62.4	65.0	63.0	65.0	59.0	65.0
R2	68.9	66.3	68.9	66.9	68.9	62.9	68.9
R3	65.0	63.3	65.0	63.0	65.0	59.0	65.0
R4	68.9	61.3	68.9	66.9	68.9	62.9	68.9
R5	65.9	76.1	65.9	63.9	65.9	59.9	76.1
R6	63.9	73.8	63.9	61.9	63.9	57.9	73.8

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	65.0	80	No
R2	68.9	80	No
R3	65.0	80	No
R4	68.9	80	No
R5	76.1	80	No
R6	73.8	80	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area as shown on Exhibit 10-B. Since the nighttime concrete pours will take place outside the permitted by Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), the Project Applicant will be required to obtain authorization for nighttime work from the County of Riverside. Any nighttime construction noise activities are evaluated against the FTA nighttime exterior construction noise level threshold of 70 dBA L_{eq} for noise sensitive residential land use (8 p. 179).

10.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

To estimate the noise levels due to nighttime concrete pour activities, sample reference noise level measurements were taken during a nighttime concrete pour at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling.

To describe the nighttime concrete pour noise levels associated with the construction of the Rider & Patterson Business Center, this analysis relies on reference sound pressure level of 67.7 dBA L_{eq} at 50 feet representing a sound power level of 100.3 dBA L_w. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA L_w is used to describe the expected Project nighttime concrete pour noise activities.

10.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 40.8 to 44.1 dBA $L_{eq.}$ The analysis shows that the unmitigated nighttime concrete pour activities will satisfy the FTA 70 dBA L_{eq} nighttime residential noise level threshold at all the nearest noise sensitive receiver locations. Therefore, the noise impacts due to Project construction nighttime concrete pour noise activity are considered *less than significant* at all receiver locations with prior authorization for nighttime work from the County of Riverside. Appendix 10.2 includes the CadnaA nighttime concrete pour noise model inputs.

EXHIBIT 10-B: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS

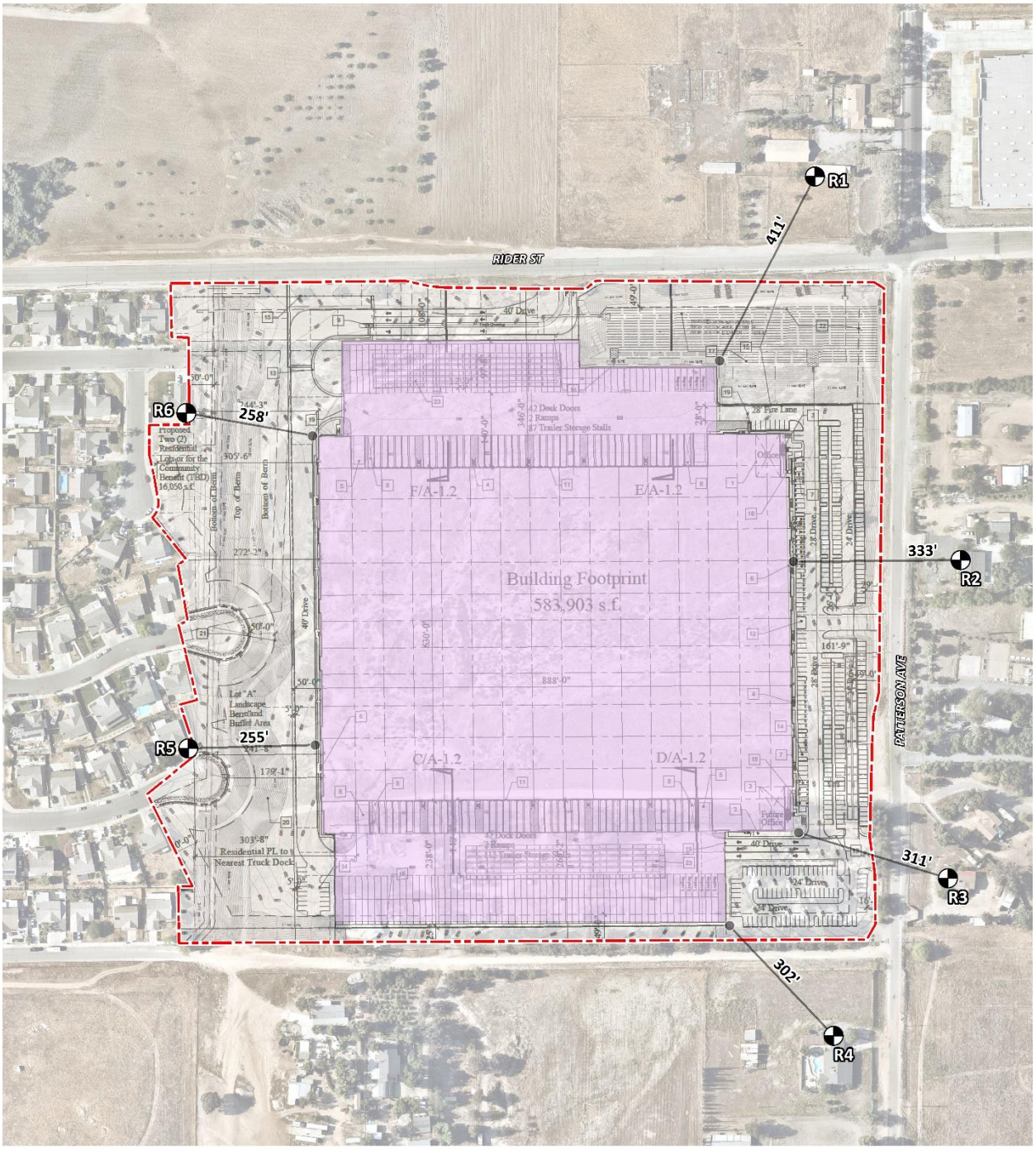

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Concrete Pour Construction Noise Levels (dBA L_{eq})		
	Exterior Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	42.9	70	No
R2	44.1	70	No
R3	43.4	70	No
R4	42.9	70	No
R5	40.8	70	No
R6	41.6	70	No

[1] Concrete noise source and receiver locations are shown on Exhibit 10-B.
[2] Nighttime Concrete Pour noise model inputs are included in Appendix 10.2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-5: 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
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 50 to 141 feet from Project construction activities including the planned 50-foot building setback at the residential areas, construction vibration velocity levels are estimated to range from 0.016 to 0.074 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration

levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site. Moreover, the vibration levels reported at the sensitive receiver locations 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 perimeter.

TABLE 10-6: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[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	Vibratory Roller	Highest Vibration Level		
R1	127'	0.000	0.003	0.007	0.008	0.018	0.018	0.3	No
R2	111'	0.000	0.004	0.008	0.010	0.022	0.022	0.3	No
R3	86'	0.000	0.005	0.012	0.014	0.033	0.033	0.3	No
R4	141'	0.000	0.003	0.006	0.007	0.016	0.016	0.3	No
R5	50'	0.001	0.012	0.027	0.031	0.074	0.074	0.3	No
R6	50'	0.001	0.012	0.027	0.031	0.074	0.074	0.3	No

[1] Construction noise source and eceiver locations are shown on Exhibit 10-A.
[2] Distance from receiver building facade to Project construction activity (Project site boundary with 50 foot building setback at residential areas).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
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5. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
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7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
9. **Office of Planning and Research.** *State of California General Plan Guidelines.* 2019.
10. **County of Riverside.** *General Plan Noise Element.* December 2015.
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15. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
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17. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
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19. **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.
20. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
21. **Urban Crossroads, Inc.** *Rider & Patterson Business Center Traffic Analysis.* September 2022.

22. **California Department of Transportation Environmental Program.** *I-80 Davis OGAC Pavement Noise Study.* September 2001.

23. **Canadian Ministry of Transportation and Highways, Highway Environment Branch.** *Open-Graded Asphalt 'Quiet Pavement' - Assessment of Traffic Noise Reduction Performance.* November 1995.

24. **California Department of Transportation.** *Highway Design Manual, Chapter 1100 Highway Traffic Noise Abatement.* November 2017.

25. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Rider & Patterson Business 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.

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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

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APPENDIX 3.1:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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Chapter 9.52 NOISE REGULATION

Sections:

9.52.010 Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

9.52.020 Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

   1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and

   2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws.

(Ord. 847 § 2, 2006)

9.52.030 Definitions.

As used in this chapter, the following terms shall have the following meanings:

"Audio equipment" means a television, stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Decibel (dB)" means a unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately one hundred thirty (130) decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. "A-weighting (dBA)" means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.

2. "Maximum sound level (L_{max})" means the maximum sound level measured on a sound level meter.

"Governmental agency" means the United States, the state of California, Riverside County, any city within Riverside County, any special district within Riverside County or any combination of these agencies.

"Land use permit" means a discretionary permit issued by Riverside County pursuant to Riverside County Ordinance No. 348.

"Motor vehicle" means a vehicle that is self-propelled.

"Motor vehicle sound system" means a stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Noise" means any loud, discordant or disagreeable sound.

"Occupied property" means property upon which is located a residence, business or industrial or manufacturing use.

"Off-highway vehicle" means a motor vehicle designed to travel over any terrain.

"Public or private school" means an institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

"Public property" means property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Sensitive receptor" means a land use that is identified as sensitive to noise in the noise element of the Riverside County general plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

"Sound-amplifying equipment" means a loudspeaker, microphone, megaphone or other similar device.

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

(Ord. 847 § 3, 2006)

9.52.040 General sound level standards.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1

Sound Level Standards (Db L_{max})

GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7 am—10 pm	10 pm—7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
	MDR	Medium Density Residential	2—5	55	45
	MHDR	Medium High Density Residential	5—8	55	45
	HDR	High Density Residential	8—14	55	45
	VHDR	Very High Density Residential	14—20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45

		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
Rural	RR	Rural Residential	5 AC	45	45
	RM	Rural Mountainous	10 AC	45	45
	RD	Rural Desert	10 AC	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45
	MR	Mineral Resources		75	45

(Ord. 847 § 4, 2006)

9.52.050 Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.52.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

(Ord. 847 § 5, 2006)

9.52.060 Special sound sources standards.

The general sound level standards set forth in Section 9.52.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than ninety-six (96) dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than one hundred one (101) dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of twenty (20) inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of ten p.m. and eight a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than one hundred (100) feet from the vehicle.

B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of ten p.m. and eight a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.

C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of ten p.m. and eight a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than one hundred (100) feet from the equipment.

D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between the hours of ten p.m. and eight a.m.

2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than two hundred (200) feet from the equipment or music.

(Ord. 847 § 6, 2006)

9.52.070 Exceptions.

Exceptions may be requested from the standards set forth in Section 9.52.040 or 9.52.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

A. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the director of building and safety on forms provided by the building and safety department and shall be accompanied by the appropriate filing fee. No public hearing is required.

2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. No public hearing is required.

3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the planning director shall set the matter for public hearing before the planning commission, notice of which shall be given as provided in Section 18.26c of Riverside County Ordinance No. 348. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

B. Requirements for Approval. The appropriate decisionmaking body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decisionmaking body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

C. Appeals. The director of building and safety's decision on an application for a construction-related exception is considered final. The planning director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decisionmaking body or officer shall mail notice of the decision to the applicant. Within ten (10) calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the board of supervisors. Upon receipt of an appeal and payment of the appropriate appeal fee, the clerk of the board shall set the matter for hearing not less than five days nor more than thirty (30) days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The board of supervisors shall render its decision within thirty (30) days after the appeal hearing is closed.

D. Effect of a Pending Continuous-Events Exception Application. For a period of one hundred eighty (180) days from the effective date of this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to sanction the sound and if a decision on the application is pending.

(Ord. 847 § 7, 2006)

9.52.080 Enforcement.

The Riverside County sheriff and code enforcement shall have the primary responsibility for enforcing this chapter; provided, however, the sheriff and code enforcement may be assisted by the public health department. Violations shall be prosecuted as described in Section 9.52.100 of this chapter, but nothing in this chapter shall

prevent the sheriff, code enforcement or the department of public health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs.

(Ord. 847.1 § 1, 2007: Ord. 847 § 8, 2006)

9.52.090 Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.52.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter.

(Ord. 847 § 9, 2006)

9.52.100 Violations and penalties.

Any person who violates any provision of this chapter once or twice within a one hundred eighty (180) day period shall be guilty of an infraction. Any person who violates any provision of this chapter more than twice within a one hundred eighty (180) day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts:

A. For the first violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be five hundred dollars ($500.00).

B. For the second violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be seven hundred fifty dollars ($750.00).

C. For any further violations within a one hundred eighty (180) day period, the minimum mandatory fine shall be one thousand dollars ($1,000.00) or imprisonment in the county jail for a period not exceeding six months, or both.

(Ord. 847 § 10, 2006)

ORDINANCE NO. 847
(AS AMENDED THROUGH 847.1)
AN ORDINANCE OF THE COUNTY OF RIVERSIDE AMENDING
ORDINANCE NO. 847 REGULATING NOISE

The Board of Supervisors of the County of Riverside Ordains as Follows:

Section 1. INTENT. At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the Board of Supervisors hereby declares that noise shall be regulated in the manner described herein. This ordinance is intended to establish countywide standards regulating noise. This ordinance is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are hereby established.

Section 2. EXEMPTIONS. Sound emanating from the following sources is exempt from the provisions of this ordinance:

a. Facilities owned or operated by or for a governmental agency.
b. Capital improvement projects of a governmental agency.
c. The maintenance or repair of public properties.
d. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile.
e. Public or private schools and school-sponsored activities
f. Agricultural operations on land designated Agriculture in the Riverside County General Plan, or land zoned A-1 (Light Agriculture), A-P (Light Agriculture With Poultry), A-2 (Heavy Agriculture), A-D (Agriculture-Dairy) or C/V (Citrus/Vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile.
g. Wind Energy Conversion Systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348.
h. Private construction projects located one-quarter (1/4) of a mile or more from an inhabited dwelling.
i. Private construction projects located within one-quarter (1/4) of a mile from an inhabited dwelling, provided that:
    1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September; and
    2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

j. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of 7 a.m. and 8 p.m.

k. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems

l. Heating and air conditioning equipment.

m. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare.

n. The discharge of firearms consistent with all state laws.

Section 3. DEFINITIONS. As used in this ordinance, the following terms shall have the following meanings:

a. Audio Equipment. A television, stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

b. Decibel (dB). A unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately one hundred thirty (130) decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. A-weighting (dBA) means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.
2. Maximum Sound level (L_{max}) means the maximum sound level measured on a sound level meter.

c. Governmental Agency. The United States, the State of California, Riverside County, any city within Riverside County, any special district within Riverside County or any combination of these agencies.

d. Land Use Permit. A discretionary permit issued by Riverside County pursuant to Riverside County Ordinance No. 348.

e. Motor Vehicle. A vehicle that is self-propelled.

f. Motor Vehicle Sound System. A stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

g. Noise. Any loud, discordant or disagreeable sound.

h. Occupied Property. Property upon which is located a residence, business or industrial or manufacturing use.

i. Off-Highway Vehicle. A motor vehicle designed to travel over any terrain.

j. Public Property. Property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

k. Public or Private School. An institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

l. Sensitive Receptor. A land use that is identified as sensitive to noise in the Noise Element of the Riverside County General Plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

m. Sound Level Meter. An instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

n. Sound Amplifying Equipment. A loudspeaker, microphone, megaphone or other similar device.

