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**Harvill and Rider Warehouse  
(PPT190039)  
NOISE IMPACT ANALYSIS  
COUNTY OF RIVERSIDE**

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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
I-215	Interstate 215
INCE	Institute of Noise Control Engineering
$L_{eq}$	Equivalent continuous (average) sound level
$L_{max}$	Maximum level measured over the time interval
$L_{min}$	Minimum level measured over the time interval
MARB/IPA	March Air Reserve Base / Inland Port Airport
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Harvill and Rider Warehouse (PPT190039)
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

## EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Harvill and Rider Warehouse (PPT190039) development (“Project”). The Project site is located on the northeast corner of Harvill Avenue and Rider Street in unincorporated County of Riverside. The Project is proposed to consist of up to 284,746 square feet (sf) of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 50,249 square feet of general light industrial use (15 percent of the total square footage) for a total of 334,995 square feet within a single building. The Project is anticipated to be constructed in a single phase by the year 2021. At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown, and therefore, this noise study includes a conservative analysis of the proposed Project uses. This study has been prepared to satisfy applicable County of Riverside standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

### OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on three study-area roadway segments were calculated using the transportation related twenty-four hour community noise equivalent levels (CNEL) based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing (2019), Existing plus Ambient Growth (EA) 2021, and EA plus Cumulative (EAC) 2021 conditions. The analysis shows that the Project-related traffic noise level increases under all with Project traffic scenarios are considered *less than significant* impacts at receiving land uses adjacent to the study area roadway segments.

### OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Harvill and Rider Warehouse (PPT190039) site, the operational analysis estimates the Project-related stationary-source noise hourly average  $L_{eq}$  levels at nearby sensitive receiver locations. The typical activities associated with the proposed Harvill and Rider Warehouse (PPT190039) are anticipated to include loading dock activity, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle movements.

The operational noise analysis shows that the Project will satisfy the County of Riverside stationary-source exterior hourly average  $L_{eq}$  noise levels of 55 dBA  $L_{eq}$  daytime and 45 dBA  $L_{eq}$  nighttime noise level standards at all nearby receiver locations. Therefore, the Project-related operational noise level impacts are considered *less than significant*.

## OPERATIONAL VIBRATION ANALYSIS

The operation of the Project site will include heavy trucks moving on site to and from the loading dock areas. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. According to the FTA *Transit Noise Impact and Vibration Assessment*, (3 p. 113) trucks rarely create vibration that exceeds 70 VdB or 0.003 in/sec RMS (4 p. 7) (unless there are bumps due to frequent potholes in the road). Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts will satisfy the County of Riverside 0.01 in/sec RMS vibration threshold, and therefore, will be *less than significant*.

## CONSTRUCTION NOISE ANALYSIS

Using sample reference noise levels to represent the planned construction activities of the Harvill and Rider Warehouse (PPT190039) site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. Since the County of Riverside General Plan and Municipal Codes do not identify specific construction noise level thresholds, an hourly average  $L_{eq}$  threshold is identified based on the National Institute for Occupational Safety and Health (NIOSH) limits for construction noise. The Project-related short-term construction noise levels are expected to range from 50.4 to 67.2 dBA  $L_{eq}$  and will satisfy the 85 dBA  $L_{eq}$  threshold identified by NIOSH at all receiver locations. Therefore, based on the results of this analysis, all nearby sensitive receiver locations will experience *less than significant* impacts due to Project construction noise levels.

## CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Based on this analysis it is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. This analysis shows the highest construction vibration levels are estimated at 0.001 in/sec RMS, which is below the vibration standard of 0.01 in/sec RMS at all receiver locations in the County of Riverside. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site. Moreover, the impacts at the site of the closest sensitive receivers 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.

## SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Harvill and Rider Warehouse (PPT190039) Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA 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	<i>Less Than Significant</i>	-
Operational Noise	9	<i>Less Than Significant</i>	-
Operational Vibration		<i>Less Than Significant</i>	-
Construction Noise	10	<i>Less Than Significant</i>	-
Construction Vibration		<i>Less Than Significant</i>	-

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# 1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Harvill and Rider Warehouse (PPT190039) (“Project”). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides 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 impacts.

## 1.1 SITE LOCATION

The proposed Harvill and Rider Warehouse (PPT190039) site is located on the northeast corner of Harvill Avenue and Rider Street in unincorporated County of Riverside, as shown on Exhibit 1-A. The Project site is currently vacant. Existing land uses near the site consist mostly of industrial land use with some nearby residential homes located west of the Project site. The Interstate 215 (I-215) Freeway is located approximately 205 feet east of the Project site. Located roughly 115 feet east of the Project site, the active Burlington National Santa Fe (BNSF) railroad lines currently serve 8 trains per day. In addition, the Project site is located approximately 2 miles southwest of the southerly end of Runway 14-32 of the March Air Reserve Base/Inland Port Airport (MARB/IPA) and 4.3 miles north of the Perris Valley Airport.

The Project site is located within an unincorporated portion of the County. As per the County’s General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (5). As per the General Plan, the Project is located within the Mead Valley Area Plan and is designated as Light Industrial.

## 1.2 PROJECT DESCRIPTION

The Project is proposed to consist of up to 284,746 square feet (sf) of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 50,249 square feet of general light industrial use (15 percent of the total square footage) for a total of 334,995 square feet within a single building as shown on Exhibit 1-B. The Project is anticipated to be constructed in a single phase by the year 2021.

The primary Project related noise source activity is expected to consist of the long-term operational and short-term construction activities. The long-term operational noise sources are expected to include: loading dock activity, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle movements. The primary source of operational noise activity is related to the 41 loading docks and approximately 138 alternate parking stalls. At the time this noise analysis was prepared, the future tenants of the proposed Project are unknown; the building is designed to accommodate one tenant or be divisible to accommodate two tenants.

While the future tenants are unknown, this noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site. This includes a combination of tractor trailer semi-trucks, two-axle delivery trucks, background forklift operations forklift horn and backup alarm. To present a conservative approach, this report assumes the Project will operate 24-hours daily for seven days per week.

In addition, to assess the worst-case construction noise levels, the Project construction noise analysis evaluates the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity during the following stages of construction.

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

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction.

EXHIBIT 1-A: LOCATION MAP

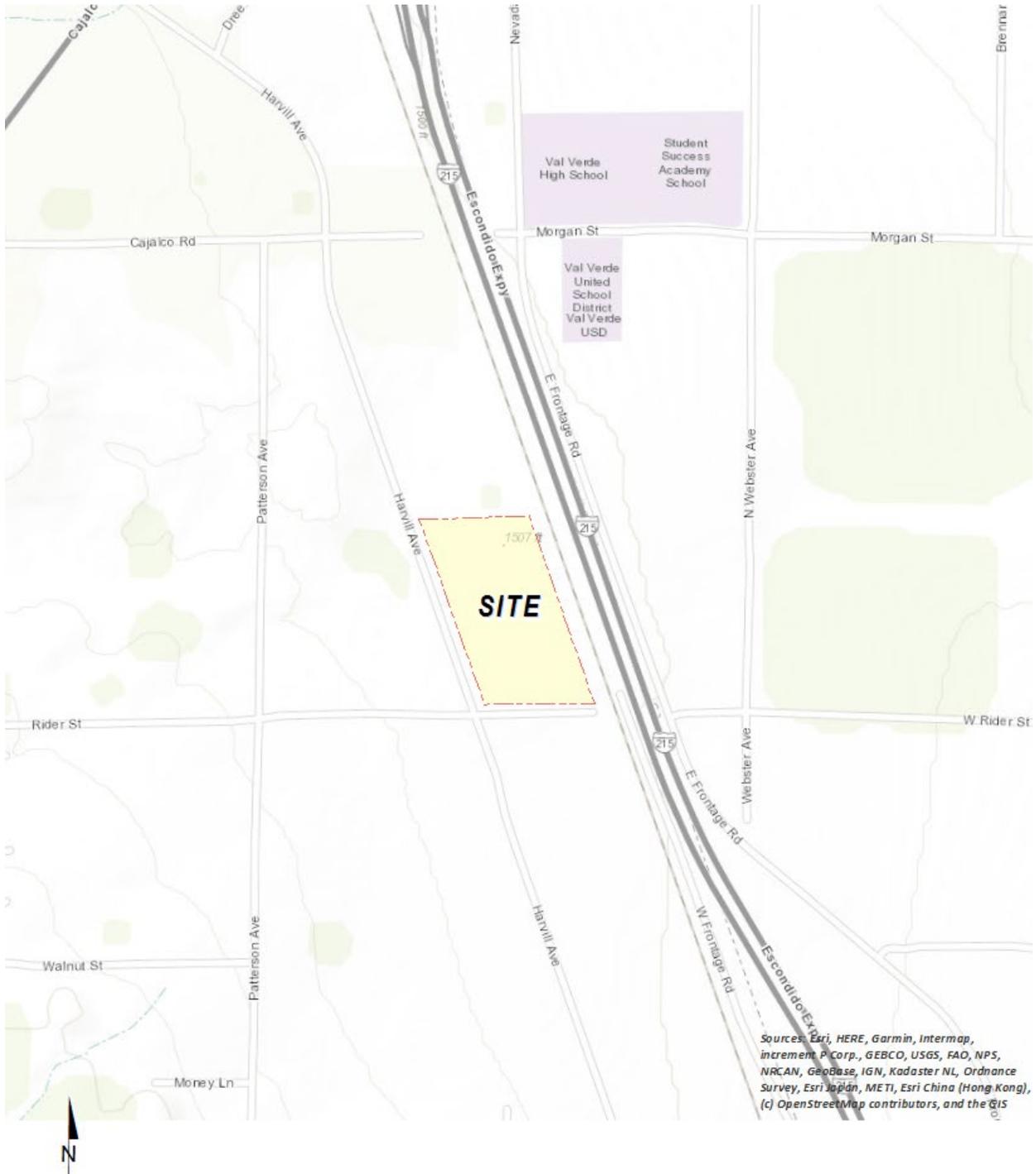
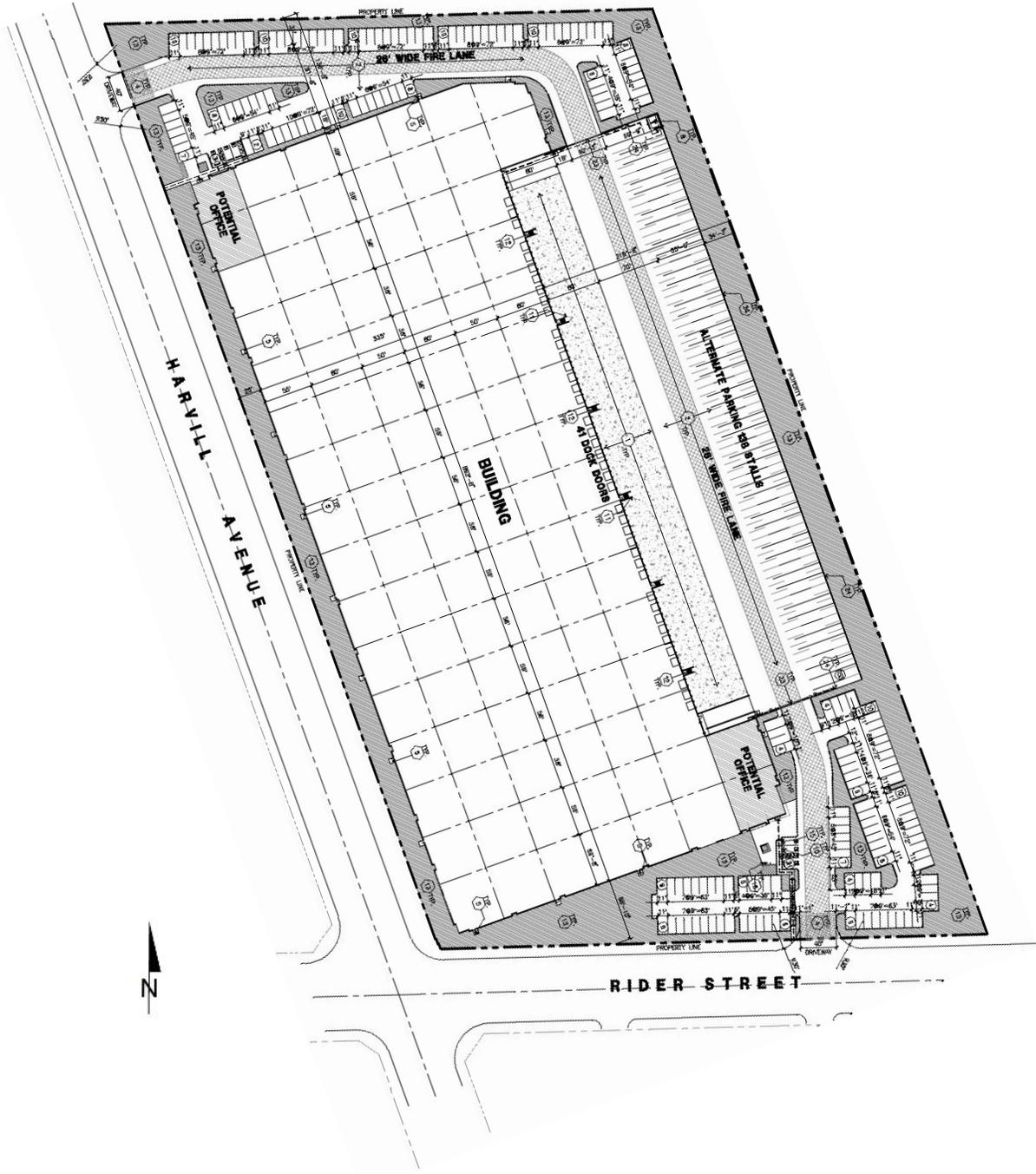


EXHIBIT 1-B: SITE PLAN



## 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**

<b>COMMON OUTDOOR ACTIVITIES</b>	<b>COMMON INDOOR ACTIVITIES</b>	<b>A - WEIGHTED SOUND LEVEL dBA</b>	<b>SUBJECTIVE LOUDNESS</b>	<b>EFFECTS OF NOISE</b>
THRESHOLD OF PAIN		140	<b>INTOLERABLE OR DEAFENING</b>	<b>HEARING LOSS</b>
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	<b>VERY NOISY</b>	<b>SPEECH INTERFERENCE</b>
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	<b>LOUD</b>	
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70		
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60	<b>MODERATE</b>	<b>SLEEP DISTURBANCE</b>
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50		
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40	<b>FAINT</b>	<b>NO EFFECT</b>
QUIET SUBURBAN NIGHTTIME	LIBRARY	30		
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	<b>VERY FAINT</b>	
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. (6) 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 100 feet, which can cause serious discomfort. (7) 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 commonly used figure 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 (typically one hour) 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 sound appears louder. 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. (6)

### 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. (8)

### **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. (6)

### **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 FHWA does not consider the planting of vegetation to be a noise abatement measure. (8)

## **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 up to 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 be high enough and long enough to block the path of the noise source. (8)

## 2.6 LAND USE COMPATIBILITY WITH NOISE

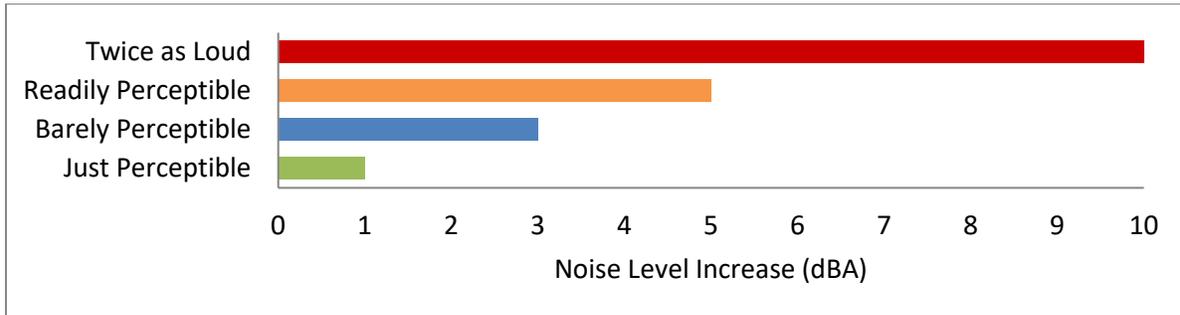
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, 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. (9)

## 2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten 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 will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (10) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (10) 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 are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (8)

**EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION****2.8 EXPOSURE TO HIGH NOISE LEVELS**

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (11)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area.

