Fontana Corporate Center

NOISE IMPACT ANALYSIS

CITY OF FONTANA

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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
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
mph	Miles per hour
ONT	Ontario International Airport
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Fontana Corporate Center
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures, if any, for the proposed Fontana Corporate Center development ("Project") located in the City of Fontana. The Project is to amend the existing Fontana Gateway Specific Plan to develop 2 warehouses totaling 355,370 square feet. This study has been prepared consistent with applicable City of Fontana noise standards, and significance criteria based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

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

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

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

1.1 SITE LOCATION

The proposed Project is located north of Slover Avenue and west of Business Drive in the City of Fontana, as shown on Exhibit 1-A. The Project site is located south of Interstate 10 the Southern Pacific Railroad, and approximately four miles east of the Ontario International Airport (ONT). The closest existing noise-sensitive residential uses in the Project study area are located to the east and southeast of the Project site, with industrial uses located east, south, and west of the Project site.

1.2 PROJECT DESCRIPTION

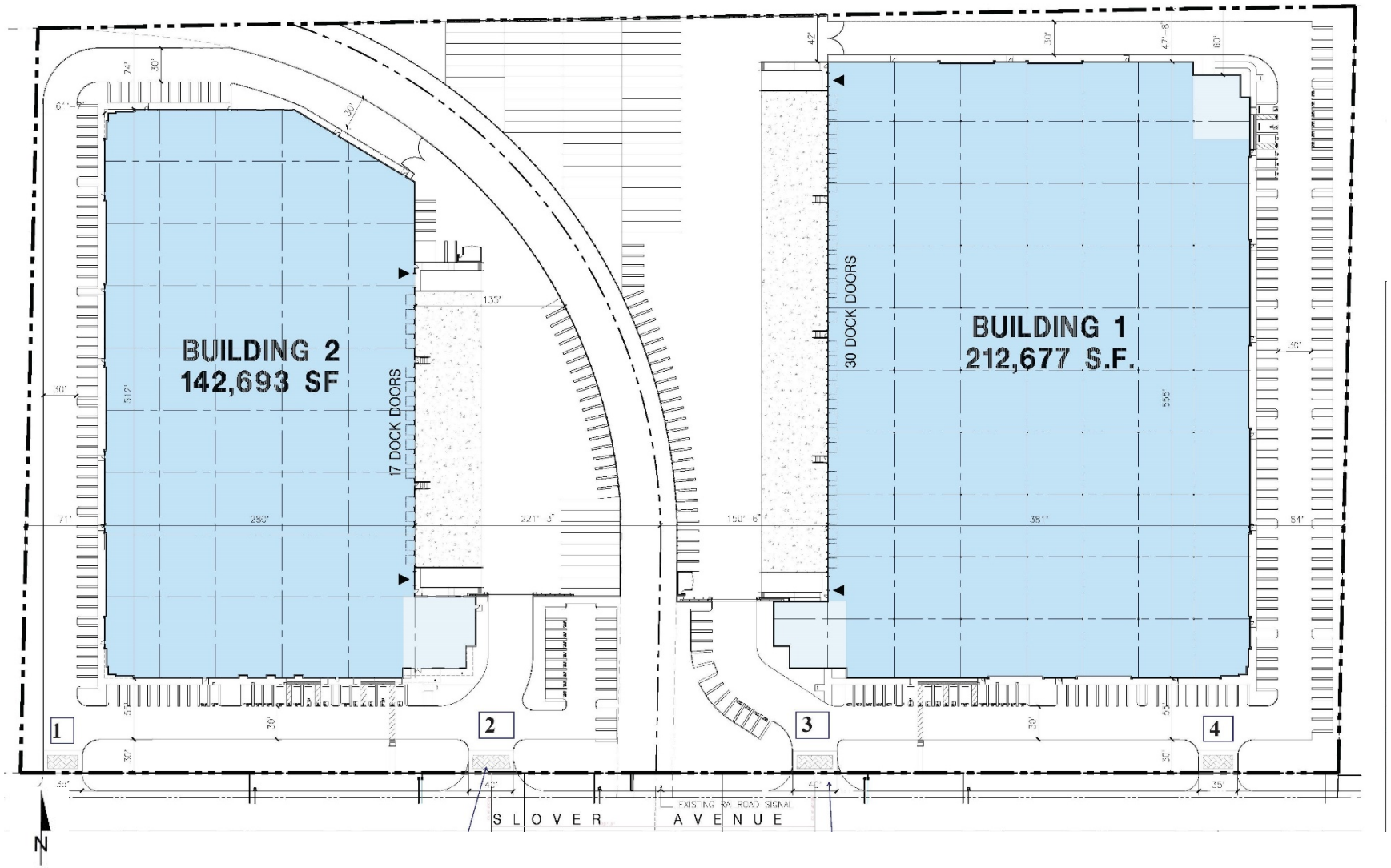
The Project is to amend the existing Fontana Gateway Specific Plan to develop two warehouse buildings totaling 355,370 square feet. Building 1 to the east is to consist of 212,677 square feet of warehouse use and Building 2 to the west is to consist of 142,693 square feet of warehousing use. The Project is anticipated to be developed within a single phase with an Opening Year of 2023. The preliminary site plan for the proposed Project is shown on Exhibit 1-B.

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

Per the *Fontana Corporate Center Traffic Study* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 622 vehicular trips-ends per day (actual vehicles) which includes 170 two-way truck trips per day (2).

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (3) 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. (4) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used 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 City of Fontana 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. (3)

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. (5)

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. (3)

2.3.4 SHIELDING

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

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (5) 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.

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. (5)

2.6 LAND USE COMPATIBILITY WITH NOISE

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

2.7 COMMUNITY RESPONSE TO NOISE

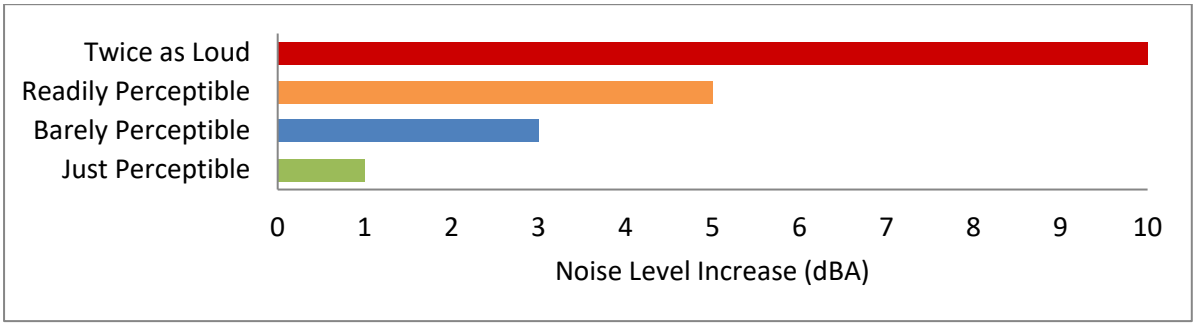
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- 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. (7) 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. (7) 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*. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

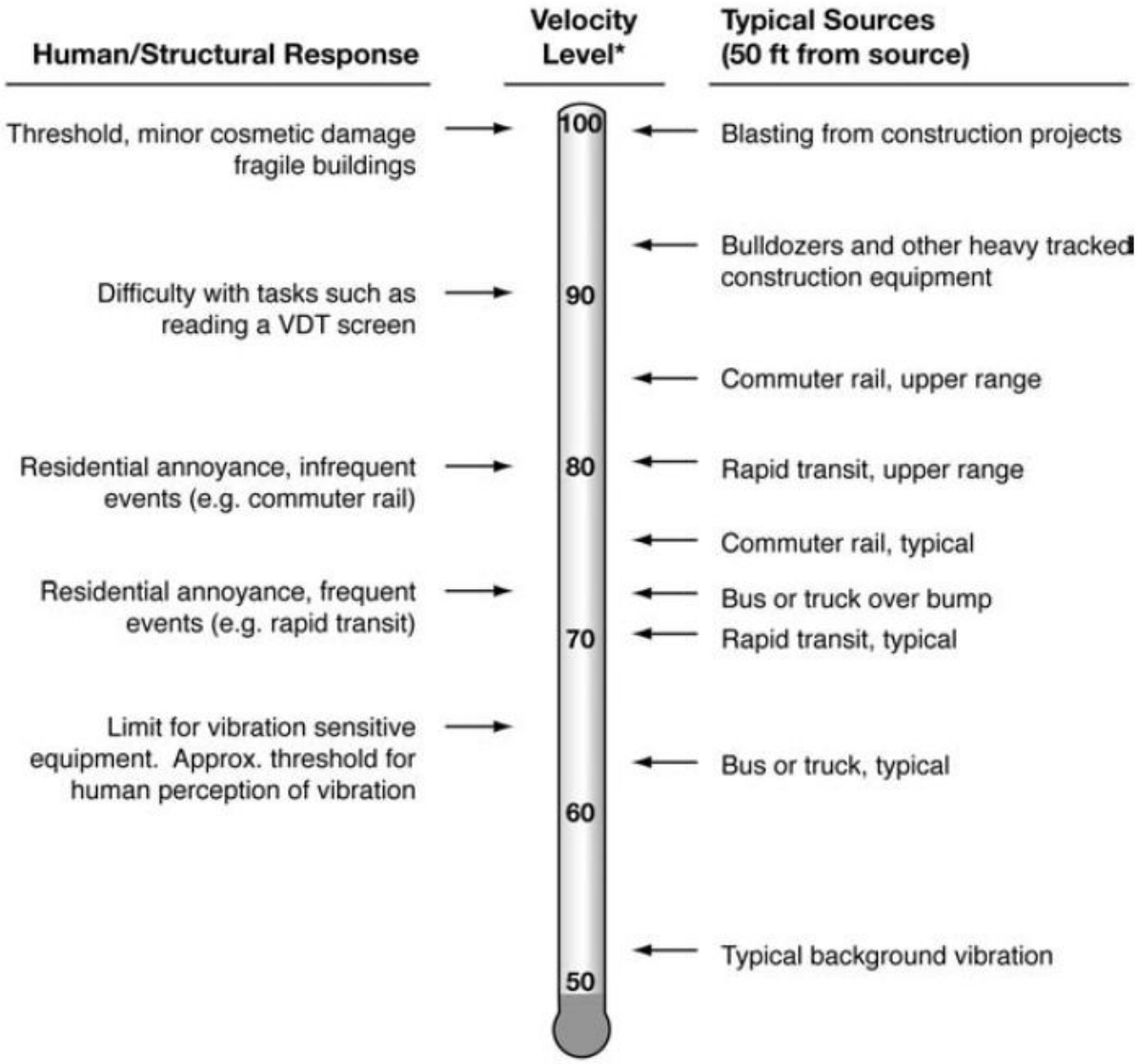
Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include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

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

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50

VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

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



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

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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (9) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 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. (10) 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 noise source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be construction to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

3.3 CITY OF FONTANA GENERAL PLAN NOISE ELEMENT

The City of Fontana General Plan was updated on November 13, 2018. (11) To protect residents from the negative effect of "spillover" noise (Goal #10), the City of Fontana has identified the following policies in the General Plan Noise Element:

Policy

Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources including industrial, commercial, and residential activities and equipment.

Actions

A. Projects located in commercial areas shall not exceed stationary- source noise standards at the property line of proximate residential or commercial uses.

B. Industrial uses shall not exceed commercial or residential stationary source noise standards at the most proximate land uses.