Section 4. GENERAL SOUND LEVEL STANDARDS. No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1 SOUND LEVEL STANDARDS (Db L_{max})					
GENERAL PLAN FOUNDATION COMPONENT	**GENERAL PLAN LAND USE DESIGNATION**	**GENERAL PLAN LAND USE DESIGNATION NAME**	**DENSITY**	**MAXIMUM DECIBEL LEVEL**	
				7am-10pm	**10pm-7am**
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
	MDR	Medium Density Residential	2--5	55	45
	MHDR	Medium High Density Residential	5--8	55	45
	HDR	High Density Residential	8--14	55	45
	VHDR	Very High Density Residential	14-20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45
		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 ac	55	45
	VLDR	Very Low Density Residential	1 ac	55	45
	LDR	Low Density Residential	1/2 ac	55	45
Rural	RR	Rural Residential	5 ac	45	45
	RM	Rural Mountainous	10 ac	45	45
	RD	Rural Desert	10 ac	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45
	MR	Mineral Resources		75	45

Section 5. SOUND LEVEL MEASUREMENT METHODOLOGY. Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 8. of this ordinance. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

Section 6. SPECIAL SOUND SOURCES STANDARDS. The general sound level standards set forth in Section 4. of this ordinance apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitute separate violations of this ordinance.

a. Motor Vehicles.
   1. Off-Highway Vehicles.
      i. No person shall operate an off-highway vehicle unless it is equipped with a USDA qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.
      ii. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than 96 dBA if the vehicle was manufactured on or after January 1, 1986 or is not more that 101 dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of twenty (20) inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.
   2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of 10:00 p.m. and 8:00 a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than one hundred (100) feet from the vehicle.

b. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of 10:00 p.m. and 8:00 a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools

or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.

c. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of 10:00 p.m. and 8:00 a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than one hundred (100) feet from the equipment.

d. Sound Amplifying Equipment and Live Music. No person shall install, use or operate sound amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control.

1. Sound amplifying equipment or live music is prohibited between the hours of 10:00 p.m. and 8:00 a.m.
2. Sound emanating from sound amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than two hundred (200) feet from the equipment or music.

Section 7. EXCEPTIONS. Exceptions may be requested from the standards set forth in Sections 4. or 6. of this ordinance and may be characterized as construction-related, single event or continuous events exceptions.

a. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the Director of Building and Safety on forms provided by the Building and Safety Department and shall be accompanied by the appropriate filing fee. No public hearing is required.
2. Single Event Exceptions. An application for a single event exception shall be made to and considered by the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. No public hearing is required.
3. Continuous Events Exceptions. An application for a continuous events exception shall be made to the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous events exception, the Planning Director shall set the matter for public hearing before the Planning Commission, notice of which shall be given as provided in Section 18.26.c. of Riverside County Ordinance No. 348. Notwithstanding the above, an application for a

continuous events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

b. Requirements for Approval. The appropriate decision making body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decision making body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

c. Appeals. The Director of Building and Safety's decision on an application for a construction-related exception is considered final. The Planning Director's decision on an application for a single event exception is considered final. After making a decision on an application for a continuous events exception, the appropriate decision making body or officer shall mail notice of the decision to the applicant. Within ten (10) calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the Board of Supervisors. Upon receipt of an appeal and payment of the appropriate appeal fee, the Clerk of the Board shall set the matter for hearing not less than five (5) days nor more than thirty (30) days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The Board of Supervisors shall render its decision within thirty (30) days after the appeal hearing is closed.

d. Effect of a Pending Continuous Events Exception Application. For a period of one hundred and eighty (180) days from the effective date of this ordinance, no person creating any sound prohibited by this ordinance shall be considered in violation of this ordinance if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous events exception has been filed to sanction the sound and if a decision on the application is pending.

Section 8. ENFORCEMENT. The Riverside County Sheriff and Code Enforcement shall have the primary responsibility for enforcing this ordinance; provided, however, the Sheriff and Code Enforcement may be assisted by the Public Health Department. Violations shall be prosecuted as described in Section 10. of this ordinance, but nothing in this ordinance shall prevent the Sheriff, Code Enforcement or the Department of Public Health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs.

Section 9. DUTY TO COOPERATE. No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 8. of this ordinance when they are engaged in the process of enforcing the provisions of this ordinance. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this ordinance.

Section 10. VIOLATIONS AND PENALTIES. Any person who violates any provision of this ordinance once or twice within a one hundred and eighty (180) day period shall be guilty of an infraction. Any person who violates any provision of this ordinance more than twice within a one hundred and eighty (180) day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts.

a. For the first violation within a one hundred and eighty (180) day period the minimum mandatory fine shall be five hundred dollars ($500).
b. For the second violation within a one hundred and eighty (180) day period the minimum mandatory fine shall be seven hundred and fifty dollars ($750).
c. For any further violations within a one hundred and eighty (180) day period the minimum mandatory fine shall be one thousand dollars ($1,000) or imprisonment in the County jail for a period not exceeding six (6) months, or both.

Section 11. SEVERABILITY. If any provision of this ordinance, or the application thereof to any person or circumstance, is held invalid, such invalidity shall not affect the remainder of the ordinance or the application of such provision(s) to other persons or circumstances.

Section 12. SAVINGS CLAUSE. The adoption of this ordinance shall not in any manner affect the prosecution of ordinance violations, which violations were committed prior to the effective date of this ordinance, nor be construed as a waiver of any permit, license, penalty or penal provisions applicable to such violations. The provisions of this ordinance, insofar as they are substantially the same as ordinance provisions previously adopted by Riverside County relating to the same subject matter, shall be construed as restatements and continuations, and not as new enactments.

Section 13. EFFECTIVE DATE. This ordinance shall take effect 30 days after its adoption.

Adopted: 847 Item 3.19 of 04/04/2006 (Eff: 05/04/2006)
Amended: 847.1 Item 3.4 of 06/19/2007 (Eff: 07/19/2007)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 14198 Study Area Photos

L1_E
33, 49' 49.300000"117, 15' 10.960000"

L1_N
33, 49' 49.320000"117, 15' 10.900000"

L1_S
33, 49' 49.300000"117, 15' 10.960000"

L1_W
33, 49' 49.300000"117, 15' 10.930000"

L2_E
33, 49' 43.210000"117, 15' 9.670000"

L2_N
33, 49' 43.260000"117, 15' 9.750000"

JN: 14198 Study Area Photos

L2_S
33, 49' 43.230000"117, 15' 9.700000"

L2_W
33, 49' 43.240000"117, 15' 9.700000"

L3_E
33, 49' 39.000000"117, 15' 9.480000"

L3_N
33, 49' 39.070000"117, 15' 9.560000"

L3_S
33, 49' 38.980000"117, 15' 9.450000"

L3_W
33, 49' 39.040000"117, 15' 9.480000"

JN: 14198 Study Area Photos

L4_E
33, 49' 38.570000"117, 15' 11.150000"

L4_N
33, 49' 38.600000"117, 15' 11.150000"

L4_S
33, 49' 38.590000"117, 15' 11.150000"

L4_W
33, 49' 38.600000"117, 15' 11.010000"

L5_E
33, 49' 39.300000"117, 15' 25.080000"

L5_N
33, 49' 39.200000"117, 15' 25.160000"

JN: 14198 Study Area Photos

L5_S
33, 49' 39.370000"117, 15' 25.130000"

L5_W
33, 49' 39.310000"117, 15' 25.080000"

L6_E
33, 49' 46.910000"117, 15' 26.200000"

L6_N
33, 49' 46.950000"117, 15' 26.120000"

L6_S
33, 49' 46.940000"117, 15' 26.170000"

L6_W
33, 49' 46.940000"117, 15' 26.150000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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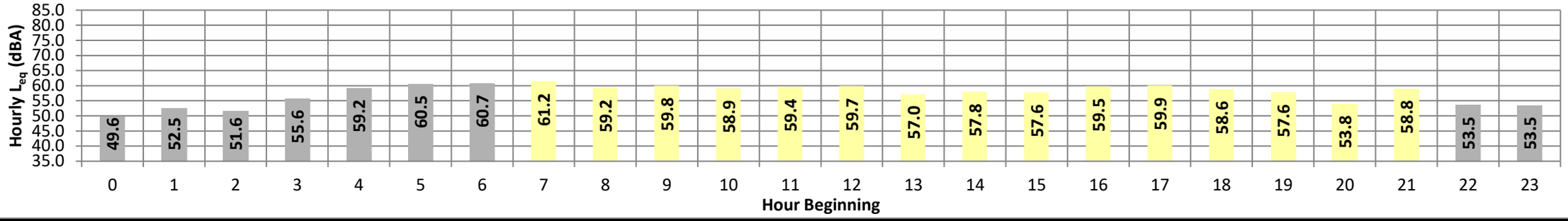
24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L1 - Located north of the Project site near single-family *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* residence at 19971 Patterson Avenue. *Analyst:* A. Khan

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	49.6	55.8	46.8	55.5	55.2	53.7	52.3	49.6	48.6	47.3	47.1	46.9	49.6	10.0	59.6
	1	52.5	63.8	46.0	63.3	62.7	59.1	55.0	50.7	48.9	46.8	46.4	46.1	52.5	10.0	62.5
	2	51.6	56.3	49.4	56.1	55.6	54.6	53.7	51.8	51.0	49.9	49.7	49.5	51.6	10.0	61.6
	3	55.6	65.4	50.5	65.1	64.7	62.2	59.7	53.9	52.5	51.1	50.9	50.6	55.6	10.0	65.6
	4	59.2	67.8	54.6	67.5	67.1	65.0	63.2	58.4	56.8	55.3	55.0	54.8	59.2	10.0	69.2
	5	60.5	69.4	56.3	69.0	68.6	66.3	64.7	59.2	57.8	56.7	56.6	56.3	60.5	10.0	70.5
	6	60.7	69.9	55.5	69.5	68.9	66.9	64.9	60.4	57.7	56.0	55.8	55.6	60.7	10.0	70.7
Day	7	61.2	71.1	54.6	70.7	70.2	68.3	66.5	59.7	56.7	55.1	54.9	54.7	61.2	0.0	61.2
	8	59.2	78.4	46.1	77.8	76.9	74.4	72.0	61.9	55.8	48.2	47.1	46.3	59.2	0.0	59.2
	9	59.8	71.0	47.5	70.3	69.6	67.6	65.5	57.9	51.8	48.5	48.0	47.6	59.8	0.0	59.8
	10	58.9	69.7	47.1	69.4	68.9	66.5	64.4	56.8	51.8	48.1	47.6	47.3	58.9	0.0	58.9
	11	59.4	73.7	47.0	73.2	72.7	70.2	68.1	60.0	54.9	49.0	48.2	47.4	59.4	0.0	59.4
	12	59.7	75.6	47.4	74.9	74.3	72.8	71.9	69.2	63.9	48.5	48.0	47.6	59.7	0.0	59.7
	13	57.0	67.1	46.8	66.7	66.2	64.2	62.3	56.0	51.3	47.6	47.2	46.9	57.0	0.0	57.0
	14	57.8	67.9	47.6	67.4	66.9	65.0	63.2	57.0	52.5	48.5	48.2	47.8	57.8	0.0	57.8
	15	57.6	79.1	47.3	78.6	78.2	75.4	71.7	60.5	53.8	48.4	47.9	47.4	57.6	0.0	57.6
	16	59.5	71.2	46.5	70.8	70.4	68.6	66.8	59.4	53.1	47.6	47.1	46.7	59.5	0.0	59.5
	17	59.9	69.7	49.3	69.3	68.7	66.6	65.1	60.0	54.8	50.3	49.8	49.4	59.9	0.0	59.9
	18	58.6	70.0	49.6	69.5	69.0	66.8	64.7	58.8	53.4	50.4	50.1	49.7	58.6	0.0	58.6
	19	57.6	71.1	48.5	70.7	70.3	67.6	65.3	57.4	52.5	49.3	48.9	48.6	57.6	5.0	62.6
	20	53.8	64.0	46.8	63.7	63.1	60.8	58.6	52.5	49.5	47.4	47.2	46.9	53.8	5.0	58.8
	21	58.8	69.4	48.7	69.1	68.7	67.5	66.5	61.8	55.8	49.9	49.4	48.8	58.8	5.0	63.8
Night	22	53.5	64.1	46.3	63.6	63.1	61.2	58.5	51.1	48.8	47.0	46.7	46.4	53.5	10.0	63.5
	23	53.5	64.5	45.0	64.2	63.8	61.4	59.1	50.2	47.4	45.6	45.4	45.1	53.5	10.0	63.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	53.8	64.0	46.1	63.7	63.1	60.8	58.6	52.5	49.5	47.4	47.1	46.3
	Max	61.2	79.1	54.6	78.6	78.2	75.4	72.0	69.2	63.9	55.1	54.9	54.7
Energy Average		58.9	Average:		70.8	70.3	68.2	66.2	59.3	54.1	49.1	48.6	48.2
Night	Min	49.6	55.8	45.0	55.5	55.2	53.7	52.3	49.6	47.4	45.6	45.4	45.1
	Max	60.7	69.9	56.3	69.5	68.9	66.9	64.9	60.4	57.8	56.7	56.6	56.3
Energy Average		56.8	Average:		63.8	63.3	61.2	59.0	53.9	52.2	50.6	50.4	50.1

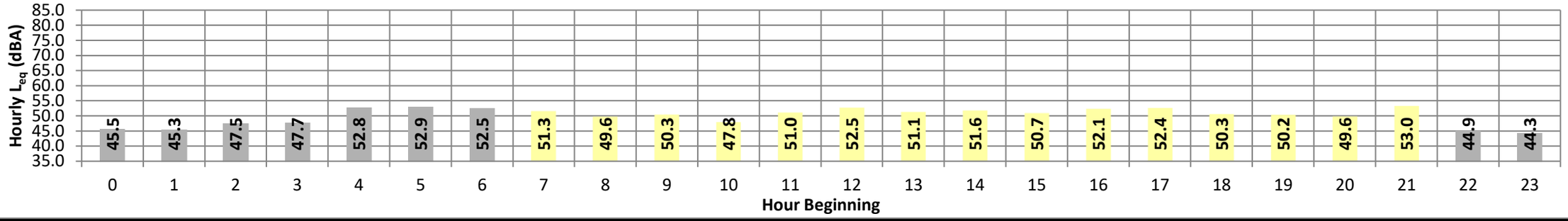
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
63.9	58.9	56.8

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L2 - Located east of the Project site near single-family *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* residence at 20050 Patterson Avenue. *Analyst:* A. Khan