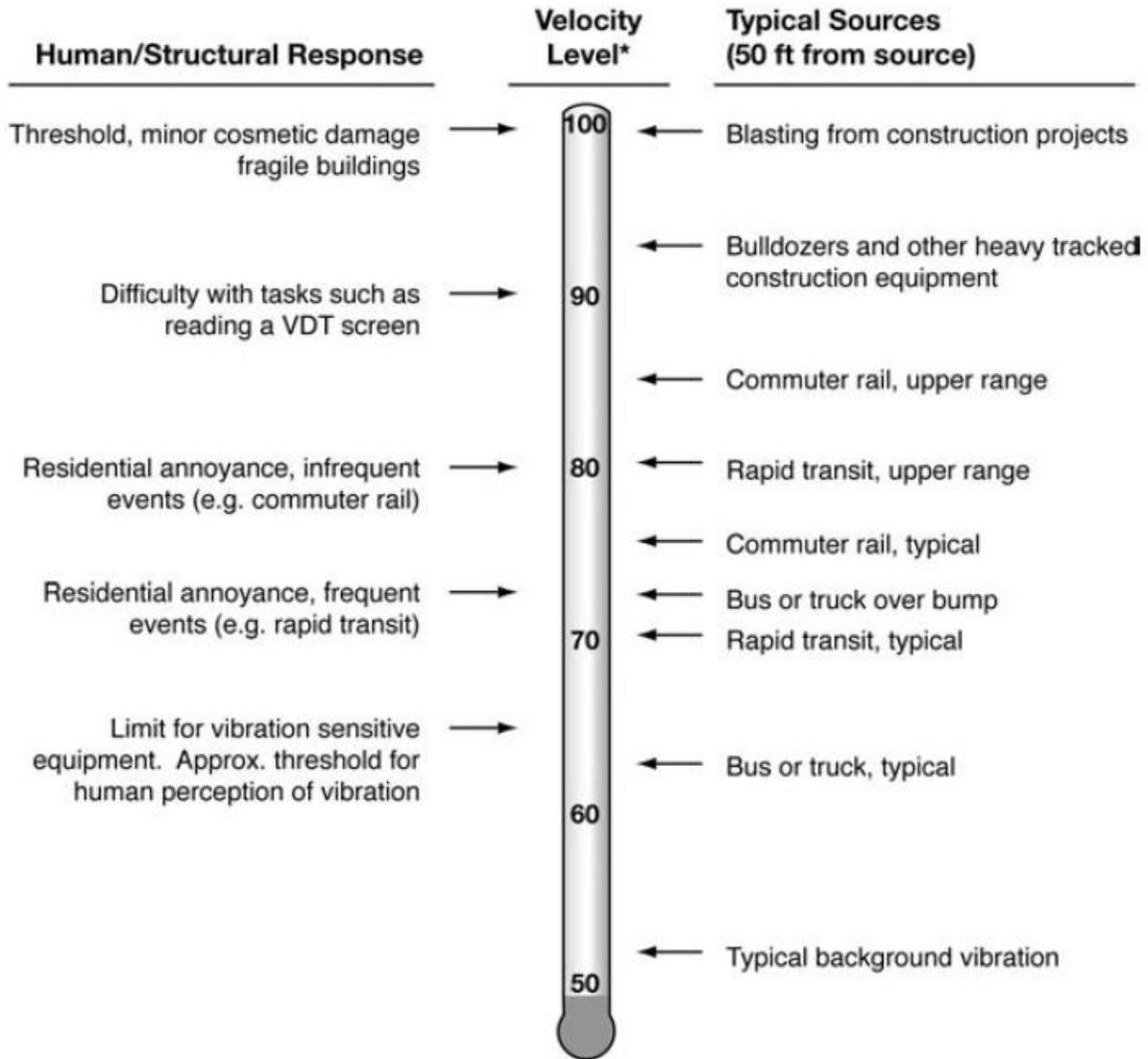
**2.9 VIBRATION**

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (3), 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 Impact and Vibration Assessment.

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### 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). (12) 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 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (13) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA  $L_{eq}$  for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

#### 3.3 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 County of Riverside from excessive exposure to noise. (14) 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 10-minute  $L_{eq}$  between 10:00 p.m. and 7:00 a.m.*
  - b. *65 dBA 10-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, using methods such as:*
  - i. *Temporary noise attenuation fences.*
  - ii. *Preferential location and equipment; and*
  - iii. *Use of current noise suppression technology and equipment.*
- 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 noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. 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. Policy 16.3 establishes the vibration perception threshold for rail-related vibration levels, used in this analysis as a threshold for determining potential vibration impacts due to Project construction. (14)

### 3.3.1 LAND USE COMPATIBILITY

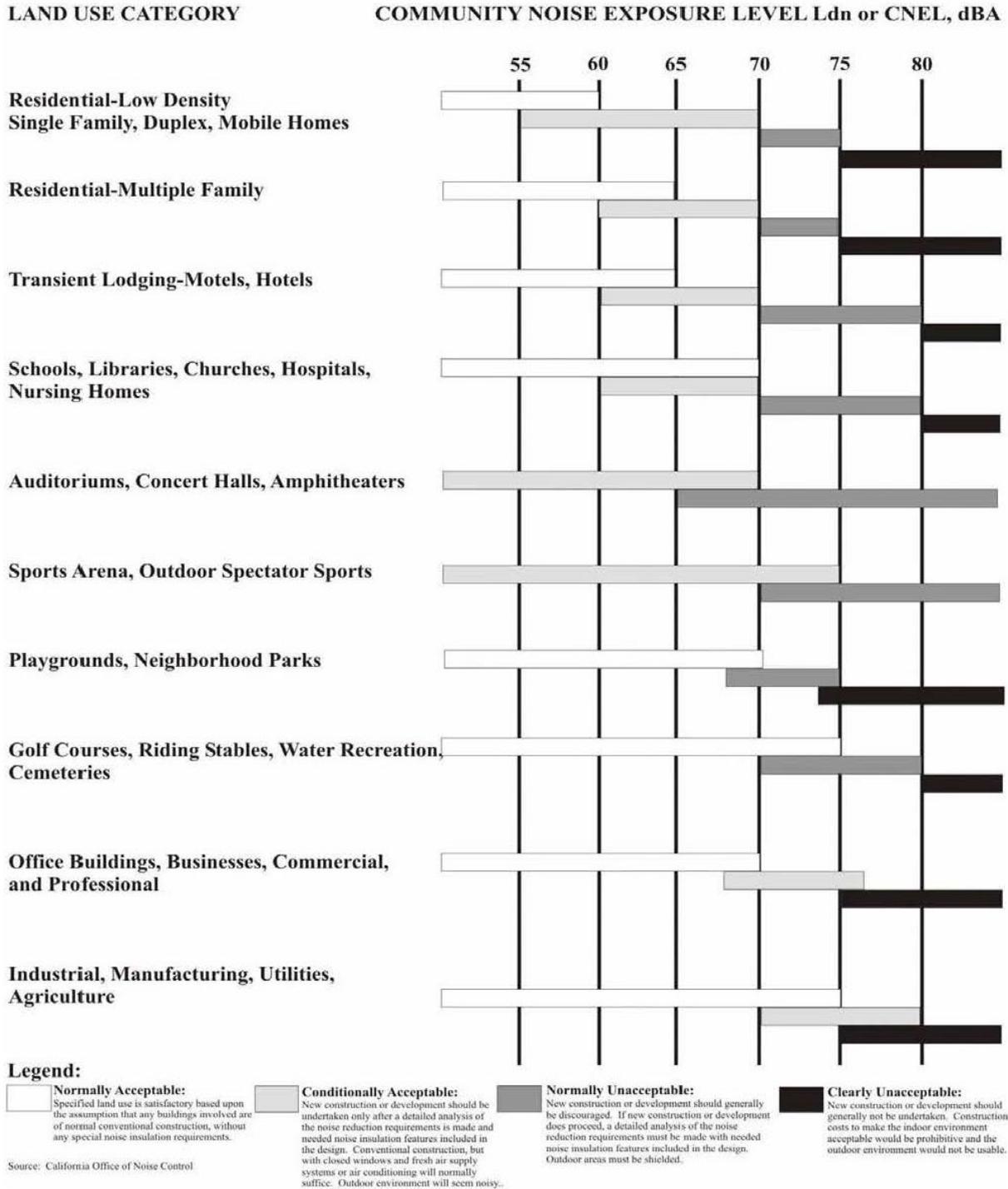
The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses 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.* (14)

### 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, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle movements associated with the development of the proposed Harvill and Rider Warehouse (PPT190039). 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.

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



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

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. (14)

The County of Riverside Municipal Code Section 9.52.040 *General sound level standards* 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 Municipal Code identifies 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. for noise-sensitive uses. (15)

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 Municipal 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 15<sup>th</sup>, 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.

### 3.4 CONSTRUCTION NOISE STANDARDS

Section 9.52.020 of the County's Noise Regulation ordinance 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. (15) Neither the County's General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*.

To evaluate whether the Project will generate potentially significant construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (16) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (16) For the purposes of this analysis, the lowest, more conservative construction noise level threshold of 85 dBA  $L_{eq}$  is used as an acceptable threshold for

construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as  $L_{eq}$  noise levels. Therefore, the noise level threshold of 85 dBA  $L_{eq}$  over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

The NIOSH 85 dBA  $L_{eq}$  construction noise level threshold used in the Noise Study is consistent with similar construction noise level thresholds identified by the Federal Transit Administration (FTA) that are specific to noise-sensitive residential uses. The FTA Transit Noise and Vibration Impact Assessment identifies a daytime construction noise level threshold of 90 dBA  $L_{eq}$  for general assessment. (3) As such, the NIOSH 85 dBA  $L_{eq}$  threshold used in the Noise Study to identify potential impacts is more conservative than the FTA threshold which is specific to construction noise at residential receiver locations. In addition, the NIOSH threshold has been used in several other technical noise studies and environmental impact reports prepared in the County of Riverside.

Consistent with the NIOSH 85 dBA  $L_{eq}$  construction noise level threshold, the Occupational Safety and Health Administration (OSHA) requires employers to implement a hearing conservation program when noise exposure is at or above 85 dBA over 8 working hours. (16) Workers are required to wear hearing protection when engaged in work that exposes them to noise that equals or exceeds 85 dBA over 8 working hours. This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations using a construction noise level threshold that is consistent with guidelines and standards identified by NIOSH, FTA and OSHA.

### 3.5 VIBRATION STANDARDS

The County of Riverside does not have vibration standards for temporary construction, but the County's General Plan Noise Element does contain the human reaction to typical vibration levels. Vibration levels with peak particle velocity of 0.0787 inches per second are considered readily perceptible and above 0.1968 in/sec are considered annoying to people in buildings. Further, County of Riverside General Plan Policy N 16.3 identifies a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz, which is used in this noise study to assess potential impacts due to Project construction vibration levels. (14)

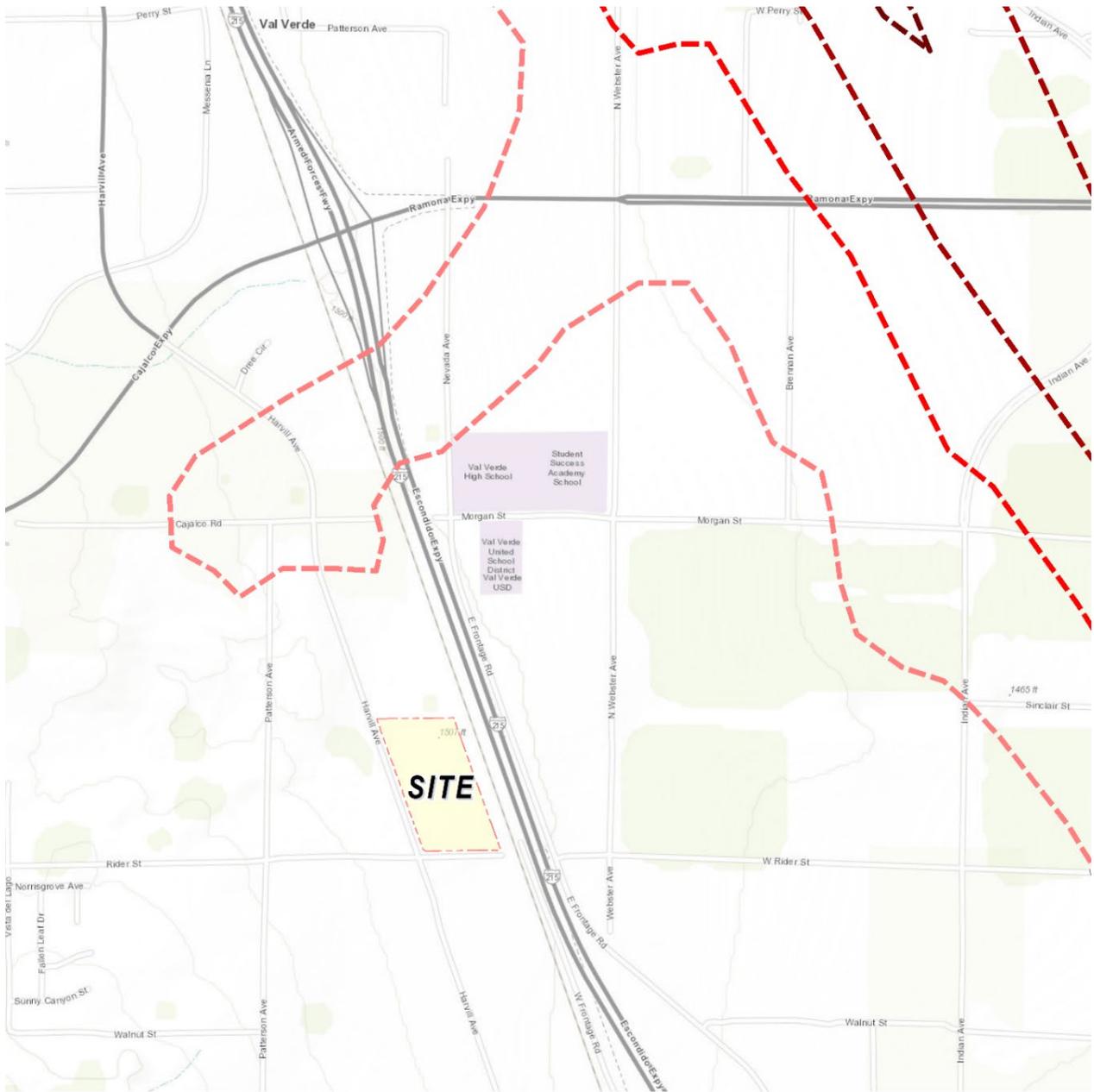
### 3.6 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located approximately 2 miles north of the Project site. The *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan* (MARB/IPA LUCP) includes the policies for determining the land use compatibility of the Project. The MARB/IPA, Map MA-1, indicates that the Project site is located within Compatibility Zone C2, which Table MA-1 Compatibility Zone Factors indicates is considered to have a *moderate* noise impact. Further, the Project site is located outside of the 60 dBA CNEL noise level contour boundary. Moreover, the Basic Compatibility Criteria, listed in Table MA-2 of the MARB/IPA LUCP

identifies no prohibited uses other than highly noise-sensitive outdoor nonresidential uses (e.g., sports stadiums and concert halls). (17) The MARB/IPA LUCP does not identify industrial-use specific noise compatibility standards, and therefore, the County of Riverside *Land Use Compatibility for Community Noise Exposure* matrix, previously discussed in Section 3.3, is used to assess potential aircraft-related noise levels at the Project site. The County of Riverside guidelines indicate that industrial uses, such as the Project, are considered *normally acceptable* with exterior noise levels of up to 70 dBA CNEL. (14)

