Appendix H

Thermal Ranch Specific Plan Noise and Vibration Analysis

Prepared By

Urban Crossroads, Inc. July 24, 2023.

Thermal Ranch Specific Plan

NOISE AND VIBRATION ANALYSIS

COUNTY OF RIVERSIDE

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14497-05 NA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Thermal Ranch Specific Plan
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Thermal Ranch Specific Plan development ("Project"). The Project site is located south of Avenue 62, east of Harrison Street, and west of Tyler Street in the Thermal area of the County of Riverside. The Project consists of a mix of uses including and centered around a 223-acre equestrian center and related show facilities, including barns, stabling and related equestrian services. This noise study has been prepared to satisfy applicable County of Riverside noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
On-Site Traffic Noise	8	*Potentially Significant*	*Less Than Significant*
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*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 Thermal Ranch Specific Plan ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the 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 south of Avenue 62, east of Harrison Street, and west of Tyler Street in the Thermal area of the County of Riverside, as shown on Exhibit 1-A. The project site is currently undeveloped and used for agricultural purposes. The area surrounding the Project Site is mostly vacant with the Desert Mirage High School located to the southwest and the nearest noise sensitive residential land use located east of the site at 62800 Tyler Street.

1.2 PROJECT DESCRIPTION

The Project consists of a mix of uses including and centered around a 223-acre equestrian center and related show facilities, including barns, stabling and related equestrian services. Other components of the Thermal Ranch Specific Plan provide a mix of residential neighborhoods including seasonal and year-round workforce housing and RV park facilities, single-family and multi-family lots, and extended stay condominiums. Proposed commercial areas would include a commercial village adjacent to Harrison Street, resort commercial uses near a proposed hotel (150± keys) and supporting commercial uses within the equestrian center. A preliminary land use plan for the proposed Project is shown on Exhibit 1-B.

Exhibit 1-C depicts the Project planning areas (PAs). It is anticipated that PAs 1 – 4 will be constructed as the initial / interim phase of the Project (2026), with PAs 5 and 6 then occurring upon buildout of the Project (2032).

EXHIBIT 1-A: LOCATION MAP

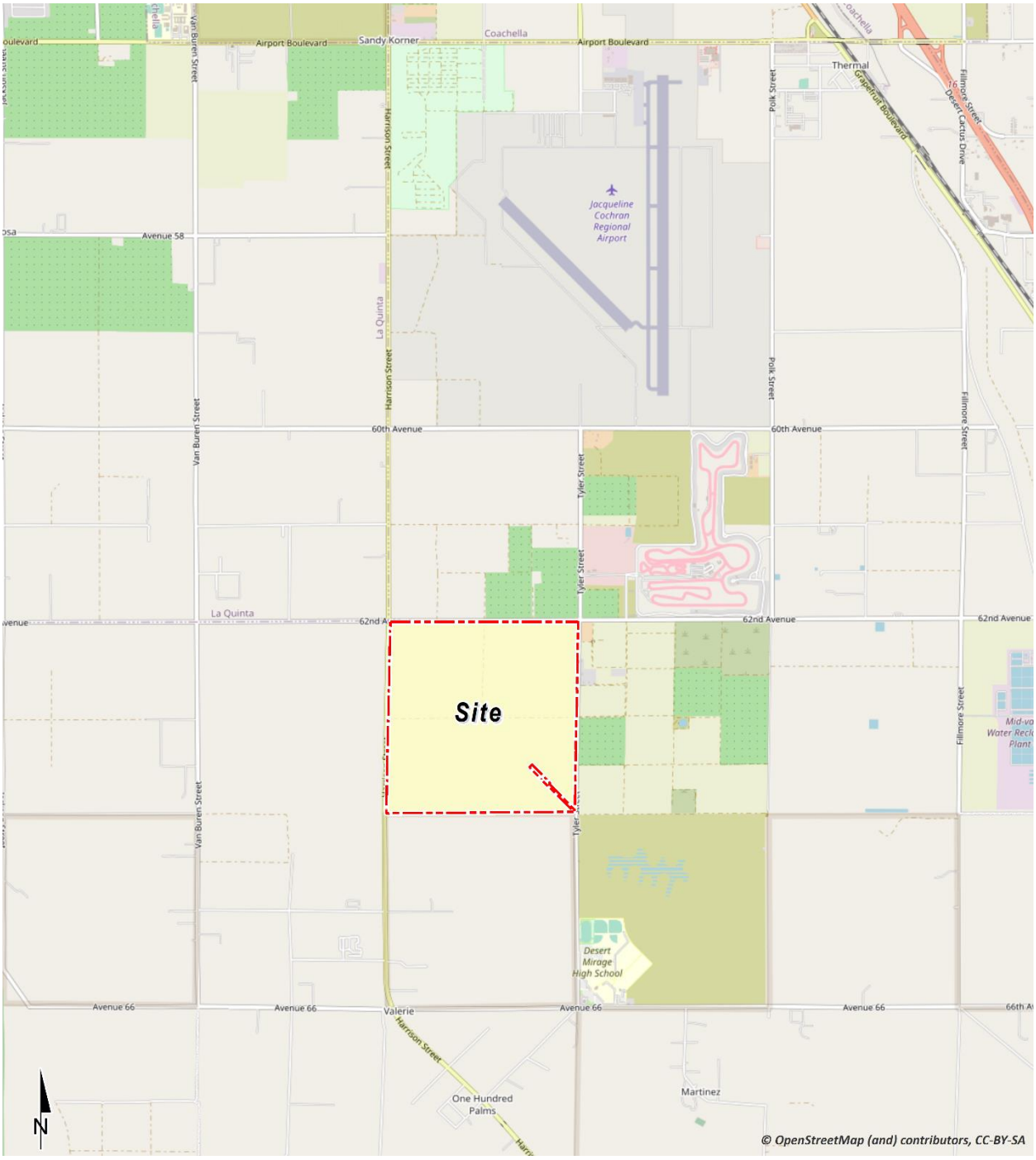
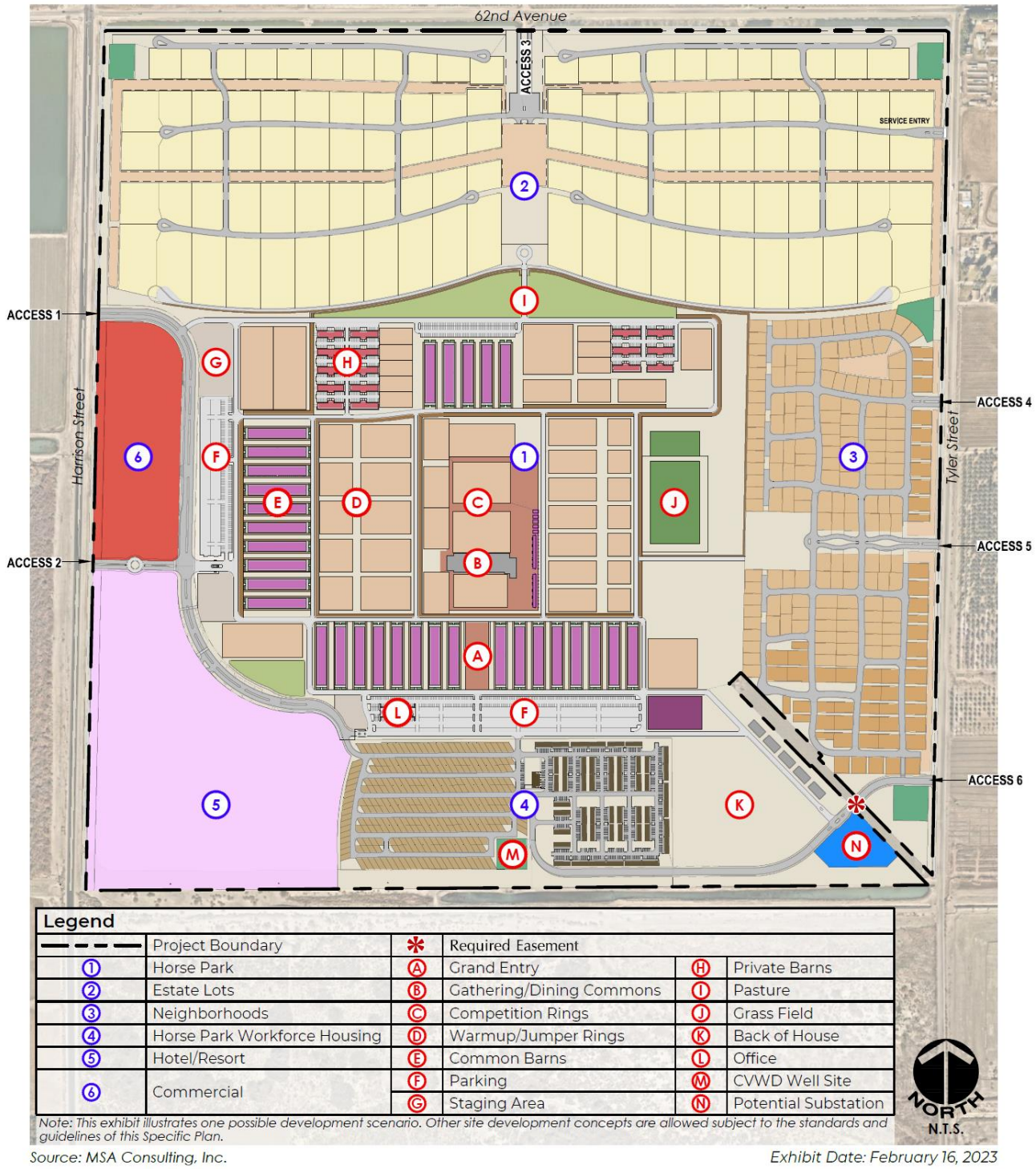