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	45.5	53.4	42.3	53.0	52.1	49.4	47.7	45.4	44.4	42.9	42.7	42.4	45.5	10.0	55.5
	1	45.3	53.1	41.7	52.7	52.2	50.1	48.3	45.3	43.8	42.2	42.0	41.8	45.3	10.0	55.3
	2	47.5	55.9	44.2	55.4	54.4	51.4	49.6	47.3	46.2	44.9	44.6	44.3	47.5	10.0	57.5
	3	47.7	55.3	44.7	54.9	53.9	51.2	49.6	47.7	46.8	45.3	45.0	44.8	47.7	10.0	57.7
	4	52.8	63.4	48.3	63.0	62.2	58.4	55.2	51.0	50.0	49.0	48.7	48.5	52.8	10.0	62.8
	5	52.9	62.2	50.1	61.6	60.7	57.7	55.1	51.9	51.3	50.6	50.4	50.2	52.9	10.0	62.9
	6	52.5	66.0	48.8	65.3	64.5	60.0	57.0	52.4	50.5	49.3	49.1	48.9	52.5	10.0	62.5
Day	7	51.3	63.3	47.5	62.2	60.6	56.3	53.5	49.4	48.6	47.9	47.7	47.6	51.3	0.0	51.3
	8	49.6	82.6	40.1	81.9	80.7	76.5	73.4	59.1	49.1	41.7	41.0	40.3	49.6	0.0	49.6
	9	50.3	61.0	43.7	60.5	59.4	56.0	53.4	49.4	47.3	44.9	44.4	43.9	50.3	0.0	50.3
	10	47.8	57.9	41.3	57.3	56.2	53.0	50.9	48.0	45.1	42.4	41.9	41.4	47.8	0.0	47.8
	11	51.0	75.7	41.9	75.1	73.6	68.6	64.6	54.9	48.6	43.6	42.9	42.2	51.0	0.0	51.0
	12	52.5	64.1	41.8	63.6	62.7	60.0	57.8	49.5	45.8	42.8	42.4	42.0	52.5	0.0	52.5
	13	51.1	67.7	41.0	67.0	65.5	60.8	56.9	48.8	45.1	41.8	41.5	41.1	51.1	0.0	51.1
	14	51.6	68.3	43.7	67.9	67.0	62.8	59.1	51.9	48.1	44.8	44.4	43.8	51.6	0.0	51.6
	15	50.7	70.5	43.5	69.7	68.7	65.4	62.1	52.2	47.5	44.6	44.3	43.7	50.7	0.0	50.7
	16	52.1	65.5	42.2	65.0	64.1	61.6	59.4	53.3	48.1	43.5	43.0	42.4	52.1	0.0	52.1
	17	52.4	63.4	43.2	62.7	62.1	60.0	58.2	52.9	48.6	44.2	43.7	43.4	52.4	0.0	52.4
	18	50.3	60.5	45.0	60.0	59.1	56.2	54.0	49.5	47.2	45.5	45.3	45.1	50.3	0.0	50.3
	19	50.2	65.8	43.3	65.3	64.3	61.1	59.0	50.2	46.6	44.0	43.7	43.4	50.2	5.0	55.2
	20	49.6	62.4	42.3	61.8	60.6	56.0	52.6	46.2	44.7	42.9	42.7	42.4	49.6	5.0	54.6
	21	53.0	64.3	45.5	64.0	63.7	62.6	62.0	58.7	52.5	47.2	46.7	45.9	53.0	5.0	58.0
Night	22	44.9	55.9	40.9	55.3	53.9	49.8	47.1	43.5	42.5	41.5	41.3	41.1	44.9	10.0	54.9
	23	44.3	56.3	39.7	55.3	52.8	49.7	47.2	42.6	41.4	40.2	40.0	39.8	44.3	10.0	54.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.8	57.9	40.1	57.3	56.2	53.0	50.9	46.2	44.7	41.7	41.0	40.3
	Max	53.0	82.6	47.5	81.9	80.7	76.5	73.4	59.1	52.5	47.9	47.7	47.6
Energy Average		51.1	Average:		65.6	64.5	61.1	58.5	51.6	47.5	44.1	43.7	43.2
Night	Min	44.3	53.1	39.7	52.7	52.1	49.4	47.1	42.6	41.4	40.2	40.0	39.8
	Max	52.9	66.0	50.1	65.3	64.5	60.0	57.0	52.4	51.3	50.6	50.4	50.2
Energy Average		49.5	Average:		57.4	56.3	53.1	50.8	47.5	46.3	45.1	44.9	44.6

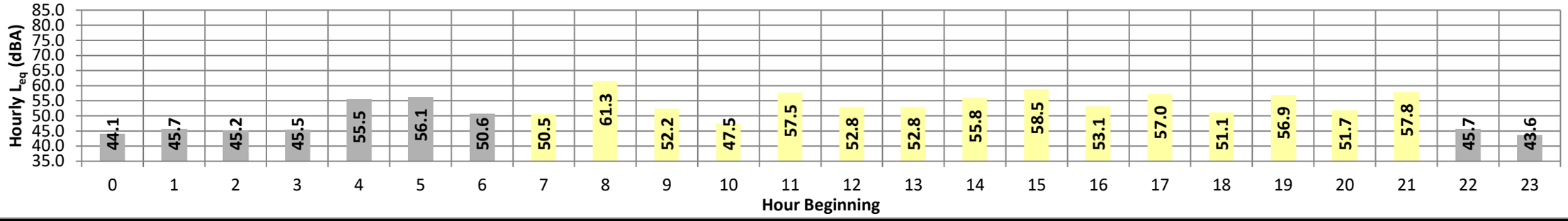
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
56.5	51.1	49.5

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L3 - Located southeast of the Project site near U-Turn for Christ *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* at 20170 Patterson Avenue. *Analyst:* A. Khan

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	44.1	50.2	41.4	50.0	49.4	47.5	46.3	44.2	43.2	42.0	41.8	41.5	44.1	10.0	54.1
	1	45.7	53.2	41.0	53.0	52.5	51.2	50.1	45.2	43.5	41.7	41.4	41.1	45.7	10.0	55.7
	2	45.2	53.5	42.4	53.0	52.2	49.5	47.1	44.7	44.0	42.9	42.7	42.5	45.2	10.0	55.2
	3	45.5	53.1	42.8	52.8	52.2	49.5	47.4	45.0	44.4	43.4	43.1	42.9	45.5	10.0	55.5
	4	55.5	65.9	51.5	64.9	63.3	59.1	57.4	54.7	53.5	52.9	52.8	51.8	55.5	10.0	65.5
	5	56.1	65.5	51.1	64.4	62.9	60.1	58.7	56.3	55.1	51.9	51.6	51.2	56.1	10.0	66.1
	6	50.6	59.7	47.4	59.3	58.4	55.1	52.8	49.8	48.9	47.9	47.7	47.5	50.6	10.0	60.6
Day	7	50.5	58.7	47.4	58.2	57.4	54.9	53.5	50.2	48.9	47.9	47.8	47.5	50.5	0.0	50.5
	8	61.3	73.9	40.9	73.6	73.0	69.8	66.7	53.4	45.9	41.7	41.4	41.0	61.3	0.0	61.3
	9	52.2	61.9	41.3	61.3	60.7	58.7	57.1	52.8	47.5	42.3	41.9	41.4	52.2	0.0	52.2
	10	47.5	57.7	41.4	57.1	56.0	52.9	50.8	47.2	44.9	42.2	41.9	41.6	47.5	0.0	47.5
	11	57.5	69.8	41.9	69.6	68.9	65.2	62.4	53.7	50.1	43.8	42.9	42.1	57.5	0.0	57.5
	12	52.8	63.3	43.9	62.7	61.9	59.8	57.6	52.0	47.8	44.9	44.5	44.1	52.8	0.0	52.8
	13	52.8	63.7	43.3	63.0	62.2	59.4	57.2	52.4	48.1	44.3	43.9	43.5	52.8	0.0	52.8
	14	55.8	67.5	44.1	67.1	66.4	63.7	61.0	53.1	48.6	45.1	44.7	44.2	55.8	0.0	55.8
	15	58.5	72.6	43.1	71.1	70.0	65.8	63.1	54.7	50.4	45.2	43.9	43.3	58.5	0.0	58.5
	16	53.1	63.5	41.5	63.1	62.3	59.8	58.4	52.3	47.8	42.5	42.1	41.7	53.1	0.0	53.1
	17	57.0	68.0	48.3	67.0	65.8	63.1	61.2	56.8	53.4	49.7	49.0	48.5	57.0	0.0	57.0
	18	51.1	60.8	44.9	59.8	58.9	57.0	55.8	50.7	47.6	45.4	45.2	45.0	51.1	0.0	51.1
	19	56.9	67.2	50.0	66.5	65.7	63.6	62.1	55.2	52.7	50.5	50.3	50.1	56.9	5.0	61.9
	20	51.7	64.7	41.6	63.3	62.3	58.9	55.8	50.3	43.6	42.2	41.9	41.7	51.7	5.0	56.7
	21	57.8	64.9	44.8	64.6	64.3	63.6	63.1	59.8	52.8	46.7	46.1	45.1	57.8	5.0	62.8
Night	22	45.7	54.4	40.8	53.9	53.3	51.5	49.9	45.2	42.7	41.4	41.2	40.9	45.7	10.0	55.7
	23	43.6	52.7	40.3	52.3	51.5	48.6	46.0	42.6	41.8	40.8	40.6	40.4	43.6	10.0	53.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.5	57.7	40.9	57.1	56.0	52.9	50.8	47.2	43.6	41.7	41.4	41.0
	Max	61.3	73.9	50.0	73.6	73.0	69.8	66.7	59.8	53.4	50.5	50.3	50.1
Energy Average		55.9	Average:		64.5	63.7	61.1	59.1	53.0	48.7	45.0	44.5	44.1
Night	Min	43.6	50.2	40.3	50.0	49.4	47.5	46.0	42.6	41.8	40.8	40.6	40.4
	Max	56.1	65.9	51.5	64.9	63.3	60.1	58.7	56.3	55.1	52.9	52.8	51.8
Energy Average		50.7	Average:		56.0	55.1	52.5	50.6	47.5	46.4	45.0	44.8	44.4

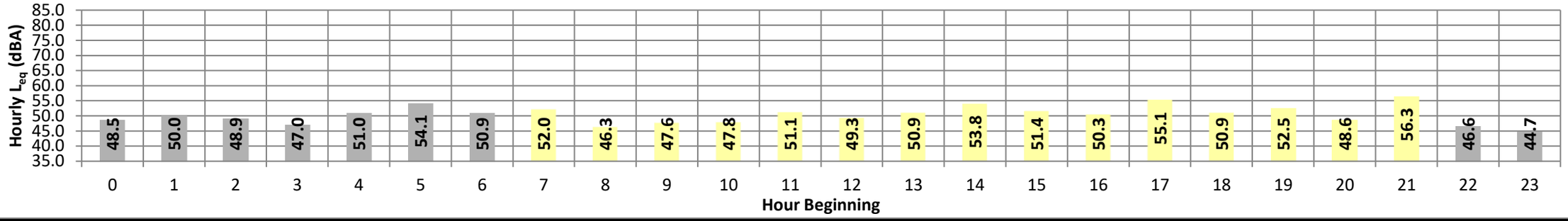
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
59.0	**55.9**	**50.7**

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L4 - Located south of the Project site near single-family *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* residence at 20111 Patterson Avenue. *Analyst:* A. Khan

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	48.5	53.6	45.3	53.2	52.7	51.7	51.2	49.1	47.7	45.9	45.6	45.4	48.5	10.0	58.5
	1	50.0	54.9	45.9	54.6	54.3	53.5	52.9	50.9	49.2	46.8	46.5	46.0	50.0	10.0	60.0
	2	48.9	52.9	46.6	52.6	52.3	51.4	50.8	49.5	48.4	47.2	47.0	46.7	48.9	10.0	58.9
	3	47.0	50.8	44.9	50.6	50.3	49.4	48.7	47.4	46.6	45.4	45.2	45.0	47.0	10.0	57.0
	4	51.0	54.9	49.0	54.6	54.3	53.6	52.9	51.4	50.5	49.5	49.3	49.1	51.0	10.0	61.0
	5	54.1	58.4	52.5	58.1	57.9	57.4	56.9	55.2	54.1	53.1	52.9	52.6	54.1	10.0	64.1
	6	50.9	56.1	48.7	55.7	55.3	54.0	53.1	51.1	50.1	49.1	49.0	48.8	50.9	10.0	60.9
Day	7	52.0	54.7	50.7	54.4	54.2	53.6	53.1	52.2	51.8	51.1	50.9	50.8	52.0	0.0	52.0
	8	46.3	70.4	40.5	70.0	69.5	68.1	65.6	55.9	45.3	41.3	41.0	40.7	46.3	0.0	46.3
	9	47.6	54.3	41.7	53.9	53.6	52.2	51.6	49.1	45.2	42.5	42.1	41.8	47.6	0.0	47.6
	10	47.8	56.3	42.6	55.2	54.1	52.1	51.2	48.6	45.9	43.5	43.2	42.7	47.8	0.0	47.8
	11	51.1	66.4	42.9	66.0	65.5	63.8	62.1	54.3	50.5	45.0	43.8	43.2	51.1	0.0	51.1
	12	49.3	61.8	45.6	61.4	61.0	60.1	58.3	50.8	48.3	46.3	46.1	45.8	49.3	0.0	49.3
	13	50.9	58.1	45.4	57.8	57.4	56.1	54.8	51.3	48.8	46.2	45.9	45.5	50.9	0.0	50.9
	14	53.8	65.3	47.3	64.9	64.1	62.3	60.7	54.5	51.0	48.2	47.9	47.5	53.8	0.0	53.8
	15	51.4	63.9	46.9	63.4	62.9	60.3	58.5	53.9	50.9	47.9	47.5	47.0	51.4	0.0	51.4
	16	50.3	65.7	45.1	65.4	65.1	63.6	62.6	55.0	50.3	46.3	45.9	45.4	50.3	0.0	50.3
	17	55.1	62.1	47.5	61.7	61.5	60.6	60.2	56.5	51.1	48.3	48.0	47.7	55.1	0.0	55.1
	18	50.9	55.7	48.5	55.3	54.8	54.0	53.4	51.4	50.2	49.0	48.8	48.6	50.9	0.0	50.9
	19	52.5	65.1	46.9	64.7	64.4	63.4	62.6	54.6	50.0	47.7	47.4	47.1	52.5	5.0	57.5
	20	48.6	55.2	45.6	54.6	54.2	52.8	51.4	48.7	47.4	46.2	46.0	45.7	48.6	5.0	53.6
	21	56.3	67.5	47.4	67.3	67.1	66.5	65.6	60.9	53.9	49.0	48.4	47.6	56.3	5.0	61.3
Night	22	46.6	51.2	44.1	50.8	50.4	49.5	48.7	47.0	45.9	44.7	44.5	44.3	46.6	10.0	56.6
	23	44.7	50.2	42.0	49.8	49.3	48.4	47.4	45.0	43.8	42.6	42.4	42.1	44.7	10.0	54.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	46.3	54.3	40.5	53.9	53.6	52.1	51.2	48.6	45.2	41.3	41.0	40.7
	Max	56.3	70.4	50.7	70.0	69.5	68.1	65.6	60.9	53.9	51.1	50.9	50.8
Energy Average		51.8	Average:		61.1	60.6	59.3	58.1	53.2	49.4	46.6	46.2	45.8
Night	Min	44.7	50.2	42.0	49.8	49.3	48.4	47.4	45.0	43.8	42.6	42.4	42.1
	Max	54.1	58.4	52.5	58.1	57.9	57.4	56.9	55.2	54.1	53.1	52.9	52.6
Energy Average		49.9	Average:		53.3	53.0	52.1	51.4	49.6	48.5	47.1	46.9	46.7

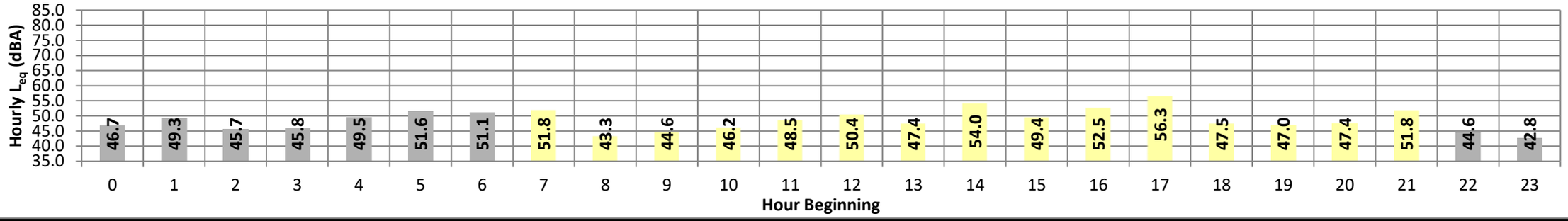
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
57.2	**51.8**	**49.9**

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L5 - Located west of the Project site near single-family *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* residence at 23246 Sunny Canyon Street. *Analyst:* A. Khan