C. Non-transportation noise shall be considered in land use planning decisions.

D. Construction shall be performed as quietly as feasible when performed in proximity to residential or other noise sensitive land uses.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Fontana Corporate Center Project, stationary-source (operational) noise such as the expected loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements are typically evaluated against standards established under a jurisdiction's Municipal Code. The City of Fontana noise control guidelines for determining and mitigating non-transportation or stationary noise source impacts from operations in neighboring residential areas are found in the Zoning and Development Code (Section 30-543), provided in Appendix 3.1. For industrial zoning districts, Section 30-543 indicates that *no person shall create or cause to be created any sound which exceeds the noise levels in this section as measured at the property line of any residentially zoned property*. The performance standards found in Section 30-543 limit the exterior noise level to 70 dBA L_{eq} during the daytime hours, and 65 dBA L_{eq} during the nighttime hours at sensitive receiver locations as shown on Table 3-1. (12)

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land use	Noise Level Standards (dBA Leq)[1]	
		Daytime	Nighttime
City of Fontana[1]	Residential	70	65

[1] Source: Section 30-543 of the City of Fontana Development Code (Appendix 3.1).
[2] L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a sample period. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

3.5 CONSTRUCTION NOISE STANDARDS

The City of Fontana has set restrictions to control noise impacts associated with the construction of the proposed Project. According to Section 18-63(b)(7), *Construction or repairing of buildings or structures,* construction activity is limited: *between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays except in the case of urgent necessity*. (13) Project construction noise levels are, therefore, considered exempt from municipal regulation if activities occur within the hours specified in the City of Fontana Municipal Code, Section 18-63(7) of 7:00 a.m. to 6:00 p.m. on weekdays and between the hours of 8:00

a.m. to 5:00 p.m. on Saturdays. However, if activity occurs outside of these hours, the City of Fontana stationary-source (operational) noise level standards of 70 dBA L_{eq} during the daytime hours, and 65 dBA L_{eq} during the nighttime hours shall apply as previously discussed in Section 3.4.

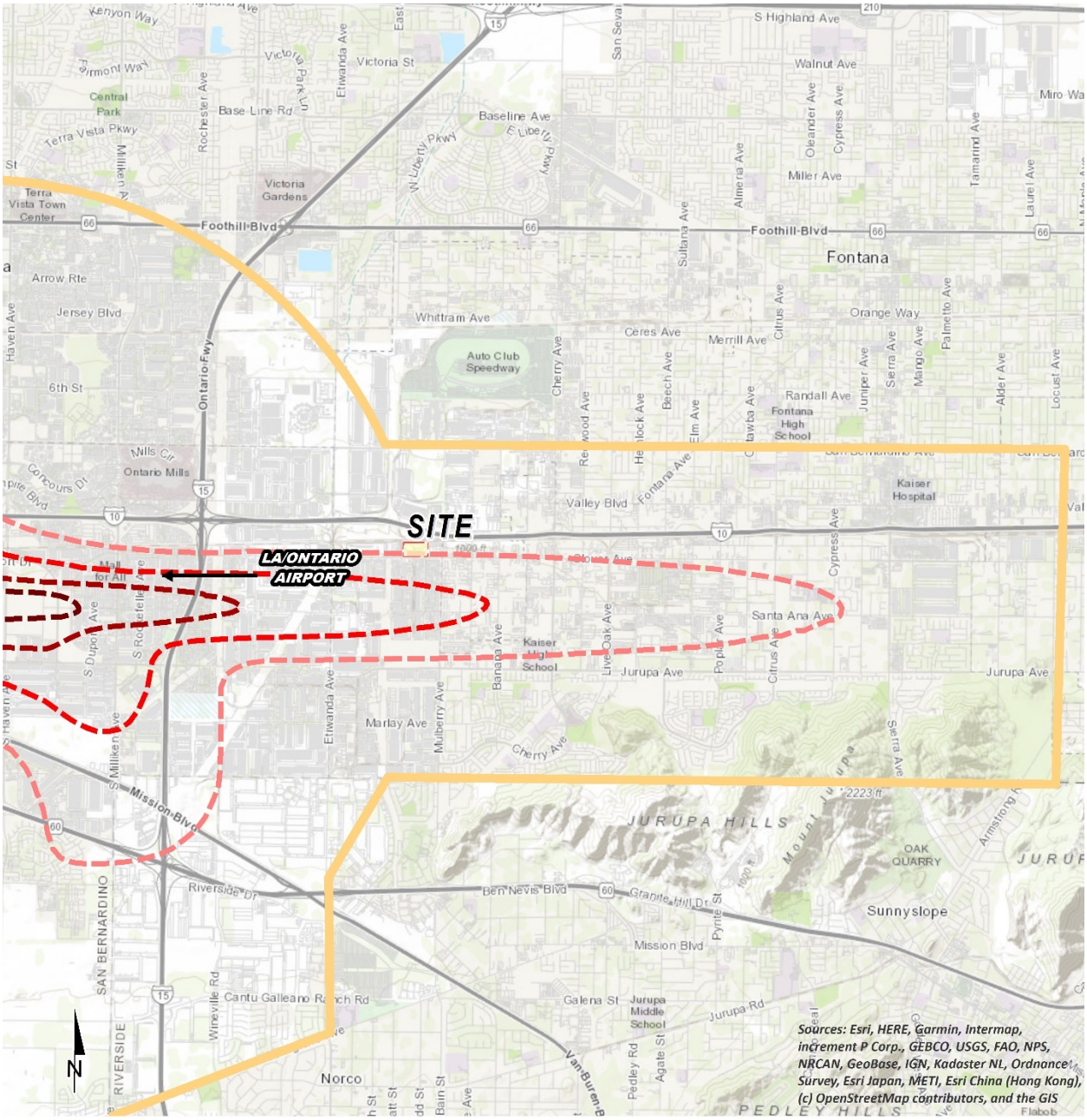
3.6 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the operation and construction of the Fontana Corporate Center, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Fontana does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. (14 p. 38) The existing buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

3.7 AIRPORT LAND USE COMPATIBILITY

The Project site is located approximately four miles east of the Ontario International Airport (ONT). This places the Project site within the ONT Airport Influence Area according to Policy Map 2-1 of the *Ontario International Airport Land Use Compatibility Plan (ONT ALUCP).* The ONT ALUCP was amended July 2018 to promote compatibility between airport and the land uses that surround it. (15) Since the Project site is located within the ONT Airport Influence Area, the Project is subject to the Noise Criteria established on Table 2-3 in the ONT ALUCP. As shown on Exhibit 3-B, the Project site is located within the ONT Airport Influence Area but outside the 60 dBA CNEL airport noise impact zone consistent with Policy Map 2-3. According to Table 2-3 of the ONT ALUCP, industrial land uses located outside the 60 dBA CNEL noise level contours of ONT, such as the Project, are considered *normally compatible land use.* For *normally compatible land use,* either the activities associated with the land use are inherently noisy or standard construction methods will sufficiently attenuate exterior noise to an acceptable indoor community noise equivalent level (CNEL).

EXHIBIT 3-B: FUTURE AIRPORT NOISE LEVEL CONTOURS



LEGEND:

- Project Site Boundary
- ONT Airport Influence Area

Ontario Airport Noise Impact Zone

- 55 dBA CNEL Noise Contour
- 60 dBA CNEL Noise Contour
- 65 dBA CNEL Noise Contour
- 70 dBA CNEL Noise Contour
- 75 dBA CNEL Noise Contour

Source: Ontario International ALUCP Compatibility Policy Map: Noise Impact Zones, Map 2-3 (July 2018 Amendment)

4 SIGNIFICANCE CRITERIA

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

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

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

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

While the City of Fontana 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

Threshold C, above, does not require further analysis. As previously indicated in Section 3.7, the ONT Airport noise contour boundaries are presented on Exhibit 3-B of this report and show that the Project is considered *normally compatible* land use since it is located outside the 60 dBA CNEL noise impact zone.

4.2 SIGNIFICANCE CRITERIA SUMMARY

Consistent with guidance provided by the City of Fontana, the following thresholds are used in this analysis to evaluate potential impacts. (16) Noise impacts, therefore, shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

4.3 NON-NOISE-SENSITIVE RECEIVERS

The Office of Planning and Research General Plan Guidelines, Appendix C was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. (9) To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, when the noise levels, without or with the Project, at existing and future non-noise-sensitive land uses (e.g., industrial, etc.) exceed the OPR General Plan Guidelines, Appendix C: Noise Element Guidelines, normally acceptable 70 dBA CNEL noise level criteria and the Project creates a barely perceptible 3 dBA CNEL or greater Project-related noise level increase, noise impacts shall be considered significant.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic Noise[1]	Non-Noise Sensitive	If off-site traffic noise is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational Noise[2]	Residential	If operational Noise is > 70 dBA L_{eq} (daytime) > 65 dBA L_{eq} (nighttime)	≥ 3 dBA L_{eq} Project increase	
Construction Noise[3]	Adjacent Uses	If construction occurs outside of permitted hours, and > 70 dBA L_{eq} (daytime) > 65 dBA L_{eq} (nighttime)	≥ 3 dBA L_{eq} Project increase	
Construction Vibration[4]		If construction vibration exceeds:	0.3 PPV in/sec	

[1] Based on the Office of Planning and Research General Plan Guidelines.
[2] Based on Section 30-543 of the City of Fontana Development Code.
[3] Based on Sections 18-63(7) and 30-543 of the City of Fontana Municipal Code.
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at three 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 Thursday, June 24, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

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*. (3) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence (8). In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels

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

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the 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.

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

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located east of the Project site near single-family residence at 10463 Calabash Avenue.	66.0	62.0
L2	Located southeast of the Project site near single-family residence at 10709 Calabash Avenue.	64.0	62.3
L3	Located southeast of the Project site near single-family residence at 13887 Santa Ana Avenue.	64.6	60.9

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

Table 5-1 provides the (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 surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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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 *Land Use Compatibility Criteria*, 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. (18) 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. (19) 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. (20)

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 five study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Fontana General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on the Fontana Corporate Center *Traffic Study*, prepared by Urban Crossroads, Inc. for the following traffic scenarios under both Without and With Project alternatives: Existing (2021), and Opening Year Cumulative (OYC). (2)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts, without and with project ADT traffic volumes from the Project traffic study.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Mulberry Av.	s/o Slover Av.	Non-Sensitive	50'	40
2	Slover Av.	w/o Commerce Wy.	Non-Sensitive	50'	40
3	Slover Av.	w/o Business Dr.	Non-Sensitive	50'	40
4	Slover Av.	e/o Business Dr.	Non-Sensitive	50'	40
5	Slover Av.	e/o Mulberry Av.	Non-Sensitive	50'	40

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] Distance to receiving land use is based upon the right-of-way distances.
[3] Fontana Corporate Center Traffic Study, Urban Crossroads, Inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]			
			Existing 2021		Opening Year Cumulative (2023)	
			Without Project	With Project	Without Project	With Project
1	Mulberry Av.	s/o Slover Av.	6,728	6,774	6,885	6,931
2	Slover Av.	w/o Commerce Wy.	13,783	14,009	18,502	18,729
3	Slover Av.	w/o Business Dr.	13,626	13,756	18,342	18,472
4	Slover Av.	e/o Business Dr.	13,746	13,953	18,465	18,672
5	Slover Av.	e/o Mulberry Av.	14,508	14,669	19,244	19,405

[1] Fontana Corporate Center Traffic Study, Urban Crossroads, Inc.