The noise contour boundaries of MARB/IPA are presented on Exhibit 3-B of this report and show that the Project is considered *normally acceptable* land use since it is located outside of the 60 dBA CNEL contour. Further, Table MA-2 indicates that no uses are prohibited in this area except for highly noise-sensitive outdoor nonresidential uses (e.g., sports stadiums, concert halls).

**EXHIBIT 3-B: MARB/IPA FUTURE AIRPORT NOISE CONTOURS**



**LEGEND:**

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

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

## 4 SIGNIFICANCE CRITERIA

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

- A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- B. Generation of excessive ground-borne vibration or ground-borne noise levels?
- C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

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

### 4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

As previously indicated in Section 3.6, the noise contour boundaries of MARB/IPA are presented on Exhibit 3-B of this report and show that the Project is considered *normally acceptable* land use since it is located outside of the 60 dBA CNEL contour. Moreover, Table MA-2 of the MARB/IPA LUCP indicates that no uses are prohibited in this area except for highly noise-sensitive outdoor nonresidential uses (e.g., sports stadiums, concert halls), and therefore, impacts are considered *less than significant* and no further noise analysis is provided under Guideline C.

### 4.2 NOISE-SENSITIVE RECEIVERS

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 ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (18)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. 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 exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. While County of Riverside General Plan Noise Element and Municipal Code do not identify any noise level increase thresholds, the County of Riverside General Plan Environmental Impact Report No. 521 outlines incremental noise impact criteria for noise sensitive uses in Table 4.15-H. This significance criteria derived from the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* are used to evaluate the incremental transportation noise level impacts and establishes a method for comparing future project noise with existing noise. In effect, the amount to which a given noise level increase is considered acceptable is reduced based on existing ambient noise conditions. Table 4-1 below provides a summary of the allowable County of Riverside criteria used to identify potentially significant incremental noise level increases.

**TABLE 4-1: SIGNIFICANCE OF NOISE LEVEL INCREASES AT NOISE-SENSITIVE RECEIVERS**

Without Project Noise Level	Potential Significant Impact (dBA CNEL)
< 50 dBA	7 dBA or more
50 - 55 dBA	5 dBA or more
55 - 60 dBA	3 dBA or more
60 - 65 dBA	2 dBA or more
65 - 75 dBA	1 dBA or more
> 75 dBA	0 dBA

Sources: County of Riverside General Plan EIR No. 521 (Table 4.15-H) and the FTA Transit Noise and Vibration Manual, 2018 (Table 4-6).

### 4.3 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 levels 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*. (14)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria were used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. 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 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.

## 4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

### OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
  - are less than 50 dBA CNEL and the Project creates a 7 dBA CNEL or greater Project-related noise level increase; or
  - range from 50 to 55 dBA CNEL and the Project creates a 5 dBA CNEL or greater Project-related noise level increase; or
  - range from 55 to 60 dBA CNEL and the Project creates a 3 dBA CNEL or greater Project-related noise level increase; or
  - range from 60 to 65 dBA CNEL and the Project creates a 2 dBA CNEL or greater Project-related noise level increase; or
  - range from 65 to 75 dBA CNEL and the Project creates a 1 dBA CNEL or greater Project-related noise level increase; or
  - already exceed 75 dBA CNEL, and the Project creates a community noise level increase of greater than 0 dBA CNEL.
- When the noise levels at existing and future non-noise-sensitive land uses (e.g., office, commercial, industrial):
  - are less than the County of Riverside General Plan Noise Element, Table N-1, *normally acceptable* 70 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project related noise level increase; or
  - are greater than the County of Riverside General Plan Noise Element, Table N-1, *normally acceptable* 70 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project noise level increase.

### OPERATIONAL NOISE & VIBRATION

- If Project-related operational (stationary-source) noise levels exceed the exterior 55 dBA  $L_{eq}$  daytime or 45 dBA  $L_{eq}$  nighttime noise level standards at nearby sensitive receiver locations (County of Riverside Municipal Code, 9.52.040)
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
  - are less than 50 dBA CNEL and the Project creates a 7 dBA CNEL or greater Project-related noise level increase; or
  - range from 50 to 55 dBA CNEL and the Project creates a 5 dBA CNEL or greater Project-related noise level increase; or
  - range from 55 to 60 dBA CNEL and the Project creates a 3 dBA CNEL or greater Project-related noise level increase; or
  - range from 60 to 65 dBA CNEL and the Project creates a 2 dBA CNEL or greater Project-related noise level increase; or

- range from 65 to 75 dBA CNEL and the Project creates a 1 dBA CNEL or greater Project-related noise level increase; or
- already exceed 75 dBA CNEL, and the Project creates a community noise level increase of greater than 0 dBA CNEL.
- If Project generated operational vibration levels exceed the County of Riverside acceptable vibration standard of 0.01 in/sec RMS at sensitive receiver locations (County of Riverside General Plan, Policy N 16.3).

**CONSTRUCTION NOISE & VIBRATION**

- If Project-related construction activities create noise levels which exceed the 85 dBA  $L_{eq}$  acceptable noise level threshold at the nearby sensitive receiver locations (NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure);
- If short-term Project-generated construction vibration levels exceed the County of Riverside vibration standard of 0.01 in/sec RMS at sensitive receiver locations (County of Riverside General Plan Noise Element, Policy N 16.3).

**TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY**

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive <sup>1</sup>	If ambient is < 50 dBA CNEL	≥ 7 dBA CNEL Project increase	
		If ambient is 50 - 55 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 55 - 60 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 2 dBA CNEL Project increase	
		If ambient is 65 - 75 dBA CNEL	≥ 1 dBA CNEL Project increase	
		If ambient is > 75 dBA CNEL	0 dBA CNEL Project increase	
	Non-Noise-Sensitive <sup>2</sup>	If ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive <sup>1</sup>	Exterior Noise Level Standards <sup>3</sup>	55 dBA $L_{eq}$	45 dBA $L_{eq}$
		If ambient is < 50 dBA CNEL	≥ 7 dBA CNEL Project increase	
		If ambient is 50 - 55 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 55 - 60 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 2 dBA CNEL Project increase	
		If ambient is 65 - 75 dBA CNEL	≥ 1 dBA CNEL Project increase	
		Vibration Level Threshold <sup>4</sup>	0.01 in/sec RMS	
Construction	Noise-Sensitive	Noise Level Threshold <sup>5</sup>	85 dBA $L_{eq}$	
		Vibration Level Threshold <sup>4</sup>	0.01 in/sec RMS	

<sup>1</sup> Sources: County of Riverside General Plan EIR No. 521 (Table 4.15-H) and the FTA Transit Noise and Vibration Manual, 2018 (Table 4-6).

<sup>2</sup> Source: County of Riverside General Plan Noise Element, Table N-1.

<sup>3</sup> Source: County of Riverside General Plan Municipal Code, Section 9.52.040.

<sup>4</sup> Source: County of Riverside General Plan Noise Element, Policy N 16.3.

<sup>5</sup> Acceptable threshold for construction noise based on the Criteria for Recommended Standard: Occupational Noise Exposure prepared by the National Institute for Occupational Safety and Health.

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

## 5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, November 13<sup>th</sup>, 2019. Appendix 5.1 includes study area photos.

### 5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

### 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.* (6) Further, FTA guidance states, *that 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.* (3)

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. (3) 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 average or equivalent sound levels ( $L_{eq}$ ). The equivalent sound level ( $L_{eq}$ ) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 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. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels northeast of the Project site next to the Val Verde Unified School District administration building east of Interstate 215. The noise levels at this location consist primarily of traffic noise from Interstate 215. The noise level measurements collected show an overall 24-hour exterior noise level of 65.1 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 59.9 dBA  $L_{eq}$  with an average nighttime noise level of 58.0 dBA  $L_{eq}$ .
- Location L2 represents the noise levels southwest of the Project site on Rider Street near an existing residential home and vacant lot. The ambient noise levels at this location account for traffic noise on Rider Street. The noise level measurements collected show an overall 24-hour exterior noise level of 66.4 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 61.8 dBA  $L_{eq}$  with an average nighttime noise level of 59.3 dBA  $L_{eq}$ .
- Location L3 represents the noise levels west of Project site on Patterson Avenue near existing vacant lot. The noise level measurements collected show an overall 24-hour exterior noise level of 58.7 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 52.0 dBA  $L_{eq}$  with an average nighttime noise level of 52.1 dBA  $L_{eq}$ . The noise levels at this location consist primarily of traffic noise from Patterson Avenue.
- Location L4 represents the noise levels west of the Project site, south of Cajalco Expressway, near existing residential homes and industrial uses. The 24-hour CNEL indicates that the overall exterior noise level is 58.7dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 52.0 dBA  $L_{eq}$  with an average nighttime noise level of 52.1 dBA  $L_{eq}$ . Traffic on Patterson Avenue represents the primary source of noise at this location.

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

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with I-215, the MARB/IPA, the BNSF rail line in addition to background industrial land use activities. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. According to the U.S. Department of Transportation Crossing Inventory Form No. 027334L, (20) the BNSF rail line located approximately 115 feet east of the Project site currently serves 8 trains per day. The 24-hour existing noise level measurement results are shown on Table 5-1.

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

Location <sup>1</sup>	Description	Energy Average Noise Level (dBA Leq) <sup>2</sup>		CNEL
		Daytime	Nighttime	
L1	Located northeast of the Project site next to Val Verde Unified School District east of Interstate 215.	59.9	58.0	65.1
L2	Located southwest of the Project site on Rider Street near existing residential home and vacant lot.	61.8	59.3	66.4
L3	Located west of Project site on Patterson Avenue near existing vacant lot.	52.0	52.1	58.7
L4	Located northwest of the project site east of Patterson Avenue near existing residential homes.	57.2	60.0	66.3

<sup>1</sup> See Exhibit 5-A for the noise level measurement locations.

<sup>2</sup> 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



## 6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment. Consistent with the County of Riverside General Plan *Land Use Compatibility for Community Noise Exposure* matrix, 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. (21) 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. (22) 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. (23) This approach is consistent with the methodology used by the County of Riverside in the General Plan Noise Element. (5)

### 6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the three 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 posted vehicle speeds. Where posted vehicle speeds are unavailable, the 40-mph speed identified in the County of Riverside Office of Industrial Hygiene Noise Study Guidelines is used. The ADT volumes used in this study area presented on Table 6-2 are based on the *Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios under both Without and With Project alternatives: Existing 2019, Existing plus Ambient Growth (EA) 2021, and EA plus Cumulative (EAC) 2021. (2)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. The *General Plan Noise Element* (14) requires that future on-site traffic noise impacts be assessed using the maximum capacity design standard for highways and major roads. However, this analysis relies on a comparative analysis of the off-site traffic noise impacts, without and with project ADT traffic volumes from the Project traffic study. The use of the maximum capacity design standards is typically reserved for determining the

future long-range on-site traffic noise impacts, not the comparative contributions associated with the off-site Project traffic noise level impacts.

**TABLE 6-1: OFF-SITE ROADWAY PARAMETERS**

ID	Roadway	Segment	Receiving Land Use <sup>1</sup>	Distance from Centerline to Receiving Land Use (Feet) <sup>2</sup>	Vehicle Speed (mph) <sup>3</sup>
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	59'	50
2	Harvill Av.	s/o Driveway 1	LI/BP	59'	50
3	Harvill Av.	s/o Rider St.	LI/BP	59'	50

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.  
<sup>2</sup> Distance to receiving land use is based upon the right-of-way distances.  
<sup>3</sup> Source: Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis.  
 "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES**

ID	Roadway	Segment	Average Daily Traffic Volumes <sup>1</sup>					
			Existing		Existing + Ambient (EA)		Existing + Ambient + Cumulative (EAC)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Harvill Av.	n/o Driveway 1	14,168	16,357	14,805	16,994	21,179	23,368
2	Harvill Av.	s/o Driveway 1	14,168	15,947	14,805	16,584	21,179	22,958
3	Harvill Av.	s/o Rider St.	14,781	16,698	15,443	17,360	20,612	22,529

<sup>1</sup> Source: Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis.

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 *Traffic Impact 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.

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 6-3: TIME OF DAY VEHICLE SPLITS**

Vehicle Type	Time of Day Splits <sup>1</sup>			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	75.55%	13.96%	10.49%	100.00%
Medium Trucks	48.91%	2.18%	48.91%	100.00%
Heavy Trucks	47.30%	5.40%	47.30%	100.00%

<sup>1</sup> Source: County of Riverside Office of Industrial Hygiene, (Major, Arterial, Urban Arterial). Values rounded to the nearest one-hundredth. "Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

**TABLE 6-4: WITHOUT PROJECT VEHICLE MIX**

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	90.93%	4.91%	4.16%	100.00%

Based on an existing vehicle count taken at Harvill Avenue and Rider Street (Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-5: EXISTING 2019 WITH PROJECT VEHICLE MIX**

ID	Roadway	Segment	With Project <sup>1</sup>			
			Autos	Medium Trucks	Heavy Trucks	Total <sup>2</sup>
1	Harvill Av.	n/o Driveway 1	90.23%	5.00%	4.78%	100.00%
2	Harvill Av.	s/o Driveway 1	90.68%	4.95%	4.37%	100.00%
3	Harvill Av.	s/o Rider St.	90.78%	4.90%	4.32%	100.00%

<sup>1</sup> Source: Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis.