EXHIBIT 1-B: SITE PLAN

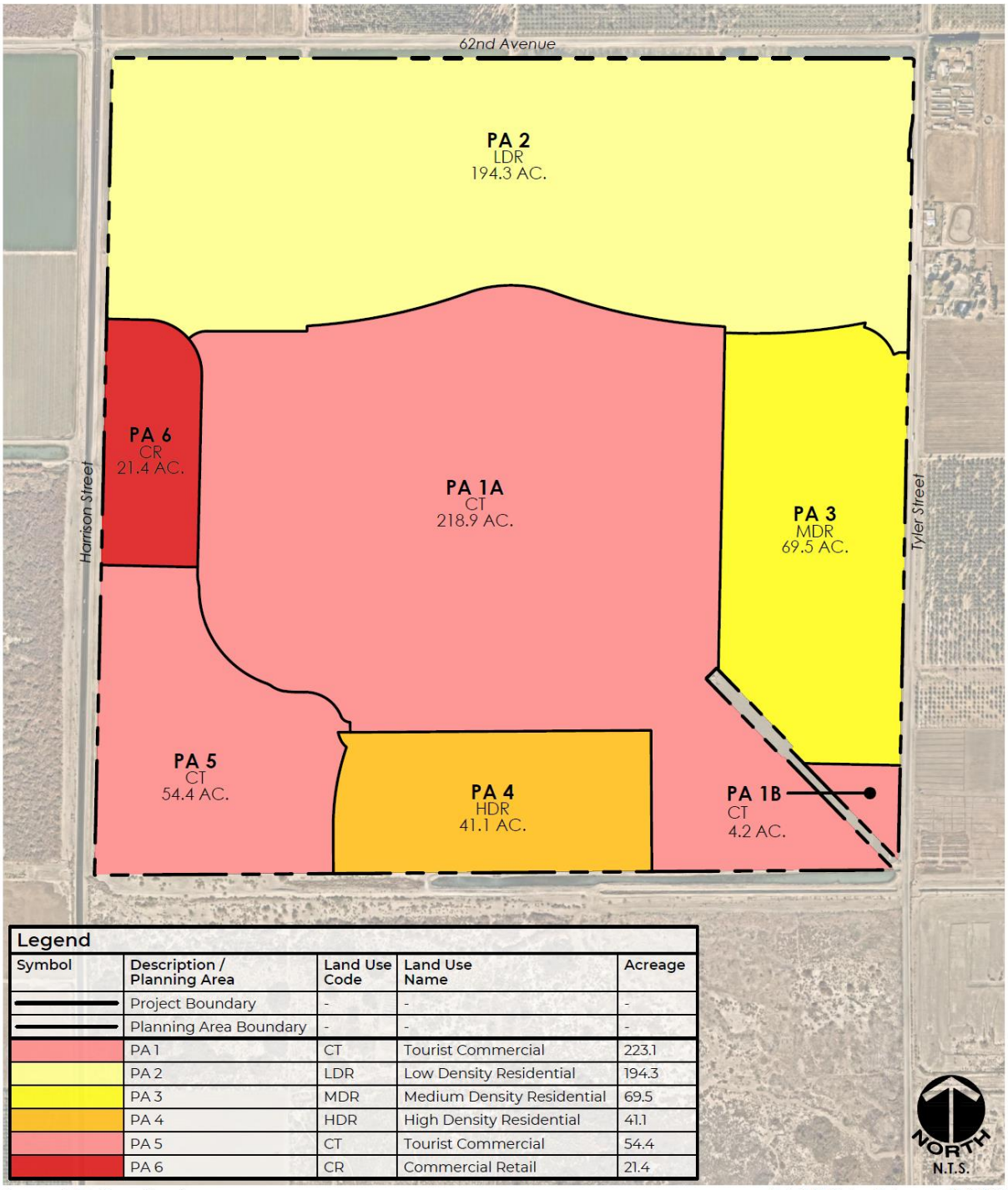


Note: This exhibit illustrates one possible development scenario. Other site development concepts are allowed subject to the standards and guidelines of this Specific Plan.

Source: MSA Consulting, Inc.

Exhibit Date: February 16, 2023

EXHIBIT 1-C: PROJECT PLANNING AREAS



Legend

Symbol	Description / Planning Area	Land Use Code	Land Use Name	Acreage
	Project Boundary	-	-	-
	Planning Area Boundary	-	-	-
	PA 1	CT	Tourist Commercial	223.1
	PA 2	LDR	Low Density Residential	194.3
	PA 3	MDR	Medium Density Residential	69.5
	PA 4	HDR	High Density Residential	41.1
	PA 5	CT	Tourist Commercial	54.4
	PA 6	CR	Commercial Retail	21.4

Source: MSA Consulting, Inc.

Exhibit Date: February 16, 2023

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 1,000 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 metric is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

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

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

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

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

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

2.6 LAND USE COMPATIBILITY WITH NOISE

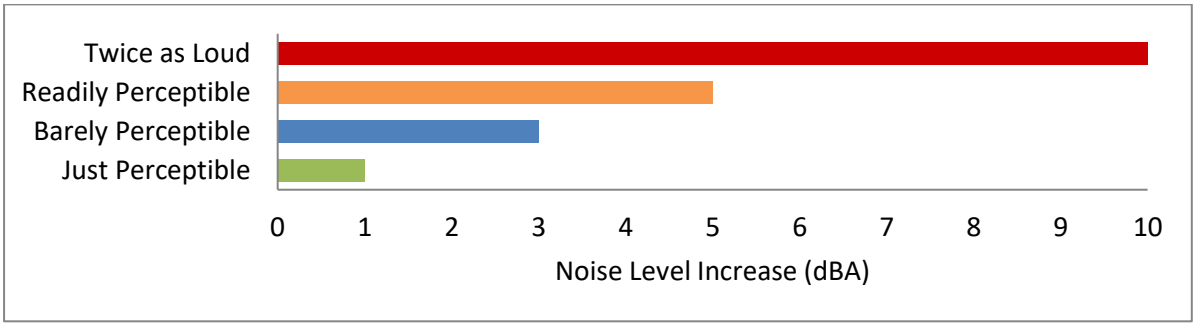
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (7)

2.7 COMMUNITY RESPONSE TO NOISE

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

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (9) According to research originally published in the Noise Effects Handbook (8), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



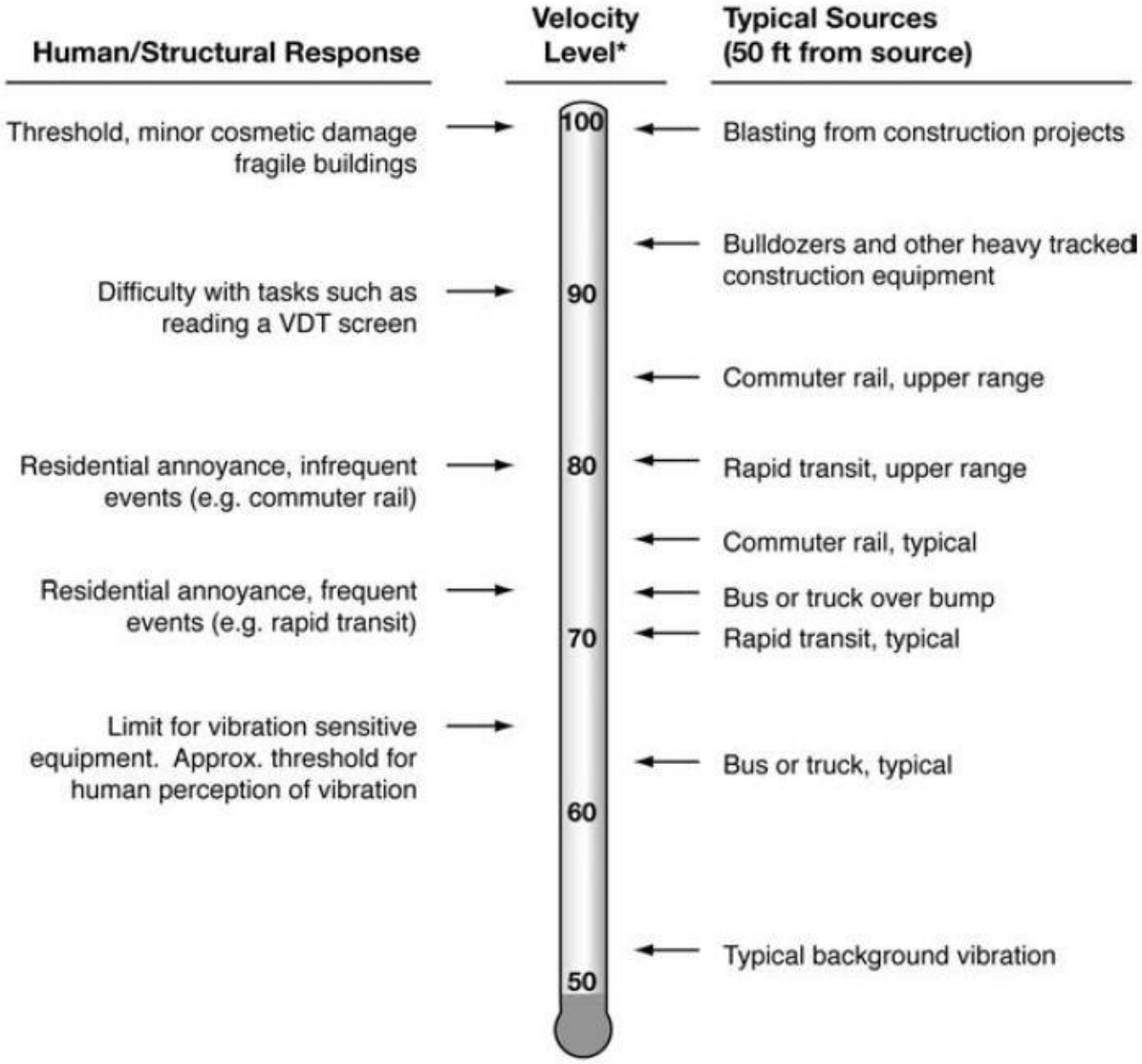
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (9) , vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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