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	46.7	50.9	44.4	50.5	50.1	49.0	48.4	47.2	46.2	45.0	44.7	44.5	46.7	10.0	56.7
	1	49.3	52.8	46.4	52.5	52.3	51.7	51.2	50.0	48.9	47.2	46.9	46.5	49.3	10.0	59.3
	2	45.7	48.5	43.9	48.3	48.0	47.4	47.0	46.2	45.5	44.4	44.2	44.0	45.7	10.0	55.7
	3	45.8	48.8	43.5	48.6	48.3	47.7	47.3	46.3	45.5	44.2	43.9	43.6	45.8	10.0	55.8
	4	49.5	51.5	48.1	51.3	51.2	50.8	50.6	49.9	49.4	48.6	48.5	48.2	49.5	10.0	59.5
	5	51.6	53.2	50.5	53.0	52.8	52.5	52.4	51.9	51.5	50.9	50.8	50.6	51.6	10.0	61.6
	6	51.1	53.3	49.8	53.0	52.8	52.5	52.2	51.5	50.9	50.2	50.0	49.9	51.1	10.0	61.1
Day	7	51.8	53.3	50.6	53.2	53.0	52.8	52.6	52.2	51.7	51.0	50.9	50.7	51.8	0.0	51.8
	8	43.3	49.0	39.1	48.6	48.2	47.4	46.7	44.5	41.8	39.5	39.4	39.1	43.3	0.0	43.3
	9	44.6	50.3	41.1	49.8	49.3	48.5	48.0	45.3	43.1	41.7	41.5	41.2	44.6	0.0	44.6
	10	46.2	51.3	42.1	51.0	50.7	49.8	49.1	47.1	45.4	42.8	42.6	42.3	46.2	0.0	46.2
	11	48.5	55.8	41.1	55.2	54.5	53.0	52.2	49.7	46.8	42.8	41.8	41.3	48.5	0.0	48.5
	12	50.4	57.4	42.8	57.1	56.9	56.1	55.3	51.6	46.5	43.9	43.4	42.9	50.4	0.0	50.4
	13	47.4	53.6	42.1	53.2	52.7	51.9	51.2	48.5	45.8	42.8	42.5	42.2	47.4	0.0	47.4
	14	54.0	73.7	45.1	73.1	72.4	68.0	63.5	51.8	48.9	46.0	45.6	45.3	54.0	0.0	54.0
	15	49.4	55.5	44.5	54.8	54.1	53.2	52.6	50.5	48.2	45.4	45.0	44.6	49.4	0.0	49.4
	16	52.5	60.5	42.7	60.1	59.7	58.9	58.1	53.0	48.5	43.8	43.3	42.9	52.5	0.0	52.5
	17	56.3	65.4	44.1	65.0	64.5	63.6	62.8	59.2	51.7	45.2	44.8	44.3	56.3	0.0	56.3
	18	47.5	51.3	45.8	50.8	50.3	49.6	49.1	47.8	47.1	46.3	46.1	45.9	47.5	0.0	47.5
	19	47.0	61.1	43.9	60.9	60.3	59.1	58.2	52.8	46.7	44.7	44.3	44.0	47.0	5.0	52.0
	20	47.4	52.3	44.6	52.0	51.8	50.9	50.0	47.8	46.6	45.1	45.0	44.7	47.4	5.0	52.4
	21	51.8	70.1	46.0	69.9	69.6	69.1	68.6	64.2	55.8	47.7	46.9	46.1	51.8	5.0	56.8
Night	22	44.6	49.2	42.3	48.9	48.7	47.8	46.9	44.7	43.8	42.9	42.7	42.4	44.6	10.0	54.6
	23	42.8	47.3	40.5	46.8	46.3	45.3	44.8	43.3	42.2	41.0	40.8	40.6	42.8	10.0	52.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.3	49.0	39.1	48.6	48.2	47.4	46.7	44.5	41.8	39.5	39.4	39.1
	Max	56.3	73.7	50.6	73.1	72.4	69.1	68.6	64.2	55.8	51.0	50.9	50.7
Energy Average		50.7	Average:		57.0	56.5	55.5	54.5	51.1	47.6	44.6	44.2	43.8
Night	Min	42.8	47.3	40.5	46.8	46.3	45.3	44.8	43.3	42.2	41.0	40.8	40.6
	Max	51.6	53.3	50.5	53.0	52.8	52.5	52.4	51.9	51.5	50.9	50.8	50.6
Energy Average		48.4	Average:		50.3	50.1	49.4	49.0	47.9	47.1	46.1	45.8	45.6

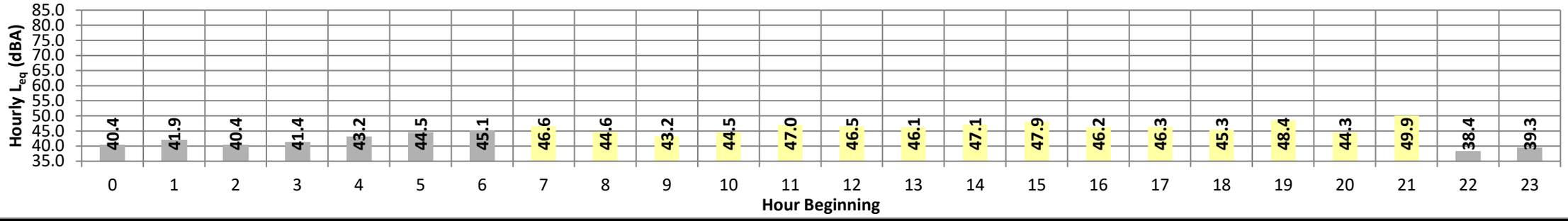
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
55.5	50.7	48.4

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 6, 2021 *Location:* L6 - Located west of the Project site near single-family *Meter:* Piccolo II *JN:* 14198

Project: Rider and Patterson *Source:* residence at 23249 Norrisgrove Drive. *Analyst:* A. Khan

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	40.4	43.6	38.7	43.2	42.8	42.2	41.9	40.9	40.1	39.1	39.0	38.8	40.4	10.0	50.4
	1	41.9	44.7	40.1	44.6	44.4	43.9	43.6	42.6	41.5	40.5	40.3	40.1	41.9	10.0	51.9
	2	40.4	43.8	38.9	43.5	43.1	42.2	41.6	40.7	40.1	39.3	39.1	39.0	40.4	10.0	50.4
	3	41.4	45.8	39.2	45.4	44.9	44.0	43.3	41.8	40.8	39.7	39.5	39.3	41.4	10.0	51.4
	4	43.2	46.2	41.6	46.0	45.7	45.2	44.7	43.5	42.8	42.0	41.9	41.7	43.2	10.0	53.2
	5	44.5	47.5	43.0	47.2	47.0	46.3	45.9	44.9	44.2	43.3	43.2	43.0	44.5	10.0	54.5
	6	45.1	49.2	42.7	48.9	48.7	48.0	47.6	45.7	44.2	43.2	43.0	42.8	45.1	10.0	55.1
Day	7	46.6	52.5	43.3	51.7	51.1	50.2	49.6	47.1	45.5	43.8	43.7	43.4	46.6	0.0	46.6
	8	44.6	52.5	36.4	52.2	51.8	50.6	49.6	45.0	40.5	37.4	37.0	36.6	44.6	0.0	44.6
	9	43.2	51.4	36.2	50.8	50.2	48.9	47.9	43.8	40.1	37.1	36.7	36.3	43.2	0.0	43.2
	10	44.5	51.3	37.1	50.8	50.3	49.4	48.6	45.7	42.7	38.3	37.8	37.2	44.5	0.0	44.5
	11	47.0	54.9	39.0	54.3	53.5	52.1	51.2	48.2	44.6	40.3	39.8	39.2	47.0	0.0	47.0
	12	46.5	57.5	41.4	57.0	56.6	55.8	54.9	50.0	45.7	42.2	41.9	41.5	46.5	0.0	46.5
	13	46.1	54.2	38.8	53.7	53.1	51.5	50.4	47.2	43.2	39.8	39.4	39.0	46.1	0.0	46.1
	14	47.1	54.8	40.5	54.2	53.4	52.0	51.2	47.7	44.7	42.0	41.4	40.7	47.1	0.0	47.1
	15	47.9	55.3	40.5	54.7	54.0	52.9	52.3	48.7	45.6	41.8	41.3	40.7	47.9	0.0	47.9
	16	46.2	58.3	39.0	57.9	57.6	56.7	56.0	51.0	45.5	40.1	39.7	39.2	46.2	0.0	46.2
	17	46.3	65.5	48.3	65.1	64.5	63.3	62.5	59.9	53.3	49.1	48.7	48.4	46.3	0.0	46.3
	18	45.3	54.4	40.0	53.4	52.3	50.1	48.6	45.6	43.6	41.0	40.6	40.1	45.3	0.0	45.3
	19	48.4	59.0	41.3	58.6	58.4	57.1	56.3	51.9	45.2	42.2	41.8	41.4	48.4	5.0	53.4
	20	44.3	52.8	39.2	52.0	51.2	49.0	48.2	44.7	41.7	39.8	39.6	39.3	44.3	5.0	49.3
	21	49.9	67.4	41.8	67.2	66.9	66.4	66.0	62.0	52.7	43.9	43.0	42.1	49.9	5.0	54.9
Night	22	38.4	42.0	36.5	41.8	41.5	40.8	40.2	38.8	37.8	36.9	36.8	36.6	38.4	10.0	48.4
	23	39.3	45.3	36.9	44.8	44.0	42.3	41.3	39.5	38.6	37.4	37.2	37.0	39.3	10.0	49.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.2	51.3	36.2	50.8	50.2	48.9	47.9	43.8	40.1	37.1	36.7	36.3
	Max	49.9	67.4	48.3	67.2	66.9	66.4	66.0	62.0	53.3	49.1	48.7	48.4
Energy Average		46.6	Average:		55.6	55.0	53.7	52.9	49.2	45.0	41.3	40.8	40.4
Night	Min	38.4	42.0	36.5	41.8	41.5	40.8	40.2	38.8	37.8	36.9	36.8	36.6
	Max	45.1	49.2	43.0	48.9	48.7	48.0	47.6	45.7	44.2	43.3	43.2	43.0
Energy Average		42.2	Average:		45.0	44.7	43.9	43.3	42.0	41.1	40.2	40.0	39.8

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
50.3	**46.6**	**42.2**

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	277 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	19 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-18.83	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-34.59	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-33.46	-3.57	-1.20	*-5.20*	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:	42.9	42.7	38.2	37.0	44.6	44.8
Medium Trucks:	38.4	38.7	26.6	30.9	39.2	39.3
Heavy Trucks:	44.8	44.6	36.2	39.5	46.9	47.0
Vehicle Noise:	47.5	47.4	40.5	41.8	49.3	49.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	8	17	36
CNEL:	4	8	17	37

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	737 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	50 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	91.75%
Medium Trucks:	87.6%	1.4%	11.0%	1.73%
Heavy Trucks:	78.8%	2.8%	18.4%	6.51%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-14.70	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-31.94	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-26.19	-3.57	-1.20	*-5.20*	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:	47.0	46.8	42.3	41.1	48.7	49.0
Medium Trucks:	41.0	41.3	29.3	33.6	41.9	41.9
Heavy Trucks:	52.0	51.9	43.4	46.8	54.1	54.2
Vehicle Noise:	53.5	53.3	46.0	48.0	55.4	55.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	43	93
CNEL:	9	20	44	95

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	294 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	20 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-18.57	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-34.33	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-33.20	-3.57	-1.20	*-5.20*	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:	43.2	42.9	38.5	37.2	44.8	45.1
Medium Trucks:	38.6	38.9	26.9	31.2	39.5	39.5
Heavy Trucks:	45.0	44.9	36.4	39.8	47.1	47.2
Vehicle Noise:	47.8	47.6	40.8	42.1	49.6	49.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	8	18	38
CNEL:	4	8	18	39

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	754 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	51 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	91.81%
Medium Trucks:	87.6%	1.4%	11.0%	1.75%
Heavy Trucks:	78.8%	2.8%	18.4%	6.44%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-14.60	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-31.80	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-26.14	-3.57	-1.20	*-5.20*	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:	47.1	46.9	42.4	41.2	48.8	49.1
Medium Trucks:	41.1	41.5	29.4	33.7	42.0	42.1
Heavy Trucks:	52.1	51.9	43.5	46.9	54.2	54.3
Vehicle Noise:	53.5	53.4	46.1	48.1	55.5	55.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	44	94
CNEL:	10	21	44	96

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	305 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	21 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-18.41	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-34.17	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-33.04	-3.57	-1.20	*-5.20*	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:	43.3	43.1	38.6	37.4	45.0	45.3
Medium Trucks:	38.8	39.1	27.1	31.3	39.6	39.7
Heavy Trucks:	45.2	45.0	36.6	40.0	47.3	47.4
Vehicle Noise:	47.9	47.8	40.9	42.2	49.7	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	8	18	39
CNEL:	4	9	18	40

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Patterson Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	764 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	52 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	87.0 feet
Centerline Dist. to Observer:	87.0 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:	77.5%	6.9%	15.6%	91.84%
Medium Trucks:	87.6%	1.4%	11.0%	1.76%
Heavy Trucks:	78.8%	2.8%	18.4%	6.39%

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:	85.264
Medium Trucks:	85.160
Heavy Trucks:	85.171

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-14.54	-3.58	-1.20	*-4.75*	0.000	0.000
Medium Trucks:	77.72	-31.71	-3.57	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-26.11	-3.57	-1.20	*-5.20*	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:	47.2	47.0	42.5	41.2	48.9	49.1
Medium Trucks:	41.2	41.5	29.5	33.8	42.1	42.2
Heavy Trucks:	52.1	52.0	43.5	46.9	54.2	54.3
Vehicle Noise:	53.6	53.4	46.1	48.1	55.5	55.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	44	94
CNEL:	10	21	45	96

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,869 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	739 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.87	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-19.63	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.49	-0.60	-1.20	*-5.35*	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:	64.5	64.3	59.8	58.6	66.2	66.5
Medium Trucks:	59.6	59.9	47.9	52.1	60.4	60.5
Heavy Trucks:	65.1	64.9	56.5	59.9	67.2	67.3
Vehicle Noise:	68.4	68.3	61.7	62.7	70.2	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	131	283	610
CNEL:	63	135	290	625

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,079 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	753 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.06%
Medium Trucks:	87.6%	1.4%	11.0%	2.49%
Heavy Trucks:	78.8%	2.8%	18.4%	3.45%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.79	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-19.56	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.15	-0.60	-1.20	*-5.35*	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:	64.6	64.4	59.9	58.6	66.3	66.5
Medium Trucks:	59.6	60.0	47.9	52.2	60.5	60.6
Heavy Trucks:	65.4	65.3	56.8	60.2	67.5	67.6
Vehicle Noise:	68.6	68.5	61.8	62.9	70.4	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	63	136	292	630
CNEL:	65	139	300	645

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,097 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,843 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.10	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.66	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.53	-0.60	-1.20	-5.35	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:	68.5	68.3	63.8	62.5	70.2	70.4
Medium Trucks:	63.5	63.8	51.8	56.1	64.4	64.5
Heavy Trucks:	69.0	68.9	60.5	63.8	71.2	71.3
Vehicle Noise:	72.4	72.3	65.6	66.6	74.2	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	112	242	520	1,121
CNEL:	115	248	533	1,149

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,307 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,857 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.17%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.33%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.13	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.63	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.39	-0.60	-1.20	-5.35	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:	68.5	68.3	63.8	62.6	70.2	70.5
Medium Trucks:	63.6	63.9	51.9	56.1	64.4	64.5
Heavy Trucks:	69.2	69.0	60.6	64.0	71.3	71.4
Vehicle Noise:	72.5	72.4	65.7	66.7	74.3	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	114	245	527	1,136
CNEL:	116	251	540	1,164

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,462 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,935 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.32	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.45	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.31	-0.60	-1.20	-5.35	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:	68.7	68.5	64.0	62.8	70.4	70.6
Medium Trucks:	63.8	64.1	52.0	56.3	64.6	64.7
Heavy Trucks:	69.3	69.1	60.7	64.0	71.4	71.5
Vehicle Noise:	72.6	72.5	65.8	66.9	74.4	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	250	538	1,159
CNEL:	119	256	551	1,188