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 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 through 6-7 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] Typical Southern California vehicle mix. 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	76.05%	5.78%	18.16%	100.00%

Based on an existing vehicle count taken at Commerce Way and Slover Avenue (Fontana Corporate Center Traffic Study, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

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

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Mulberry Av.	s/o Slover Av.	76.21%	5.75%	18.04%	100.00%
2	Slover Av.	w/o Commerce Wy.	75.90%	5.76%	18.33%	100.00%
3	Slover Av.	w/o Business Dr.	75.88%	5.78%	18.34%	100.00%
4	Slover Av.	e/o Business Dr.	76.01%	5.75%	18.24%	100.00%
5	Slover Av.	e/o Mulberry Av.	75.94%	5.77%	18.29%	100.00%

[1] Fontana Corporate Center Traffic Study, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: OYC WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Mulberry Av.	s/o Slover Av.	76.21%	5.75%	18.05%	100.00%
2	Slover Av.	w/o Commerce Wy.	75.94%	5.77%	18.29%	100.00%
3	Slover Av.	w/o Business Dr.	75.92%	5.78%	18.30%	100.00%
4	Slover Av.	e/o Business Dr.	76.02%	5.76%	18.22%	100.00%
5	Slover Av.	e/o Mulberry Av.	75.97%	5.77%	18.26%	100.00%

[1] Fontana Corporate Center Traffic Study, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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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 *Fontana Corporate Center Traffic Study*. (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 7-4 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 2021, and Opening Year Cumulative (2023). Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING 2021 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Mulberry Av.	s/o Slover Av.	Non-Sensitive	71.7	65	140	302
2	Slover Av.	w/o Commerce Wy.	Non-Sensitive	74.8	105	226	487
3	Slover Av.	w/o Business Dr.	Non-Sensitive	74.8	104	224	483
4	Slover Av.	e/o Business Dr.	Non-Sensitive	74.8	105	226	486
5	Slover Av.	e/o Mulberry Av.	Non-Sensitive	75.1	109	234	504

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

TABLE 7-2: EXISTING 2021 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Mulberry Av.	s/o Slover Av.	Non-Sensitive	71.7	65	140	302
2	Slover Av.	w/o Commerce Wy.	Non-Sensitive	74.9	107	230	495
3	Slover Av.	w/o Business Dr.	Non-Sensitive	74.9	105	227	489
4	Slover Av.	e/o Business Dr.	Non-Sensitive	74.9	106	228	492
5	Slover Av.	e/o Mulberry Av.	Non-Sensitive	75.1	110	237	510

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

TABLE 7-3: OYC 2023 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Mulberry Av.	s/o Slover Av.	Non-Sensitive	71.8	66	142	307
2	Slover Av.	w/o Commerce Wy.	Non-Sensitive	76.1	128	275	593
3	Slover Av.	w/o Business Dr.	Non-Sensitive	76.1	127	274	589
4	Slover Av.	e/o Business Dr.	Non-Sensitive	76.1	128	275	592
5	Slover Av.	e/o Mulberry Av.	Non-Sensitive	76.3	131	282	609

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

TABLE 7-4: OYC 2023 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Mulberry Av.	s/o Slover Av.	Non-Sensitive	71.8	66	142	307
2	Slover Av.	w/o Commerce Wy.	Non-Sensitive	76.2	129	278	600
3	Slover Av.	w/o Business Dr.	Non-Sensitive	76.1	128	276	595
4	Slover Av.	e/o Business Dr.	Non-Sensitive	76.2	129	277	597
5	Slover Av.	e/o Mulberry Av.	Non-Sensitive	76.3	132	285	614

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

7.2 EXISTING 2021 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 *Fontana Corporate Center Traffic Study* 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 OYC 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 71.7 to 75.1 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 71.7 to 75.1 dBA CNEL. Table 7-5 shows that the Project off-site traffic noise level impacts will range from 0.0 to 0.1 dBA CNEL.

7.3 OYC 2023 PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the OYC without Project conditions CNEL noise levels. The OYC without Project exterior noise levels are expected to range from 71.8 to 76.3 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the OYC with Project conditions will range from 71.8 to 76.3 dBA CNEL. Table 7-6 shows that the Project off-site traffic noise level increases will range from 0.0 to 0.1 dBA CNEL. Based on the significance criteria for 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 on receiving land uses due to the Project-related traffic.

TABLE 7-5: EXISTING 2021 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]			Noise Sensitive Land Use?	Incremental Noise Level Increase Threshold[3]	
			No Project	With Project	Project Addition		Limit	Exceeded?
1	Mulberry Av.	s/o Slover Av.	71.7	71.7	0.0	No	3.0	No
2	Slover Av.	w/o Commerce Wy.	74.8	74.9	0.1	No	3.0	No
3	Slover Av.	w/o Business Dr.	74.8	74.9	0.1	No	3.0	No
4	Slover Av.	e/o Business Dr.	74.8	74.9	0.1	No	3.0	No
5	Slover Av.	e/o Mulberry Av.	75.1	75.1	0.1	No	3.0	No

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-6: OYC 2023 WITH PROJECT TRAFFIC NOISE INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]			Noise Sensitive Land Use?	Incremental Noise Level Increase Threshold[3]	
			No Project	With Project	Project Addition		Limit	Exceeded?
1	Mulberry Av.	s/o Slover Av.	71.8	71.8	0.0	No	3.0	No
2	Slover Av.	w/o Commerce Wy.	76.1	76.2	0.1	No	3.0	No
3	Slover Av.	w/o Business Dr.	76.1	76.1	0.1	No	3.0	No
4	Slover Av.	e/o Business Dr.	76.1	76.2	0.1	No	3.0	No
5	Slover Av.	e/o Mulberry Av.	76.3	76.3	0.1	No	3.0	No

[1] Noise sensitive uses limited to noise sensitive residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

8 RECEIVER LOCATIONS

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

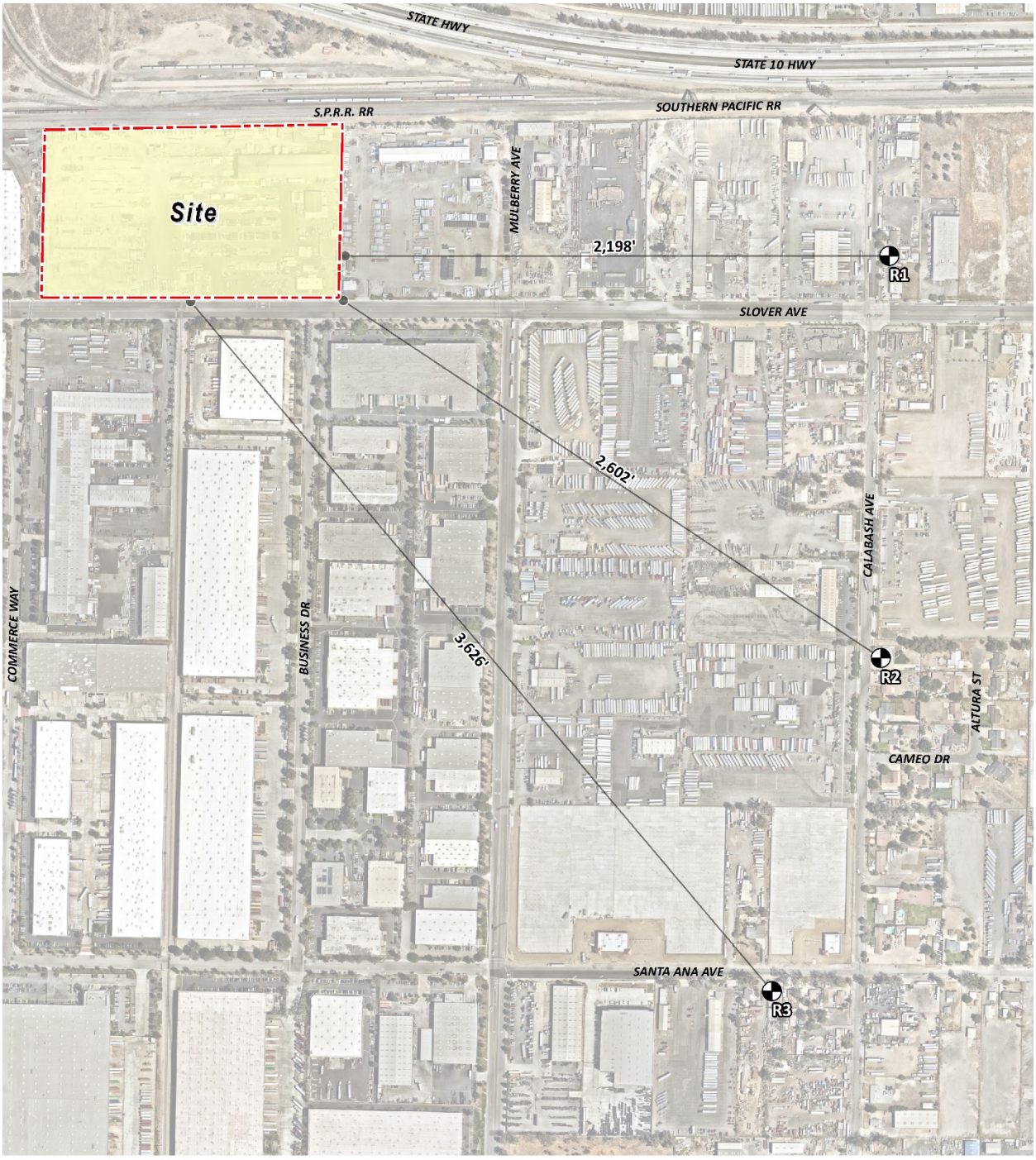
To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the 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. 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 existing noise sensitive residence at 10463 Calabash Avenue, approximately 2,198 feet east of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive residence at 10709 Calabash Avenue, approximately 2,602 feet east of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R2 is placed at the 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 existing noise sensitive residence at 13851 Santa Ana Avenue, approximately 3,626 feet southeast of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



9 OPERATIONAL NOISE ANALYSIS

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 Fontana Corporate Center Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

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

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements all operating continuously. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using Larson Davis Lxt Type 1 integrating sound level meters and dataloggers. All sound level meters were 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. (17)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

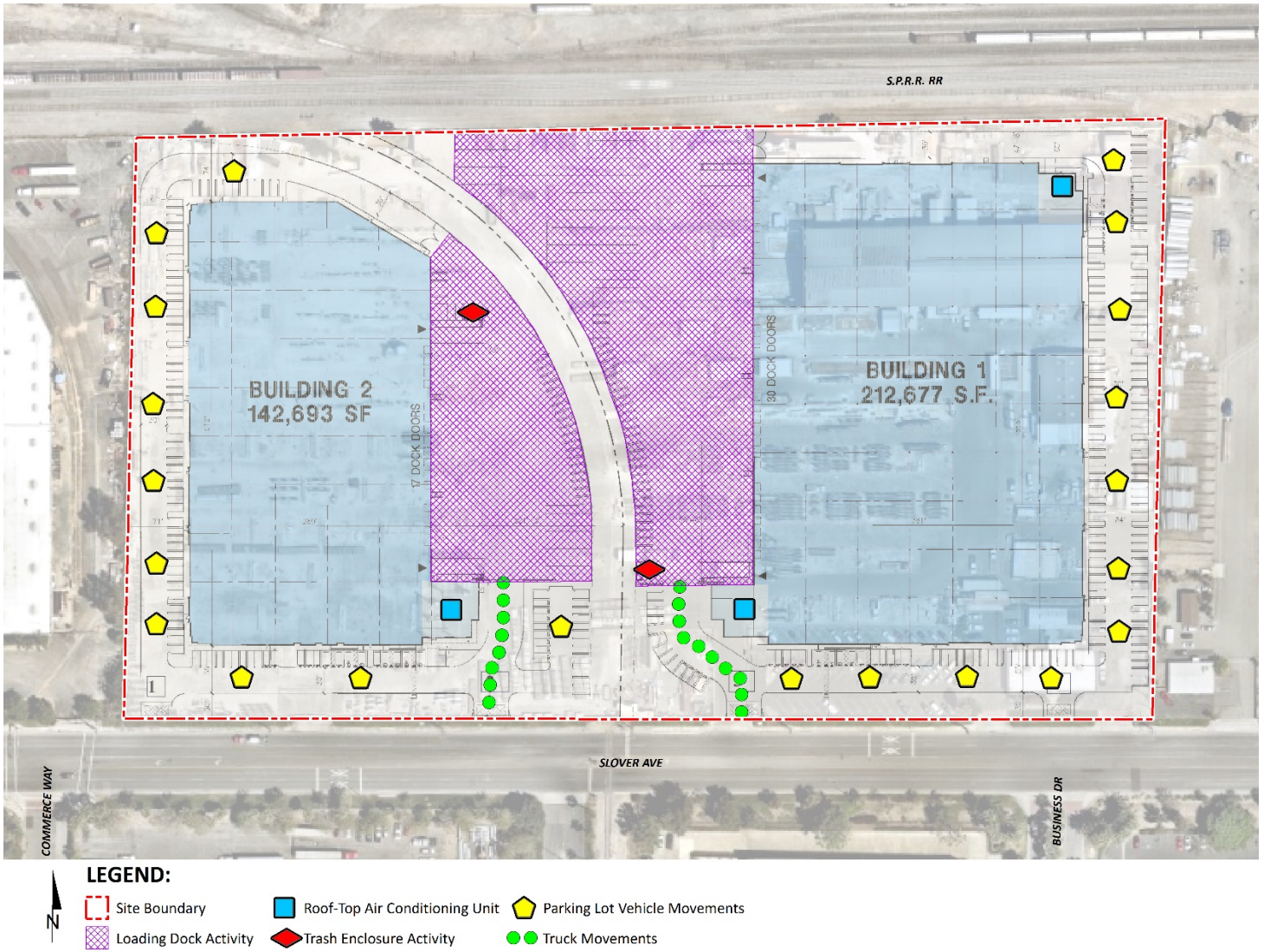


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level @ 50 feet (dBA L_{eq})	Sound Power Level (dBA)[3]
		Day	Night		
Loading Dock Activity	8'	60	60	65.7	111.5
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	10	10	57.3	89.0
Parking Lot Vehicle Movements	5'	60	60	56.1	87.8
Truck Movements	8'	-[4]	-[4]	59.8	93.2

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.
[4] Entry Gate & Truck Movements are calculate based on the number of events by time of day (See Table 7-2).