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



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

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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

3.2 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the County of Riverside from excessive exposure to noise. (10) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

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

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

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

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

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

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

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

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

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

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

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

i. Temporary noise attenuation fences;

ii. Preferential location and equipment; and

iii. Use of current noise suppression technology and equipment.

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

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

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

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

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

3.2.1 LAND USE COMPATIBILITY GUIDELINES

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

The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. Based on the *Industrial, Manufacturing, Utilities, Agriculture* land use compatibility criteria shown on Exhibit 3-A, non-noise sensitive land use is considered *normally acceptable* with unmitigated exterior noise levels of less than 75 dBA CNEL. Noise sensitive residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. For *conditionally acceptable* exterior noise levels, of up to 80 dBA CNEL for Project land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice*. (10)

3.3.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

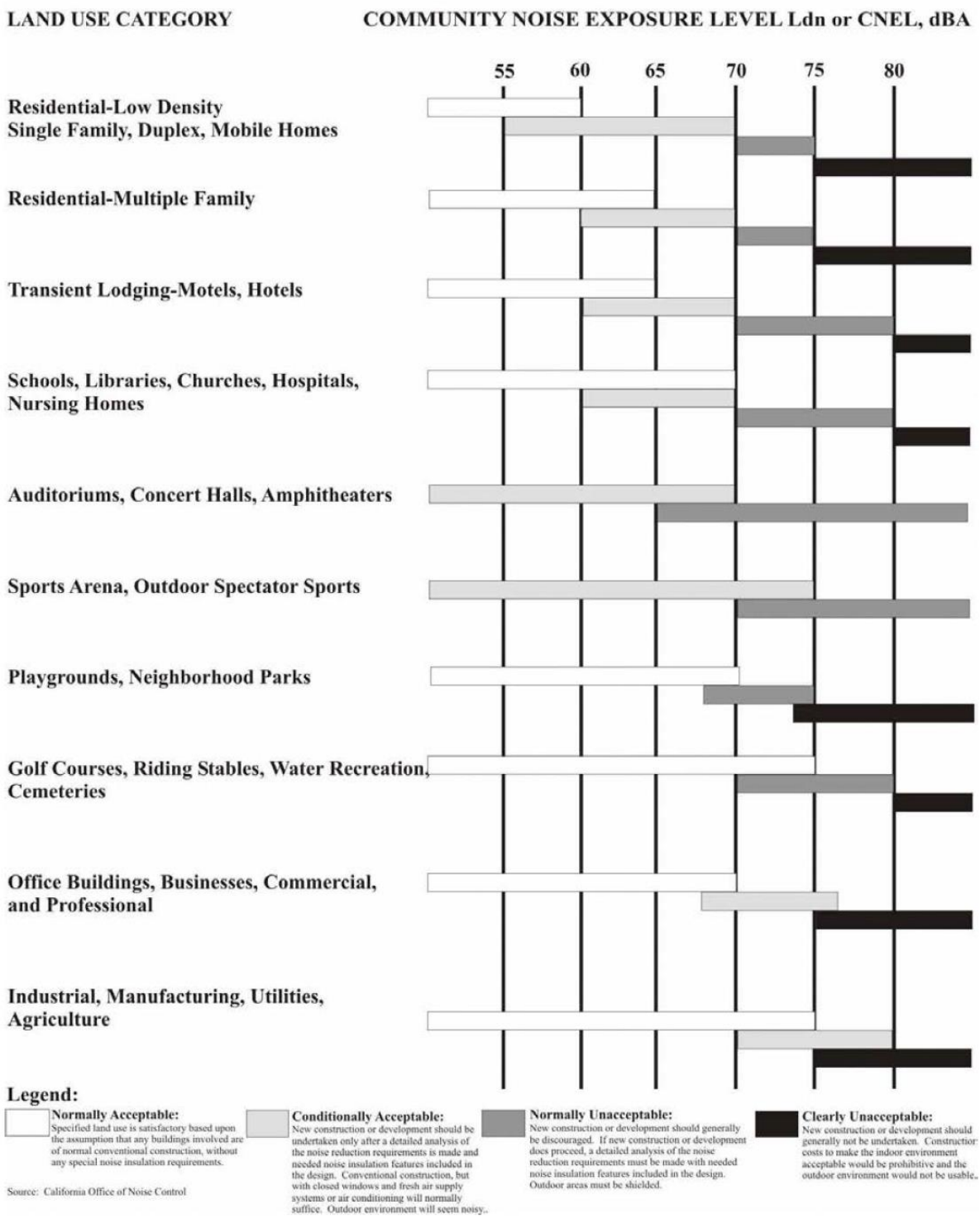
The County of Riverside has set stationary-source hourly average L_{eq} exterior noise limits to control horse park activities, public address speaker system, CVWD well site, IID substation, roof-top air conditioning units, trash enclosure activity, and parking lot activity associated with the development of the proposed Thermal Ranch Specific Plan. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library, or nursing home*, must not exceed the following worst-case noise levels.

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

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

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

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



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

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

3.3 CONSTRUCTION NOISE STANDARDS

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

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

3.4 CONSTRUCTION VIBRATION STANDARDS

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

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

3.5 JACQUELINE COCHRAN REGIONAL AIRPORT (JCRA)

The Jacqueline Cochran Regional Airport (JCRA) is located approximately 1.25 miles northeast of the Project Site. This puts the Project site within the JCRA Influence Area and is subject to the *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP). The RC ALUCP outlines policies for determining the land use compatibility planning in the vicinity of airports throughout Riverside County. According to Table 2B of the RC ALUCP *Supporting Compatibility Criteria: Noise* shown on Exhibit 3-B, the planned noise sensitive Project residential land use is considered *clearly acceptable* with exterior noise levels of 50-55 dBA CNEL, and *marginally acceptable* with exterior noise levels of 55-60 dBA CNEL. (14)

The noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Map JC-3 of the RC ALUCP. As shown on Exhibit 3-C, the entire Project site lies outside of the ultimate 55 dBA CNEL contour associated with buildout and full projected operations at the airport and is considered *normally acceptable.* Therefore, based on the RC ALUCP compatibility criteria, *the activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.*