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Harvill Av.
Road Segment: n/o Cajalco Expy.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,672 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,950 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.18%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.32%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.34	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.42	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.18	-0.60	-1.20	-5.35	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:	68.7	68.5	64.0	62.8	70.4	70.7
Medium Trucks:	63.8	64.1	52.1	56.3	64.6	64.7
Heavy Trucks:	69.4	69.2	60.8	64.2	71.5	71.6
Vehicle Noise:	72.7	72.6	65.9	66.9	74.5	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	117	253	545	1,173
CNEL:	120	259	558	1,202

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: n/o Rider St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,718 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	593 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.82	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.58	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.45	-0.60	-1.20	-5.35	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:	63.6	63.3	58.9	57.6	65.2	65.5
Medium Trucks:	58.6	58.9	46.9	51.2	59.5	59.5
Heavy Trucks:	64.1	64.0	55.5	58.9	66.2	66.3
Vehicle Noise:	67.5	67.4	60.7	61.7	69.3	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	526
CNEL:	54	116	250	540

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: n/o Rider St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,285 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	631 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.52%
Medium Trucks:	87.6%	1.4%	11.0%	2.49%
Heavy Trucks:	78.8%	2.8%	18.4%	3.99%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.58	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.33	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.28	-0.60	-1.20	-5.35	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:	63.8	63.6	59.1	57.9	65.5	65.7
Medium Trucks:	58.9	59.2	47.2	51.4	59.7	59.8
Heavy Trucks:	65.3	65.1	56.7	60.1	67.4	67.5
Vehicle Noise:	68.2	68.0	61.2	62.5	70.0	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	273	589
CNEL:	60	130	280	603

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: n/o Rider St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,726 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,273 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.50	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.26	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.13	-0.60	-1.20	-5.35	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:	66.9	66.7	62.2	60.9	68.6	68.8
Medium Trucks:	61.9	62.2	50.2	54.5	62.8	62.9
Heavy Trucks:	67.4	67.3	58.9	62.2	69.6	69.7
Vehicle Noise:	70.8	70.7	64.0	65.0	72.6	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	189	407	876
CNEL:	90	194	417	898

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: n/o Rider St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,293 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,312 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.90%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.61%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.39	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.14	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.55	-0.60	-1.20	-5.35	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:	67.0	66.8	62.3	61.0	68.7	68.9
Medium Trucks:	62.1	62.4	50.3	54.6	62.9	63.0
Heavy Trucks:	68.0	67.9	59.4	62.8	70.1	70.2
Vehicle Noise:	71.1	71.0	64.3	65.4	72.9	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	199	430	926
CNEL:	95	204	440	948

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Harvill Av.
Road Segment: n/o Rider St.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,690 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,339 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.28	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-17.05	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.91	-0.60	-1.20	*-5.35*	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:	67.1	66.9	62.4	61.2	68.8	69.0
Medium Trucks:	62.2	62.5	50.4	54.7	63.0	63.1
Heavy Trucks:	67.7	67.5	59.1	62.4	69.8	69.9
Vehicle Noise:	71.0	70.9	64.2	65.3	72.8	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	91	195	421	906
CNEL:	93	200	431	929

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Harvill Av.
Road Segment: n/o Rider St.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,257 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,377 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.92%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.59%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.18	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.93	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.36	-0.60	-1.20	*-5.35*	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:	67.2	67.0	62.5	61.3	68.9	69.1
Medium Trucks:	62.3	62.6	50.6	54.8	63.1	63.2
Heavy Trucks:	68.2	68.1	59.6	63.0	70.3	70.4
Vehicle Noise:	71.3	71.2	64.5	65.6	73.1	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	95	206	443	955
CNEL:	98	211	454	978

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,113 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	756 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.77	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-19.53	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.40	-0.60	-1.20	*-5.35*	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:	64.6	64.4	59.9	58.7	66.3	66.6
Medium Trucks:	59.7	60.0	48.0	52.2	60.5	60.6
Heavy Trucks:	65.2	65.0	56.6	60.0	67.3	67.4
Vehicle Noise:	68.5	68.4	61.8	62.8	70.3	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	62	133	287	619
CNEL:	63	137	294	634

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,243 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	765 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.62%
Medium Trucks:	87.6%	1.4%	11.0%	2.56%
Heavy Trucks:	78.8%	2.8%	18.4%	3.82%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.75	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-19.37	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.65	-0.60	-1.20	*-5.35*	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:	64.6	64.4	59.9	58.7	66.3	66.6
Medium Trucks:	59.8	60.1	48.1	52.4	60.7	60.8
Heavy Trucks:	65.9	65.8	57.3	60.7	68.0	68.1
Vehicle Noise:	68.9	68.8	62.0	63.2	70.7	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	66	142	306	660
CNEL:	68	146	314	675

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,419 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,457 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.92	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.68	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.55	-0.60	-1.20	*-5.35*	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:	67.5	67.2	62.8	61.5	69.1	69.4
Medium Trucks:	62.5	62.8	50.8	55.1	63.4	63.4
Heavy Trucks:	68.0	67.9	59.4	62.8	70.1	70.2
Vehicle Noise:	71.4	71.3	64.6	65.6	73.2	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	96	207	445	959
CNEL:	98	212	456	982

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,550 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,465 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.92%
Medium Trucks:	87.6%	1.4%	11.0%	2.53%
Heavy Trucks:	78.8%	2.8%	18.4%	3.54%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.91	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.60	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.14	-0.60	-1.20	*-5.35*	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:	67.5	67.3	62.8	61.5	69.2	69.4
Medium Trucks:	62.6	62.9	50.9	55.2	63.5	63.5
Heavy Trucks:	68.4	68.3	59.9	63.2	70.5	70.6
Vehicle Noise:	71.6	71.5	64.7	65.8	73.4	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	99	214	460	991
CNEL:	102	219	471	1,016

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,497 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,530 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.71	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.47	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-15.34	-0.60	-1.20	*-5.35*	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:	67.7	67.5	63.0	61.7	69.4	69.6
Medium Trucks:	62.7	63.0	51.0	55.3	63.6	63.7
Heavy Trucks:	68.2	68.1	59.7	63.0	70.4	70.5
Vehicle Noise:	71.6	71.5	64.8	65.8	73.4	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	99	213	460	990
CNEL:	102	219	471	1,015

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Harvill Av.
Road Segment: n/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,627 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,539 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	93.94%
Medium Trucks:	87.6%	1.4%	11.0%	2.53%
Heavy Trucks:	78.8%	2.8%	18.4%	3.53%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.70	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.39	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.95	-0.60	-1.20	*-5.35*	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:	67.7	67.5	63.0	61.7	69.4	69.6
Medium Trucks:	62.8	63.1	51.1	55.4	63.7	63.7
Heavy Trucks:	68.6	68.5	60.0	63.4	70.7	70.8
Vehicle Noise:	71.8	71.7	64.9	66.0	73.6	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	102	220	475	1,023
CNEL:	105	226	486	1,048

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: s/o Placentia Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,318 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	770 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.69	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.45	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.32	-0.60	-1.20	-5.35	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:	64.7	64.5	60.0	58.7	66.4	66.6
Medium Trucks:	59.7	60.1	48.0	52.3	60.6	60.7
Heavy Trucks:	65.3	65.1	56.7	60.0	67.4	67.5
Vehicle Noise:	68.6	68.5	61.8	62.8	70.4	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	135	291	627
CNEL:	64	138	298	642

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: s/o Placentia Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,442 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	778 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.32%
Medium Trucks:	87.6%	1.4%	11.0%	2.47%
Heavy Trucks:	78.8%	2.8%	18.4%	3.21%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.64	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.45	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.32	-0.60	-1.20	-5.35	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:	64.7	64.5	60.0	58.8	66.4	66.7
Medium Trucks:	59.7	60.1	48.0	52.3	60.6	60.7
Heavy Trucks:	65.3	65.1	56.7	60.0	67.4	67.5
Vehicle Noise:	68.6	68.5	61.9	62.9	70.4	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	135	292	628
CNEL:	64	139	299	644

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: s/o Placentia Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,261 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,718 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.20	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.96	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.83	-0.60	-1.20	-5.35	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:	68.2	68.0	63.5	62.2	69.9	70.1
Medium Trucks:	63.2	63.5	51.5	55.8	64.1	64.2
Heavy Trucks:	68.7	68.6	60.2	63.5	70.9	71.0
Vehicle Noise:	72.1	72.0	65.3	66.3	73.9	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	497	1,070
CNEL:	110	236	509	1,097

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Harvill Av. | Job Number: 14198
Road Segment: s/o Placentia Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,385 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,726 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.28%
Medium Trucks:	87.6%	1.4%	11.0%	2.49%
Heavy Trucks:	78.8%	2.8%	18.4%	3.23%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.18	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.96	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.83	-0.60	-1.20	-5.35	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:	68.2	68.0	63.5	62.3	69.9	70.1
Medium Trucks:	63.2	63.5	51.5	55.8	64.1	64.2
Heavy Trucks:	68.7	68.6	60.2	63.5	70.9	71.0
Vehicle Noise:	72.1	72.0	65.3	66.3	73.9	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	497	1,071
CNEL:	110	237	510	1,098

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Harvill Av.
Road Segment: s/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,530 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,804 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.01	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-15.75	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.62	-0.60	-1.20	*-5.35*	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:	68.4	68.2	63.7	62.4	70.1	70.3
Medium Trucks:	63.4	63.8	51.7	56.0	64.3	64.4
Heavy Trucks:	69.0	68.8	60.4	63.7	71.1	71.2
Vehicle Noise:	72.3	72.2	65.5	66.5	74.1	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	111	238	513	1,106
CNEL:	113	244	526	1,133

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Harvill Av.
Road Segment: s/o Placentia Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,654 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,812 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 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:	77.5%	6.9%	15.6%	94.28%
Medium Trucks:	87.6%	1.4%	11.0%	2.49%
Heavy Trucks:	78.8%	2.8%	18.4%	3.23%

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:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.03	-0.62	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-15.75	-0.60	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.62	-0.60	-1.20	*-5.35*	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:	68.4	68.2	63.7	62.5	70.1	70.4
Medium Trucks:	63.4	63.8	51.7	56.0	64.3	64.4
Heavy Trucks:	69.0	68.8	60.4	63.7	71.1	71.2
Vehicle Noise:	72.3	72.2	65.5	66.6	74.1	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	111	238	514	1,107
CNEL:	113	244	527	1,135

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Cajalco Expy.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,767 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,684 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.29	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-16.05	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.92	-2.88	-1.20	*-5.18*	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:	65.8	65.6	61.1	59.9	67.5	67.8
Medium Trucks:	60.9	61.2	49.2	53.4	61.7	61.8
Heavy Trucks:	66.4	66.2	57.8	61.2	68.5	68.6
Vehicle Noise:	69.7	69.6	63.0	64.0	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	116	250	539	1,161
CNEL:	119	256	552	1,190

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Cajalco Expy.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,956 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,697 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.16%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.34%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.26	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-16.02	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-14.76	-2.88	-1.20	*-5.18*	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:	65.9	65.6	61.1	59.9	67.5	67.8
Medium Trucks:	60.9	61.2	49.2	53.4	61.8	61.8
Heavy Trucks:	66.5	66.4	57.9	61.3	68.6	68.7
Vehicle Noise:	69.8	69.7	63.0	64.1	71.6	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	118	254	546	1,177
CNEL:	121	260	560	1,206

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	52,386 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,562 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.97	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-12.80	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.66	-2.88	-1.20	-5.18	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:	69.1	68.9	64.4	63.1	70.8	71.0
Medium Trucks:	64.1	64.4	52.4	56.7	65.0	65.0
Heavy Trucks:	69.6	69.5	61.0	64.4	71.7	71.8
Vehicle Noise:	73.0	72.9	66.2	67.2	74.8	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	191	412	888	1,912
CNEL:	196	422	910	1,960

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	52,575 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,575 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.21%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.29%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.98	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-12.78	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.59	-2.88	-1.20	-5.18	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:	69.1	68.9	64.4	63.1	70.8	71.0
Medium Trucks:	64.1	64.4	52.4	56.7	65.0	65.1
Heavy Trucks:	69.7	69.6	61.1	64.5	71.8	71.9
Vehicle Noise:	73.0	72.9	66.2	67.3	74.8	75.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	193	415	894	1,925
CNEL:	197	425	916	1,973

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	55,015 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,741 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.18	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-12.58	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.45	-2.88	-1.20	-5.18	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:	69.3	69.1	64.6	63.3	71.0	71.2
Medium Trucks:	64.3	64.6	52.6	56.9	65.2	65.3
Heavy Trucks:	69.8	69.7	61.3	64.6	72.0	72.1
Vehicle Noise:	73.2	73.1	66.4	67.4	75.0	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	198	426	917	1,976
CNEL:	203	436	940	2,025

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	55,204 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,754 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.21%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.29%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.19	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-12.57	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-11.38	-2.88	-1.20	-5.18	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:	69.3	69.1	64.6	63.4	71.0	71.2
Medium Trucks:	64.3	64.7	52.6	56.9	65.2	65.3
Heavy Trucks:	69.9	69.8	61.3	64.7	72.0	72.1
Vehicle Noise:	73.2	73.1	66.5	67.5	75.0	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	199	428	923	1,989
CNEL:	204	439	946	2,038

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,644 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,880 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.19	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-15.57	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.44	-2.88	-1.20	-5.18	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:	66.3	66.1	61.6	60.4	68.0	68.2
Medium Trucks:	61.3	61.7	49.6	53.9	62.2	62.3
Heavy Trucks:	66.9	66.7	58.3	61.6	69.0	69.1
Vehicle Noise:	70.2	70.1	63.4	64.4	72.0	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	580	1,249
CNEL:	128	276	594	1,280

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,812 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	1,891 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.17%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.33%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.21	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-15.55	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.30	-2.88	-1.20	-5.18	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:	66.3	66.1	61.6	60.4	68.0	68.3
Medium Trucks:	61.4	61.7	49.7	53.9	62.2	62.3
Heavy Trucks:	67.0	66.8	58.4	61.8	69.1	69.2
Vehicle Noise:	70.3	70.2	63.5	64.5	72.1	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	587	1,265
CNEL:	130	279	602	1,296

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,471 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,792 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.25	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.51	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.38	-2.88	-1.20	-5.18	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:	70.4	70.1	65.7	64.4	72.0	72.3
Medium Trucks:	65.4	65.7	53.7	58.0	66.3	66.3
Heavy Trucks:	70.9	70.8	62.3	65.7	73.0	73.1
Vehicle Noise:	74.3	74.1	67.5	68.5	76.1	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	233	502	1,082	2,330
CNEL:	239	515	1,109	2,389

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,639 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,803 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.22%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.28%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.26	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.50	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.32	-2.88	-1.20	-5.18	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:	70.4	70.2	65.7	64.4	72.0	72.3
Medium Trucks:	65.4	65.7	53.7	58.0	66.3	66.3
Heavy Trucks:	71.0	70.8	62.4	65.7	73.1	73.2
Vehicle Noise:	74.3	74.2	67.5	68.5	76.1	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	234	505	1,087	2,342
CNEL:	240	517	1,114	2,400

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74,003 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	5,032 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.47	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-11.30	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.16	-2.88	-1.20	*-5.18*	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:	70.6	70.4	65.9	64.6	72.3	72.5
Medium Trucks:	65.6	65.9	53.9	58.2	66.5	66.5
Heavy Trucks:	71.1	71.0	62.5	65.9	73.2	73.3
Vehicle Noise:	74.5	74.4	67.7	68.7	76.3	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	241	519	1,118	2,408
CNEL:	247	532	1,145	2,468