<sup>2</sup> Total of vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-6: EA 2021 WITH PROJECT VEHICLE MIX**

ID	Roadway	Segment	With Project <sup>1</sup>			
			Autos	Medium Trucks	Heavy Trucks	Total <sup>2</sup>
1	Harvill Av.	n/o Driveway 1	90.25%	4.99%	4.75%	100.00%
2	Harvill Av.	s/o Driveway 1	90.69%	4.95%	4.36%	100.00%
3	Harvill Av.	s/o Rider St.	90.78%	4.90%	4.32%	100.00%

<sup>1</sup> Source: Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis.

<sup>2</sup> Total of vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-7: EAC 2021 WITH PROJECT VEHICLE MIX**

ID	Roadway	Segment	With Project <sup>1</sup>			
			Autos	Medium Trucks	Heavy Trucks	Total <sup>2</sup>
1	Harvill Av.	n/o Driveway 1	90.46%	4.97%	4.58%	100.00%
2	Harvill Av.	s/o Driveway 1	90.76%	4.94%	4.30%	100.00%
3	Harvill Av.	s/o Rider St.	90.82%	4.90%	4.28%	100.00%

<sup>1</sup> Source: Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis.

<sup>2</sup> Total of vehicle mix percentage values rounded to the nearest one-hundredth.

### 6.3 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-8. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. The FTA provides the following equation:  $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$

**TABLE 6-8: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

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

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

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## 7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the *Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis*. (2) 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 24-hour dBA CNEL 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 CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation. Roadway segments are analyzed from the without Project to the with Project conditions in each of the following timeframes: Existing 2019, Existing plus Ambient Growth (EA) 2021, and Existing plus Ambient Growth plus Cumulative (EAC) 2021. Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

**TABLE 7-1: EXISTING 2019 WITHOUT PROJECT NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	74.8	124	266	574
2	Harvill Av.	s/o Driveway 1	LI/BP	74.8	124	266	574
3	Harvill Av.	s/o Rider St.	LI/BP	75.0	127	274	590

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-2: EXISTING 2019 WITH PROJECT NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	75.3	133	288	619
2	Harvill Av.	s/o Driveway 1	LI/BP	75.0	127	274	589
3	Harvill Av.	s/o Rider St.	LI/BP	75.2	131	281	606

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-3: EA 2021 WITHOUT PROJECT NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	75.0	127	274	591
2	Harvill Av.	s/o Driveway 1	LI/BP	75.0	127	274	591
3	Harvill Av.	s/o Rider St.	LI/BP	75.2	131	282	608

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-4 EA 2021 WITH PROJECT NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	75.5	137	295	636
2	Harvill Av.	s/o Driveway 1	LI/BP	75.2	131	281	606
3	Harvill Av.	s/o Rider St.	LI/BP	75.4	134	289	624

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-5: EAC 2021 WITHOUT PROJECT NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	76.6	162	348	750
2	Harvill Av.	s/o Driveway 1	LI/BP	76.6	162	348	750
3	Harvill Av.	s/o Rider St.	LI/BP	76.4	159	342	737

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-6: EAC 2021 WITH PROJECT CONDITIONS NOISE CONTOURS**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	76.9	170	367	790
2	Harvill Av.	s/o Driveway 1	LI/BP	76.7	165	355	764
3	Harvill Av.	s/o Rider St.	LI/BP	76.6	162	349	751

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road. "PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

## 7.2 EXISTING 2019 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 to fully analyze all the existing traffic scenarios identified in the *Harvill and Rider Warehouse (PPT190039) Traffic Impact Analysis* prepared by Urban Crossroads, Inc. This condition is provided solely for informational purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions. Therefore, no mitigation measures are considered to reduce the Existing Plus Project traffic noise level increases. The future EAC traffic noise conditions that include all cumulative projects are used to determine the significance of the Project off-site traffic noise level increases on the study area roadway segments. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 74.8 to 75.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 75.0 to 75.3 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level impacts will range from 0.2 to 0.5 dBA CNEL.

### **7.3 EA 2021 PROJECT TRAFFIC NOISE LEVEL INCREASES**

Table 7-3 presents the Existing plus Ambient Growth (EA) without Project conditions CNEL noise levels. The EA without Project exterior noise levels are expected to range from 75.0 to 75.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the EA with Project conditions will range from 75.2 to 75.5 dBA CNEL. Table 7-8 shows that the Project off-site traffic noise level increases will range from 0.2 to 0.5 dBA CNEL.

### **7.4 EAC 2021 PROJECT TRAFFIC NOISE LEVEL INCREASES**

Table 7-5 presents the Existing plus Ambient Growth plus Cumulative (EAC) without Project conditions CNEL noise levels. The EAC without Project exterior noise levels are expected to range from 76.4 to 76.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the EAC with Project conditions will range from 76.6 to 76.9 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases will range from 0.1 to 0.3 dBA CNEL. Based on the significance criteria for the off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases due to Project-related traffic noise levels.

**TABLE 7-7: EXISTING 2019 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>			Noise Sensitive Land Use?	Incremental Noise Level Increase Criteria <sup>3</sup>	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	74.8	75.3	0.5	No	3	No
2	Harvill Av.	s/o Driveway 1	LI/BP	74.8	75.0	0.2	No	3	No
3	Harvill Av.	s/o Rider St.	LI/BP	75.0	75.2	0.2	No	3	No

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

<sup>3</sup> Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

"PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

**TABLE 7-8: EA 2021 WITH PROJECT TRAFFIC NOISE INCREASES**

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>			Noise Sensitive Land Use?	Incremental Noise Level Increase Criteria <sup>3</sup>	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	75.0	75.5	0.5	No	3	No
2	Harvill Av.	s/o Driveway 1	LI/BP	75.0	75.2	0.2	No	3	No
3	Harvill Av.	s/o Rider St.	LI/BP	75.2	75.4	0.2	No	3	No

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

<sup>3</sup> Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

"PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

TABLE 7-9: EAC 2021 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use <sup>1</sup>	CNEL at Receiving Land Use (dBA) <sup>2</sup>			Noise Sensitive Land Use?	Incremental Noise Level Increase Criteria <sup>3</sup>	
				No Project	With Project	Project Addition		Limit	Exceeded?
1	Harvill Av.	n/o Driveway 1	PF/LI/BP	76.6	76.9	0.3	No	3	No
2	Harvill Av.	s/o Driveway 1	LI/BP	76.6	76.7	0.1	No	3	No
3	Harvill Av.	s/o Rider St.	LI/BP	76.4	76.6	0.1	No	3	No

<sup>1</sup> Sources: Mead Valley Area Plan, Land Use Plan, Figure 3.

<sup>2</sup> The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

<sup>3</sup> Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

"PF"= Public Facilities; "LI"= Light Industrial; "BP"= Business Park.

## **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, outpatient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, four receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. 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. The nearest receptor where an individual can stay for a 24-hour period is represented by the residence located 633 feet southwest of the Project site at 23615 Rider Street (Receiver R2). 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 exterior façade of the Val Verde School District administrative building located at 975 Morgan Street roughly 1,045 feet northeast of the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment for this institutional use.
- R2: Location R2 represents the existing noise sensitive residential home located at 23615 Rider Street, roughly 633 feet southwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R2 is placed at the residential building façade. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents the residence at 19971 Patterson Avenue Drive which is located roughly 1,160 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the residential building façade. A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.
- R4: Location R4 represents the private outdoor living area (backyard) at 23453 Cajalco Rd approximately 1,426 feet north west of the Project site. A 24-hour noise measurement near this location, L4, is used to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS



**LEGEND:**

- Receiver Locations
- Distance from receiver to Project site boundary (in feet)

## **9 OPERATIONAL NOISE IMPACTS**

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations, identified in Section 8, resulting from the operation of the proposed Harvill and Rider Warehouse (PPT190039) Project. Exhibit 9-A identifies the representative receiver locations and noise source locations used to assess the hourly average  $L_{eq}$  operational noise levels consistent with the County of Riverside General Plan Noise Element Policy N 4.1.

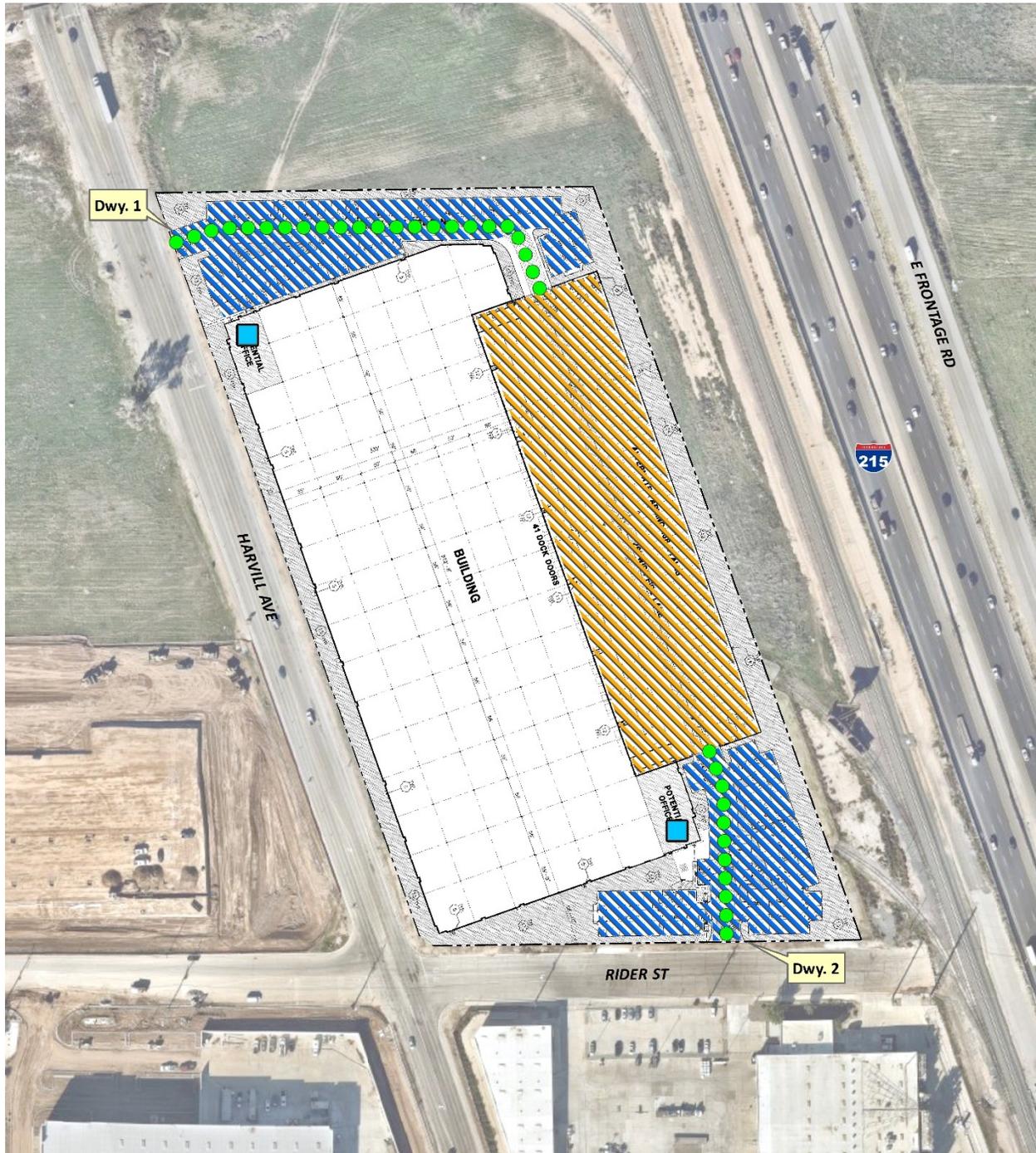
### **9.1 OPERATIONAL NOISE SOURCES**

At the time this noise analysis was prepared the future tenants of the proposed Project were unknown. Therefore, this operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle 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, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle movements all operating continuously. These sources of noise activity will likely vary throughout the day. Appendix 9.1 provides reference measurement photos for each noise source.

**EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS**



- LEGEND:**
- Blue square: Roof-Top Air Conditioning Unit
  - Blue hatched area: Parking Lot Vehicle Movements
  - Yellow hatched area: Loading Dock Activity
  - Green circle: Entry Gate & Truck Movements

**TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS**

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Noise Source Height (Feet)	Min./Hour <sup>5</sup>		Reference Noise Level (dBA Leq)		Sound Power Level (dBA) <sup>6</sup>
				Day	Night	@ Ref. Dist.	@ 50 Feet	
Loading Dock Activity <sup>1</sup>	00:15:00	30'	8'	60	60	67.2	62.8	103.4
Entry Gate & Truck Movements <sup>2</sup>	00:15:00	20'	8'	- <sup>7</sup>	- <sup>7</sup>	64.0	58.0	89.7
Roof-Top Air Conditioning Units <sup>3</sup>	96:00:00	5'	5'	39	28	77.2	57.2	88.9
Parking Lot Vehicle Movements <sup>4</sup>	01:00:00	10'	5'	60	60	52.2	41.7	79.0

<sup>1</sup> As measured by Urban Crossroads, Inc. at the Motivational Fulfillment & Logistics Services distribution facility in the City of Chino.

<sup>2</sup> As measured by Urban Crossroads, Inc. at the Nature's Best Distribution Facility in the City of Chino.

<sup>3</sup> As measured by Urban Crossroads, Inc. at the Santee Walmart located at 170 Town Center Parkway.

<sup>4</sup> As measured by Urban Crossroads, Inc. at the Panasonic Avionics Corporation parking lot in the City of Lake Forest.

<sup>5</sup> Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

<sup>6</sup> 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.

<sup>7</sup> Entry Gate & Truck Movements are calculate based on the number of events by time of day (See Table 9-2).

### 9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

### 9.2.2 LOADING DOCK ACTIVITY

The Project includes a single large loading dock area on the eastern building façade providing 41 dock doors and approximately 138 alternate parking stalls. 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 Leq. The short-term reference noise level measurements were collected at the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino. 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.

The noise level measurements represent the typical weekday dry goods logistics warehouse operation in a single building with a loading dock area on the western side of the building façade. In addition, since this reference noise level describes the peak noise source activity, it is also used in the noise prediction model as area source to conservatively describe the entire loading dock area even though during normal operations, the loading dock noise source activity will occur at different locations throughout the loading dock area.

**9.2.3 ENTRY GATE & TRUCK MOVEMENTS**

An entry gate and truck movements reference noise level measurement were taken at the southern entry gate of the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino over a 15-minute period and represents multiple noise sources producing a reference noise level of 58.0 dBA Leq at 50 feet. The noise sources included at this measurement location account for the rattling and squeaking during normal opening and closing operations, the gate closure equipment, truck engines idling outside the entry gate, truck movements through the entry gate, and background truck court activities and forklift backup alarm noise.