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

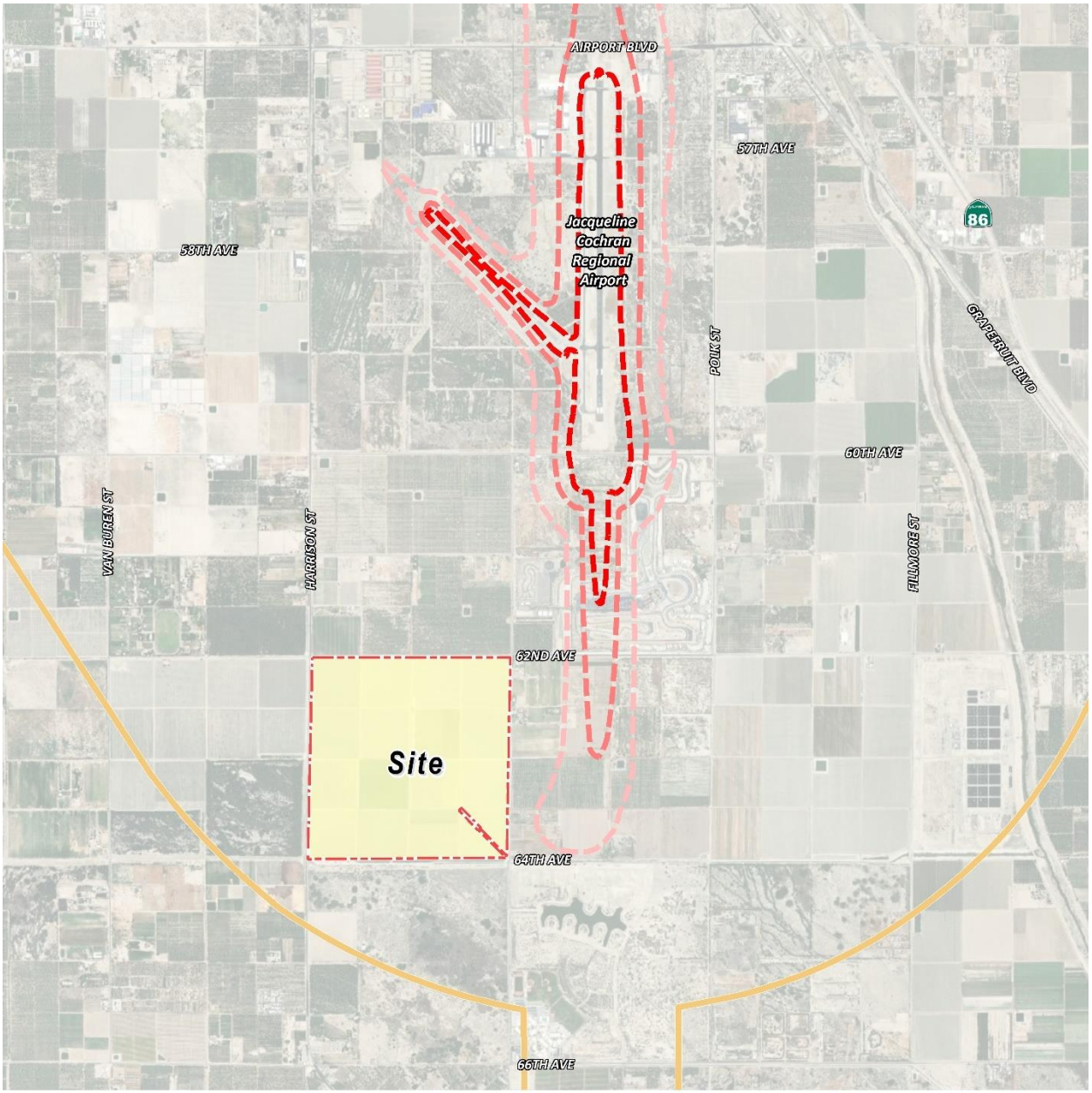
Land Use Category	CNEL (dB) 50–55	55–60	60–65	65–70	70–75
Residential *					
single-family, nursing homes, mobile homes	++	o	–	– –	– –
multi-family, apartments, condominiums	++	+	o	– –	– –
Public					
schools, libraries, hospitals	+	o	–	– –	– –
churches, auditoriums, concert halls	+	o	o	–	– –
transportation,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

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

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

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

EXHIBIT 3-C: JACQUELINE COCHRAN REGIONAL AIRPORT (JCRA)



Source: Riverside County Airport Land Use Compatibility Plan Policy Document (July 2010)

4 SIGNIFICANCE CRITERIA

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

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

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

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

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders a noise impact significant.* (14) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

4.1.1 NOISE-SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (15) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (14) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels

range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance at noise sensitive receiver locations are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (16 p. 2_48).

4.1.2 NON-NOISE-SENSITIVE RECEIVERS

The County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land uses is 75 dBA CNEL. Noise levels greater than 75 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Exposure*. (10)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 75 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure normally acceptable* 75 dBA CNEL exterior noise level criteria.

4.2 VIBRATION (THRESHOLD B)

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

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is the Jacqueline Cochran Regional Airport (JCRA) located approximately 1.2 miles northeast of the Project Site. As previously indicated in Section 3.5, the noise contour boundaries of JCRA are presented on Exhibit 3-C of this report shows that the Project's residential land uses are considered *clearly acceptable* since the development area is located outside the 55 dBA CNEL contour. Therefore, the Project impacts are considered *less than significant,* and no further noise analysis is provided under CEQA Significance Criteria C

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	If ambient is > 75 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive	Exterior Noise Level Standards[3]	55 dBA L_{eq}	45 dBA L_{eq}
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[4]	80 dBA L_{eq}	70 dBA L_{eq}
		Vibration Level Threshold[5]	0.3 PPV (in/sec)	

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

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at six locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, March 23, 2023. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (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*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

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

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

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the energy average hourly sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

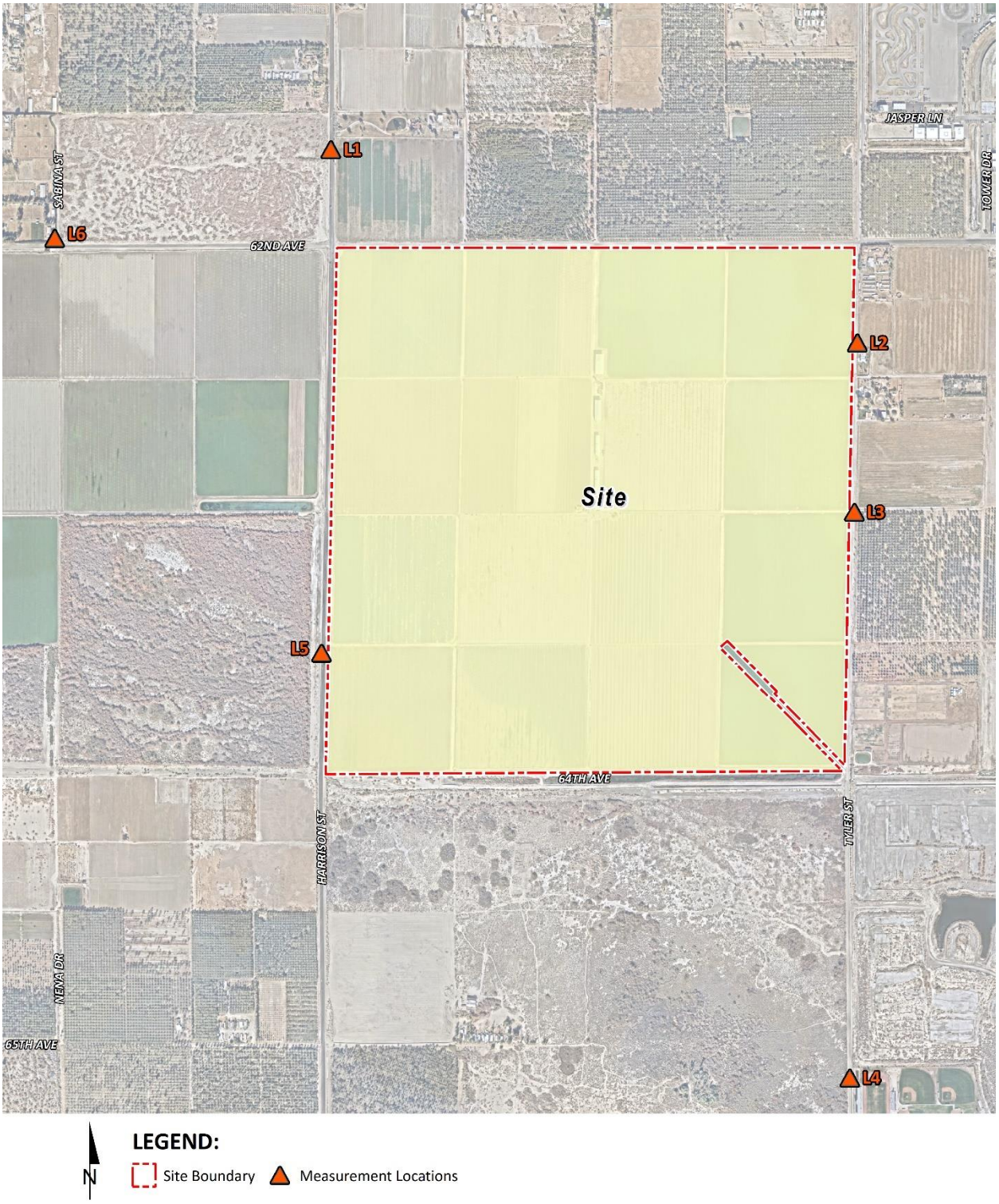
TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located northwest of the site near the residence at 61610 Harrison St.	62.7	61.1	68.1
L2	Located east of the site near the residence at 62800 Tyler St.	70.4	67.4	74.5
L3	Located east of the Project site south of the residence at 62800 Tyler St.	67.0	63.7	70.9
L4	Located southeast of the Project site near the Desert Mirage High School	64.7	61.7	68.8
L5	Located west of the Project site north of 64th Av.	66.2	66.3	72.9
L6	Located northwest of the Project site near the residence at 61855 Sabina St.	63.2	61.3	68.2

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

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

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with the County of Riverside *Land Use Compatibility* guidelines, 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. (20) 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. (21) 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. (22)

This methodology is consistent with the County of Riverside Office of Industrial Hygiene *Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures*, which specifically requires the FHWA RD-77-108 model to be used in analysis within the County's jurisdiction. (23)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 35 off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the County of Riverside General Plan Circulation Element, and the vehicle speeds.