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 65.7 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning unit is estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning unit is expected to be located on the roof of the Project building.

9.2.4 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.2.5 PARKING LOT

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of an Amazon distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 56.1 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes at the entry gate of the fleet maintenance building at 1333 Virginia Avenue. The measurements represent multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area. This activity is considered a moving point source or line source and is used to represent the truck movements from the driveway locations to the loading docks. Since these noise levels represent the typical tractor trailer entering and exiting, the noise levels adequately describe the planned entry gate and truck movements activities at the Project Site.

Consistent with the *Fontana Corporate Center Traffic Study*, the Project is expected to generate a total of approximately 622 vehicle trip-ends per day (actual vehicles), which includes 170 truck trip-ends per day. (2) Using the estimated number of truck trips in combination with time-of-day vehicle splits, the number of truck movements by driveway location were calculated. As shown on Table 9-2, this information is then used to calculate the truck movements noise source activity based on the number of events by time of day.

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

Entry Gate & Truck Movement Location[1]	Total Project Truck Trips[2]	Time of Day Vehicle Splits[3]			Truck Movements[4]		
		Day	Evening	Night	Day	Evening	Night
Driveway 2	68	86.50%	2.70%	10.80%	59	2	7
Driveway 3	102	86.50%	2.70%	10.80%	88	3	11

[1] Driveway locations as shown on the Site Plan Exhibit 9-A.
[2] Total Project truck trips according to Table 4-2 of the Fontana Corporate Center Traffic Study.
[3] Typical Southern California vehicle mix. Vehicle mix percentage values rounded to the nearest one-hundredth.
[4] Calculated time of day entry gate and truck movements.

9.3 CADNAA NOISE PREDICTION MODEL

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

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

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.0 was used in the CadnaA noise analysis to account for hard site conditions. Appendix 9.1 includes the detailed noise model inputs.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-3 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m.

The daytime hourly noise levels at the off-site receiver locations are expected to range from 45.2 to 46.8 dBA L_{eq}.

TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	46.5	45.7	45.0
Roof-Top Air Conditioning Units	24.3	24.0	22.5
Trash Enclosure Activity	9.7	9.9	14.6
Parking Lot Vehicle Movements	34.9	33.2	31.3
Truck Movements	23.9	25.0	23.8
Total (All Noise Sources)	**46.8**	**46.0**	**45.2**

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

Table 9-4 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 45.2 to 46.8 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity (Table 9-1).

TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	46.5	45.7	45.0
Roof-Top Air Conditioning Units	21.9	21.6	20.1
Trash Enclosure Activity	8.7	9.0	13.6
Parking Lot Vehicle Movements	34.9	33.2	31.3
Truck Movements	14.8	15.8	14.7
Total (All Noise Sources)	**46.8**	**46.0**	**45.2**

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Fontana exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-5 shows the operational noise levels associated with Fontana Corporate Center Project will satisfy the City of Fontana 70 dBA L_{eq} daytime and 65 dBA L_{eq} 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[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Threshold Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	46.8	46.8	70	65	No	No
R2	46.0	46.0	70	65	No	No
R3	45.2	45.2	70	65	No	No

[1] See Exhibit 9-A for the noise source locations.
[2] Proposed Project operational noise levels as shown on Tables 9-3 and 9-4.
[3] City of Fontana exterior noise level standards for residential land use, as shown on Table 3-1.
[4] 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. (3) Instead, they must be logarithmically added using the following base equation:

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-6 and 9-7, respectively. As indicated on Tables 9-6 and 9-7, the Project will generate a daytime and nighttime operational noise level increases ranging from 0.1 to 0.1 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, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-6: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	46.8	L1	69.3	69.3	0.0	n/a	No
R2	46.0	L2	64.4	64.5	0.1	n/a	No
R3	45.2	L2	64.4	64.5	0.1	n/a	No

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

TABLE 9-7: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	46.8	L1	66.2	66.2	0.0	n/a	No
R2	46.0	L2	60.6	60.7	0.1	n/a	No
R3	45.2	L2	60.6	60.7	0.1	n/a	No

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

10 CONSTRUCTION ANALYSIS

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 activity boundaries in relation to the nearby sensitive receiver locations previously described in Section 8. City of Fontana Municipal Code Section 18-63(7), states that project construction noise levels are considered exempt between 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. to 5:00 p.m. on Saturdays.

If Project construction activity occurs outside of the hours specified in the Municipal Code, noise levels shall satisfy the City of Fontana construction noise level thresholds of 70 dBA L_{eq} during the daytime hours and 65 dBA L_{eq} during the nighttime hours.

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 are expected to occur in the following stages:

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (21). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 10-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (22) to describe the typical construction activities for each stage of Project construction.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE AND RECEIVER LOCATIONS

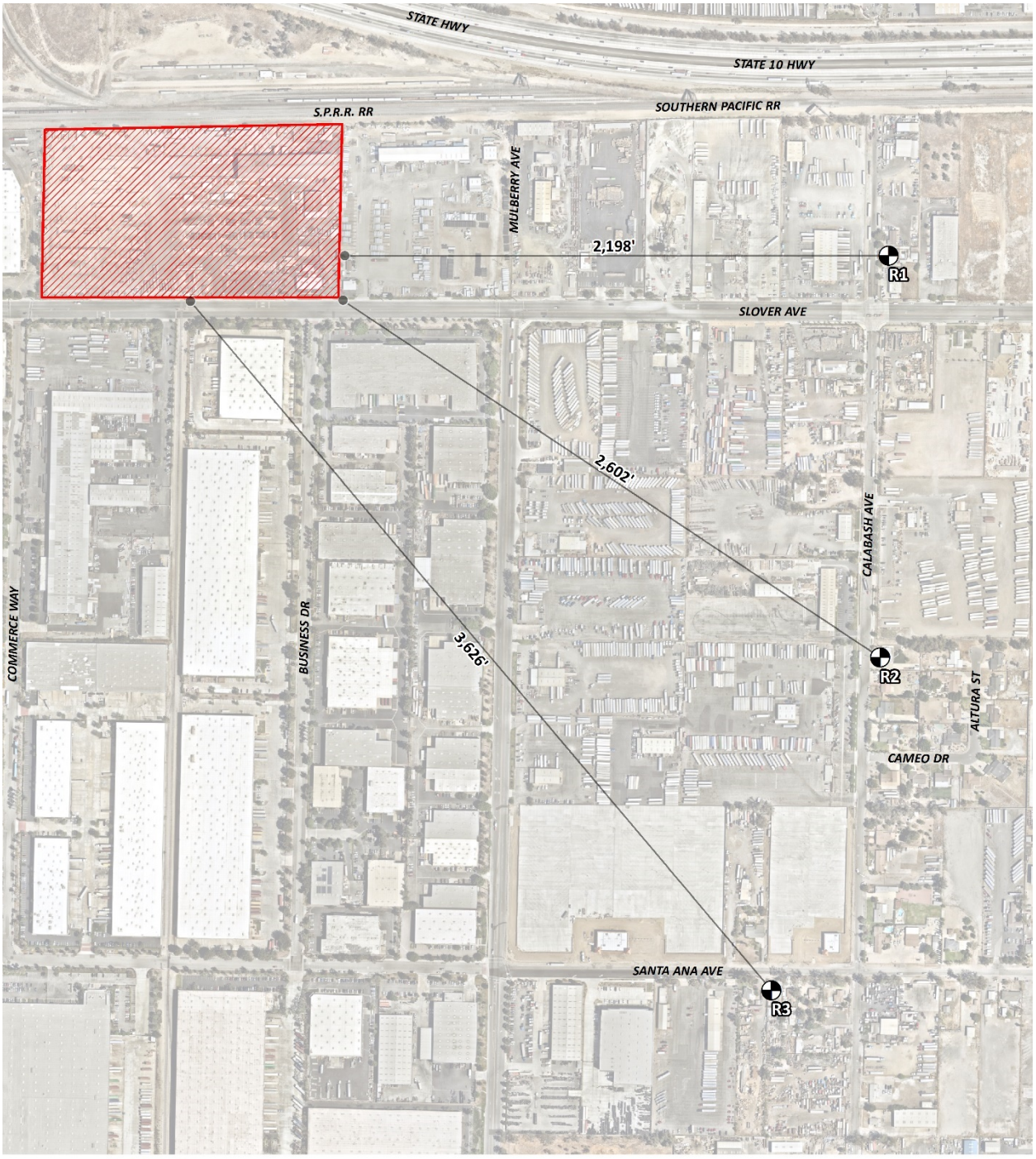


TABLE 10-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Highest Reference Noise Level (dBA L_{eq})
Demolition/ Crushing	Demolition Equipment	69	83
	Backhoes	61	
	Hauling Trucks	71	
	Impact Hammer (hoe ram)	83	
	Loaders	71	
Site Preparation	Crawler Tractors	77	77
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

[1] Update of noise database for prediction of noise on construction and open site expressed in hourly average L_{eq} based on estimated usage factor.

10.3 TYPICAL 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 nearest 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 46.7 to 66.2 dBA L_{eq} at the nearest receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition/ Crushing	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	66.2	60.2	62.2	55.2	53.2	50.2	66.2
R2	64.5	58.5	60.5	53.5	51.5	48.5	64.5
R3	62.7	56.7	58.7	51.7	49.7	46.7	62.7

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the closest point from the edge of primary construction activity to each of the nearby receiver locations. Project construction noise levels are considered exempt if activities occur within the hours specified in the City of Fontana Municipal Code, Section 18-63(7) of 7:00 a.m. to 6:00 p.m. on weekdays and between the hours of 8:00 a.m. to 5:00 p.m. on Saturdays.

If Project construction activity occurs outside of the hours specified in the Municipal Code, noise levels shall satisfy the City of Fontana construction noise level thresholds of 70 dBA L_{eq} during the daytime hours and 65 dBA L_{eq} during the nighttime hours. At the time of this analysis, no Project construction activity is planned within the hours specified in the City of Fontana Municipal Code, Section 18-63(7). As shown on table 10-3, the noise impacts due to project construction noise is considered *less than significant* at all receiver locations.