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74,171 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	5,044 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.22%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.28%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.47	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-11.29	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.11	-2.88	-1.20	*-5.18*	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:	70.6	70.4	65.9	64.6	72.3	72.5
Medium Trucks:	65.6	65.9	53.9	58.2	66.5	66.6
Heavy Trucks:	71.2	71.0	62.6	66.0	73.3	73.4
Vehicle Noise:	74.5	74.4	67.7	68.8	76.3	76.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	242	521	1,123	2,419
CNEL:	248	534	1,151	2,479

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	48,717 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,313 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	2.65	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-13.11	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-11.98	-2.88	-1.20	*-5.18*	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:	68.8	68.5	64.1	62.8	70.4	70.7
Medium Trucks:	63.8	64.1	52.1	56.4	64.7	64.7
Heavy Trucks:	69.3	69.2	60.7	64.1	71.4	71.5
Vehicle Noise:	72.7	72.5	65.9	66.9	74.5	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	182	393	846	1,822
CNEL:	187	402	867	1,868

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Cajalco Expy.
Road Segment: e/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	48,748 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	3,315 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.26%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.24%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	2.65	-2.89	-1.20	*-4.76*	0.000	0.000
Medium Trucks:	81.00	-13.11	-2.88	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-11.98	-2.88	-1.20	*-5.18*	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:	68.8	68.5	64.1	62.8	70.4	70.7
Medium Trucks:	63.8	64.1	52.1	56.4	64.7	64.7
Heavy Trucks:	69.3	69.2	60.7	64.1	71.4	71.5
Vehicle Noise:	72.7	72.5	65.9	66.9	74.5	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	182	393	846	1,822
CNEL:	187	402	867	1,868

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	64,403 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,379 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.86	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.90	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.77	-2.88	-1.20	-5.18	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:	70.0	69.8	65.3	64.0	71.6	71.9
Medium Trucks:	65.0	65.3	53.3	57.6	65.9	65.9
Heavy Trucks:	70.5	70.4	61.9	65.3	72.6	72.7
Vehicle Noise:	73.9	73.8	67.1	68.1	75.7	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	219	473	1,019	2,195
CNEL:	225	485	1,044	2,250

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	64,434 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,382 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.26%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.24%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.86	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.90	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.77	-2.88	-1.20	-5.18	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:	70.0	69.8	65.3	64.0	71.7	71.9
Medium Trucks:	65.0	65.3	53.3	57.6	65.9	65.9
Heavy Trucks:	70.5	70.4	61.9	65.3	72.6	72.7
Vehicle Noise:	73.9	73.8	67.1	68.1	75.7	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	220	473	1,019	2,195
CNEL:	225	485	1,044	2,250

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	67,625 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,598 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.07	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.69	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.56	-2.88	-1.20	-5.18	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:	70.2	70.0	65.5	64.2	71.9	72.1
Medium Trucks:	65.2	65.5	53.5	57.8	66.1	66.2
Heavy Trucks:	70.7	70.6	62.2	65.5	72.8	72.9
Vehicle Noise:	74.1	74.0	67.3	68.3	75.9	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	227	488	1,052	2,267
CNEL:	232	501	1,079	2,324

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP | Project Name: Rider & Patterson Busines
Road Name: Cajalco Expy. | Job Number: 14198
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	67,656 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	4,601 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	92.0 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:	77.5%	6.9%	15.6%	94.26%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.24%

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:	76.733
Medium Trucks:	76.618
Heavy Trucks:	76.629

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.08	-2.89	-1.20	-4.76	0.000	0.000
Medium Trucks:	81.00	-11.69	-2.88	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-10.56	-2.88	-1.20	-5.18	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:	70.2	70.0	65.5	64.2	71.9	72.1
Medium Trucks:	65.2	65.5	53.5	57.8	66.1	66.2
Heavy Trucks:	70.7	70.6	62.2	65.5	72.8	72.9
Vehicle Noise:	74.1	74.0	67.3	68.3	75.9	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	227	489	1,053	2,268
CNEL:	232	501	1,079	2,324

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E | Project Name: Rider & Patterson Busines
Road Name: Rider St. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,709 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	116 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-10.93	-8.77	-1.20	-4.83	0.000	0.000
Medium Trucks:	77.72	-26.69	-8.77	-1.20	-4.89	0.000	0.000
Heavy Trucks:	82.99	-25.56	-8.77	-1.20	-5.03	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:	45.6	45.4	40.9	39.7	47.3	47.5
Medium Trucks:	41.1	41.4	29.3	33.6	41.9	42.0
Heavy Trucks:	47.5	47.3	38.9	42.2	49.6	49.7
Vehicle Noise:	50.2	50.1	43.2	44.5	52.0	52.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	12	26	56	120
CNEL:	12	27	57	123

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P | Project Name: Rider & Patterson Busines
Road Name: Rider St. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,406 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	88.47%
Medium Trucks:	87.6%	1.4%	11.0%	2.74%
Heavy Trucks:	78.8%	2.8%	18.4%	8.79%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.72	-8.77	-1.20	-4.83	0.000	0.000
Medium Trucks:	77.72	-24.80	-8.77	-1.20	-4.89	0.000	0.000
Heavy Trucks:	82.99	-19.75	-8.77	-1.20	-5.03	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:	46.8	46.6	42.1	40.9	48.5	48.8
Medium Trucks:	42.9	43.2	31.2	35.5	43.8	43.9
Heavy Trucks:	53.3	53.1	44.7	48.0	55.4	55.5
Vehicle Noise:	54.5	54.3	46.7	49.0	56.4	56.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	110	237
CNEL:	24	52	112	241

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Rider St. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,965 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	134 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-10.32	-8.77	-1.20	-4.83	0.000	0.000
Medium Trucks:	77.72	-26.09	-8.77	-1.20	-4.89	0.000	0.000
Heavy Trucks:	82.99	-24.95	-8.77	-1.20	-5.03	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:	46.2	46.0	41.5	40.3	47.9	48.2
Medium Trucks:	41.7	42.0	29.9	34.2	42.5	42.6
Heavy Trucks:	48.1	47.9	39.5	42.8	50.2	50.3
Vehicle Noise:	50.8	50.7	43.8	45.1	52.6	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	28	61	132
CNEL:	14	29	63	135

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Rider St. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,662 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	181 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	89.03%
Medium Trucks:	87.6%	1.4%	11.0%	2.72%
Heavy Trucks:	78.8%	2.8%	18.4%	8.25%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.25	-8.77	-1.20	-4.83	0.000	0.000
Medium Trucks:	77.72	-24.40	-8.77	-1.20	-4.89	0.000	0.000
Heavy Trucks:	82.99	-19.58	-8.77	-1.20	-5.03	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:	47.3	47.1	42.6	41.3	49.0	49.2
Medium Trucks:	43.3	43.7	31.6	35.9	44.2	44.3
Heavy Trucks:	53.4	53.3	44.9	48.2	55.6	55.7
Vehicle Noise:	54.7	54.6	47.0	49.2	56.7	56.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	53	114	245
CNEL:	25	54	116	250

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY
Road Name: Rider St.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,031 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	138 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.18	-8.77	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	77.72	-25.94	-8.77	-1.20	*-4.89*	0.000	0.000
Heavy Trucks:	82.99	-24.81	-8.77	-1.20	*-5.03*	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:	46.4	46.1	41.7	40.4	48.0	48.3
Medium Trucks:	41.8	42.1	30.1	34.4	42.7	42.7
Heavy Trucks:	48.2	48.1	39.6	43.0	50.3	50.4
Vehicle Noise:	51.0	50.8	43.9	45.3	52.8	52.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	29	63	135
CNEL:	14	30	64	138

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP
Road Name: Rider St.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,729 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	186 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	190.0 feet
Centerline Dist. to Observer:	190.0 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:	77.5%	6.9%	15.6%	89.15%
Medium Trucks:	87.6%	1.4%	11.0%	2.72%
Heavy Trucks:	78.8%	2.8%	18.4%	8.13%

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:	189.212
Medium Trucks:	189.165
Heavy Trucks:	189.169

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-9.14	-8.77	-1.20	*-4.83*	0.000	0.000
Medium Trucks:	77.72	-24.30	-8.77	-1.20	*-4.89*	0.000	0.000
Heavy Trucks:	82.99	-19.54	-8.77	-1.20	*-5.03*	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:	47.4	47.2	42.7	41.5	49.1	49.3
Medium Trucks:	43.4	43.8	31.7	36.0	44.3	44.4
Heavy Trucks:	53.5	53.3	44.9	48.3	55.6	55.7
Vehicle Noise:	54.8	54.6	47.1	49.3	56.7	56.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	53	115	248
CNEL:	25	54	117	252

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Placentia Av.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	438 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	30 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-16.84	-3.01	-1.20	*-4.74*	0.000	0.000
Medium Trucks:	77.72	-32.60	-3.00	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-31.47	-3.00	-1.20	*-5.23*	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:	45.5	45.2	40.8	39.5	47.1	47.4
Medium Trucks:	40.9	41.2	29.2	33.5	41.8	41.8
Heavy Trucks:	47.3	47.2	38.7	42.1	49.4	49.5
Vehicle Noise:	50.1	49.9	43.1	44.4	51.9	52.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	11	23	50
CNEL:	5	11	24	51

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Placentia Av.
Road Segment: w/o Harvill Av.
Project Name: Rider & Patterson Busines
Job Number: 14198

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	897 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	61 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	92.20%
Medium Trucks:	87.6%	1.4%	11.0%	1.87%
Heavy Trucks:	78.8%	2.8%	18.4%	5.93%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-13.82	-3.01	-1.20	*-4.74*	0.000	0.000
Medium Trucks:	77.72	-30.75	-3.00	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-25.74	-3.00	-1.20	*-5.23*	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:	48.5	48.3	43.8	42.5	50.2	50.4
Medium Trucks:	42.8	43.1	31.1	35.3	43.6	43.7
Heavy Trucks:	53.1	52.9	44.5	47.8	55.2	55.3
Vehicle Noise:	54.6	54.5	47.2	49.1	56.6	56.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	22	47	102
CNEL:	10	22	48	104

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAC | Project Name: Rider & Patterson Busines
Road Name: Placentia Av. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,743 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	255 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.53	-3.01	-1.20	-4.74	0.000	0.000
Medium Trucks:	77.72	-23.29	-3.00	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-22.16	-3.00	-1.20	-5.23	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:	54.8	54.6	50.1	48.8	56.5	56.7
Medium Trucks:	50.2	50.5	38.5	42.8	51.1	51.2
Heavy Trucks:	56.6	56.5	48.1	51.4	58.7	58.8
Vehicle Noise:	59.4	59.3	52.4	53.7	61.2	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	96	207
CNEL:	21	46	99	212

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EAPC | Project Name: Rider & Patterson Busines
Road Name: Placentia Av. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,202 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	286 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	93.81%
Medium Trucks:	87.6%	1.4%	11.0%	2.37%
Heavy Trucks:	78.8%	2.8%	18.4%	3.82%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.04	-3.01	-1.20	-4.74	0.000	0.000
Medium Trucks:	77.72	-23.03	-3.00	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.95	-3.00	-1.20	-5.23	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:	55.3	55.0	50.6	49.3	56.9	57.2
Medium Trucks:	50.5	50.8	38.8	43.0	51.4	51.4
Heavy Trucks:	57.8	57.7	49.3	52.6	60.0	60.1
Vehicle Noise:	60.2	60.1	53.1	54.6	62.1	62.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	110	238
CNEL:	24	52	113	243

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HY | Project Name: Rider & Patterson Busines
Road Name: Placentia Av. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,953 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	269 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	94.25%
Medium Trucks:	87.6%	1.4%	11.0%	2.50%
Heavy Trucks:	78.8%	2.8%	18.4%	3.25%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.29	-3.01	-1.20	-4.74	0.000	0.000
Medium Trucks:	77.72	-23.05	-3.00	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-21.92	-3.00	-1.20	-5.23	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:	55.0	54.8	50.3	49.1	56.7	57.0
Medium Trucks:	50.5	50.8	38.8	43.0	51.3	51.4
Heavy Trucks:	56.9	56.7	48.3	51.6	59.0	59.1
Vehicle Noise:	59.6	59.5	52.6	53.9	61.4	61.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	46	100	215
CNEL:	22	47	102	220

Sunday, November 13, 2022

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: HYP | Project Name: Rider & Patterson Busines
Road Name: Placentia Av. | Job Number: 14198
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,412 vehicles
Peak Hour Percentage:	6.80%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	80.0 feet
Centerline Dist. to Observer:	80.0 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:	77.5%	6.9%	15.6%	93.84%
Medium Trucks:	87.6%	1.4%	11.0%	2.37%
Heavy Trucks:	78.8%	2.8%	18.4%	3.79%

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:	78.109
Medium Trucks:	77.996
Heavy Trucks:	78.007

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.83	-3.01	-1.20	-4.74	0.000	0.000
Medium Trucks:	77.72	-22.80	-3.00	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.77	-3.00	-1.20	-5.23	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:	55.5	55.2	50.8	49.5	57.1	57.4
Medium Trucks:	50.7	51.0	39.0	43.3	51.6	51.6
Heavy Trucks:	58.0	57.9	49.4	52.8	60.1	60.2
Vehicle Noise:	60.4	60.3	53.3	54.8	62.3	62.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	53	114	245
CNEL:	25	54	116	251

Sunday, November 13, 2022

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APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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14198 - Rider & Patterson Business Center

CadnaA Noise Prediction Model: 14198-02.cna
Date: 14.11.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
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 (TNM)	
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	44.9	44.3	51.0	55.0	45.0	0.0				5.00	r	6256976.07	2247358.05	1537.00
RECEIVERS		R2	44.8	44.7	51.4	55.0	45.0	0.0				5.00	r	6257256.57	2246619.31	1538.85
RECEIVERS		R3	45.5	44.3	51.1	55.0	45.0	0.0				5.00	r	6257232.45	2246006.63	1549.01
RECEIVERS		R4	44.0	43.3	50.1	55.0	45.0	0.0				5.00	r	6257012.11	2245703.23	1560.05
RECEIVERS		R5	37.2	34.1	41.1	55.0	45.0	0.0				5.00	r	6255769.72	2246256.52	1578.38
RECEIVERS		R6	42.0	40.1	47.0	55.0	45.0	0.0				5.00	r	6255765.96	2246902.45	1563.08
RECEIVERS		X	48.2	47.5	54.2	55.0	45.0	0.0				5.00	r	6256928.52	2245830.06	1560.28

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6256887.55	2246831.88	1605.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6256894.95	2246131.78	1605.00
POINTSOURCE		CAR01	81.1	81.1	81.1	Lw	81.1					5.00	r	6256871.67	2245978.45	1557.94
POINTSOURCE		CAR02	81.1	81.1	81.1	Lw	81.1					5.00	r	6256909.16	2245978.45	1556.75
POINTSOURCE		CAR03	81.1	81.1	81.1	Lw	81.1					5.00	r	6256969.13	2245979.75	1554.85
POINTSOURCE		CAR04	81.1	81.1	81.1	Lw	81.1					5.00	r	6257014.77	2245979.43	1554.00
POINTSOURCE		CAR05	81.1	81.1	81.1	Lw	81.1					5.00	r	6256979.57	2246020.50	1554.00
POINTSOURCE		CAR06	81.1	81.1	81.1	Lw	81.1					5.00	r	6256934.26	2246019.52	1555.32
POINTSOURCE		CAR07	81.1	81.1	81.1	Lw	81.1					5.00	r	6256886.66	2246018.87	1556.84
POINTSOURCE		CAR08	81.1	81.1	81.1	Lw	81.1					5.00	r	6256849.83	2246018.55	1558.00
POINTSOURCE		CAR09	81.1	81.1	81.1	Lw	81.1					5.00	r	6256827.99	2245976.17	1559.41