- Existing (E)
- Existing plus Project (E+P) (2032)
- Existing plus Ambient Growth plus Cumulative (EAC) (2026) without Project Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2026) with Project Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2032) without Project Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2032) with Project Conditions
- Horizon Year (2045) without Project Conditions
- Horizon Year (2045) with Project Conditions

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Receiving Land Use[2]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Monroe St.	n/o 62nd Av.	Secondary	Sensitive	50'	50
2	Van Buren St.	n/o 62nd Av.	Major	Non-Sensitive	59'	50
3	Cesar Chavez St.	n/o 54th Av.	Expressway	Sensitive	110'	55
4	Harrison St.	n/o Airport Bl.	Expressway	Sensitive	110'	55
5	Harrison St.	n/o 58th Av.	Expressway	Sensitive	110'	55
6	Harrison St.	n/o 60th Av.	Expressway	Non-Sensitive	110'	55
7	Harrison St.	n/o 62nd Av.	Expressway	Non-Sensitive	110'	55
8	Harrison St.	s/o 62nd Av.	Expressway	Non-Sensitive	110'	55
9	Harrison St.	n/o 66th Av.	Expressway	Non-Sensitive	110'	55
10	Harrison St.	s/o 66th Av.	Arterial	Non-Sensitive	64'	50
11	Harrison St.	s/o Middleton St.	Urban Arterial	Non-Sensitive	76'	55
12	Harrison St.	s/o Desert Empire Homes	Urban Arterial	Sensitive	76'	55
13	Tyler St.	n/o 62nd Av.	Secondary	Non-Sensitive	50'	50
14	Tyler St.	s/o 62nd Av.	Secondary	Non-Sensitive	50'	50
15	Tyler St.	n/o 66th Av.	Secondary	Sensitive	50'	40
16	Polk St.	n/o 62nd Av.	Arterial	Non-Sensitive	64'	50
17	Pierce St.	s/o 66th Av.	Arterial	Non-Sensitive	64'	50
18	52nd Av.	e/o Cesar Chavez St.	Urban Arterial	Sensitive	76'	50
19	54th Av.	w/o Cesar Chavez St.	Urban Arterial	Non-Sensitive	76'	50
20	Airport Bl.	e/o Harrison St.	Urban Arterial	Non-Sensitive	76'	55
21	Airport Bl.	e/o Polk St.	Urban Arterial	Sensitive	76'	55
22	Airport Bl.	e/o Palm St.	Urban Arterial	Sensitive	76'	55
23	60th Av.	w/o Harrison St.	Arterial	Non-Sensitive	64'	50
24	62nd Av.	w/o Jackson St.	Expressway	Non-Sensitive	110'	55
25	62nd Av.	w/o Van Buren St.	Expressway	Non-Sensitive	110'	55
26	62nd Av.	w/o Harrison St.	Expressway	Non-Sensitive	110'	55
27	62nd Av.	e/o Harrison St.	Expressway	Non-Sensitive	110'	55
28	62nd Av.	w/o Tyler St.	Expressway	Non-Sensitive	110'	55
29	62nd Av.	e/o Tyler St.	Expressway	Non-Sensitive	110'	55
30	62nd Av.	e/o Polk St.	Expressway	Non-Sensitive	110'	55
31	62nd Av.	e/o Fillmore St.	Expressway	Non-Sensitive	110'	55
32	62nd Av.	e/o Pierce St.	Expressway	Non-Sensitive	110'	55
33	66th Av.	e/o Harrison St.	Urban Arterial	Non-Sensitive	76'	55
34	66th Av.	e/o Tyler St.	Urban Arterial	Sensitive	76'	55
35	66th Av.	e/o Pierce St.	Urban Arterial	Non-Sensitive	76'	55

[1] Thermal Ranch Specific Plan, Urban Crossroads, Inc.
[2] Based on a review of existing aerial imagery.
[3] Distance to receiving land use is based upon the right-of-way distances.

The ADT volumes used in this study area presented on Table 6-2 are based on the *Thermal Ranch Specific Plan Traffic Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios (22). The ADT volumes vary for each roadway segment based on the existing and future horizon year traffic volumes plus the project traffic volumes for each traffic scenario. The *General Plan Noise Element* (10) requires that future on-site traffic noise impacts be assessed using the maximum capacity design standard for highways and major roads. However, this analysis relies on a comparative analysis of the off-site traffic noise impacts, without and with project ADT traffic volumes from the Project traffic study. The use of the maximum capacity design standards is typically reserved for determining the future long-range on-site traffic noise impacts, not the comparative contributions associated with the off-site Project traffic noise level impacts.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]							
			Existing (2022)		EAC (2025)		EAC (2032)		HY (2045)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Monroe St.	n/o 62nd Av.	1,500	2,000	1,700	1,900	2,500	3,000	11,900	12,300
2	Van Buren St.	n/o 62nd Av.	1,400	1,900	1,700	1,900	4,900	5,400	10,700	11,200
3	Cesar Chavez St.	n/o 54th Av.	18,800	20,200	20,500	21,100	23,900	25,300	42,000	43,300
4	Harrison St.	n/o Airport Bl.	10,400	12,500	11,700	12,700	14,300	16,400	30,000	32,100
5	Harrison St.	n/o 58th Av.	8,300	12,900	9,500	11,700	11,900	16,500	27,700	32,300
6	Harrison St.	n/o 60th Av.	8,100	13,100	9,400	11,800	11,700	16,700	27,900	32,900
7	Harrison St.	n/o 62nd Av.	7,400	12,900	8,500	11,000	9,900	15,400	26,300	31,800
8	Harrison St.	s/o 62nd Av.	6,800	18,700	8,000	11,800	10,000	21,900	27,400	39,300
9	Harrison St.	n/o 66th Av.	7,500	9,500	8,700	9,000	10,000	12,000	28,400	30,400
10	Harrison St.	s/o 66th Av.	9,000	9,900	9,800	10,000	11,500	12,400	38,200	39,000
11	Harrison St.	s/o Middleton St.	10,000	10,700	11,100	11,400	13,400	14,100	36,600	37,300
12	Harrison St.	s/o Desert Empire Homes	6,900	7,500	7,700	8,000	9,600	10,200	31,900	32,400
13	Tyler St.	n/o 62nd Av.	600	1,100	1,000	1,300	1,100	1,600	1,700	2,200
14	Tyler St.	s/o 62nd Av.	2,500	6,000	2,900	7,100	3,200	6,700	4,300	7,700
15	Tyler St.	n/o 66th Av.	1,700	2,500	2,100	3,100	2,300	3,100	2,800	3,700
16	Polk St.	n/o 62nd Av.	1,400	2,500	2,500	3,100	4,800	5,900	22,400	23,400
17	Pierce St.	s/o 66th Av.	2,800	3,300	3,300	3,700	4,200	4,700	6,200	6,700
18	52nd Av.	e/o Cesar Chavez St.	11,300	11,700	12,100	12,300	13,700	14,100	21,700	22,100
19	54th Av.	w/o Cesar Chavez St.	6,100	6,500	6,600	6,800	7,700	8,100	14,000	14,400
20	Airport Bl.	e/o Harrison St.	7,900	11,700	16,300	18,100	21,300	25,100	43,600	47,400
21	Airport Bl.	e/o Polk St.	7,100	9,900	8,300	9,800	10,400	13,200	21,400	24,200
22	Airport Bl.	e/o Palm St.	7,500	10,100	8,500	9,900	10,400	13,000	24,500	27,100
23	60th Av.	w/o Harrison St.	500	1,000	1,300	1,500	2,400	2,900	12,500	13,000
24	62nd Av.	w/o Jackson St.	1,600	2,600	2,100	2,500	3,600	4,600	16,200	17,100
25	62nd Av.	w/o Van Buren St.	800	2,500	1,300	1,900	3,400	5,100	17,600	19,300
26	62nd Av.	w/o Harrison St.	900	3,300	1,300	2,200	3,400	5,800	20,400	22,800
27	62nd Av.	e/o Harrison St.	2,300	9,300	2,700	6,700	5,500	12,500	19,100	26,100

ID	Roadway	Segment	Average Daily Traffic Volumes[1]							
			Existing (2022)		EAC (2025)		EAC (2032)		HY (2045)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
28	62nd Av.	w/o Tyler St.	2,300	9,500	2,700	6,900	5,500	12,700	19,100	26,300
29	62nd Av.	e/o Tyler St.	2,400	10,100	2,900	8,100	5,800	13,500	19,400	27,100
30	62nd Av.	e/o Polk St.	1,300	8,000	2,100	6,700	4,800	11,500	24,800	31,500
31	62nd Av.	e/o Fillmore St.	1,600	7,900	5,300	9,700	6,200	12,500	23,200	29,500
32	62nd Av.	e/o Pierce St.	1,700	7,800	2,800	6,900	6,500	12,600	21,600	27,600
33	66th Av.	e/o Harrison St.	2,400	3,200	3,500	3,600	4,300	5,100	5,800	6,600
34	66th Av.	e/o Tyler St.	7,800	10,800	11,400	13,400	16,000	19,000	19,500	22,700
35	66th Av.	e/o Pierce St.	4,800	5,900	6,400	7,100	9,100	10,200	12,300	13,300

[1] Thermal Ranch Specific Plan Traffic Analysis, Urban Crossroads, Inc.