TABLE 10-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})				
	Highest Construction Noise Levels[2]	Threshold			Specified Hours Threshold Exceeded?[5]
		Specified Hours[3]	Outside of Specified Hours Daytime[4]	Outside of Specified Hours Nighttime[4]	
R1	66.2	Exempt	70	65	No
R2	64.5	Exempt	70	65	No
R3	62.7	Exempt	70	65	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 10-2.
[3] Specified hours of 7:00 a.m. to 6:00 p.m. on weekdays and between the hours of 8:00 a.m. to 5:00 p.m. on Saturdays as per the City of Fontana Municipal Code Section 18-63(7).
[4] City of Fontana exterior noise level standards for residential land use, as shown on Table 3-1.
[5] Do the estimated Project construction noise levels exceed the construction noise level threshold during the specified hours mentioned in The City of Fontana Municipal Code Section 18-63(7)?

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building area as shown on Exhibit 10-B. Since the nighttime concrete pours will take place outside the permitted City of Fontana Municipal Code, Section 18-63(b)(7) hours of *7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays* the Project Applicant will be required to obtain authorization for nighttime work from the City of Fontana. Any nighttime construction noise activities shall satisfy the residential noise limit categories outlined in Table 3-1.

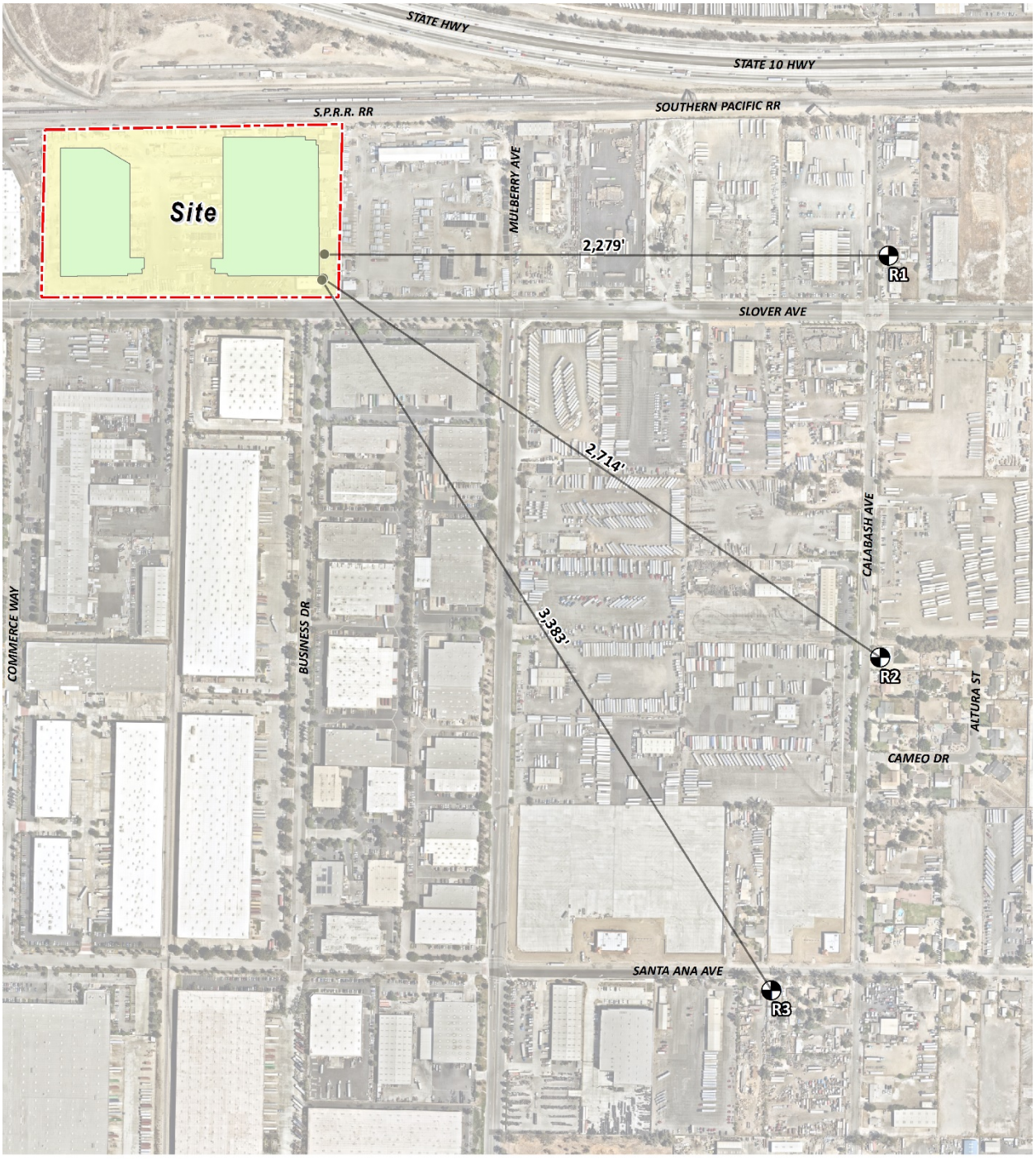
As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities (paving) are estimated to range from 46.2 to 49.9 dBA L_{eq} and will satisfy the City of Fontana 65 dBA L_{eq} nighttime stationary-source exterior hourly average L_{eq} residential noise level threshold at the nearest noise sensitive residential receiver locations. Based on the results of this analysis, all nearest noise receiver locations will experience *less than significant* impacts due to the Project related nighttime concrete pour activities. Appendix 10.2 includes the CadnaA nighttime concrete pour noise model inputs.

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Use	Meas. Location[2]	Construction Noise Levels (dBA L_{eq})		
			Paving Construction[3]	Nighttime Threshold[4]	Threshold Exceeded?[5]
R1	Residence	L1	49.9	65	No
R2	Residence	L2	48.1	65	No
R3	Residence	L3	46.2	65	No

[1] Noise receiver locations are shown on Exhibit 10-B.
[2] Reference noise level measurement locations as shown on Exhibit 5-A.
[3] Paving construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations.
[4] Exterior noise level standards based on the City of Fontana Development Code Section 30-543.
[5] Do the estimated Project construction noise levels exceed the nighttime construction noise level threshold?

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



10.6 TYPICAL CONSTRUCTION VIBRATION ANALYSIS

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

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

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

Table 10-6 presents the expected Project related vibration levels at the nearest receiver locations. At distances ranging from 2,198 to 3,626 feet from Project construction activities, construction vibration velocity levels are estimated at 0.000 PPV (in/sec). Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec) for older residential buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver locations. In addition, the typical construction vibration levels at the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries.

TABLE 10-6: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	2,198'	0.000	0.000	0.000	0.000	0.000	0.3	No
R2	2,602'	0.000	0.000	0.000	0.000	0.000	0.3	No
R3	3,626'	0.000	0.000	0.000	0.000	0.000	0.3	No

[1] Receiver locations are shown on Exhibit 10-A.
[2] Distance from receiver location to Project construction boundary.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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11 REFERENCES

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3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
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9. **Office of Planning and Research.** *State of California General Plan Guidlines.* October 2017.
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13. —. *Municipal Code, Chapter 18, Article II - Noise.*
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16. **City of Fontana Community Development.** *Noise and Vibration Thresholds of Significance, Confirmation of Noise Impact Analysis Scope for an Industrial Warehouse Project.* May 2019.
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20. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.

21. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.

22. **FHWA.** *Roadway Construction Noise Model.* January 2006.

12 CERTIFICATIONS

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

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF FONTANA DEVELOPMENT CODE

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Sec. 30-543. - Noise and vibration.

(a) *Noise levels.* No person shall create or cause to be created any sound which exceeds the noise levels in this section as measured at the property line of any residentially zoned property:

(1) The noise level between 7:00 a.m. and 10:00 p.m. shall not exceed 70 db(A).

(2) The noise level between 10:00 p.m. and 7:00 a.m. shall not exceed 65 db(A).

(b) *Noise measurements.* Noise shall be measured with a sound level meter that meets the standards of the American National Standards Institute (ANSI) Section SI4-1979, Type 1 or Type 2. Noise levels shall be measured using the "A" weighted sound pressure level scale in decibels (reference pressure = 20 micronewtons per meter squared).

(c) *Vibration.* No person shall create or cause to be created any activity which causes a vibration which can be felt beyond the property line with or without the aid of an instrument.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 14102 Study Area Photos

L1_E
34, 3' 49.940000"117, 30' 6.810000"

L1_N
34, 3' 50.010000"117, 30' 6.810000"

L1_S
34, 3' 50.010000"117, 30' 6.780000"

L1_W
34, 3' 50.000000"117, 30' 6.780000"

L2_E
34, 3' 33.380000"117, 30' 6.870000"

L2_N
34, 3' 33.420000"117, 30' 6.730000"

JN: 14102 Study Area Photos

L2_S
34, 3' 33.420000"117, 30' 6.870000"

L2_W
34, 3' 33.420000"117, 30' 6.780000"

L3_E
34, 3' 20.020000"117, 30' 8.320000"

L3_N
34, 3' 20.020000"117, 30' 8.290000"

L3_S
34, 3' 20.020000"117, 30' 8.290000"

L3_W
34, 3' 20.020000"117, 30' 8.270000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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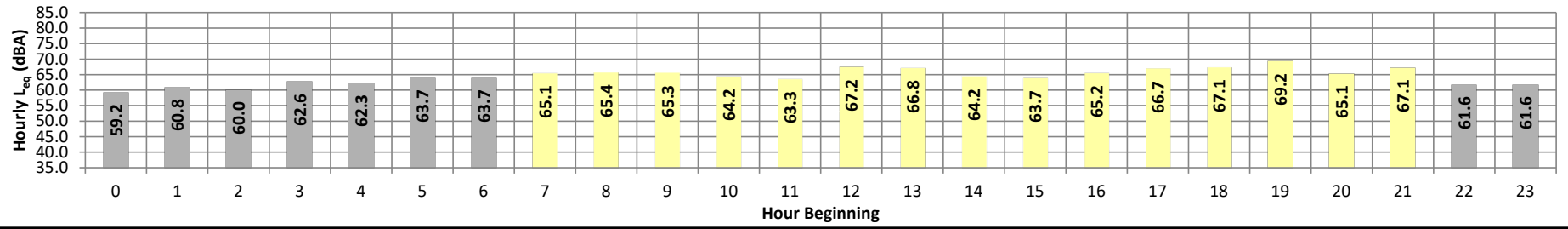
24-Hour Noise Level Measurement Summary

Date: Thursday, June 24, 2021 *Location:* L1 - Located east of the Project site near single-family residence at 10463 Calabash Avenue. *Meter:* Piccolo II *JN:* 14102