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		CAR10	81.1	81.1	81.1	Lw	81.1					5.00	r	6256828.64	2245942.59	1559.95
POINTSOURCE		CAR11	81.1	81.1	81.1	Lw	81.1					5.00	r	6256881.45	2245923.04	1558.54
POINTSOURCE		CAR12	81.1	81.1	81.1	Lw	81.1					5.00	r	6256935.56	2245924.01	1556.79
POINTSOURCE		CAR13	81.1	81.1	81.1	Lw	81.1					5.00	r	6256995.21	2245925.32	1554.91
POINTSOURCE		CAR14	81.1	81.1	81.1	Lw	81.1					5.00	r	6257044.76	2245927.60	1554.17
POINTSOURCE		CAR15	81.1	81.1	81.1	Lw	81.1					5.00	r	6257065.62	2245971.93	1554.10
POINTSOURCE		CAR16	81.1	81.1	81.1	Lw	81.1					5.00	r	6257064.64	2246004.85	1554.18
POINTSOURCE		CAR17	81.1	81.1	81.1	Lw	81.1					5.00	r	6257020.91	2246397.21	1549.82
POINTSOURCE		CAR18	81.1	81.1	81.1	Lw	81.1					5.00	r	6257023.49	2246355.23	1551.31
POINTSOURCE		CAR19	81.1	81.1	81.1	Lw	81.1					5.00	r	6257024.14	2246310.02	1551.66
POINTSOURCE		CAR20	81.1	81.1	81.1	Lw	81.1					5.00	r	6257024.14	2246249.31	1552.00
POINTSOURCE		CAR21	81.1	81.1	81.1	Lw	81.1					5.00	r	6257024.14	2246202.80	1552.46
POINTSOURCE		CAR22	81.1	81.1	81.1	Lw	81.1					5.00	r	6257027.37	2246142.74	1552.77
POINTSOURCE		CAR23	81.1	81.1	81.1	Lw	81.1					5.00	r	6257069.99	2246122.71	1552.99
POINTSOURCE		CAR24	81.1	81.1	81.1	Lw	81.1					5.00	r	6257068.70	2246177.61	1551.48
POINTSOURCE		CAR25	81.1	81.1	81.1	Lw	81.1					5.00	r	6257066.76	2246226.05	1550.76
POINTSOURCE		CAR26	81.1	81.1	81.1	Lw	81.1					5.00	r	6257065.47	2246277.72	1549.95
POINTSOURCE		CAR27	81.1	81.1	81.1	Lw	81.1					5.00	r	6257064.18	2246322.93	1551.00
POINTSOURCE		CAR28	81.1	81.1	81.1	Lw	81.1					5.00	r	6257064.18	2246366.21	1548.66
POINTSOURCE		CAR29	81.1	81.1	81.1	Lw	81.1					5.00	r	6257064.18	2246408.19	1547.36
POINTSOURCE		CAR30	81.1	81.1	81.1	Lw	81.1					5.00	r	6257063.53	2246455.34	1546.59
POINTSOURCE		CAR31	81.1	81.1	81.1	Lw	81.1					5.00	r	6256996.36	2246422.40	1550.77
POINTSOURCE		CAR32	81.1	81.1	81.1	Lw	81.1					5.00	r	6256995.72	2246376.54	1551.34
POINTSOURCE		CAR33	81.1	81.1	81.1	Lw	81.1					5.00	r	6256998.30	2246333.27	1551.71
POINTSOURCE		CAR34	81.1	81.1	81.1	Lw	81.1					5.00	r	6257000.88	2246274.49	1552.37
POINTSOURCE		CAR35	81.1	81.1	81.1	Lw	81.1					5.00	r	6257000.24	2246223.47	1553.00
POINTSOURCE		CAR36	81.1	81.1	81.1	Lw	81.1					5.00	r	6257001.53	2246168.57	1553.00
POINTSOURCE		CAR37	81.1	81.1	81.1	Lw	81.1					5.00	r	6257000.88	2246120.78	1553.33
POINTSOURCE		CAR38	81.1	81.1	81.1	Lw	81.1					5.00	r	6256954.38	2246171.16	1556.25
POINTSOURCE		CAR39	81.1	81.1	81.1	Lw	81.1					5.00	r	6256953.09	2246221.53	1554.98
POINTSOURCE		CAR40	81.1	81.1	81.1	Lw	81.1					5.00	r	6256953.74	2246272.56	1553.82
POINTSOURCE		CAR41	81.1	81.1	81.1	Lw	81.1					5.00	r	6256953.74	2246330.69	1553.19
POINTSOURCE		CAR42	81.1	81.1	81.1	Lw	81.1					5.00	r	6256951.80	2246375.90	1552.97
POINTSOURCE		CAR43	81.1	81.1	81.1	Lw	81.1					5.00	r	6256951.15	2246432.09	1552.34
POINTSOURCE		CAR44	81.1	81.1	81.1	Lw	81.1					5.00	r	6256951.15	2246472.13	1551.92
POINTSOURCE		CAR45	81.1	81.1	81.1	Lw	81.1					5.00	r	6256993.13	2246740.81	1554.95
POINTSOURCE		CAR46	81.1	81.1	81.1	Lw	81.1					5.00	r	6256995.07	2246702.71	1554.69
POINTSOURCE		CAR47	81.1	81.1	81.1	Lw	81.1					5.00	r	6256995.72	2246652.97	1553.45
POINTSOURCE		CAR48	81.1	81.1	81.1	Lw	81.1					5.00	r	6256995.72	2246599.37	1552.08
POINTSOURCE		CAR49	81.1	81.1	81.1	Lw	81.1					5.00	r	6256949.22	2246543.82	1552.37
POINTSOURCE		CAR50	81.1	81.1	81.1	Lw	81.1					5.00	r	6256948.57	2246583.87	1553.44
POINTSOURCE		CAR51	81.1	81.1	81.1	Lw	81.1					5.00	r	6256947.92	2246634.89	1554.64
POINTSOURCE		CAR52	81.1	81.1	81.1	Lw	81.1					5.00	r	6256948.57	2246674.29	1555.61
POINTSOURCE		CAR53	81.1	81.1	81.1	Lw	81.1					5.00	r	6256947.92	2246718.85	1556.00
POINTSOURCE		CAR54	81.1	81.1	81.1	Lw	81.1					5.00	r	6256946.63	2246755.67	1556.59
POINTSOURCE		CAR55	81.1	81.1	81.1	Lw	81.1					5.00	r	6256991.84	2246777.63	1555.25
POINTSOURCE		CAR56	81.1	81.1	81.1	Lw	81.1					5.00	r	6256945.99	2246803.46	1557.46
POINTSOURCE		CAR57	81.1	81.1	81.1	Lw	81.1					5.00	r	6256991.20	2246849.32	1555.83
POINTSOURCE		CAR58	81.1	81.1	81.1	Lw	81.1					5.00	r	6256946.63	2246857.07	1558.47
POINTSOURCE		CAR59	81.1	81.1	81.1	Lw	81.1					5.00	r	6257061.60	2246545.76	1545.44
POINTSOURCE		CAR60	81.1	81.1	81.1	Lw	81.1					5.00	r	6257020.26	2246581.28	1550.52
POINTSOURCE		CAR61	81.1	81.1	81.1	Lw	81.1					5.00	r	6257062.89	2246600.66	1548.16
POINTSOURCE		CAR62	81.1	81.1	81.1	Lw	81.1					5.00	r	6257019.62	2246634.89	1552.10
POINTSOURCE		CAR63	81.1	81.1	81.1	Lw	81.1					5.00	r	6257062.89	2246654.91	1551.87
POINTSOURCE		CAR64	81.1	81.1	81.1	Lw	81.1					5.00	r	6257017.68	2246684.62	1553.39
POINTSOURCE		CAR65	81.1	81.1	81.1	Lw	81.1					5.00	r	6257061.60	2246710.46	1550.29
POINTSOURCE		CAR66	81.1	81.1	81.1	Lw	81.1					5.00	r	6257017.68	2246742.10	1554.32
POINTSOURCE		CAR67	81.1	81.1	81.1	Lw	81.1					5.00	r	6257062.24	2246766.00	1554.00
POINTSOURCE		CAR68	81.1	81.1	81.1	Lw	81.1					5.00	r	6257016.39	2246793.77	1554.88
POINTSOURCE		CAR69	81.1	81.1	81.1	Lw	81.1					5.00	r	6257060.95	2246815.73	1550.46
POINTSOURCE		CAR70	81.1	81.1	81.1	Lw	81.1					5.00	r	6257017.68	2246869.34	1555.56
POINTSOURCE		CAR71	81.1	81.1	81.1	Lw	81.1					5.00	r	6257017.03	2246837.05	1555.40
POINTSOURCE		CAR72	81.1	81.1	81.1	Lw	81.1					5.00	r	6257060.30	2246863.53	1552.81
POINTSOURCE		CAR73	81.1	81.1	81.1	Lw	81.1					5.00	r	6257060.30	2246903.57	1553.46
POINTSOURCE		CAR74	81.1	81.1	81.1	Lw	81.1					5.00	r	6256904.65	2246881.61	1557.43
POINTSOURCE		CAR75	81.1	81.1	81.1	Lw	81.1					5.00	r	6256865.25	2246882.90	1555.13
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	r	6256774.06	2246962.97	1555.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	r	6256789.86	2245934.93	1558.00

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		DWY01	100.3	86.1	94.0	73.5	59.2	67.2	PWL-Pt	93.2					106.0	4.0	25.0	6.2	8	r
LINESOURCE		DWY01	87.3	73.1	81.0	73.5	59.2	67.2	PWL-Pt	93.2					106.0	4.0	25.0	6.2	8	r
LINESOURCE		DWY03	91.1	77.3	84.6	71.7	58.0	65.3	PWL-Pt	93.2					71.0	3.0	16.0	6.2	8	r

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	r			6256479.13	2247141.39	1552.65	1544.65
					6256480.29	2247132.80	1552.36	1544.36
					6256480.06	2247124.14	1552.06	1544.06
					6256478.44	2247115.62	1551.76	1543.76
					6256475.48	2247107.48	1551.11	1543.11
					6256471.24	2247099.92	1550.79	1542.79
					6256465.85	2247093.14	1550.86	1542.86
					6256459.44	2247087.31	1550.89	1542.89
					6256452.17	2247082.58	1550.93	1542.93
					6256444.25	2247079.08	1550.98	1542.98
					6256435.86	2247076.91	1551.11	1543.11
					6256427.23	2247076.10	1551.33	1543.33
					6256012.80	2247073.14	1560.91	1552.91
					6256003.48	2247061.86	1560.39	1552.39
					6255996.14	2247049.20	1560.00	1552.00
					6255990.97	2247035.51	1559.96	1551.96
					6255988.11	2247021.16	1559.80	1551.80
					6255987.64	2247006.53	1559.64	1551.64
					6255999.48	2246077.02	1562.65	1554.65
					6256000.58	2246069.69	1562.66	1554.66
					6256002.91	2246062.66	1562.51	1554.51
					6256006.40	2246056.12	1562.20	1554.20
					6256010.94	2246050.27	1561.66	1553.66
					6256016.41	2246045.28	1561.28	1553.28
					6256022.65	2246041.28	1561.21	1553.21
					6256029.48	2246038.40	1561.10	1553.10
					6256036.70	2246036.72	1561.04	1553.04
					6256044.09	2246036.29	1561.04	1553.04
					6256051.45	2246037.12	1560.93	1552.93
LINESOURCE	8.00	r			6256068.21	2246907.54	1559.38	1551.38
					6255988.92	2246906.00	1559.69	1551.69
LINESOURCE	8.00	r			6256803.24	2246056.24	1559.60	1551.60
					6257085.78	2246054.34	1558.24	1550.24

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	61.8	61.8	61.8	Lw	103.4					8	r
AREASOURCE		DOCK02	103.4	103.4	103.4	61.3	61.3	61.3	Lw	103.4					8	r

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	r			6256065.95	2247033.17	1559.75	1551.75
					6256522.76	2247036.26	1550.26	1542.26
					6256523.38	2246989.34	1555.30	1547.30
					6256785.73	2246990.58	1547.11	1539.11
					6256794.38	2246868.35	1562.72	1554.72
					6256769.14	2246861.48	1563.00	1555.00
					6256766.18	2246802.28	1563.00	1555.00
					6256085.32	2246796.36	1562.91	1554.91
					6256083.84	2246861.48	1563.00	1555.00
					6256069.04	2246861.48	1563.00	1555.00
AREASOURCE	8.00	r			6256092.72	2246156.95	1562.95	1554.95
					6256773.58	2246159.91	1563.00	1555.00
					6256776.54	2246102.18	1563.00	1555.00
					6256802.78	2246102.18	1563.00	1555.00
					6256804.57	2245920.68	1561.00	1553.00
					6256052.43	2245916.50	1561.09	1553.09
					6256051.01	2246092.28	1563.00	1555.00
					6256092.72	2246094.78	1563.00	1555.00

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	r	6256018.72	2246861.48	1600.00	1555.00
								6256083.84	2246861.48	1600.00	1555.00
								6256085.32	2246796.36	1600.00	1554.91
								6256766.18	2246802.28	1600.00	1555.00
								6256769.14	2246861.48	1600.00	1555.00
								6256928.99	2246864.44	1600.00	1555.00
								6256928.99	2246102.18	1600.00	1555.00
								6256776.54	2246102.18	1600.00	1555.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6256773.58	2246159.91	1600.00	1555.00
								6256092.72	2246156.95	1600.00	1554.95
								6256092.72	2246094.78	1600.00	1555.00
								6256018.72	2246090.34	1600.00	1554.99
BUILDING		BUILDING00002	x	0		25.00	r	6255678.48	2247100.77	1579.00	1554.00
								6255724.13	2247102.51	1579.00	1554.70
								6255724.13	2247059.48	1579.00	1553.00
								6255708.43	2247053.95	1579.00	1553.09
								6255679.35	2247053.66	1579.00	1553.69
BUILDING		BUILDING00003	x	0		25.00	r	6255741.58	2246957.41	1578.90	1553.90
								6255763.97	2246958.00	1578.90	1554.00
								6255765.42	2246900.13	1578.90	1558.38
								6255722.68	2246901.29	1578.90	1554.60
								6255721.23	2246935.61	1578.90	1554.00
								6255742.45	2246936.48	1578.90	1554.00
BUILDING		BUILDING00004	x	0		25.00	r	6255672.35	2246662.84	1587.00	1562.00
								6255715.16	2246667.85	1587.00	1562.85
								6255725.64	2246627.31	1587.00	1563.57
								6255683.28	2246617.29	1587.00	1563.24
BUILDING		BUILDING00005	x	0		25.00	r	6255697.85	2246567.19	1592.27	1567.27
								6255738.85	2246578.12	1592.27	1567.00
								6255748.41	2246543.96	1592.27	1567.00
								6255727.46	2246539.86	1592.27	1567.00
								6255733.84	2246518.45	1592.27	1567.00
								6255708.79	2246512.53	1592.27	1567.00
BUILDING		BUILDING00006	x	0		25.00	r	6255738.39	2246417.80	1593.00	1568.00
								6255761.16	2246425.08	1593.00	1567.67
								6255775.74	2246366.78	1593.00	1568.54
								6255729.74	2246355.85	1593.00	1568.88
								6255723.36	2246391.83	1593.00	1568.17
								6255742.03	2246396.84	1593.00	1568.22
BUILDING		BUILDING00007	x	0		25.00	r	6255709.70	2246292.09	1599.00	1574.00
								6255747.96	2246311.22	1599.00	1574.00
								6255767.54	2246252.46	1599.00	1573.48
								6255747.50	2246245.63	1599.00	1573.76
								6255717.89	2246260.20	1599.00	1574.35
BUILDING		BUILDING00008	x	0		25.00	r	6255680.77	2246100.28	1600.66	1575.66
								6255709.79	2246114.03	1600.66	1575.97
								6255731.17	2246069.73	1600.66	1576.42
								6255689.93	2246050.64	1600.66	1576.98
								6255672.37	2246088.57	1600.66	1576.00
								6255683.82	2246094.17	1600.66	1575.97
BUILDING		BUILDING00009	x	0		25.00	r	6255689.51	2245964.05	1608.00	1583.00
								6255735.24	2245964.05	1608.00	1582.63
								6255737.11	2245927.65	1608.00	1582.65
								6255711.91	2245929.52	1608.00	1583.00
								6255714.71	2245903.39	1608.00	1582.29
								6255689.51	2245903.39	1608.00	1582.24
BUILDING		BUILDING00010	x	0		25.00	r	6257259.69	2246635.35	1558.07	1533.07
								6257304.08	2246634.33	1558.07	1532.10
								6257302.67	2246574.26	1558.07	1532.82
								6257250.14	2246573.99	1558.07	1534.00
								6257249.57	2246609.15	1558.07	1534.00
								6257260.28	2246609.14	1558.07	1533.73