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. In addition, the off-site traffic noise analysis is based on a PM peak hour to average daily traffic (peak-to-daily) relationship of 7.8%. Tables 6-3 and 6-4 provide the time of day (daytime, evening, and nighttime) vehicle splits by roadway classification, and Table 6-5 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS (SECONDARY, COLLECTOR)

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	75.5%	48.9%	47.3%
Evening (7:00 p.m. - 10:00 p.m.)	14.0%	2.2%	5.4%
Nighttime (10:00 p.m. - 7:00 a.m.)	10.5%	48.9%	47.3%
Total:	100.0%	100.0%	100.0%

County of Riverside Office of Industrial Hygiene - Secondary, Collector

TABLE 6-4: TIME OF DAY VEHICLE SPLITS (MAJOR, ARTERIAL, URBAN ARTERIAL)

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	75.5%	48.0%	48.0%
Evening (7:00 p.m. - 10:00 p.m.)	14.0%	2.0%	2.0%
Nighttime (10:00 p.m. - 7:00 a.m.)	10.5%	50.0%	50.0%
Total:	100.0%	100.0%	100.0%

County of Riverside Office of Industrial Hygiene - Major, Arterial, Urban Arterial

TABLE 6-5: TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway[1]	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
Secondary, Collector	97.42%	1.84%	0.74%	100.00%
Expressway, Arterial, Major	92.00%	3.00%	5.00%	100.00%

[1] County of Riverside Office of Industrial Hygiene

6.1.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-6 presents the on-site roadway parameters including the ADT volumes used for this study. The on-site roadway parameters are based on the County of Riverside General Plan Circulation Element roadway classifications and consistent with the County of Riverside office of Industrial Hygiene Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures. (26)

The maximum two-way traffic volumes at a level of service C, shown on Table 6-6, were obtained from Figure C-3 of the 2008 County of Riverside General Plan Circulation Element (23) and reflect future long-range traffic conditions needed to assess the on-site traffic noise environment and to identify the appropriate noise mitigation measures that address the worst-case future noise conditions. Consistent with the County of Riverside Office of Industrial Hygiene noise study requirements, hard site conditions were used to analyze the potential on-site traffic noise impacts for the Project study area. (26) Hard site conditions account for the sound propagation loss over a reflective surface between the source and the receiver.

TABLE 6-6: ON-SITE ROADWAY PARAMETERS

Location	Roadway Segment	Classification[1]	Lanes	Average Daily Traffic Volume[2]	Speed Limit (mph)[2]	Site Conditions[2]
PA-2, 5, 6	Harrison St.	Expressway	6	65,400	40	Hard
PA-2, 3	Tyler St.	Secondary	4	20,700	40	Hard
PA-2	62nd Av.	Expressway	6	65,400	40	Hard
PA-4	64th Av.	Major	4	27,300	40	Hard

[1] Road classifications based upon the County of Riverside General Plan Circulation Element.
[2] County of Riverside Office of Industrial Hygiene Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

As described in Section 4.1, the off-site traffic noise impacts are evaluated based on noise level increases resulting from the Project. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *the Thermal Ranch Specific Plan Traffic Analysis* prepared by Urban Crossroads, Inc. (22) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at receiving 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.

Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios. Tables 7-1 through 7-8 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation.

TABLE 7-1: EXISTING 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	Monroe St.	n/o 62nd Av.	Sensitive	61.7	RW	RW	65
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	60.5	RW	RW	64
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	68.9	RW	200	430
4	Harrison St.	n/o Airport Bl.	Sensitive	66.3	RW	135	290
5	Harrison St.	n/o 58th Av.	Sensitive	65.3	RW	116	249
6	Harrison St.	n/o 60th Av.	Non-Sensitive	65.2	RW	114	245
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	64.8	RW	RW	231
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	64.5	RW	RW	218
9	Harrison St.	n/o 66th Av.	Non-Sensitive	64.9	RW	RW	233
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.2	RW	104	225
11	Harrison St.	s/o Middleton St.	Non-Sensitive	68.8	RW	135	291
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.1	RW	106	227
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	57.7	RW	RW	RW
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	63.9	RW	RW	91
15	Tyler St.	n/o 66th Av.	Sensitive	60.0	RW	RW	50
16	Polk St.	n/o 62nd Av.	Non-Sensitive	60.1	RW	RW	65
17	Pierce St.	s/o 66th Av.	Non-Sensitive	63.1	RW	RW	103
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.3	RW	126	272
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	65.6	RW	84	180
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	67.7	RW	115	249
21	Airport Bl.	e/o Polk St.	Sensitive	67.3	RW	108	232
22	Airport Bl.	e/o Palm St.	Sensitive	67.5	RW	112	240
23	60th Av.	w/o Harrison St.	Non-Sensitive	55.6	RW	RW	RW
24	62nd Av.	w/o Jackson St.	Non-Sensitive	58.2	RW	RW	RW
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	55.2	RW	RW	RW
26	62nd Av.	w/o Harrison St.	Non-Sensitive	55.7	RW	RW	RW
27	62nd Av.	e/o Harrison St.	Non-Sensitive	59.8	RW	RW	RW
28	62nd Av.	w/o Tyler St.	Non-Sensitive	59.8	RW	RW	RW
29	62nd Av.	e/o Tyler St.	Non-Sensitive	59.9	RW	RW	RW
30	62nd Av.	e/o Polk St.	Non-Sensitive	57.3	RW	RW	RW
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	58.2	RW	RW	RW
32	62nd Av.	e/o Pierce St.	Non-Sensitive	58.4	RW	RW	RW
33	66th Av.	e/o Harrison St.	Non-Sensitive	62.6	RW	RW	112
34	66th Av.	e/o Tyler St.	Sensitive	67.7	RW	115	247
35	66th Av.	e/o Pierce St.	Non-Sensitive	65.6	RW	83	179

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING PLUS PROJECT (2032) 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	Monroe St.	n/o 62nd Av.	Sensitive	63.0	RW	RW	79
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	61.8	RW	RW	78
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.2	RW	209	451
4	Harrison St.	n/o Airport Bl.	Sensitive	67.1	RW	152	328
5	Harrison St.	n/o 58th Av.	Sensitive	67.2	RW	155	335
6	Harrison St.	n/o 60th Av.	Non-Sensitive	67.3	RW	157	338
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	67.2	RW	155	335
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	68.9	RW	199	429
9	Harrison St.	n/o 66th Av.	Non-Sensitive	65.9	RW	127	273
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.6	RW	111	240
11	Harrison St.	s/o Middleton St.	Non-Sensitive	69.0	RW	141	305
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.5	RW	112	240
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.4	RW	RW	53
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	67.7	RW	76	164
15	Tyler St.	n/o 66th Av.	Sensitive	61.7	RW	RW	65
16	Polk St.	n/o 62nd Av.	Non-Sensitive	62.6	RW	RW	96
17	Pierce St.	s/o 66th Av.	Non-Sensitive	63.8	RW	RW	115
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.5	RW	129	279
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	65.9	RW	87	188
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	69.4	RW	150	323
21	Airport Bl.	e/o Polk St.	Sensitive	68.7	RW	134	289
22	Airport Bl.	e/o Palm St.	Sensitive	68.8	RW	136	293
23	60th Av.	w/o Harrison St.	Non-Sensitive	58.7	RW	RW	RW
24	62nd Av.	w/o Jackson St.	Non-Sensitive	60.3	RW	RW	115
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	60.1	RW	RW	112
26	62nd Av.	w/o Harrison St.	Non-Sensitive	61.3	RW	RW	135
27	62nd Av.	e/o Harrison St.	Non-Sensitive	65.8	RW	125	269
28	62nd Av.	w/o Tyler St.	Non-Sensitive	65.9	RW	127	273
29	62nd Av.	e/o Tyler St.	Non-Sensitive	66.2	RW	132	284
30	62nd Av.	e/o Polk St.	Non-Sensitive	65.2	RW	113	243
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	65.1	RW	112	241
32	62nd Av.	e/o Pierce St.	Non-Sensitive	65.1	RW	111	239
33	66th Av.	e/o Harrison St.	Non-Sensitive	63.8	RW	RW	136
34	66th Av.	e/o Tyler St.	Sensitive	69.1	RW	142	307
35	66th Av.	e/o Pierce St.	Non-Sensitive	66.5	RW	95	205