Project: Fontana Gateway Industrial *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	59.2	62.8	57.1	62.5	62.3	61.6	61.1	59.7	58.7	57.6	57.4	57.2	59.2	10.0	69.2
	1	60.8	66.7	57.6	66.3	66.0	65.1	64.4	62.2	60.2	58.4	58.1	57.8	60.8	10.0	70.8
	2	60.0	64.1	57.6	63.8	63.5	62.5	61.9	60.4	59.5	58.2	57.9	57.7	60.0	10.0	70.0
	3	62.6	67.0	60.0	66.6	66.3	65.7	65.1	63.3	62.0	60.5	60.3	60.1	62.6	10.0	72.6
	4	62.3	66.6	59.5	66.3	65.9	65.1	64.6	62.9	61.6	60.1	59.9	59.6	62.3	10.0	72.3
	5	63.7	68.4	61.4	68.2	67.9	67.0	66.2	64.5	63.6	62.0	61.8	61.5	63.7	10.0	73.7
	6	63.7	68.6	60.7	68.2	67.8	66.9	66.2	64.1	63.2	61.3	61.0	60.8	63.7	10.0	73.7
Day	7	65.1	76.2	61.6	75.4	74.3	72.4	71.5	68.9	66.1	62.3	61.9	61.7	65.1	0.0	65.1
	8	65.4	76.7	61.9	75.8	75.1	72.8	71.4	66.9	64.7	62.7	62.4	62.1	65.4	0.0	65.4
	9	65.3	76.2	61.3	75.9	75.6	74.8	73.9	69.5	64.6	61.9	61.7	61.4	65.3	0.0	65.3
	10	64.2	71.8	59.2	71.2	70.6	69.3	68.4	64.2	62.2	60.0	59.6	59.3	64.2	0.0	64.2
	11	63.3	74.4	60.6	73.8	72.7	70.3	68.3	64.3	63.2	61.5	61.1	60.7	63.3	0.0	63.3
	12	67.2	80.9	67.4	80.5	79.9	78.3	77.1	72.9	70.9	68.6	68.0	67.5	67.2	0.0	67.2
	13	66.8	78.6	66.6	78.1	77.7	76.6	75.9	73.0	70.7	68.5	67.6	66.8	66.8	0.0	66.8
	14	64.2	72.9	61.1	72.5	72.1	70.3	69.2	64.7	63.4	61.8	61.5	61.2	64.2	0.0	64.2
	15	63.7	75.0	61.0	74.6	74.0	71.6	69.3	65.0	63.2	61.7	61.4	61.1	63.7	0.0	63.7
	16	65.2	79.3	62.6	78.6	77.9	74.3	72.6	68.4	65.8	63.2	63.0	62.7	65.2	0.0	65.2
	17	66.7	77.1	62.9	76.7	76.0	73.9	72.5	67.2	65.1	63.7	63.3	63.0	66.7	0.0	66.7
	18	67.1	77.0	63.3	76.7	76.0	74.4	73.0	67.8	65.6	63.9	63.7	63.4	67.1	0.0	67.1
	19	69.2	79.9	64.9	79.3	78.6	76.4	75.6	73.4	68.7	65.8	65.3	65.0	69.2	5.0	74.2
	20	65.1	70.2	61.8	69.9	69.6	68.7	68.0	65.7	64.2	62.6	62.3	61.9	65.1	5.0	70.1
	21	67.1	74.9	61.3	74.4	74.1	73.1	71.0	67.2	64.8	62.1	61.7	61.4	67.1	5.0	72.1
Night	22	61.6	67.8	58.5	67.5	66.9	64.6	63.6	62.0	60.7	59.1	58.9	58.6	61.6	10.0	71.6
	23	61.6	67.4	56.2	67.1	66.6	65.8	64.9	62.9	60.3	57.2	56.8	56.4	61.6	10.0	71.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	63.3	70.2	59.2	69.9	69.6	68.7	68.0	64.2	62.2	60.0	59.6	59.3
	Max	69.2	80.9	67.4	80.5	79.9	78.3	77.1	73.4	70.9	68.6	68.0	67.5
Energy Average		66.0	Average:		75.6	74.9	73.1	71.8	68.0	65.5	63.4	63.0	62.6
Night	Min	59.2	62.8	56.2	62.5	62.3	61.6	61.1	59.7	58.7	57.2	56.8	56.4
	Max	63.7	68.6	61.4	68.2	67.9	67.0	66.2	64.5	63.6	62.0	61.8	61.5
Energy Average		62.0	Average:		66.3	65.9	64.9	64.2	62.5	61.1	59.4	59.1	58.9

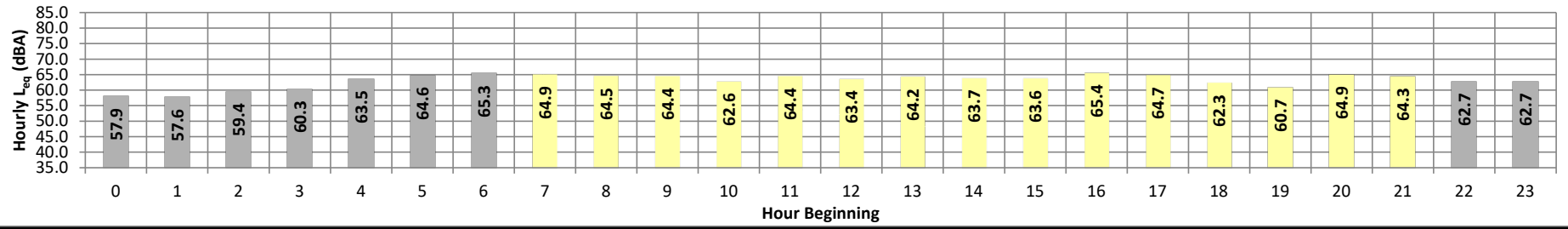
L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
64.9	**66.0**	**62.0**

24-Hour Noise Level Measurement Summary

Date: Thursday, June 24, 2021 *Location:* L2 - Located southeast of the Project site near single-family residence at 10709 Calabash Avenue. *Meter:* Piccolo II *JN:* 14102

Project: Fontana Gateway Industrial *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	57.9	69.1	48.6	68.8	68.4	66.1	62.9	55.1	51.3	49.1	48.8	48.6	57.9	10.0	67.9
	1	57.6	68.9	47.4	68.5	68.1	65.8	62.8	54.1	50.4	48.1	47.8	47.5	57.6	10.0	67.6
	2	59.4	69.8	48.0	69.6	69.2	67.2	65.1	57.8	52.0	49.2	48.5	48.1	59.4	10.0	69.4
	3	60.3	70.5	49.8	70.2	69.5	67.6	66.0	59.1	53.5	50.4	50.2	50.0	60.3	10.0	70.3
	4	63.5	73.8	51.3	73.4	72.8	70.9	69.2	62.7	56.7	52.0	51.7	51.4	63.5	10.0	73.5
	5	64.6	75.0	55.8	74.6	73.8	71.4	69.8	63.9	59.1	56.4	56.1	55.8	64.6	10.0	74.6
	6	65.3	74.5	58.7	74.1	73.6	71.8	70.0	65.0	61.7	59.3	59.0	58.8	65.3	10.0	75.3
Day	7	64.9	75.0	55.9	74.6	73.9	71.9	70.2	64.3	59.3	56.7	56.4	56.0	64.9	0.0	64.9
	8	64.5	73.9	57.8	73.6	73.1	71.0	69.4	63.9	60.0	58.3	58.1	57.9	64.5	0.0	64.5
	9	64.4	73.7	57.3	73.3	72.7	71.1	69.5	64.2	60.2	57.9	57.7	57.4	64.4	0.0	64.4
	10	62.6	71.3	55.6	71.0	70.5	69.0	67.6	62.7	58.9	56.4	56.1	55.7	62.6	0.0	62.6
	11	64.4	74.9	53.6	74.3	73.7	71.9	69.7	63.4	58.3	54.6	54.2	53.8	64.4	0.0	64.4
	12	63.4	74.2	54.5	73.9	73.2	70.4	67.8	62.4	58.5	55.4	54.9	54.6	63.4	0.0	63.4
	13	64.2	74.2	55.6	73.9	73.3	71.0	69.0	63.4	59.7	56.6	56.2	55.8	64.2	0.0	64.2
	14	63.7	72.9	56.0	72.4	71.7	70.1	68.8	63.8	59.8	56.9	56.5	56.1	63.7	0.0	63.7
	15	63.6	72.9	55.5	72.6	72.2	70.5	68.6	63.2	59.5	56.4	56.0	55.6	63.6	0.0	63.6
	16	65.4	77.5	53.9	77.1	76.4	73.0	70.0	62.5	57.1	54.5	54.2	54.0	65.4	0.0	65.4
	17	64.7	74.8	54.5	74.4	73.8	71.8	70.1	64.1	59.0	55.2	54.8	54.5	64.7	0.0	64.7
	18	62.3	72.2	53.0	71.8	71.2	69.3	67.4	62.0	57.2	53.7	53.4	53.1	62.3	0.0	62.3
	19	60.7	70.4	52.6	70.0	69.4	67.6	66.1	60.3	55.4	53.2	53.0	52.7	60.7	5.0	65.7
	20	64.9	72.0	61.3	71.6	71.2	69.8	68.8	65.0	62.5	61.6	61.5	61.4	64.9	5.0	69.9
	21	64.3	72.4	58.8	72.0	71.4	69.6	68.4	65.2	61.2	59.2	59.1	58.9	64.3	5.0	69.3
Night	22	62.7	71.1	57.6	70.8	70.3	68.9	67.5	62.7	59.0	57.8	57.7	57.6	62.7	10.0	72.7
	23	62.7	70.3	59.7	69.9	69.3	67.4	66.0	62.6	60.7	59.9	59.9	59.8	62.7	10.0	72.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.7	70.4	52.6	70.0	69.4	67.6	66.1	60.3	55.4	53.2	53.0	52.7
	Max	65.4	77.5	61.3	77.1	76.4	73.0	70.2	65.2	62.5	61.6	61.5	61.4
Energy Average		64.0	Average:		73.1	72.5	70.5	68.8	63.4	59.1	56.4	56.1	55.8
Night	Min	57.6	68.9	47.4	68.5	68.1	65.8	62.8	54.1	50.4	48.1	47.8	47.5
	Max	65.3	75.0	59.7	74.6	73.8	71.8	70.0	65.0	61.7	59.9	59.9	59.8
Energy Average		62.3	Average:		71.1	70.6	68.6	66.6	60.3	56.1	53.6	53.3	53.1

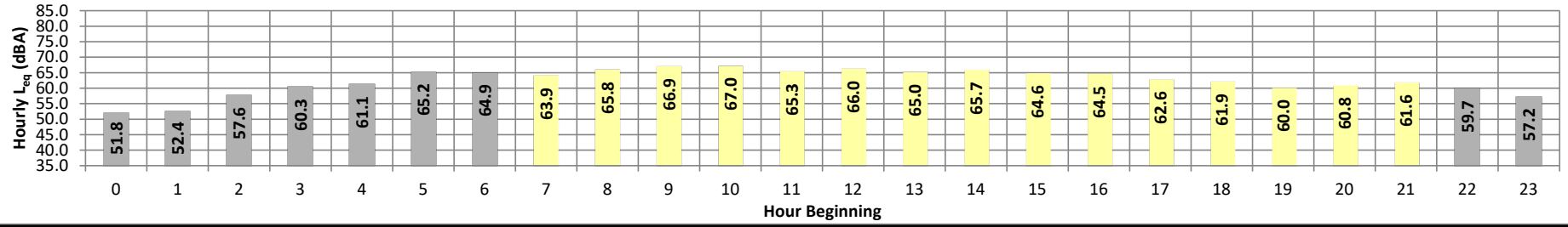
L_{eq} (dBA)		
24-Hour	*Daytime (7am-10pm)*	*Nighttime (10pm-7am)*
63.5	**64.0**	**62.3**

24-Hour Noise Level Measurement Summary

Date: Thursday, June 24, 2021 *Location:* L3 - Located southeast of the Project site near single-family residence at 13887 Santa Ana Avenue. *Meter:* Piccolo II *JN:* 14102