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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14198 - Rider & Patterson Business Center

CadnaA Noise Prediction Model: 14198-03_Construction.cna
Date: 06.12.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
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)	**463.30**
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 (TNM)	
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	65.0	62.5	69.5	55.0	45.0	0.0				5.00	r	6256976.07	2247358.05	1537.00
RECEIVERS		R2	68.9	67.6	74.5	55.0	45.0	0.0				5.00	r	6257256.57	2246619.31	1538.85
RECEIVERS		R3	65.9	63.2	70.2	55.0	45.0	0.0				5.00	r	6257232.45	2246006.63	1549.01
RECEIVERS		R4	63.9	61.3	68.3	55.0	45.0	0.0				5.00	r	6257012.11	2245703.23	1560.05
RECEIVERS		R5	78.7	78.3	85.0	55.0	45.0	0.0				5.00	r	6255769.72	2246256.52	1578.38
RECEIVERS		R6	76.4	75.5	82.3	55.0	45.0	0.0				5.00	r	6255765.96	2246902.45	1563.08
RECEIVERS		X	69.6	65.6	72.9	55.0	45.0	0.0				5.00	r	6256928.52	2245830.06	1560.28

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
		CONS01	115.0	115.0	115.0	Lw	115					8.00	r	6255847.34	2246940.59	1570.86
		CONS02	115.0	115.0	115.0	Lw	115					8.00	r	6255836.08	2246265.63	1581.49
		CONS03	115.0	115.0	115.0	Lw	115					8.00	r	6256998.53	2245984.58	1557.00
		CONS04	115.0	115.0	115.0	Lw	115					8.00	r	6257051.58	2246616.45	1552.99
		CONS05	115.0	115.0	115.0	Lw	115					8.00	r	6256953.51	2247121.30	1537.13

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)		
CONSTRUCTION		CONS_Limits	122.0	15.0	15.0	69.3	-37.7	-37.7	PWL-Pt	115					8	r

Name	ID	Height			Coordinates			
		Begin		End	x	y	z	Ground
		(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
CONSTRUCTION	CONS_Limits	8.00	r		6254929.31	2247175.93	1528.52	1520.52
					6255393.64	2247195.07	1558.81	1550.81
					6257109.35	2247236.74	1538.63	1530.63
					6257113.94	2247238.31	1538.48	1530.48
					6257118.22	2247240.60	1538.19	1530.19
					6257122.08	2247243.55	1537.86	1529.86
					6257125.41	2247247.08	1537.42	1529.42
					6257128.13	2247251.10	1537.14	1529.14
					6257130.17	2247255.50	1537.16	1529.16
					6257131.48	2247260.18	1537.24	1529.24
					6257143.20	2247261.04	1537.00	1529.00
					6257141.90	2247218.08	1537.91	1529.91
					6257215.69	2247218.94	1536.09	1528.09
					6257216.55	2247199.85	1535.63	1527.63
					6258196.59	2247211.56	1528.05	1520.05
					6258196.59	2247200.28	1528.05	1520.05
					6257190.51	2247188.56	1535.27	1527.27
					6257185.48	2247188.41	1535.58	1527.58
					6257180.53	2247187.46	1536.00	1528.00
					6257175.80	2247185.73	1536.00	1528.00
					6257171.39	2247183.28	1536.09	1528.09
					6257167.44	2247180.16	1536.34	1528.34
					6257164.03	2247176.45	1536.74	1528.74
					6257161.25	2247172.25	1537.27	1529.27
					6257159.17	2247167.66	1537.67	1529.67
					6257157.85	2247162.80	1537.96	1529.96
					6257157.32	2247157.79	1538.00	1530.00
					6257146.24	2246006.70	1555.67	1547.67
					6257159.70	2245910.35	1556.42	1548.42
					6257157.09	2245887.78	1557.26	1549.26
					6257156.22	2245843.51	1557.13	1549.13
					6257093.29	2245843.94	1560.00	1552.00
					6257084.18	2245830.92	1560.00	1552.00
					6257059.44	2245844.81	1560.21	1552.21
					6256040.34	2245826.15	1588.72	1580.72
					6255783.83	2245821.81	1590.84	1582.84
					6255783.39	2245842.64	1589.00	1581.00
					6255751.28	2245846.55	1588.70	1580.70
					6255751.79	2245881.51	1588.54	1580.54
					6255749.87	2245991.00	1588.78	1580.78
					6255777.41	2245991.46	1586.08	1578.08
					6255690.45	2246168.79	1581.81	1573.81
					6255704.84	2246179.01	1581.46	1573.46
					6255697.89	2246195.51	1581.54	1573.54
					6255752.58	2246224.15	1580.79	1572.79
					6255786.87	2246237.17	1580.33	1572.33
					6255753.50	2246340.94	1580.00	1572.00
					6255786.09	2246349.96	1575.95	1567.95
					6255762.17	2246448.46	1573.83	1565.83
					6255759.09	2246456.79	1573.17	1565.17
					6255748.24	2246458.09	1573.22	1565.22
					6255735.22	2246457.66	1573.41	1565.41
					6255726.10	2246455.05	1573.61	1565.61
					6255718.29	2246486.30	1573.62	1565.62
					6255750.83	2246494.38	1573.08	1565.08
					6255768.26	2246503.10	1573.94	1565.94
					6255749.35	2246609.99	1573.47	1565.47
					6255765.45	2246621.19	1573.10	1565.10
					6255700.54	2246701.10	1568.57	1560.57
					6255705.04	2246707.76	1568.50	1560.50
					6255708.51	2246715.01	1568.39	1560.39
					6255710.86	2246722.69	1568.13	1560.13
					6255712.06	2246730.63	1568.11	1560.11
					6255712.08	2246738.67	1568.15	1560.15
					6255710.90	2246746.62	1568.26	1560.26
					6255704.22	2246774.35	1567.53	1559.53
					6255696.59	2246801.84	1566.48	1558.48
					6255694.93	2246879.06	1562.92	1554.92
					6255771.61	2246880.38	1565.08	1557.08
					6255769.31	2247010.36	1559.24	1551.24
					6255737.88	2247009.82	1559.89	1551.89
					6255735.10	2247189.78	1563.66	1555.66

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING			BUILDING00002	x	0		25.00	r	6255678.48	2247100.77	1579.00	1554.00
									6255724.13	2247102.51	1579.00	1554.70
									6255724.13	2247059.48	1579.00	1553.00
									6255708.43	2247053.95	1579.00	1553.09
									6255679.35	2247053.66	1579.00	1553.69
BUILDING			BUILDING00003	x	0		25.00	r	6255741.58	2246957.41	1578.90	1553.90
									6255763.97	2246958.00	1578.90	1554.00
									6255765.42	2246900.13	1578.90	1558.38
									6255722.68	2246901.29	1578.90	1554.60
									6255721.23	2246935.61	1578.90	1554.00
									6255742.45	2246936.48	1578.90	1554.00
BUILDING			BUILDING00004	x	0		25.00	r	6255672.35	2246662.84	1587.00	1562.00
									6255715.16	2246667.85	1587.00	1562.85
									6255725.64	2246627.31	1587.00	1563.57
									6255683.28	2246617.29	1587.00	1563.24
BUILDING			BUILDING00005	x	0		25.00	r	6255697.85	2246567.19	1592.27	1567.27
									6255738.85	2246578.12	1592.27	1567.00
									6255748.41	2246543.96	1592.27	1567.00
									6255727.46	2246539.86	1592.27	1567.00
									6255733.84	2246518.45	1592.27	1567.00
									6255708.79	2246512.53	1592.27	1567.00
BUILDING			BUILDING00006	x	0		25.00	r	6255738.39	2246417.80	1593.00	1568.00
									6255761.16	2246425.08	1593.00	1567.67
									6255775.74	2246366.78	1593.00	1568.54
									6255729.74	2246355.85	1593.00	1568.88
									6255723.36	2246391.83	1593.00	1568.17
									6255742.03	2246396.84	1593.00	1568.22
BUILDING			BUILDING00007	x	0		25.00	r	6255709.70	2246292.09	1599.00	1574.00
									6255747.96	2246311.22	1599.00	1574.00
									6255767.54	2246252.46	1599.00	1573.48
									6255747.50	2246245.63	1599.00	1573.76
									6255717.89	2246260.20	1599.00	1574.35
BUILDING			BUILDING00008	x	0		25.00	r	6255680.77	2246100.28	1600.66	1575.66
									6255709.79	2246114.03	1600.66	1575.97
									6255731.17	2246069.73	1600.66	1576.42
									6255689.93	2246050.64	1600.66	1576.98
									6255672.37	2246088.57	1600.66	1576.00
									6255683.82	2246094.17	1600.66	1575.97
BUILDING			BUILDING00009	x	0		25.00	r	6255689.51	2245964.05	1608.00	1583.00
									6255735.24	2245964.05	1608.00	1582.63
									6255737.11	2245927.65	1608.00	1582.65
									6255711.91	2245929.52	1608.00	1583.00
									6255714.71	2245903.39	1608.00	1582.29
									6255689.51	2245903.39	1608.00	1582.24
BUILDING			BUILDING00010	x	0		25.00	r	6257259.69	2246635.35	1558.07	1533.07
									6257304.08	2246634.33	1558.07	1532.10
									6257302.67	2246574.26	1558.07	1532.82
									6257250.14	2246573.99	1558.07	1534.00
									6257249.57	2246609.15	1558.07	1534.00
									6257260.28	2246609.14	1558.07	1533.73

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APPENDIX 10.2:

NIGHTTIME CONCRETE POUR NOISE MODEL INPUTS

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14198 - Rider & Patterson Business Center

CadnaA Noise Prediction Model: 14198-02_Concrete.cna
Date: 14.11.22
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
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 (TNM)	
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	42.9	-64.0	39.9	55.0	45.0	0.0				5.00	r	6256976.07	2247358.05	1537.00
RECEIVERS		R2	44.1	-62.8	41.1	55.0	45.0	0.0				5.00	r	6257256.57	2246619.31	1538.85
RECEIVERS		R3	43.4	-63.5	40.4	55.0	45.0	0.0				5.00	r	6257232.45	2246006.63	1549.01
RECEIVERS		R4	42.9	-64.0	39.8	55.0	45.0	0.0				5.00	r	6257012.11	2245703.23	1560.05
RECEIVERS		R5	40.8	-66.0	37.8	55.0	45.0	0.0				5.00	r	6255769.72	2246256.52	1578.38
RECEIVERS		R6	41.6	-65.2	38.6	55.0	45.0	0.0				5.00	r	6255765.96	2246902.45	1563.08
RECEIVERS		X	44.9	-62.0	41.9	55.0	45.0	0.0				5.00	r	6256928.52	2245830.06	1560.28

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)

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)

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

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)		
CONCRETE		CONCRETE	107.3	0.3	0.3	57.9	-49.1	-49.1	PWL-Pt	100.3					8	r

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CONCRETE	8.00	r			6256019.54	2246857.35	1562.98	1554.98
					6256063.79	2246859.57	1563.00	1555.00
					6256064.90	2247042.11	1559.91	1551.91
					6256524.03	2247043.22	1550.04	1542.04
					6256521.81	2246991.22	1556.98	1548.98
					6256787.33	2246993.43	1545.63	1537.63
					6256787.33	2246861.78	1563.00	1555.00
					6256918.99	2246861.78	1563.00	1555.00
					6256934.48	2246097.30	1561.69	1553.69
					6256801.72	2246095.09	1562.24	1554.24
					6256803.93	2245922.50	1561.00	1553.00
					6256051.62	2245923.61	1561.45	1553.45
					6256051.62	2246092.88	1563.00	1555.00
					6256026.17	2246092.88	1563.00	1555.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00002	x	0		25.00	r	6255678.48	2247100.77	1579.00	1554.00
								6255724.13	2247102.51	1579.00	1554.70
								6255724.13	2247059.48	1579.00	1553.00
								6255708.43	2247053.95	1579.00	1553.09
								6255679.35	2247053.66	1579.00	1553.69
BUILDING		BUILDING00003	x	0		25.00	r	6255741.58	2246957.41	1578.90	1553.90
								6255763.97	2246958.00	1578.90	1554.00
								6255765.42	2246900.13	1578.90	1558.38
								6255722.68	2246901.29	1578.90	1554.60
								6255721.23	2246935.61	1578.90	1554.00
								6255742.45	2246936.48	1578.90	1554.00
BUILDING		BUILDING00004	x	0		25.00	r	6255672.35	2246662.84	1587.00	1562.00
								6255715.16	2246667.85	1587.00	1562.85
								6255725.64	2246627.31	1587.00	1563.57
								6255683.28	2246617.29	1587.00	1563.24
BUILDING		BUILDING00005	x	0		25.00	r	6255697.85	2246567.19	1592.27	1567.27
								6255738.85	2246578.12	1592.27	1567.00
								6255748.41	2246543.96	1592.27	1567.00
								6255727.46	2246539.86	1592.27	1567.00
								6255733.84	2246518.45	1592.27	1567.00
								6255708.79	2246512.53	1592.27	1567.00
BUILDING		BUILDING00006	x	0		25.00	r	6255738.39	2246417.80	1593.00	1568.00
								6255761.16	2246425.08	1593.00	1567.67
								6255775.74	2246366.78	1593.00	1568.54
								6255729.74	2246355.85	1593.00	1568.88
								6255723.36	2246391.83	1593.00	1568.17
								6255742.03	2246396.84	1593.00	1568.22
BUILDING		BUILDING00007	x	0		25.00	r	6255709.70	2246292.09	1599.00	1574.00
								6255747.96	2246311.22	1599.00	1574.00
								6255767.54	2246252.46	1599.00	1573.48
								6255747.50	2246245.63	1599.00	1573.76
								6255717.89	2246260.20	1599.00	1574.35
BUILDING		BUILDING00008	x	0		25.00	r	6255680.77	2246100.28	1600.66	1575.66
								6255709.79	2246114.03	1600.66	1575.97
								6255731.17	2246069.73	1600.66	1576.42
								6255689.93	2246050.64	1600.66	1576.98
								6255672.37	2246088.57	1600.66	1576.00
								6255683.82	2246094.17	1600.66	1575.97
BUILDING		BUILDING00009	x	0		25.00	r	6255689.51	2245964.05	1608.00	1583.00
								6255735.24	2245964.05	1608.00	1582.63
								6255737.11	2245927.65	1608.00	1582.65
								6255711.91	2245929.52	1608.00	1583.00
								6255714.71	2245903.39	1608.00	1582.29
								6255689.51	2245903.39	1608.00	1582.24
BUILDING		BUILDING00010	x	0		25.00	r	6257259.69	2246635.35	1558.07	1533.07
								6257304.08	2246634.33	1558.07	1532.10
								6257302.67	2246574.26	1558.07	1532.82
								6257250.14	2246573.99	1558.07	1534.00
								6257249.57	2246609.15	1558.07	1534.00
								6257260.28	2246609.14	1558.07	1533.73