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-3: EAC (2026) WITHOUT PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	62.3	RW	RW	71
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	61.3	RW	RW	72
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.3	RW	212	456
4	Harrison St.	n/o Airport Bl.	Sensitive	66.8	RW	146	314
5	Harrison St.	n/o 58th Av.	Sensitive	65.9	RW	127	273
6	Harrison St.	n/o 60th Av.	Non-Sensitive	65.9	RW	126	271
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	65.4	RW	118	253
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	65.2	RW	113	243
9	Harrison St.	n/o 66th Av.	Non-Sensitive	65.5	RW	119	257
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.6	RW	111	238
11	Harrison St.	s/o Middleton St.	Non-Sensitive	69.2	RW	145	312
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.6	RW	114	245
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.0	RW	RW	50
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	64.6	RW	RW	101
15	Tyler St.	n/o 66th Av.	Sensitive	61.0	RW	RW	58
16	Polk St.	n/o 62nd Av.	Non-Sensitive	62.6	RW	RW	96
17	Pierce St.	s/o 66th Av.	Non-Sensitive	63.8	RW	RW	115
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.6	RW	132	285
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.0	RW	88	190
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	70.9	87	187	403
21	Airport Bl.	e/o Polk St.	Sensitive	67.9	RW	119	257
22	Airport Bl.	e/o Palm St.	Sensitive	68.0	RW	121	261
23	60th Av.	w/o Harrison St.	Non-Sensitive	59.8	RW	RW	RW
24	62nd Av.	w/o Jackson St.	Non-Sensitive	59.4	RW	RW	RW
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	57.3	RW	RW	RW
26	62nd Av.	w/o Harrison St.	Non-Sensitive	57.3	RW	RW	RW
27	62nd Av.	e/o Harrison St.	Non-Sensitive	60.5	RW	RW	118
28	62nd Av.	w/o Tyler St.	Non-Sensitive	60.5	RW	RW	118
29	62nd Av.	e/o Tyler St.	Non-Sensitive	60.8	RW	RW	124
30	62nd Av.	e/o Polk St.	Non-Sensitive	59.4	RW	RW	RW
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	63.4	RW	RW	185
32	62nd Av.	e/o Pierce St.	Non-Sensitive	60.6	RW	RW	121
33	66th Av.	e/o Harrison St.	Non-Sensitive	64.2	RW	RW	145
34	66th Av.	e/o Tyler St.	Sensitive	69.3	RW	147	318
35	66th Av.	e/o Pierce St.	Non-Sensitive	66.8	RW	100	216

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-4: EAPC (2026) WITH PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	62.7	RW	RW	76
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	61.8	RW	RW	78
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.4	RW	216	465
4	Harrison St.	n/o Airport Bl.	Sensitive	67.2	RW	154	331
5	Harrison St.	n/o 58th Av.	Sensitive	66.8	RW	146	314
6	Harrison St.	n/o 60th Av.	Non-Sensitive	66.9	RW	146	315
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	66.6	RW	140	301
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	66.9	RW	146	315
9	Harrison St.	n/o 66th Av.	Non-Sensitive	65.7	RW	122	263
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.7	RW	112	241
11	Harrison St.	s/o Middleton St.	Non-Sensitive	69.3	RW	147	318
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.8	RW	116	251
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	61.1	RW	RW	59
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	68.5	RW	85	183
15	Tyler St.	n/o 66th Av.	Sensitive	62.6	RW	RW	75
16	Polk St.	n/o 62nd Av.	Non-Sensitive	63.6	RW	RW	111
17	Pierce St.	s/o 66th Av.	Non-Sensitive	64.3	RW	RW	124
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.7	RW	134	288
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.1	RW	90	194
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	71.3	93	201	432
21	Airport Bl.	e/o Polk St.	Sensitive	68.7	RW	133	287
22	Airport Bl.	e/o Palm St.	Sensitive	68.7	RW	134	289
23	60th Av.	w/o Harrison St.	Non-Sensitive	60.4	RW	RW	68
24	62nd Av.	w/o Jackson St.	Non-Sensitive	60.1	RW	RW	112
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	58.9	RW	RW	RW
26	62nd Av.	w/o Harrison St.	Non-Sensitive	59.6	RW	RW	RW
27	62nd Av.	e/o Harrison St.	Non-Sensitive	64.4	RW	RW	216
28	62nd Av.	w/o Tyler St.	Non-Sensitive	64.5	RW	RW	220
29	62nd Av.	e/o Tyler St.	Non-Sensitive	65.2	RW	114	245
30	62nd Av.	e/o Polk St.	Non-Sensitive	64.4	RW	RW	216
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	66.0	RW	128	277
32	62nd Av.	e/o Pierce St.	Non-Sensitive	64.5	RW	RW	220
33	66th Av.	e/o Harrison St.	Non-Sensitive	64.3	RW	RW	147
34	66th Av.	e/o Tyler St.	Sensitive	70.0	76	164	354
35	66th Av.	e/o Pierce St.	Non-Sensitive	67.3	RW	108	232

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-5: EAC (2032) WITHOUT PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	63.9	RW	RW	91
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	65.9	RW	68	146
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.9	RW	234	505
4	Harrison St.	n/o Airport Bl.	Sensitive	67.7	RW	166	358
5	Harrison St.	n/o 58th Av.	Sensitive	66.9	RW	147	317
6	Harrison St.	n/o 60th Av.	Non-Sensitive	66.8	RW	146	314
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	66.1	RW	130	280
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	66.1	RW	131	282
9	Harrison St.	n/o 66th Av.	Non-Sensitive	66.1	RW	131	282
10	Harrison St.	s/o 66th Av.	Non-Sensitive	69.3	RW	123	265
11	Harrison St.	s/o Middleton St.	Non-Sensitive	70.0	76	164	354
12	Harrison St.	s/o Desert Empire Homes	Sensitive	68.6	RW	132	283
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.4	RW	RW	53
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	65.0	RW	50	108
15	Tyler St.	n/o 66th Av.	Sensitive	61.4	RW	RW	62
16	Polk St.	n/o 62nd Av.	Non-Sensitive	65.5	RW	69	148
17	Pierce St.	s/o 66th Av.	Non-Sensitive	64.9	RW	RW	135
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	69.1	RW	144	310
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.6	RW	98	211
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	72.0	104	224	482
21	Airport Bl.	e/o Polk St.	Sensitive	68.9	RW	139	299
22	Airport Bl.	e/o Palm St.	Sensitive	68.9	RW	139	299
23	60th Av.	w/o Harrison St.	Non-Sensitive	62.5	RW	RW	93
24	62nd Av.	w/o Jackson St.	Non-Sensitive	61.7	RW	RW	143
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	61.5	RW	RW	138
26	62nd Av.	w/o Harrison St.	Non-Sensitive	61.5	RW	RW	138
27	62nd Av.	e/o Harrison St.	Non-Sensitive	63.5	RW	RW	190
28	62nd Av.	w/o Tyler St.	Non-Sensitive	63.5	RW	RW	190
29	62nd Av.	e/o Tyler St.	Non-Sensitive	63.8	RW	RW	196
30	62nd Av.	e/o Polk St.	Non-Sensitive	63.0	RW	RW	173
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	64.1	RW	RW	205
32	62nd Av.	e/o Pierce St.	Non-Sensitive	64.3	RW	RW	212
33	66th Av.	e/o Harrison St.	Non-Sensitive	65.1	RW	77	166
34	66th Av.	e/o Tyler St.	Sensitive	70.8	86	185	398
35	66th Av.	e/o Pierce St.	Non-Sensitive	68.3	RW	127	273

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-6: EAC (2032) WITH PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	64.7	RW	RW	103
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	66.3	RW	73	156
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	70.2	113	243	524
4	Harrison St.	n/o Airport Bl.	Sensitive	68.3	RW	182	393
5	Harrison St.	n/o 58th Av.	Sensitive	68.3	RW	183	394
6	Harrison St.	n/o 60th Av.	Non-Sensitive	68.4	RW	184	397
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	68.0	RW	175	377
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	69.5	RW	221	476
9	Harrison St.	n/o 66th Av.	Non-Sensitive	66.9	RW	148	319
10	Harrison St.	s/o 66th Av.	Non-Sensitive	69.6	RW	129	279
11	Harrison St.	s/o Middleton St.	Non-Sensitive	70.2	79	170	366
12	Harrison St.	s/o Desert Empire Homes	Sensitive	68.8	RW	137	295
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	62.0	RW	RW	68
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	68.2	RW	82	176
15	Tyler St.	n/o 66th Av.	Sensitive	62.6	RW	RW	75
16	Polk St.	n/o 62nd Av.	Non-Sensitive	66.4	RW	79	170
17	Pierce St.	s/o 66th Av.	Non-Sensitive	65.4	RW	68	146
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	69.3	RW	146	316
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.9	RW	101	218
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	72.7	116	250	538
21	Airport Bl.	e/o Polk St.	Sensitive	70.0	RW	163	350
22	Airport Bl.	e/o Palm St.	Sensitive	69.9	RW	161	347
23	60th Av.	w/o Harrison St.	Non-Sensitive	63.3	RW	RW	106
24	62nd Av.	w/o Jackson St.	Non-Sensitive	62.8	RW	RW	168
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	63.2	RW	RW	180
26	62nd Av.	w/o Harrison St.	Non-Sensitive	63.8	RW	RW	196
27	62nd Av.	e/o Harrison St.	Non-Sensitive	67.1	RW	152	328
28	62nd Av.	w/o Tyler St.	Non-Sensitive	67.2	RW	154	331
29	62nd Av.	e/o Tyler St.	Non-Sensitive	67.4	RW	160	345
30	62nd Av.	e/o Polk St.	Non-Sensitive	66.7	RW	144	310
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	67.1	RW	152	328
32	62nd Av.	e/o Pierce St.	Non-Sensitive	67.1	RW	153	329
33	66th Av.	e/o Harrison St.	Non-Sensitive	65.8	RW	86	186
34	66th Av.	e/o Tyler St.	Sensitive	71.5	96	207	447
35	66th Av.	e/o Pierce St.	Non-Sensitive	68.8	RW	137	295