Consistent with the *Harvill and Rider Warehouse (PPT190039) Trip Generation Assessment* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 650 trip-ends per day (actual vehicles) and includes 184 truck trip-ends per day. (2) This noise study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network. Using the estimated number of truck trips in combination with time of day vehicle splits, the number of entry gate and truck movements were calculated. As shown on Table 9-2, this information is then used to calculate the entry gate and truck movements operational noise source activity based on the number of events by time of day.

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

Entry Gate & Truck Movement Location <sup>1</sup>	Total Project Truck Trips <sup>2</sup>	Trip Dist. <sup>3</sup>	Truck Trips by Location <sup>4</sup>	Time of Day Vehicle Splits <sup>5</sup>			Truck Movements <sup>6</sup>		
				Day	Evening	Night	Day	Evening	Night
Driveway 1	184	60%	110	47.30%	5.40%	47.30%	52	6	52
Driveway 2	184	40%	74	47.30%	5.40%	47.30%	35	4	35

<sup>1</sup> Driveway locations as shown on the Site Plan Exhibit 9-A.

<sup>2</sup> Total Project truck trips according to Table 4-1 of the Harvill and Rider Traffic Impact Analysis.

<sup>3</sup> Project truck trip distribution according to Exhibit 4-1 of the Harvill and Rider Traffic Impact Analysis.

<sup>4</sup> Calculated trip trucks per location represents the product of the total project truck trips by and the trip distribution.

<sup>5</sup> Heavy truck time of day vehicle splits as shown on Table 6-3.

<sup>6</sup> Calculated time of day entry gate and truck movements by location.

#### **9.2.4 ROOF-TOP AIR CONDITIONING UNITS**

To assess the noise levels created by the roof-top air conditioning units within the planned commercial retail land uses within the Project site, reference noise levels measurements were taken at the Santee Walmart. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of the existing Walmart store. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At 5 feet from the roof-top air conditioning unit, the exterior noise levels were measured at 77.2 dBA  $L_{eq}$ . 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 an 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. The noise attenuation provided by the existing parapet wall is not reflected in this reference noise level measurement.

#### **9.2.5 PARKING LOT VEHICLE MOVEMENTS**

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements over a 24-hour period at the parking lot for the Panasonic Avionics Corporation in the City of Lake Forest. The peak hour of activity measured over the 24-hour noise level measurement period occurred between 12:00 p.m. to 1:00 p.m., or the typical lunch hour for employees working in the area. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 41.7 dBA  $L_{eq}$ . The parking lot noise levels are mainly due to cars pulling in and out of spaces during peak lunch hour activity and employees talking. Noise associated with parking lot vehicle movements is expected to operate for the entire hour (60 minutes).

### **9.3 CADNA A 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 the noise level of multiple types of noise sources and calculates the noise levels at any location using the spatially accurate Project site plan and includes the effects of topography, buildings, and multiple barriers in its calculations using the latest standards to predict outdoor noise impacts. Appendix 9.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section. Using the spatially accurate Project site plan and flown aerial imagery from Nearmap, a CadnaA noise prediction model of the Project study area was developed. The noise model provides a three-dimensional representation of the Project study area using the following key data inputs:

- Ground absorption;
- Multiple reflections at buildings and barriers;
- Reference noise level sources by type (area, point, etc.) and noise source height;

- Multiple noise receiver locations and heights;
- Topography and earthen berms;
- Barrier and building heights.

Using the ISO 9613 protocol, the CadnaA noise prediction model 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 calculations at each receiver location and the partial noise level contributions by noise source. The reference sound power level (PWL) for the highest noise source expected at the Project site was input into the CadnaA noise prediction model. While sound pressure levels (e.g.  $L_{eq}$ ) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (PWL) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish as a result 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. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6.0 dBA for each doubling of distance from a point source, based on existing conditions in the Project study area.

#### 9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, entry gate & truck movements, roof-top air conditioning units, and parking lot vehicle 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. Tables 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 32.9 to 44.3 dBA  $L_{eq}$ .

**TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS**

Noise Source <sup>1,2</sup>	Operational Noise Levels by Receiver Location (dBA Leq)			
	R1	R2	R3	R4
Loading Dock Activity	43.7	24.5	22.4	27.8
Entry Gate & Truck Movements	34.3	29.8	30.0	30.8
Roof-Top Air Conditioning Units	26.5	29.3	28.4	25.7
Parking Lot Vehicle Movements	22.3	21.4	18.2	18.4
<b>Total (All Noise Sources)</b>	<b>44.3</b>	<b>33.5</b>	<b>32.9</b>	<b>33.5</b>

<sup>1</sup> See Exhibit 9-A for the noise source locations.

<sup>2</sup> CadnaA noise model calculations are included in Appendix 9.2.

Tables 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 28.8 to 43.8 dBA Leq. The differences between the daytime and nighttime noise levels is largely related to the duration of noise activity (Table 9-1). Appendix 9.2 includes the detailed noise model inputs including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

**TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS**

Noise Source <sup>1,2</sup>	Operational Noise Levels by Receiver Location (dBA Leq)			
	R1	R2	R3	R4
Loading Dock Activity	43.7	24.5	22.4	27.8
Entry Gate & Truck Movements	25.9	22.7	21.0	21.8
Roof-Top Air Conditioning Units	24.0	26.9	26.0	23.3
Parking Lot Vehicle Movements	22.3	21.4	18.2	18.4
<b>Total (All Noise Sources)</b>	<b>43.8</b>	<b>30.4</b>	<b>28.8</b>	<b>30.2</b>

<sup>1</sup> See Exhibit 9-A for the noise source locations.

<sup>2</sup> CadnaA noise model calculations are included in Appendix 9.2.

## 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 Harvill and Rider Warehouse (PPT190039) Project will satisfy the County of Riverside 55 dBA Leq daytime and 45 dBA Leq nighttime exterior noise level standards at all nearby receiver locations. 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 <sup>1</sup>	Project Operational Noise Levels (dBA Leq) <sup>2</sup>		Noise Level Standards (dBA Leq) <sup>3</sup>		Noise Level Standards Exceeded? <sup>4</sup>	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	44.3	43.8	55	45	No	No
R2	33.5	30.4	55	45	No	No
R3	32.9	28.8	55	45	No	No
R4	33.5	30.2	55	45	No	No

<sup>1</sup> See Exhibit 8-A for the receiver locations.

<sup>2</sup> Proposed Project operational noise levels as shown on Tables 9-3 and 9-4.

<sup>3</sup> Exterior noise level standards for residential land use, as shown on Table 4-2.

<sup>4</sup> Do the estimated Project operational noise source activities exceed the noise level standards?

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

## 9.6 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. (6) Instead, they must be logarithmically added using the following base equation:

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

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 describe 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 and 9-7, the Project will generate an daytime and nighttime operational noise level increases ranging from 0.0 to 0.2 dBA  $L_{eq}$  at the nearby receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

## 9.7 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (8) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

## 9.8 OPERATIONAL VIBRATION IMPACTS

To assess the potential vibration impacts from truck haul trips associated with operational activities the County of Riverside threshold for vibration of 0.01 in/sec RMS is used. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. According to the FTA *Transit Noise Impact and Vibration Assessment*, (3 p. 113) trucks rarely create vibration that exceeds 70 VdB or 0.003 in/sec RMS (4 p. 7) (unless there are bumps due to frequent potholes in the road. Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes will satisfy the County of Riverside vibration threshold of 0.01 in/sec RMS, and therefore, will be *less than significant*.

**TABLE 9-6: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES**

Receiver Location <sup>1</sup>	Total Project Operational Noise Level <sup>2</sup>	Measurement Location <sup>3</sup>	Reference Ambient Noise Levels <sup>4</sup>	Combined Project and Ambient <sup>5</sup>	Project Increase <sup>6</sup>	Increase Criteria <sup>7</sup>	Increase Criteria Exceeded?
R1	44.3	L1	59.9	60.0	0.1	3	No
R2	33.5	L2	61.8	61.8	0.0	2	No
R3	32.9	L3	52.0	52.1	0.1	5	No
R4	33.5	L4	57.2	57.2	0.0	3	No

<sup>1</sup> See Exhibit 8-A for the receiver locations.

<sup>2</sup> Total Project daytime operational noise levels as shown on Table 9-3.

<sup>3</sup> Reference noise level measurement locations as shown on Exhibit 5-A.

<sup>4</sup> Observed daytime ambient noise levels as shown on Table 5-1.

<sup>5</sup> Represents the combined ambient conditions plus the Project activities.

<sup>6</sup> The noise level increase expected with the addition of the proposed Project activities.

<sup>7</sup> Significance increase criteria as shown on Table 4-1.

**TABLE 9-7: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES**

Receiver Location <sup>1</sup>	Total Project Operational Noise Level <sup>2</sup>	Measurement Location <sup>3</sup>	Reference Ambient Noise Levels <sup>4</sup>	Combined Project and Ambient <sup>5</sup>	Project Increase <sup>6</sup>	Increase Criteria <sup>7</sup>	Increase Criteria Exceeded?
R1	43.8	L1	58.0	58.2	0.2	3	No
R2	30.4	L2	59.3	59.3	0.0	3	No
R3	28.8	L3	52.1	52.1	0.0	5	No
R4	30.2	L4	60.0	60.0	0.0	2	No

<sup>1</sup> See Exhibit 8-A for the receiver locations.

<sup>2</sup> Total Project nighttime operational noise levels as shown on Table 9-4.

<sup>3</sup> Reference noise level measurement locations as shown on Exhibit 5-A.

<sup>4</sup> Observed nighttime ambient noise levels as shown on Table 5-1.

<sup>5</sup> Represents the combined ambient conditions plus the Project activities.

<sup>6</sup> The noise level increase expected with the addition of the proposed Project activities.

<sup>7</sup> Significance increase criteria as shown on Table 4-1.



## 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 locations in relation to the nearby sensitive receiver locations previously described in Section 8.

### 10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment is expected to occur in the following stages, based on the *Harvill and Rider Warehouse (PPT190039) Air Quality Impact Analysis* for the Project:

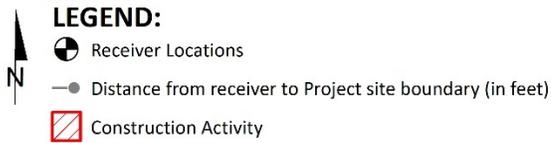
- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver.

### 10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances of 30 feet and 50 feet, all construction noise level measurements presented on Table 10-1 have been adjusted for consistency to describe a uniform reference distance of 50 feet.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS



**TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS**

Construction Stage	Reference Construction Activity <sup>1</sup>	Reference Noise Level @ 50 Feet (dBA L <sub>eq</sub> )	Highest Reference Noise Level (dBA L <sub>eq</sub> )
Demolition	Demolition Activity	67.9	71.9
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Site Preparation	Scraper, Water Truck, & Dozer Activity	75.3	75.3
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Grading	Rough Grading Activities	73.5	73.5
	Water Truck Pass-By & Backup Alarm	71.9	
	Construction Vehicle Maintenance Activities	67.5	
Building Construction	Foundation Trenching	68.2	71.6
	Framing	62.3	
	Concrete Mixer Backup Alarms & Air Brakes	71.6	
Paving	Concrete Mixer Truck Movements	71.2	71.2
	Concrete Paver Activities	65.6	
	Concrete Mixer Pour & Paving Activities	65.9	
Architectural Coating	Air Compressors	65.2	65.2
	Generator	64.9	
	Crane	62.3	

<sup>1</sup> Reference construction noise level measurements taken by Urban Crossroads, Inc.

### 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. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 50.4 to 67.2 dBA L<sub>eq</sub> at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

**TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY**

Receiver Location <sup>1</sup>	Construction Noise Levels (dBA Leq)						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels <sup>2</sup>
R1	60.0	63.4	61.6	59.7	59.3	53.3	63.4
R2	63.8	67.2	65.4	63.5	63.1	57.1	67.2
R3	60.4	63.8	62.0	60.1	59.7	53.7	63.8
R4	57.1	60.5	58.7	56.8	56.4	50.4	60.5

<sup>1</sup> Noise receiver locations are shown on Exhibit 10-A.

<sup>2</sup> Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

### 10.3 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearby receiver locations, a construction-related the NIOSH noise level threshold of 85 dBA Leq is used as acceptable thresholds to assess construction noise level impacts. The construction noise analysis shows that the nearby receiver locations will satisfy the 85 dBA Leq significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

**TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE**

Receiver Location <sup>1</sup>	Construction Noise Levels (dBA Leq)		
	Highest Construction Noise Levels <sup>2</sup>	Threshold <sup>3</sup>	Threshold Exceeded? <sup>4</sup>
R1	63.4	85	No
R2	67.2	85	No
R3	63.8	85	No
R4	60.5	85	No

<sup>1</sup> Noise receiver locations are shown on Exhibit 10-A.

<sup>2</sup> Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 10-2.

<sup>3</sup> Construction noise level thresholds as shown on Table 4-2.

<sup>4</sup> Do the estimated Project construction noise levels exceed the construction noise level threshold?

### 10.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project’s construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts.

Table 10-4 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 633 to 1,426 feet from Project construction activities, construction vibration velocity levels are estimated at 0.001 in/sec RMS and will remain below the County of Riverside threshold of 0.01 in/sec RMS at all receiver locations, as shown on Table 10-4. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site. Moreover, the impacts at the site of the closest sensitive receivers 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 10-4: PROJECT CONSTRUCTION VIBRATION LEVELS**

Receiver <sup>1</sup>	Distance to Const. Activity (Feet)	Receiver Levels (in/sec) PPV <sup>2</sup>					Velocity Levels (in/sec) RMS <sup>3</sup>	Threshold (in/sec) RMS <sup>4</sup>	Threshold Exceeded? <sup>5</sup>
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration			
R1	1,040'	0.000	0.000	0.000	0.000	0.000	0.000	0.01	No
R2	633'	0.000	0.000	0.001	0.001	0.001	0.001	0.01	No
R3	1,160'	0.000	0.000	0.000	0.000	0.000	0.000	0.01	No
R4	1,426'	0.000	0.000	0.000	0.000	0.000	0.000	0.01	No

<sup>1</sup> Receiver locations are shown on Exhibit 10-A.

<sup>2</sup> Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.

<sup>3</sup> Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2013.

<sup>4</sup> Source: County of Riverside General Plan Noise Element, Policy N 16.3.

<sup>5</sup> Does the vibration level exceed the maximum acceptable vibration threshold?

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## 11 REFERENCES

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## 12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Harvill and Rider Warehouse (PPT190039) 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) 336-5979.

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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 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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**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-I (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<sub>max</sub>)**

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.