Project: Fontana Gateway Industrial *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	51.8	61.4	43.1	60.9	60.3	58.6	57.4	51.0	46.9	43.8	43.5	43.2	51.8	10.0	61.8
	1	52.4	64.3	40.5	63.4	62.7	60.2	57.7	50.1	45.1	41.2	40.8	40.6	52.4	10.0	62.4
	2	57.6	68.6	42.6	68.2	67.5	65.4	63.4	56.1	48.7	43.3	43.0	42.7	57.6	10.0	67.6
	3	60.3	70.6	45.2	70.2	69.8	68.4	66.6	58.5	51.8	46.0	45.6	45.3	60.3	10.0	70.3
	4	61.1	70.4	47.9	69.9	69.3	68.0	66.8	61.6	55.8	49.6	48.6	48.0	61.1	10.0	71.1
	5	65.2	77.8	51.8	77.5	76.8	73.7	71.5	65.6	59.2	53.6	52.9	52.1	65.2	10.0	75.2
	6	64.9	78.2	53.1	77.9	77.4	74.9	72.6	66.2	60.2	54.3	53.8	53.3	64.9	10.0	74.9
Day	7	63.9	74.6	51.1	74.3	73.6	71.4	69.7	64.4	59.1	53.0	52.0	51.3	63.9	0.0	63.9
	8	65.8	75.1	56.4	74.7	74.1	71.8	70.4	66.0	62.2	57.7	57.1	56.6	65.8	0.0	65.8
	9	66.9	78.6	60.2	77.7	76.3	73.2	71.1	67.6	64.7	61.3	60.8	60.4	66.9	0.0	66.9
	10	67.0	74.8	58.3	74.4	73.9	72.7	71.5	67.3	64.6	60.2	59.3	58.5	67.0	0.0	67.0
	11	65.3	74.4	56.2	74.1	73.6	72.1	70.8	65.8	62.0	57.5	57.0	56.4	65.3	0.0	65.3
	12	66.0	78.9	56.7	78.2	77.1	73.7	71.6	66.3	63.3	59.1	57.8	57.0	66.0	0.0	66.0
	13	65.0	81.0	54.5	80.3	79.3	75.1	72.2	65.6	60.9	56.1	55.3	54.7	65.0	0.0	65.0
	14	65.7	77.0	53.8	76.4	75.6	73.1	71.3	65.0	60.2	55.4	54.8	54.0	65.7	0.0	65.7
	15	64.6	75.8	52.6	75.3	74.5	72.3	70.4	64.3	59.8	54.2	53.4	52.7	64.6	0.0	64.6
	16	64.5	75.1	51.1	74.5	73.7	71.6	69.9	63.8	58.7	53.0	52.2	51.4	64.5	0.0	64.5
	17	62.6	73.6	49.9	73.0	72.4	70.5	68.7	63.4	56.7	51.2	50.7	50.1	62.6	0.0	62.6
	18	61.9	72.4	50.0	72.0	71.2	68.6	67.1	61.8	55.7	51.3	50.8	50.2	61.9	0.0	61.9
	19	60.0	69.3	48.5	68.8	68.3	66.7	65.6	60.3	53.9	49.5	49.2	48.7	60.0	5.0	65.0
	20	60.8	70.6	47.9	70.0	69.3	67.7	66.6	60.4	54.6	49.0	48.5	48.1	60.8	5.0	65.8
	21	61.6	71.1	46.9	70.8	70.5	69.4	68.7	62.4	53.9	47.9	47.4	47.0	61.6	5.0	66.6
Night	22	59.7	69.2	44.6	68.8	68.4	67.2	66.2	58.5	50.0	45.3	44.9	44.7	59.7	10.0	69.7
	23	57.2	66.1	43.4	65.8	65.4	64.2	63.2	57.3	49.9	44.4	44.0	43.6	57.2	10.0	67.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.0	69.3	46.9	68.8	68.3	66.7	65.6	60.3	53.9	47.9	47.4	47.0
	Max	67.0	81.0	60.2	80.3	79.3	75.1	72.2	67.6	64.7	61.3	60.8	60.4
Energy Average		64.6	Average:		74.3	73.6	71.3	69.7	64.3	59.4	54.4	53.7	53.1
Night	Min	51.8	61.4	40.5	60.9	60.3	58.6	57.4	50.1	45.1	41.2	40.8	40.6
	Max	65.2	78.2	53.1	77.9	77.4	74.9	72.6	66.2	60.2	54.3	53.8	53.3
Energy Average		60.9	Average:		69.2	68.6	66.7	65.1	58.3	52.0	46.8	46.3	45.9

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
63.5	**64.6**	**60.9**

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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

Scenario: E
Road Name: Mulberry Av.
Road Segment: s/o Slover Av.
Project Name: Fontana Corporate Center
Job Number: 14102

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,728	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	557	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.06	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.24	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-11.27	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	59.5	57.7	51.7	60.3	60.9
Medium Trucks:	60.6	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	70.9	70.3	61.2	62.5	70.8	70.9
Vehicle Noise:	71.6	71.0	63.3	63.2	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	137	294	634
CNEL:	65	140	302	651

Tuesday, October 19, 2021

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

Scenario: OYC
Road Name: Mulberry Av.
Road Segment: s/o Slover Av.
Project Name: Fontana Corporate Center
Job Number: 14102

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,885	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	570	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.96	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.14	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-11.17	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.7	59.6	57.8	51.8	60.4	61.0
Medium Trucks:	60.7	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	71.0	70.4	61.3	62.6	70.9	71.0
Vehicle Noise:	71.7	71.1	63.4	63.3	71.6	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	643
CNEL:	66	142	307	661

Tuesday, October 19, 2021

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

Scenario: E+P
Road Name: Mulberry Av.
Road Segment: s/o Slover Av.
Project Name: Fontana Corporate Center
Job Number: 14102

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,774	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	561	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.21%
Medium Trucks:	84.8%	4.9%	10.3%	5.75%
Heavy Trucks:	86.5%	2.7%	10.8%	18.04%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.02	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.24	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-11.27	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	59.5	57.8	51.7	60.3	60.9
Medium Trucks:	60.6	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	70.9	70.3	61.2	62.5	70.8	70.9
Vehicle Noise:	71.6	71.0	63.3	63.2	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	137	294	634
CNEL:	65	140	302	651

Tuesday, October 19, 2021

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

Scenario: OYC+P
Road Name: Mulberry Av.
Road Segment: s/o Slover Av.
Project Name: Fontana Corporate Center
Job Number: 14102

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,931	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	574	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.21%
Medium Trucks:	84.8%	4.9%	10.3%	5.75%
Heavy Trucks:	86.5%	2.7%	10.8%	18.05%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.92	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-16.14	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-11.17	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.7	59.6	57.9	51.8	60.4	61.0
Medium Trucks:	60.7	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	71.0	70.4	61.3	62.6	70.9	71.0
Vehicle Noise:	71.7	71.1	63.4	63.3	71.6	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	644
CNEL:	66	142	307	661

Tuesday, October 19, 2021

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

Scenario: E | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Commerce Wy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,783	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,141	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.94	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.13	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.16	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	62.6	60.8	54.8	63.4	64.0
Medium Trucks:	63.7	63.0	56.7	55.1	63.6	63.8
Heavy Trucks:	74.0	73.4	64.3	65.6	73.9	74.1
Vehicle Noise:	74.7	74.1	66.4	66.3	74.7	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	220	474	1,022
CNEL:	105	226	487	1,050

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

Scenario: OYC | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Commerce Wy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,502	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,532	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.66	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.85	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.88	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	65.0	64.3	58.0	56.4	64.9	65.1
Heavy Trucks:	75.2	74.6	65.6	66.9	75.2	75.3
Vehicle Noise:	76.0	75.4	67.7	67.6	75.9	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	124	268	577	1,244
CNEL:	128	275	593	1,277

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

Scenario: E+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Commerce Wy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,009	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,160	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.90%
Medium Trucks:	84.8%	4.9%	10.3%	5.76%
Heavy Trucks:	86.5%	2.7%	10.8%	18.33%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.88	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.08	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.05	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	62.7	60.9	54.8	63.5	64.1
Medium Trucks:	63.8	63.1	56.7	55.2	63.6	63.9
Heavy Trucks:	74.1	73.5	64.4	65.7	74.0	74.2
Vehicle Noise:	74.8	74.2	66.5	66.4	74.8	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	482	1,038
CNEL:	107	230	495	1,066

Tuesday, October 19, 2021

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

Scenario: OYC+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Commerce Wy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,729	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,551	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.94%
Medium Trucks:	84.8%	4.9%	10.3%	5.77%
Heavy Trucks:	86.5%	2.7%	10.8%	18.29%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.62	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.81	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.80	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.9	62.2	56.1	64.7	65.3
Medium Trucks:	65.0	64.4	58.0	56.4	64.9	65.1
Heavy Trucks:	75.3	74.7	65.7	66.9	75.3	75.4
Vehicle Noise:	76.1	75.4	67.8	67.6	76.0	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	271	584	1,259
CNEL:	129	278	600	1,292

Tuesday, October 19, 2021

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

Scenario: E | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,626	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,128	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.99	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.18	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.21	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.6	62.6	60.8	54.7	63.4	64.0
Medium Trucks:	63.7	63.0	56.6	55.1	63.5	63.8
Heavy Trucks:	73.9	73.3	64.3	65.5	73.9	74.0
Vehicle Noise:	74.7	74.0	66.4	66.2	74.6	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	219	471	1,014
CNEL:	104	224	483	1,042

Tuesday, October 19, 2021

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

Scenario: OYC | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,342	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,519	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.70	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.89	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.92	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.8	62.1	56.0	64.6	65.3
Medium Trucks:	65.0	64.3	57.9	56.4	64.8	65.1
Heavy Trucks:	75.2	74.6	65.6	66.8	75.2	75.3
Vehicle Noise:	76.0	75.3	67.7	67.5	75.9	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	124	266	574	1,237
CNEL:	127	274	589	1,270

Tuesday, October 19, 2021

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

Scenario: E+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,756	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,139	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.88%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.34%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.96	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.14	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.13	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	62.6	60.8	54.8	63.4	64.0
Medium Trucks:	63.7	63.0	56.7	55.1	63.6	63.8
Heavy Trucks:	74.0	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	74.7	74.1	66.4	66.3	74.7	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	221	476	1,026
CNEL:	105	227	489	1,054

Tuesday, October 19, 2021

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

Scenario: OYC+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: w/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,472	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,530	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.92%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.30%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.68	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.86	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.86	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	65.0	64.3	57.9	56.4	64.9	65.1
Heavy Trucks:	75.3	74.7	65.6	66.9	75.2	75.4
Vehicle Noise:	76.0	75.4	67.7	67.6	76.0	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	579	1,247
CNEL:	128	276	595	1,281

Tuesday, October 19, 2021

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

Scenario: E | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,746	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,138	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.95	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.14	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.17	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	62.6	60.8	54.8	63.4	64.0
Medium Trucks:	63.7	63.0	56.7	55.1	63.6	63.8
Heavy Trucks:	74.0	73.4	64.3	65.6	73.9	74.1
Vehicle Noise:	74.7	74.1	66.4	66.3	74.6	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	220	474	1,020
CNEL:	105	226	486	1,048

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

Scenario: OYC | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,465	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,529	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.67	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.86	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.89	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	65.0	64.3	57.9	56.4	64.9	65.1
Heavy Trucks:	75.2	74.6	65.6	66.9	75.2	75.3
Vehicle Noise:	76.0	75.3	67.7	67.5	75.9	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	124	268	577	1,242
CNEL:	128	275	592	1,276

Tuesday, October 19, 2021

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

Scenario: E+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,953	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,155	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.01%
Medium Trucks:	84.8%	4.9%	10.3%	5.75%
Heavy Trucks:	86.5%	2.7%	10.8%	18.24%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.89	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-13.10	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-8.09	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	62.7	60.9	54.8	63.5	64.1
Medium Trucks:	63.7	63.1	56.7	55.2	63.6	63.8
Heavy Trucks:	74.0	73.4	64.4	65.7	74.0	74.1
Vehicle Noise:	74.8	74.1	66.5	66.3	74.7	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	222	479	1,033
CNEL:	106	228	492	1,060

Tuesday, October 19, 2021

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

Scenario: OYC+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Business Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,672	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,546	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.02%
Medium Trucks:	84.8%	4.9%	10.3%	5.76%
Heavy Trucks:	86.5%	2.7%	10.8%	18.22%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.62	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.83	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.83	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.9	62.2	56.1	64.7	65.3
Medium Trucks:	65.0	64.3	58.0	56.4	64.9	65.1
Heavy Trucks:	75.3	74.7	65.7	66.9	75.3	75.4
Vehicle Noise:	76.0	75.4	67.7	67.6	76.0	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	270	582	1,253
CNEL:	129	277	597	1,287