#### 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)

**APPENDIX 5.1:**  
**STUDY AREA PHOTOS**

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JN: 12845 Study Area Photos



L1\_E

33, 50' 8.560000", 117, 14' 46.180000"



L1\_N

33, 50' 8.610000", 117, 14' 46.240000"



L1\_S

33, 50' 8.590000", 117, 14' 46.210000"



L1\_W

33, 50' 8.560000", 117, 14' 46.160000"



L2\_E

33, 49' 49.010000", 117, 15' 4.750000"



L2\_N

,

JN: 12845 Study Area Photos



L2\_S  
33, 49' 49.220000", 117, 15' 4.810000"



L2\_W  
33, 49' 49.000000", 117, 15' 4.750000"



L3\_E  
33, 49' 54.100000", 117, 15' 10.080000"



L3\_N  
33, 49' 54.120000", 117, 15' 10.110000"



L3\_S  
33, 49' 54.100000", 117, 15' 10.080000"



L3\_W  
33, 49' 54.090000", 117, 15' 10.050000"

JN: 12845 Study Area Photos



L4\_E  
33, 50' 8.810000", 117, 15' 10.570000"



L4\_N  
33, 50' 8.800000", 117, 15' 10.600000"



L4\_S  
33, 50' 8.810000", 117, 15' 10.570000"



L4\_W  
33, 50' 8.800000", 117, 15' 10.570000"

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**APPENDIX 5.2:**  
**NOISE LEVEL MEASUREMENT WORKSHEETS**

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### 24-Hour Noise Level Measurement Summary

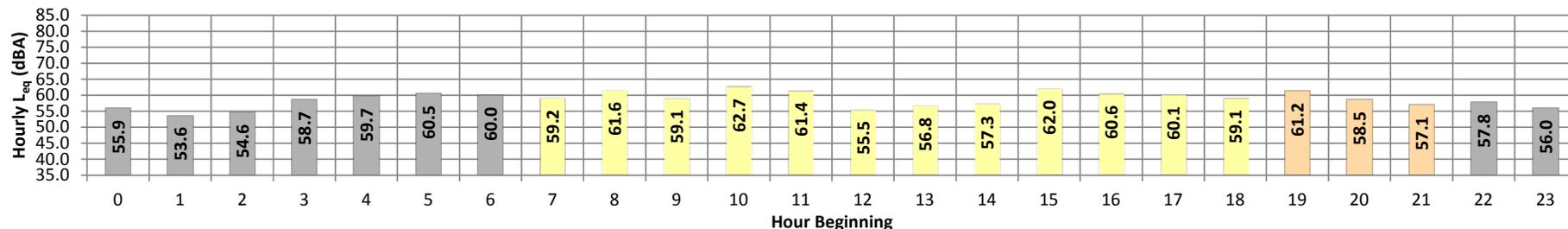
Date: Wednesday, November 13, 2019  
Project: 28840 Rider St.

Location: L1 - Located northeast of the Project site next to Val Verde Unified School District east of Interstate 215.

Meter: Piccolo II

JN: 12845  
Analyst: P. Mara

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	55.9	59.8	52.0	59.6	59.3	58.7	58.3	56.8	55.4	53.0	52.6	52.1	55.9	10.0	65.9
	1	53.6	57.9	49.5	57.6	57.4	56.8	56.2	54.5	53.1	50.7	50.2	49.7	53.6	10.0	63.6
	2	54.6	58.6	51.2	58.4	58.1	57.4	56.9	55.5	54.2	52.0	51.6	51.3	54.6	10.0	64.6
	3	58.7	63.5	55.8	62.2	62.7	61.7	61.1	59.1	58.1	56.5	56.2	55.9	58.7	10.0	68.7
	4	59.7	62.7	57.5	62.5	62.3	61.7	61.4	60.3	59.4	58.1	57.9	57.6	59.7	10.0	69.7
	5	60.5	63.6	58.6	63.3	63.1	62.5	62.0	60.9	60.2	59.1	58.9	58.7	60.5	10.0	70.5
	6	60.0	63.4	58.0	63.0	62.7	62.0	61.5	60.5	59.6	58.5	58.3	58.1	60.0	10.0	70.0
Day	7	59.2	65.7	55.8	65.0	64.5	63.3	62.5	59.9	57.7	56.3	56.2	55.9	59.2	0.0	59.2
	8	61.6	65.6	60.2	64.8	64.1	62.9	62.5	61.8	61.4	60.5	60.3	60.2	61.6	0.0	61.6
	9	59.1	64.7	51.2	64.2	63.8	63.2	62.6	60.5	58.1	52.6	51.9	51.4	59.1	0.0	59.1
	10	62.7	74.4	52.5	73.8	72.9	69.9	67.5	60.7	56.8	53.5	53.1	52.7	62.7	0.0	62.7
	11	61.4	75.5	52.0	74.0	72.0	66.7	63.9	59.4	56.5	53.3	52.8	52.2	61.4	0.0	61.4
	12	55.5	60.1	52.1	59.7	59.3	58.6	58.2	56.3	54.9	52.9	52.5	52.2	55.5	0.0	55.5
	13	56.8	64.5	52.7	63.3	62.7	61.1	60.2	57.1	55.2	53.5	53.1	52.8	56.8	0.0	56.8
	14	57.3	63.5	54.4	62.7	61.7	60.1	59.5	57.8	56.7	55.2	54.9	54.6	57.3	0.0	57.3
	15	62.0	69.3	57.3	68.7	68.2	67.4	66.4	62.3	59.6	57.9	57.6	57.4	62.0	0.0	62.0
	16	60.6	66.7	57.9	66.2	65.4	63.5	62.8	60.9	59.8	58.4	58.2	57.9	60.6	0.0	60.6
	17	60.1	62.9	58.2	62.7	62.4	62.0	61.6	60.6	59.9	58.8	58.6	58.3	60.1	0.0	60.1
	18	59.1	62.5	57.0	62.2	62.0	61.5	61.0	59.6	58.8	57.5	57.3	57.0	59.1	0.0	59.1
Evening	19	61.2	64.7	59.0	64.3	64.0	63.5	63.1	61.7	60.8	59.5	59.3	59.1	61.2	5.0	66.2
	20	58.5	62.8	55.7	62.4	62.1	61.3	60.8	59.1	57.9	56.3	56.0	55.8	58.5	5.0	63.5
	21	57.1	60.9	54.1	60.6	60.3	59.6	59.2	57.7	56.7	54.9	54.6	54.2	57.1	5.0	62.1
Night	22	57.8	61.0	55.3	60.8	60.5	60.1	59.7	58.4	57.5	56.0	55.7	55.4	57.8	10.0	67.8
	23	56.0	61.6	51.6	61.4	60.9	60.0	59.1	56.7	54.9	52.5	52.1	51.7	56.0	10.0	66.0
Timeframe	Hour	$L_{eq}$	$L_{max}$	$L_{min}$	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	$L_{eq}$ (dBA)		
Day	Min	55.5	60.1	51.2	59.7	59.3	58.6	58.2	56.3	54.9	52.6	51.9	51.4	24-Hour	Daytime	Nighttime
	Max	62.7	75.5	60.2	74.0	72.9	69.9	67.5	62.3	61.4	60.5	60.3	60.2			
Energy Average		60.1	Average:		65.6	64.9	63.4	62.4	59.7	57.9	55.9	55.5	55.2	59.3	59.9	58.0
Evening	Min	57.1	60.9	54.1	60.6	60.3	59.6	59.2	57.7	56.7	54.9	54.6	54.2			
	Max	61.2	64.7	59.0	64.3	64.0	63.5	63.1	61.7	60.8	59.5	59.3	59.1	65.1		
Energy Average		59.3	Average:		62.5	62.1	61.5	61.0	59.5	58.5	56.9	56.6	56.4			
Night	Min	53.6	57.9	49.5	57.6	57.4	56.8	56.2	54.5	53.1	50.7	50.2	49.7			
	Max	60.5	63.6	58.6	63.3	63.1	62.5	62.0	60.9	60.2	59.1	58.9	58.7			
Energy Average		58.0	Average:		61.1	60.8	60.1	59.6	58.1	56.9	55.2	54.8	54.5			

## 24-Hour Noise Level Measurement Summary

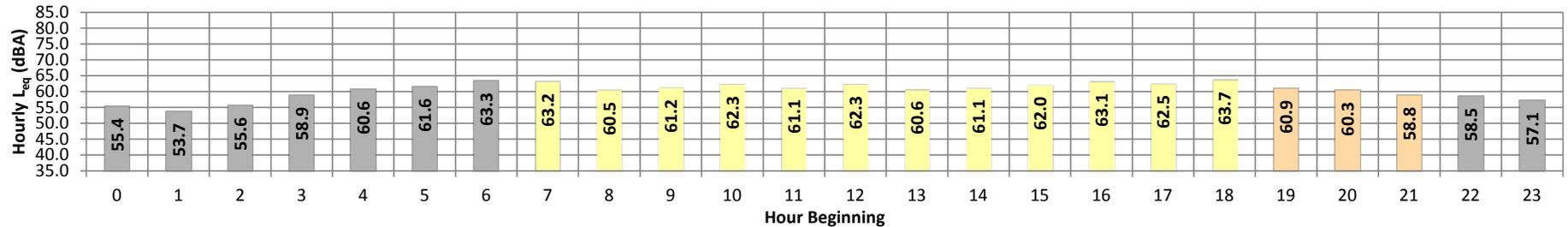
Date: Wednesday, November 13, 2019  
Project: 28840 Rider St.

Location: L2 - Located southwest of the Project site on Rider Street  
near existing residential home and vacant lot.

Meter: Piccolo I

JN: 12845  
Analyst: P. Mara

*Hourly L<sub>eq</sub> dBA Readings (unadjusted)*



Timeframe	Hour	L <sub>eq</sub>	L <sub>max</sub>	L <sub>min</sub>	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L <sub>eq</sub>	Adj.	Adj. L <sub>eq</sub>
Night	0	55.4	79.6	46.5	64.0	59.0	56.0	56.0	54.0	52.0	50.0	49.0	49.0	55.4	10.0	65.4
	1	53.7	75.0	46.5	62.0	59.0	56.0	55.0	52.0	51.0	48.0	48.0	47.0	53.7	10.0	63.7
	2	55.6	79.6	48.1	63.0	60.0	57.0	57.0	55.0	53.0	51.0	50.0	49.0	55.6	10.0	65.6
	3	58.9	77.4	49.8	68.0	64.0	60.0	60.0	58.0	56.0	52.0	51.0	50.0	58.9	10.0	68.9
	4	60.6	80.3	53.3	72.0	70.0	64.0	60.0	57.0	56.0	55.0	54.0	54.0	60.6	10.0	70.6
	5	61.6	78.2	53.6	72.0	70.0	67.0	64.0	59.0	58.0	55.0	55.0	54.0	61.6	10.0	71.6
Day	6	63.3	82.3	56.5	73.0	72.0	68.0	65.0	61.0	60.0	58.0	57.0	57.0	63.3	10.0	73.3
	7	63.2	80.2	51.7	75.0	73.0	69.0	67.0	59.0	57.0	53.0	52.0	52.0	63.2	0.0	63.2
	8	60.5	79.7	46.9	73.0	71.0	66.0	63.0	55.0	52.0	49.0	48.0	48.0	60.5	0.0	60.5
	9	61.2	83.1	45.4	74.0	72.0	67.0	62.0	53.0	51.0	48.0	47.0	46.0	61.2	0.0	61.2
	10	62.3	82.5	42.6	75.0	72.0	68.0	64.0	53.0	48.0	45.0	45.0	43.0	62.3	0.0	62.3
	11	61.1	83.1	42.6	74.0	72.0	67.0	63.0	51.0	48.0	45.0	44.0	43.0	61.1	0.0	61.1
	12	62.3	80.9	44.4	74.0	72.0	69.0	67.0	57.0	51.0	47.0	46.0	45.0	62.3	0.0	62.3
	13	60.6	81.4	43.5	73.0	71.0	67.0	64.0	52.0	49.0	46.0	45.0	45.0	60.6	0.0	60.6
	14	61.1	83.9	43.5	72.0	71.0	68.0	65.0	56.0	50.0	46.0	45.0	44.0	61.1	0.0	61.1
	15	62.0	79.1	46.1	74.0	73.0	69.0	67.0	55.0	51.0	48.0	47.0	47.0	62.0	0.0	62.0
	16	63.1	81.7	48.6	75.0	73.0	70.0	67.0	57.0	53.0	51.0	50.0	49.0	63.1	0.0	63.1
	17	62.5	83.3	50.1	74.0	72.0	69.0	66.0	57.0	54.0	52.0	52.0	51.0	62.5	0.0	62.5
Evening	18	63.7	90.0	53.8	73.0	72.0	69.0	66.0	59.0	57.0	55.0	55.0	54.0	63.7	0.0	63.7
	19	60.9	80.2	49.2	73.0	70.0	66.0	63.0	57.0	55.0	52.0	51.0	50.0	60.9	5.0	65.9
	20	60.3	79.6	48.8	72.0	70.0	66.0	62.0	56.0	55.0	52.0	51.0	50.0	60.3	5.0	65.3
Night	21	58.8	76.2	51.3	70.0	68.0	62.0	59.0	57.0	55.0	53.0	52.0	52.0	58.8	5.0	63.8
	22	58.5	79.8	49.7	69.0	66.0	60.0	59.0	57.0	55.0	52.0	52.0	51.0	58.5	10.0	68.5
	23	57.1	80.7	47.3	69.0	65.0	58.0	57.0	53.0	52.0	49.0	49.0	48.0	57.1	10.0	67.1
Day	Min	60.5	79.1	42.6	72.0	71.0	66.0	62.0	51.0	48.0	45.0	44.0	43.0			
	Max	63.7	90.0	53.8	75.0	73.0	70.0	67.0	59.0	57.0	55.0	55.0	54.0	24-Hour	Daytime	Nighttime
Energy Average		62.1	Average:		73.8	72.0	68.2	65.1	55.3	51.8	48.8	48.0	47.3	61.0	61.8	59.3
Evening	Min	58.8	76.2	48.8	70.0	68.0	62.0	59.0	56.0	55.0	52.0	51.0	50.0			
	Max	60.9	80.2	51.3	73.0	70.0	66.0	63.0	57.0	55.0	53.0	52.0	52.0			
Energy Average		60.1	Average:		71.7	69.3	64.7	61.3	56.7	55.0	52.3	51.3	50.7	24-Hour CNEL (dBA)		
Night	Min	53.7	75.0	46.5	62.0	59.0	56.0	55.0	52.0	51.0	48.0	48.0	47.0			
	Max	63.3	82.3	56.5	73.0	72.0	68.0	65.0	61.0	60.0	58.0	57.0	57.0			
Energy Average		59.3	Average:		68.0	65.0	60.7	59.2	56.2	54.8	52.2	51.7	51.0	<b>66.4</b>		

## 24-Hour Noise Level Measurement Summary

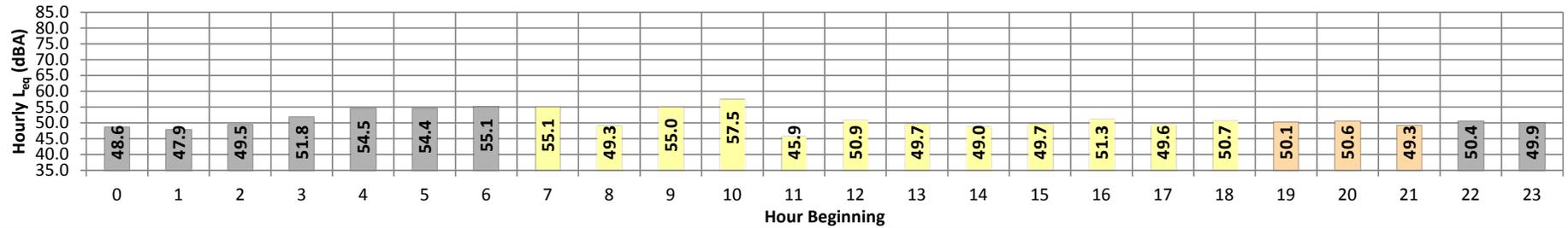
Date: Wednesday, November 13, 2019  
Project: 28840 Rider St.