Tuesday, October 19, 2021

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

Scenario: E | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Mulberry Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,508	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,201	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.72	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-12.91	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-7.94	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.9	62.8	61.1	55.0	63.6	64.2
Medium Trucks:	63.9	63.3	56.9	55.4	63.8	64.0
Heavy Trucks:	74.2	73.6	64.6	65.8	74.2	74.3
Vehicle Noise:	74.9	74.3	66.6	66.5	74.9	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	106	228	491	1,058
CNEL:	109	234	504	1,086

Tuesday, October 19, 2021

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

Scenario: OYC | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Mulberry Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,244	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,593	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	76.05%
Medium Trucks:	84.8%	4.9%	10.3%	5.78%
Heavy Trucks:	86.5%	2.7%	10.8%	18.16%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.49	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.68	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.71	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	64.1	62.3	56.2	64.9	65.5
Medium Trucks:	65.2	64.5	58.1	56.6	65.0	65.3
Heavy Trucks:	75.4	74.8	65.8	67.0	75.4	75.5
Vehicle Noise:	76.2	75.5	67.9	67.7	76.1	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	593	1,277
CNEL:	131	282	609	1,311

Tuesday, October 19, 2021

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

Scenario: E+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Mulberry Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,669	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,215	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.94%
Medium Trucks:	84.8%	4.9%	10.3%	5.77%
Heavy Trucks:	86.5%	2.7%	10.8%	18.29%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.68	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-12.87	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-7.86	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.9	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	64.0	63.3	56.9	55.4	63.8	64.1
Heavy Trucks:	74.3	73.7	64.6	65.9	74.2	74.4
Vehicle Noise:	75.0	74.4	66.7	66.6	75.0	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	230	496	1,069
CNEL:	110	237	510	1,098

Tuesday, October 19, 2021

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

Scenario: OYC+P | Project Name: Fontana Corporate Center
Road Name: Slover Av. | Job Number: 14102
Road Segment: e/o Mulberry Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,405	vehicles
Peak Hour Percentage:	8.28%	
Peak Hour Volume:	1,607	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	75.97%
Medium Trucks:	84.8%	4.9%	10.3%	5.77%
Heavy Trucks:	86.5%	2.7%	10.8%	18.26%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.46	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-11.65	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-6.65	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	64.1	62.3	56.3	64.9	65.5
Medium Trucks:	65.2	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	75.5	74.9	65.8	67.1	75.4	75.6
Vehicle Noise:	76.2	75.6	67.9	67.8	76.2	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	129	277	598	1,288
CNEL:	132	285	614	1,322

Tuesday, October 19, 2021

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APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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14102 - Fontana Corporate Center

CadnaA Noise Prediction Model: 14102_02.cna
Date: 15.10.21
Analyst: S. Shami

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	46.9	46.9	53.5	70.0	65.0	0.0				5.00	a	6182554.37	2332870.28	5.00
RECEIVERS		R2	46.0	45.9	52.6	70.0	65.0	0.0				5.00	a	6182519.62	2331262.86	5.00
RECEIVERS		R3	45.2	45.2	51.8	70.0	65.0	0.0				5.00	a	6182085.11	2329931.57	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6179569.21	2333172.48	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6179772.70	2332876.06	5.00
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6179544.38	2332829.59	41.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6179882.46	2332830.39	45.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6180249.38	2333318.29	45.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179293.62	2333335.92	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179203.89	2333264.61	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179203.09	2333179.69	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179199.88	2333067.53	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179200.68	2332978.61	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179203.89	2332883.27	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179203.89	2332813.57	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179302.43	2332751.88	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179439.43	2332751.08	5.00
POINTSOURCE		PARK10	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179670.96	2332810.37	5.00
POINTSOURCE		PARK11	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6179936.93	2332750.28	5.00
POINTSOURCE		PARK12	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180027.46	2332751.88	5.00
POINTSOURCE		PARK13	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180139.62	2332752.68	5.00
POINTSOURCE		PARK14	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180236.56	2332751.08	5.00
POINTSOURCE		PARK15	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180315.07	2332804.76	5.00
POINTSOURCE		PARK16	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180314.27	2332877.66	5.00
POINTSOURCE		PARK17	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180312.67	2332978.61	5.00
POINTSOURCE		PARK18	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180311.87	2333074.74	5.00
POINTSOURCE		PARK19	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180315.88	2333176.49	5.00
POINTSOURCE		PARK20	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180311.87	2333277.43	5.00
POINTSOURCE		PARK21	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	6180308.66	2333348.73	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		DWY02	87.8	73.1	78.5	70.9	56.2	61.7	PWL-Pt	93.2					59.0	2.0	7.0	6.2	8
LINESOURCE		DWY03	90.3	75.6	81.3	72.7	58.0	63.6	PWL-Pt	93.2					88.0	3.0	11.0	6.2	8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6179604.46	2332861.55	8.00	0.00
					6179604.46	2332810.37	8.00	0.00
					6179598.85	2332777.52	8.00	0.00
					6179590.04	2332760.70	8.00	0.00
					6179586.83	2332703.65	8.00	0.00
LINESOURCE	8.00	a			6179807.90	2332857.43	8.00	0.00
					6179805.55	2332823.18	8.00	0.00
					6179811.16	2332797.55	8.00	0.00
					6179834.39	2332784.73	8.00	0.00
					6179855.22	2332765.50	8.00	0.00
					6179879.25	2332749.48	8.00	0.00
					6179879.25	2332703.44	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK02	111.5	111.5	111.5	71.4	71.4	71.4	Lw	111.5					8
AREASOURCE		DOCK01	111.5	111.5	111.5	74.3	74.3	74.3	Lw	111.5					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6179892.14	2332858.43	8.00	0.00
					6179757.48	2332856.83	8.00	0.00
					6179756.68	2332942.55	8.00	0.00
					6179754.27	2332959.38	8.00	0.00
					6179752.67	2332979.41	8.00	0.00
					6179748.67	2333000.24	8.00	0.00
					6179744.66	2333027.48	8.00	0.00
					6179738.25	2333051.51	8.00	0.00
					6179729.44	2333073.94	8.00	0.00
					6179718.22	2333107.59	8.00	0.00
					6179700.60	2333147.65	8.00	0.00
					6179670.96	2333196.52	8.00	0.00
					6179658.14	2333216.55	8.00	0.00
					6179638.11	2333241.38	8.00	0.00
					6179616.48	2333264.61	8.00	0.00
					6179593.24	2333287.85	8.00	0.00
					6179578.02	2333301.47	8.00	0.00
					6179562.80	2333311.88	8.00	0.00
					6179547.58	2333323.90	8.00	0.00
					6179548.40	2333380.78	8.00	0.00
					6179892.73	2333387.10	8.00	0.00
					6179892.62	2333344.20	8.00	0.00
AREASOURCE	8.00	a			6179520.72	2333236.09	8.00	0.00
					6179542.77	2333264.61	8.00	0.00
					6179547.58	2333257.40	8.00	0.00
					6179562.80	2333246.99	8.00	0.00
					6179578.82	2333229.36	8.00	0.00
					6179594.05	2333214.94	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6179609.27	2333194.91	8.00	0.00
					6179625.29	2333174.08	8.00	0.00
					6179640.51	2333152.45	8.00	0.00
					6179655.73	2333123.61	8.00	0.00
					6179673.36	2333086.76	8.00	0.00
					6179687.78	2333046.70	8.00	0.00
					6179698.19	2332997.83	8.00	0.00
					6179705.40	2332956.17	8.00	0.00
					6179706.21	2332862.44	8.00	0.00
					6179576.46	2332861.31	8.00	0.00
					6179520.72	2332862.27	8.00	0.00

Barrier(s)

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

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00002	x	0		36.00	a	6179240.98	2333300.24	36.00	0.00
								6179411.17	2333301.44	36.00	0.00
								6179520.72	2333236.09	36.00	0.00
								6179520.72	2332862.27	36.00	0.00
								6179576.46	2332861.31	36.00	0.00
								6179576.46	2332817.58	36.00	0.00
								6179567.33	2332817.10	36.00	0.00
								6179568.77	2332797.88	36.00	0.00
								6179510.63	2332797.40	36.00	0.00
								6179511.59	2332789.72	36.00	0.00
								6179241.55	2332787.31	36.00	0.00
BUILDING		BUILDING00001	x	0		40.00	a	6179892.62	2333344.20	40.00	0.00
								6180221.76	2333345.65	40.00	0.00
								6180222.24	2333332.19	40.00	0.00
								6180265.00	2333332.67	40.00	0.00
								6180264.52	2333312.97	40.00	0.00
								6180273.65	2333312.97	40.00	0.00
								6180275.57	2332790.20	40.00	0.00
								6179910.88	2332788.27	40.00	0.00
								6179910.40	2332798.84	40.00	0.00
								6179858.99	2332797.88	40.00	0.00
								6179859.47	2332818.06	40.00	0.00
								6179844.09	2332817.58	40.00	0.00
								6179844.09	2332858.43	40.00	0.00
								6179892.14	2332858.43	40.00	0.00

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APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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14102 - Fontana Corporate Center

CadnaA Noise Prediction Model: 14102_04 - Construction.cna
Date: 23.11.21
Analyst: S. Shami

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	66.2	66.2	72.9	70.0	65.0	0.0				5.00	a	6182554.37	2332870.28	5.00
RECEIVERS		R2	64.5	64.5	71.2	70.0	65.0	0.0				5.00	a	6182519.62	2331262.86	5.00
RECEIVERS		R3	62.7	62.7	69.4	70.0	65.0	0.0				5.00	a	6182085.11	2329931.57	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	131.8	131.8	131.8	83.0	83.0	83.0	Lw"	83					8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a		6179180.68	2333374.02	8.00	0.00
				6180368.20	2333395.83	8.00	0.00
				6180353.11	2332703.11	8.00	0.00
				6179166.43	2332703.95	8.00	0.00

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APPENDIX 10.2:

CADNAA CONCRETE POUR NOISE MODEL INPUTS

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14102 - Fontana Corporate Center

CadnaA Noise Prediction Model: 14102_02 - ConcretePour.cna
Date: 15.10.21
Analyst: S. Shami

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	49.9	49.9	56.6	70.0	65.0	0.0				5.00	a	6182554.37	2332870.28	5.00
RECEIVERS		R2	48.1	48.1	54.8	70.0	65.0	0.0				5.00	a	6182519.62	2331262.86	5.00
RECEIVERS		R3	46.2	46.2	52.9	70.0	65.0	0.0				5.00	a	6182085.11	2329931.57	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
BUILDING		CONCRETEPOUR1	113.0	113.0	113.0	70.0	70.0	70.0	Lw''	70					8
BUILDING		CONCRETEPOUR2	111.2	111.2	111.2	70.0	70.0	70.0	Lw''	70					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING	8.00	a			6179892.62	2333344.20	8.00	0.00
					6180221.76	2333345.65	8.00	0.00
					6180222.24	2333332.19	8.00	0.00
					6180265.00	2333332.67	8.00	0.00
					6180264.52	2333312.97	8.00	0.00
					6180273.65	2333312.97	8.00	0.00
					6180275.57	2332790.20	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6179910.88	2332788.27	8.00	0.00
					6179910.40	2332798.84	8.00	0.00
					6179858.99	2332797.88	8.00	0.00
					6179859.47	2332818.06	8.00	0.00
					6179844.09	2332817.58	8.00	0.00
					6179844.09	2332858.43	8.00	0.00
					6179892.14	2332858.43	8.00	0.00
BUILDING	8.00	a			6179240.98	2333300.24	8.00	0.00
					6179411.17	2333301.44	8.00	0.00
					6179520.72	2333236.09	8.00	0.00
					6179520.72	2332862.27	8.00	0.00
					6179576.46	2332861.31	8.00	0.00
					6179576.46	2332817.58	8.00	0.00
					6179567.33	2332817.10	8.00	0.00
					6179568.77	2332797.88	8.00	0.00
					6179510.63	2332797.40	8.00	0.00
					6179511.59	2332789.72	8.00	0.00
					6179241.55	2332787.31	8.00	0.00