Location: L3 - Located west of Project site on Patterson Avenue near existing vacant lot.

Meter: Piccolo I

JN: 12845  
Analyst: P. Mara

*Hourly  $L_{eq}$  dBA Readings (unadjusted)*



Timeframe	Hour	$L_{eq}$	$L_{max}$	$L_{min}$	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	$L_{eq}$	Adj.	Adj. $L_{eq}$
Night	0	48.6	70.0	42.9	54.0	52.0	51.0	50.0	48.0	47.0	45.0	45.0	44.0	48.6	10.0	58.6
	1	47.9	63.0	42.9	54.0	53.0	50.0	50.0	48.0	46.0	44.0	44.0	43.0	47.9	10.0	57.9
	2	49.5	60.5	44.1	54.0	53.0	51.0	51.0	50.0	48.0	47.0	46.0	45.0	49.5	10.0	59.5
	3	51.8	61.4	44.5	55.0	55.0	54.0	54.0	52.0	51.0	48.0	47.0	45.0	51.8	10.0	61.8
	4	54.5	81.2	49.5	57.0	56.0	55.0	54.0	53.0	52.0	51.0	50.0	50.0	54.5	10.0	64.5
	5	54.4	64.5	50.7	58.0	57.0	56.0	55.0	55.0	54.0	54.0	52.0	52.0	51.0	54.4	10.0
Day	6	55.1	70.4	52.4	58.0	57.0	56.0	56.0	55.0	54.0	53.0	53.0	53.0	55.1	10.0	65.1
	7	55.1	76.4	48.7	64.0	60.0	56.0	56.0	54.0	53.0	50.0	50.0	49.0	55.1	0.0	55.1
	8	49.3	66.5	43.0	56.0	54.0	52.0	51.0	48.0	47.0	45.0	44.0	44.0	49.3	0.0	49.3
	9	55.0	77.8	41.5	69.0	62.0	54.0	52.0	47.0	45.0	43.0	42.0	42.0	55.0	0.0	55.0
	10	57.5	79.0	40.7	70.0	65.0	57.0	54.0	47.0	45.0	43.0	42.0	41.0	57.5	0.0	57.5
	11	45.9	64.3	39.1	55.0	53.0	50.0	48.0	45.0	43.0	41.0	41.0	40.0	45.9	0.0	45.9
	12	50.9	69.8	40.7	63.0	61.0	55.0	53.0	46.0	44.0	42.0	42.0	41.0	50.9	0.0	50.9
	13	49.7	72.1	40.6	60.0	53.0	48.0	47.0	44.0	43.0	42.0	41.0	40.0	49.7	0.0	49.7
	14	49.0	75.3	39.1	58.0	53.0	49.0	48.0	45.0	43.0	41.0	40.0	40.0	49.0	0.0	49.0
	15	49.7	76.7	40.8	56.0	54.0	51.0	49.0	47.0	45.0	43.0	42.0	42.0	49.7	0.0	49.7
	16	51.3	80.0	42.9	57.0	56.0	53.0	51.0	47.0	46.0	44.0	44.0	43.0	51.3	0.0	51.3
	17	49.6	71.3	43.8	59.0	56.0	51.0	50.0	47.0	47.0	45.0	45.0	44.0	49.6	0.0	49.6
18	50.7	74.5	45.6	56.0	55.0	52.0	51.0	50.0	49.0	49.0	48.0	47.0	50.7	0.0	50.7	
Evening	19	50.1	64.6	43.8	59.0	56.0	53.0	52.0	49.0	48.0	46.0	45.0	44.0	50.1	5.0	55.1
	20	50.6	67.5	44.6	56.0	55.0	53.0	52.0	50.0	49.0	47.0	46.0	45.0	50.6	5.0	55.6
	21	49.3	57.6	45.7	54.0	52.0	51.0	51.0	49.0	48.0	47.0	46.0	46.0	49.3	5.0	54.3
Night	22	50.4	70.2	46.1	54.0	53.0	52.0	52.0	50.0	49.0	47.0	47.0	47.0	50.4	10.0	60.4
	23	49.9	62.2	43.9	56.0	55.0	53.0	52.0	50.0	48.0	46.0	46.0	45.0	49.9	10.0	59.9
Day	Min	45.9	64.3	39.1	55.0	53.0	48.0	47.0	44.0	43.0	41.0	40.0	40.0	24-Hour	Daytime	Nighttime
	Max	57.5	80.0	48.7	70.0	65.0	57.0	56.0	54.0	53.0	50.0	50.0	49.0			
Energy Average		52.3	Average:		60.3	56.8	52.3	50.8	47.3	45.8	43.9	43.3	42.7	52.0	52.0	52.1
Evening	Min	49.3	57.6	43.8	54.0	52.0	51.0	51.0	49.0	48.0	46.0	45.0	44.0			
	Max	50.6	67.5	45.7	59.0	56.0	53.0	52.0	50.0	49.0	47.0	46.0	46.0	24-Hour CNEL (dBA)		
Energy Average		50.0	Average:		56.3	54.3	52.3	51.7	49.3	48.3	46.7	45.7	45.0	58.7		
Night	Min	47.9	60.5	42.9	54.0	52.0	50.0	50.0	48.0	46.0	44.0	44.0	43.0			
	Max	55.1	81.2	52.4	58.0	57.0	56.0	56.0	55.0	54.0	53.0	53.0	53.0			
Energy Average		52.1	Average:		55.6	54.6	53.1	52.7	51.2	49.9	48.1	47.8	47.0			

## 24-Hour Noise Level Measurement Summary

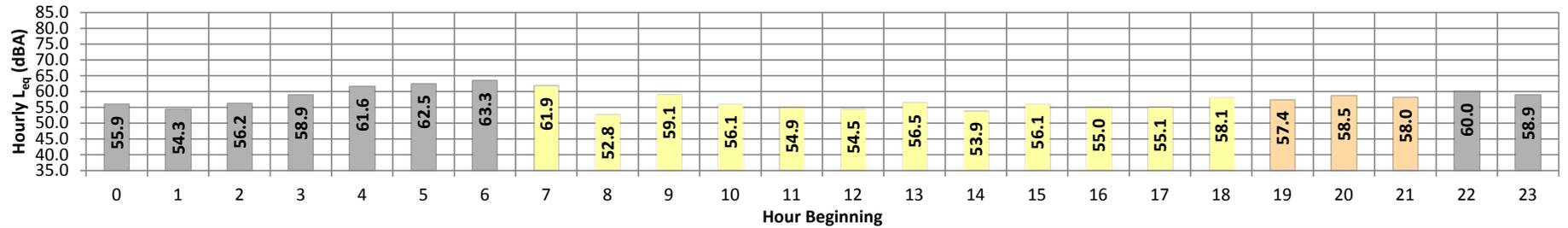
Date: Wednesday, November 13, 2019  
Project: 28840 Rider St.

Location: L4 - Located northwest of the project site east of Patterson Avenue near existing residential homes.

Meter: Piccolo II

JN: 12845  
Analyst: P. Mara

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	55.9	60.7	52.7	60.4	60.1	58.9	58.2	56.5	55.2	53.4	53.1	52.8	55.9	10.0	65.9			
	1	54.3	58.6	51.1	58.4	58.0	57.1	56.4	55.0	53.8	51.9	51.5	51.2	54.3	10.0	64.3			
	2	56.2	59.2	53.5	59.1	58.9	58.4	58.1	56.8	55.9	54.2	53.9	53.6	56.2	10.0	66.2			
	3	58.9	62.0	56.7	61.8	61.6	61.1	60.6	59.5	58.6	57.4	57.1	56.8	58.9	10.0	68.9			
	4	61.6	64.5	59.9	64.2	64.0	63.5	63.1	62.1	61.3	60.4	60.2	60.0	61.6	10.0	71.6			
	5	62.5	64.7	60.9	64.5	64.3	64.0	63.7	63.0	62.3	61.4	61.2	61.0	62.5	10.0	72.5			
Day	6	63.3	65.7	61.6	65.5	65.2	64.8	64.5	63.8	63.1	62.1	61.9	61.7	63.3	10.0	73.3			
	7	61.9	66.0	59.3	65.6	65.1	64.4	63.9	62.8	60.9	59.7	59.5	59.3	61.9	0.0	61.9			
	8	52.8	56.8	50.3	56.5	56.3	55.6	55.2	53.3	52.1	50.7	50.5	50.4	52.8	0.0	52.8			
	9	59.1	66.8	49.4	66.3	65.9	64.0	63.3	59.3	57.0	53.9	50.4	49.5	59.1	0.0	59.1			
	10	56.1	64.5	48.3	64.1	63.4	61.8	60.8	56.5	53.2	49.3	48.8	48.5	56.1	0.0	56.1			
	11	54.9	61.5	47.0	61.2	60.8	60.1	59.5	56.2	52.1	47.9	47.6	47.2	54.9	0.0	54.9			
	12	54.5	60.5	48.9	60.0	59.5	58.9	58.3	55.7	53.1	49.8	49.4	49.0	54.5	0.0	54.5			
	13	56.5	65.3	48.3	64.8	64.3	62.9	61.7	57.0	52.3	49.1	48.7	48.4	56.5	0.0	56.5			
	14	53.9	60.3	51.2	59.7	59.4	58.2	57.0	53.8	52.5	51.6	51.4	51.3	53.9	0.0	53.9			
	15	56.1	63.2	51.3	62.4	61.8	60.5	59.7	56.7	54.7	52.0	51.7	51.4	56.1	0.0	56.1			
	16	55.0	59.8	52.6	59.3	58.8	58.0	57.3	55.4	54.3	53.1	52.9	52.7	55.0	0.0	55.0			
	17	55.1	59.6	52.9	59.2	58.8	57.6	56.9	55.3	54.5	53.4	53.2	53.0	55.1	0.0	55.1			
Evening	18	58.1	63.5	55.9	62.9	62.0	60.3	59.7	58.5	57.6	56.5	56.2	56.0	58.1	0.0	58.1			
	19	57.4	63.5	54.8	62.9	62.1	60.4	59.5	57.8	56.6	55.4	55.1	54.9	57.4	5.0	62.4			
	20	58.5	62.7	56.0	62.3	62.0	61.3	60.6	59.1	57.9	56.6	56.4	56.1	58.5	5.0	63.5			
Night	21	58.0	61.4	55.8	61.1	60.8	60.2	59.8	58.5	57.7	56.4	56.1	55.9	58.0	5.0	63.0			
	22	60.0	63.0	57.8	62.7	62.5	61.9	61.6	60.5	59.8	58.5	58.2	57.9	60.0	10.0	70.0			
23	58.9	65.6	54.6	65.2	64.7	63.3	62.2	59.4	57.5	55.5	55.0	54.7	58.9	10.0	68.9				
Timeframe	Hour	$L_{eq}$	$L_{max}$	$L_{min}$	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	$L_{eq}$ (dBA)					
Day	Min	52.8	56.8	47.0	56.5	56.3	55.6	55.2	53.3	52.1	47.9	47.6	47.2	24-Hour	Daytime	Nighttime			
	Max	61.9	66.8	59.3	66.3	65.9	64.4	63.9	62.8	60.9	59.7	59.5	59.3						
Energy Average		56.9	Average:		61.8	61.3	60.2	59.4	56.7	54.5	52.2	51.7	51.4	24-Hour CNEL (dBA)					
Evening	Min	57.4	61.4	54.8	61.1	60.8	60.2	59.5	57.8	56.6	55.4	55.1	54.9				58.5	57.2	60.0
	Max	58.5	63.5	56.0	62.9	62.1	61.3	60.6	59.1	57.9	56.6	56.4	56.1						
Energy Average		58.0	Average:		62.1	61.6	60.6	60.0	58.5	57.4	56.1	55.9	55.6	66.3					
Night	Min	54.3	58.6	51.1	58.4	58.0	57.1	56.4	55.0	53.8	51.9	51.5	51.2				24-Hour CNEL (dBA)		
	Max	63.3	65.7	61.6	65.5	65.2	64.8	64.5	63.8	63.1	62.1	61.9	61.7						
Energy Average		60.0	Average:		62.4	62.1	61.4	60.9	59.6	58.6	57.2	56.9	56.6						

**APPENDIX 7.1:**  
**OFF-SITE TRAFFIC NOISE CONTOURS**

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing (2019) Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,168 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,074 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.40	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.07	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.80	-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:	66.0	65.2	63.9	57.9	66.3	66.9	
Medium Trucks:	64.1	61.4	53.9	62.7	68.9	68.9	
Heavy Trucks:	67.8	64.9	61.5	66.2	72.4	72.5	
Vehicle Noise:	71.0	68.9	66.1	68.2	74.7	74.8	
Centerline Distance to Noise Contour (in feet)							
		70 dBA	65 dBA	60 dBA	55 dBA		
	Ldn:	121	260	560	1,206		
	CNEL:	124	266	574	1,237		

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing (2019) Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,168 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,074 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.40	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.07	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.80	-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:	66.0	65.2	63.9	57.9	66.3	66.9	
Medium Trucks:	64.1	61.4	53.9	62.7	68.9	68.9	
Heavy Trucks:	67.8	64.9	61.5	66.2	72.4	72.5	
Vehicle Noise:	71.0	68.9	66.1	68.2	74.7	74.8	
Centerline Distance to Noise Contour (in feet)							
		70 dBA	65 dBA	60 dBA	55 dBA		
	Ldn:	121	260	560	1,206		
	CNEL:	124	266	574	1,237		

Thursday, February 27, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing (2019) Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,781 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,120 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.21	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.89	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.62	-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:	66.2	65.4	64.1	58.0	66.5	67.1	
Medium Trucks:	64.3	61.6	54.1	62.9	69.0	69.1	
Heavy Trucks:	68.0	65.1	61.7	66.4	72.6	72.7	
Vehicle Noise:	71.2	69.1	66.3	68.4	74.8	75.0	
Centerline Distance to Noise Contour (in feet)							
		70 dBA	65 dBA	60 dBA	55 dBA		
	Ldn:	124	267	576	1,241		
	CNEL:	127	274	590	1,272		

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing + Project Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,563 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,104 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.23% Medium Trucks: 48.9% 2.2% 48.9% 5.00% Heavy Trucks: 47.3% 5.4% 47.3% 4.78%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.31	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.88	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.07	-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:	66.1	65.3	64.0	57.9	66.4	67.0	
Medium Trucks:	64.3	61.6	54.1	62.9	69.0	69.1	
Heavy Trucks:	68.5	65.7	62.3	66.9	73.1	73.2	
Vehicle Noise:	71.4	69.3	66.5	68.7	75.2	75.3	
Centerline Distance to Noise Contour (in feet)							
		70 dBA	65 dBA	60 dBA	55 dBA		
	Ldn:	130	281	605	1,303		
	CNEL:	133	288	619	1,335		

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing + Project Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,285 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,083 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.68% Medium Trucks: 48.9% 2.2% 48.9% 4.95% Heavy Trucks: 47.3% 5.4% 47.3% 4.37%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.37	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.01	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.54	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	66.0	65.2	63.9	57.9	66.3	66.9	
Medium Trucks:	64.2	61.5	54.0	62.7	68.9	69.0	
Heavy Trucks:	68.0	65.2	61.8	66.4	72.6	72.7	
Vehicle Noise:	71.1	69.0	66.2	68.4	74.8	75.0	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			124	267	575	1,239	
CNEL:			127	274	589	1,270	

Thursday, February 27, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: Existing + Project Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 15,038 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,140 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.78% Medium Trucks: 48.9% 2.2% 48.9% 4.90% Heavy Trucks: 47.3% 5.4% 47.3% 4.32%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.15	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.82	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.37	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	66.2	65.4	64.1	58.1	66.5	67.2	
Medium Trucks:	64.4	61.7	54.2	62.9	69.1	69.1	
Heavy Trucks:	68.2	65.4	62.0	66.6	72.8	72.9	
Vehicle Noise:	71.3	69.2	66.4	68.6	75.0	75.2	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			127	275	592	1,275	
CNEL:			131	281	606	1,306	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EA Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,805 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,122 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.21	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.88	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.61	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	66.2	65.4	64.1	58.0	66.5	67.1	
Medium Trucks:	64.3	61.6	54.1	62.9	69.0	69.1	
Heavy Trucks:	68.0	65.1	61.7	66.4	72.6	72.7	
Vehicle Noise:	71.2	69.1	66.3	68.4	74.9	75.0	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			124	268	577	1,242	
CNEL:			127	274	591	1,273	

Thursday, February 27, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EA Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,805 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,122 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.21	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.88	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.61	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	66.2	65.4	64.1	58.0	66.5	67.1	
Medium Trucks:	64.3	61.6	54.1	62.9	69.0	69.1	
Heavy Trucks:	68.0	65.1	61.7	66.4	72.6	72.7	
Vehicle Noise:	71.2	69.1	66.3	68.4	74.9	75.0	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			124	268	577	1,242	
CNEL:			127	274	591	1,273	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EA Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 15,443 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,171 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.02	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.70	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.43	-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:	66.4	65.6	64.2	58.2	66.6	67.3	
Medium Trucks:	64.5	61.8	54.3	63.1	69.2	69.3	
Heavy Trucks:	68.2	65.3	61.9	66.6	72.8	72.9	
Vehicle Noise:	71.4	69.3	66.5	68.6	75.0	75.2	
Centerline Distance to Noise Contour (in feet)							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			128	275	593	1,278	
CNEL:			131	282	608	1,310	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAP (2021) Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 15,200 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,152 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.25% Medium Trucks: 48.9% 2.2% 48.9% 4.99% Heavy Trucks: 47.3% 5.4% 47.3% 4.75%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.13	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.70	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.91	-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:	66.3	65.5	64.1	58.1	66.5	67.2	
Medium Trucks:	64.5	61.8	54.3	63.1	69.2	69.3	
Heavy Trucks:	68.7	65.8	62.4	67.1	73.3	73.4	
Vehicle Noise:	71.6	69.5	66.6	68.9	75.3	75.5	
Centerline Distance to Noise Contour (in feet)							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			134	288	621	1,338	
CNEL:			137	295	636	1,370	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAP (2021) Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 14,922 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,131 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.69% Medium Trucks: 48.9% 2.2% 48.9% 4.95% Heavy Trucks: 47.3% 5.4% 47.3% 4.36%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-2.18	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.82	-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:	66.2	65.4	64.1	58.1	66.5	67.1	
Medium Trucks:	64.4	61.7	54.2	62.9	69.1	69.1	
Heavy Trucks:	68.2	65.4	62.0	66.6	72.8	72.9	
Vehicle Noise:	71.3	69.2	66.4	68.6	75.0	75.2	
Centerline Distance to Noise Contour (in feet)							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			127	275	592	1,275	
CNEL:			131	281	606	1,306	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAP (2021) Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 15,699 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,190 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.78% Medium Trucks: 48.9% 2.2% 48.9% 4.90% Heavy Trucks: 47.3% 5.4% 47.3% 4.32%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			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	-1.96	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-14.64	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-15.19	-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:	66.4	65.6	64.3	58.3	66.7	67.3	
Medium Trucks:	64.6	61.9	54.4	63.1	69.3	69.3	
Heavy Trucks:	68.4	65.5	62.1	66.8	73.0	73.1	
Vehicle Noise:	71.5	69.4	66.6	68.8	75.2	75.4	
Centerline Distance to Noise Contour (in feet)							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			131	282	608	1,311	
CNEL:			134	289	624	1,344	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAC (2021) Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 21,179 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,605 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.65	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.33	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.05	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.7	66.9	65.6	59.6	68.0	68.6	
Medium Trucks:	65.9	63.2	55.7	64.4	70.6	70.6	
Heavy Trucks:	69.5	66.7	63.3	67.9	74.1	74.2	
Vehicle Noise:	72.7	70.7	67.9	70.0	76.4	76.6	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			158	340	732	1,577	
CNEL:			162	348	750	1,617	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAC (2021) Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 21,179 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,605 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.65	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.33	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.05	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.7	66.9	65.6	59.6	68.0	68.6	
Medium Trucks:	65.9	63.2	55.7	64.4	70.6	70.6	
Heavy Trucks:	69.5	66.7	63.3	67.9	74.1	74.2	
Vehicle Noise:	72.7	70.7	67.9	70.0	76.4	76.6	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			158	340	732	1,577	
CNEL:			162	348	750	1,617	

Thursday, February 27, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAC (2021) Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 20,612 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,562 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.93% Medium Trucks: 48.9% 2.2% 48.9% 4.91% Heavy Trucks: 47.3% 5.4% 47.3% 4.16%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.77	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.45	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-14.17	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.6	66.8	65.5	59.5	67.9	68.5	
Medium Trucks:	65.8	63.1	55.6	64.3	70.5	70.5	
Heavy Trucks:	69.4	66.6	63.2	67.8	74.0	74.1	
Vehicle Noise:	72.6	70.6	67.8	69.8	76.3	76.4	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			155	334	719	1,549	
CNEL:			159	342	737	1,588	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAPC (2021) Road Name: Harvill Av. Road Segment: n/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 21,574 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,635 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.46% Medium Trucks: 48.9% 2.2% 48.9% 4.97% Heavy Trucks: 47.3% 5.4% 47.3% 4.58%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.59	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.20	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.55	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.8	67.0	65.7	59.7	68.1	68.7	
Medium Trucks:	66.0	63.3	55.8	64.6	70.7	70.8	
Heavy Trucks:	70.0	67.2	63.8	68.4	74.6	74.7	
Vehicle Noise:	73.0	70.9	68.1	70.3	76.7	76.9	
<b>Centerline Distance to Noise Contour (in feet)</b>							
			70 dBA	65 dBA	60 dBA	55 dBA	
Ldn:			166	358	772	1,662	
CNEL:			170	367	790	1,703	

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAPC (2021) Road Name: Harvill Av. Road Segment: s/o Driveway 1				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 21,296 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,614 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.76% Medium Trucks: 48.9% 2.2% 48.9% 4.94% Heavy Trucks: 47.3% 5.4% 47.3% 4.30%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.64	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.28	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.88	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.7	66.9	65.6	59.6	68.0	68.7	
Medium Trucks:	65.9	63.2	55.7	64.5	70.6	70.7	
Heavy Trucks:	69.7	66.9	63.5	68.1	74.3	74.4	
Vehicle Noise:	72.8	70.8	68.0	70.1	76.5	76.7	
<b>Centerline Distance to Noise Contour (in feet)</b>							
	70 dBA	65 dBA	60 dBA	55 dBA			
Ldn:	161	346	745	1,606			
CNEL:	165	355	764	1,646			

Thursday, February 27, 2020

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL							
Scenario: EAPC (2021) Road Name: Harvill Av. Road Segment: s/o Rider St.				Project Name: Harvill and Rider Wareho Job Number: 12845			
SITE SPECIFIC INPUT DATA			NOISE MODEL INPUTS				
<b>Highway Data</b>			<b>Site Conditions (Hard = 10, Soft = 15)</b>				
Average Daily Traffic (Adt): 20,868 vehicles Peak Hour Percentage: 7.58% Peak Hour Volume: 1,582 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 48 feet			Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15				
<b>Site Data</b>			<b>Vehicle Mix</b>				
			VehicleType	Day	Evening	Night	Daily
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			Autos: 75.6% 14.0% 10.5% 90.82% Medium Trucks: 48.9% 2.2% 48.9% 4.90% Heavy Trucks: 47.3% 5.4% 47.3% 4.28%				
			<b>Noise Source Elevations (in feet)</b>				
			Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0				
			<b>Lane Equivalent Distance (in feet)</b>				
			Autos: 54.129 Medium Trucks: 53.966 Heavy Trucks: 53.982				
<b>FHWA Noise Model Calculations</b>							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.72	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-13.40	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-13.99	-0.60	-1.20	-5.35	0.000	0.000
<b>Unmitigated Noise Levels (without Topo and barrier attenuation)</b>							
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL	
Autos:	67.7	66.9	65.5	59.5	68.0	68.6	
Medium Trucks:	65.8	63.1	55.6	64.4	70.5	70.6	
Heavy Trucks:	69.6	66.7	63.3	68.0	74.2	74.3	
Vehicle Noise:	72.7	70.7	67.9	70.0	76.4	76.6	
<b>Centerline Distance to Noise Contour (in feet)</b>							
	70 dBA	65 dBA	60 dBA	55 dBA			
Ldn:	158	340	733	1,579			
CNEL:	162	349	751	1,618			

Thursday, February 27, 2020

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**APPENDIX 9.1:**  
**REFERENCE NOISE SOURCE PHOTOS**

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# Dry Storage Operational Reference Noise Source Photos



Background Trucks 01



Background Trucks 02



Background Trucks 03



Entry Gate 01



Truck Idle & Unloading 01



Truck Movement 01

# Dry Storage Operational Reference Noise Source Photos



Truck Movement 02



Truck Movement 03



Truck Unloading 01



Truck Unloading 02



# Parking Lot Operational Reference Noise Source Photos



Parking Lot 01



Parking Lot 02



Parking Lot 03



Parking Lot 04



Parking Lot 05

**APPENDIX 9.2:**  
**CADNAA OPERATIONAL NOISE MODEL INPUTS**

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# 13138

## CadnaA Noise Prediction Model

12845.cna

### Date:

27.02.20

### Analyst:

B. Lawson

## 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)	
R1		R1	44.3	43.8	50.5	55.0	45.0	0.0				5.00	a	6258874.86	2249327.74	5.00
R2		R2	33.5	30.4	37.3	55.0	45.0	0.0				5.00	a	6257766.41	2247119.76	5.00
R3		R3	32.9	28.9	36.0	55.0	45.0	0.0				5.00	a	6257083.10	2247469.73	5.00
R4		R4	33.5	30.2	37.3	55.0	45.0	0.0				5.00	a	6256948.48	2249260.96	5.00

## Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li		Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height	Coordinates			
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R		Area	Day	Special					Night	(dB)	(Hz)	(ft)
			(dBA)	(dBA)	(dBA)		dB(A)	dB(A)	dB(A)		dB(A)	dB(A)		(min)	(min)	(min)				(ft)	(ft)	(ft)		
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		0.0	0.0	0.0			585.00	0.00	252.00	0.0	500	(none)	5.00	g	6258140.59	2248115.54	49.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		0.0	0.0	0.0			585.00	0.00	252.00	0.0	500	(none)	5.00	g	6258730.41	2247433.92	49.00

## Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li		Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src				
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R		Area	Day	Special				Night	Day	Evening	Night	Speed
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	dB(A)	dB(A)	dB(A)		dB(A)	dB(A)	dB(A)		(ft²)	(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(mph)
LINESOURCE		DWY1	91.8	76.8	82.8	69.5	54.5	60.5	PWL-Pt	89.7		0.0	0.0	0.0							0.0	500	(none)	95.0	3.0	12.0	6.2
LINESOURCE		DWY2	86.8	71.8	81.3	67.8	52.7	62.3	PWL-Pt	89.7		0.0	0.0	0.0							0.0	500	(none)	64.0	2.0	18.0	6.2

## Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li		Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R		Area	Day	Special				Night	Day	Evening	Night
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	dB(A)	dB(A)	dB(A)		dB(A)	dB(A)	dB(A)		(ft²)	(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
AREASOURCE		PARKING01	79.0	79.0	79.0	42.4	42.4	42.4	Lw	79		0.0	0.0	0.0							0.0	500	(none)			
AREASOURCE		PARKING02	79.0	79.0	79.0	43.1	43.1	43.1	Lw	79		0.0	0.0	0.0							0.0	500	(none)			
AREASOURCE		DOCK01	103.4	103.4	103.4	63.0	63.0	63.0	Lw	103.4		0.0	0.0	0.0							0.0	500	(none)			

## Barrier(s)

Name	M.	ID	Absorption		Z-Ext.		Cantilever		Height	
			left	right	horz.	vert.	Begin	End		
			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	

## Building(s)

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	End
						(ft)	(ft)
BUILDING		BUILDING01	x	0		44.00	a

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**APPENDIX 10.1:**  
**CADNAA OPERATIONAL NOISE MODEL INPUTS**

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# 13138

## CadnaA Noise Prediction Model

12845\_Construction.cna

### Date:

27.02.20

### Analyst:

B. Lawson

## Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates				
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type	(ft)	a	X	Y	Z		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)										
R1		R1	63.4	63.4	70.0	85.0	0.0	0.0				5.00	a	6258874.86	2249327.74	5.00		
R2		R2	67.2	67.2	73.9	85.0	0.0	0.0				5.00	a	6257766.41	2247119.76	5.00		
R3		R3	63.8	63.8	70.5	85.0	0.0	0.0				5.00	a	6257083.10	2247469.73	5.00		
R4		R4	60.5	60.5	67.1	85.0	0.0	0.0				5.00	a	6256948.48	2249260.96	5.00		

## Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction	Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night			R	Area	Day				Special	Night	Day
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)		dB(A)	dB(A)	dB(A)	dB(A)		(ft <sup>2</sup> )		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
SITEBOUNDARY	+	CONSTRUCTION	123.0	123.0	123.0	75.3	75.3	75.3	Lw''	75.3			0.0	0.0	0.0					0.0	500	(none)			

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