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-7: HY (2045) WITHOUT PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	70.7	56	120	259
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	69.3	RW	114	246
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	72.4	158	341	735
4	Harrison St.	n/o Airport Bl.	Sensitive	70.9	127	273	587
5	Harrison St.	n/o 58th Av.	Sensitive	70.6	120	259	557
6	Harrison St.	n/o 60th Av.	Non-Sensitive	70.6	121	260	560
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	70.3	116	250	538
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	70.5	119	257	553
9	Harrison St.	n/o 66th Av.	Non-Sensitive	70.7	122	263	566
10	Harrison St.	s/o 66th Av.	Non-Sensitive	74.5	127	274	590
11	Harrison St.	s/o Middleton St.	Non-Sensitive	74.4	149	321	692
12	Harrison St.	s/o Desert Empire Homes	Sensitive	73.8	136	293	631
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	62.3	RW	RW	71
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	66.3	RW	61	131
15	Tyler St.	n/o 66th Av.	Sensitive	62.2	RW	RW	70
16	Polk St.	n/o 62nd Av.	Non-Sensitive	72.2	89	192	413
17	Pierce St.	s/o 66th Av.	Non-Sensitive	66.6	RW	81	176
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	71.1	91	195	421
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	69.2	RW	146	314
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	75.1	167	361	777
21	Airport Bl.	e/o Polk St.	Sensitive	72.1	104	224	484
22	Airport Bl.	e/o Palm St.	Sensitive	72.6	114	246	529
23	60th Av.	w/o Harrison St.	Non-Sensitive	69.6	RW	130	280
24	62nd Av.	w/o Jackson St.	Non-Sensitive	68.2	RW	181	389
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	68.6	RW	191	412
26	62nd Av.	w/o Harrison St.	Non-Sensitive	69.2	RW	211	454
27	62nd Av.	e/o Harrison St.	Non-Sensitive	69.0	RW	202	435
28	62nd Av.	w/o Tyler St.	Non-Sensitive	69.0	RW	202	435
29	62nd Av.	e/o Tyler St.	Non-Sensitive	69.0	RW	204	439
30	62nd Av.	e/o Polk St.	Non-Sensitive	70.1	111	240	517
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	69.8	RW	230	495
32	62nd Av.	e/o Pierce St.	Non-Sensitive	69.5	RW	219	472
33	66th Av.	e/o Harrison St.	Non-Sensitive	66.4	RW	94	203
34	66th Av.	e/o Tyler St.	Sensitive	71.7	98	211	454
35	66th Av.	e/o Pierce St.	Non-Sensitive	69.6	RW	155	334

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

TABLE 7-8: HY (2045) WITH PROJECT 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	Monroe St.	n/o 62nd Av.	Sensitive	70.9	57	123	265
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	69.5	RW	118	254
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	72.5	162	348	750
4	Harrison St.	n/o Airport Bl.	Sensitive	71.2	132	285	614
5	Harrison St.	n/o 58th Av.	Sensitive	71.2	133	286	617
6	Harrison St.	n/o 60th Av.	Non-Sensitive	71.3	135	290	625
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	71.2	132	283	611
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	72.1	151	326	703
9	Harrison St.	n/o 66th Av.	Non-Sensitive	71.0	128	275	593
10	Harrison St.	s/o 66th Av.	Non-Sensitive	74.6	129	278	598
11	Harrison St.	s/o Middleton St.	Non-Sensitive	74.5	151	325	700
12	Harrison St.	s/o Desert Empire Homes	Sensitive	73.9	137	296	638
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	63.4	RW	RW	84
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	68.8	RW	90	194
15	Tyler St.	n/o 66th Av.	Sensitive	63.4	RW	RW	84
16	Polk St.	n/o 62nd Av.	Non-Sensitive	72.3	92	198	426
17	Pierce St.	s/o 66th Av.	Non-Sensitive	66.9	RW	86	185
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	71.2	92	198	426
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	69.4	RW	149	320
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	75.5	177	381	822
21	Airport Bl.	e/o Polk St.	Sensitive	72.6	113	244	525
22	Airport Bl.	e/o Palm St.	Sensitive	73.1	122	263	566
23	60th Av.	w/o Harrison St.	Non-Sensitive	69.8	RW	134	288
24	62nd Av.	w/o Jackson St.	Non-Sensitive	68.5	RW	187	404
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	69.0	RW	203	438
26	62nd Av.	w/o Harrison St.	Non-Sensitive	69.7	RW	227	489
27	62nd Av.	e/o Harrison St.	Non-Sensitive	70.3	115	248	535
28	62nd Av.	w/o Tyler St.	Non-Sensitive	70.3	116	250	538
29	62nd Av.	e/o Tyler St.	Non-Sensitive	70.5	118	255	549
30	62nd Av.	e/o Polk St.	Non-Sensitive	71.1	131	282	607
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	70.8	125	270	581
32	62nd Av.	e/o Pierce St.	Non-Sensitive	70.6	120	258	556
33	66th Av.	e/o Harrison St.	Non-Sensitive	66.9	RW	102	221
34	66th Av.	e/o Tyler St.	Sensitive	72.3	108	233	503
35	66th Av.	e/o Pierce St.	Non-Sensitive	70.0	76	163	352

[1] Based on a review of existing aerial imagery.

[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

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

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2032 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 55.2 to 68.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project (2032) conditions ranging from 58.7 to 69.4 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level increases range from 0.2 to 7.9 dBA CNEL on the study area roadway segments.

Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments are shown to experience *potentially significant* off-site traffic noise level increases due to the theoretical Existing with Project (2032) conditions. The one segment is listed below.

- Harrison Street north of 58th Avenue (Segment #5).

TABLE 7-9: EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Monroe St.	n/o 62nd Av.	Sensitive	61.7	63.0	1.3	3.0	No
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	60.5	61.8	1.3	n/a	No
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	68.9	69.2	0.3	1.5	No
4	Harrison St.	n/o Airport Bl.	Sensitive	66.3	67.1	0.8	1.5	No
5	Harrison St.	n/o 58th Av.	Sensitive	65.3	67.2	1.9	1.5	**Yes**
6	Harrison St.	n/o 60th Av.	Non-Sensitive	65.2	67.3	2.1	n/a	No
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	64.8	67.2	2.4	n/a	No
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	64.5	68.9	4.4	n/a	No
9	Harrison St.	n/o 66th Av.	Non-Sensitive	64.9	65.9	1.0	n/a	No
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.2	68.6	0.4	n/a	No
11	Harrison St.	s/o Middleton St.	Non-Sensitive	68.8	69.0	0.2	n/a	No
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.1	67.5	0.4	1.5	No
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	57.7	60.4	2.7	n/a	No
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	63.9	67.7	3.8	n/a	No
15	Tyler St.	n/o 66th Av.	Sensitive	60.0	61.7	1.7	3.0	No
16	Polk St.	n/o 62nd Av.	Non-Sensitive	60.1	62.6	2.5	n/a	No
17	Pierce St.	s/o 66th Av.	Non-Sensitive	63.1	63.8	0.7	n/a	No
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.3	68.5	0.2	1.5	No
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	65.6	65.9	0.3	n/a	No
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	67.7	69.4	1.7	n/a	No
21	Airport Bl.	e/o Polk St.	Sensitive	67.3	68.7	1.4	1.5	No
22	Airport Bl.	e/o Palm St.	Sensitive	67.5	68.8	1.3	1.5	No
23	60th Av.	w/o Harrison St.	Non-Sensitive	55.6	58.7	3.1	n/a	No
24	62nd Av.	w/o Jackson St.	Non-Sensitive	58.2	60.3	2.1	n/a	No
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	55.2	60.1	4.9	n/a	No
26	62nd Av.	w/o Harrison St.	Non-Sensitive	55.7	61.3	5.6	n/a	No
27	62nd Av.	e/o Harrison St.	Non-Sensitive	59.8	65.8	6.0	n/a	No
28	62nd Av.	w/o Tyler St.	Non-Sensitive	59.8	65.9	6.1	n/a	No
29	62nd Av.	e/o Tyler St.	Non-Sensitive	59.9	66.2	6.3	n/a	No
30	62nd Av.	e/o Polk St.	Non-Sensitive	57.3	65.2	7.9	n/a	No
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	58.2	65.1	6.9	n/a	No
32	62nd Av.	e/o Pierce St.	Non-Sensitive	58.4	65.1	6.7	n/a	No
33	66th Av.	e/o Harrison St.	Non-Sensitive	62.6	63.8	1.2	n/a	No
34	66th Av.	e/o Tyler St.	Sensitive	67.7	69.1	1.4	1.5	No
35	66th Av.	e/o Pierce St.	Non-Sensitive	65.6	66.5	0.9	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing 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)?
"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 75 dBA CNEL land use compatibility criteria.

7.3 EAC (2026) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Existing plus Ambient Growth Plus Cumulative (EAC) (2026) without Project conditions CNEL noise levels. The EAC (2026) without Project exterior noise levels range from 57.3 to 70.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the EAC (2026) with Project conditions will range from 58.9 to 71.3 dBA CNEL. Table 7-10 shows that the EAC (2026) Project off-site traffic noise level increases range from 0.1 to 5.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to all the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the EAC (2026) Project-related traffic.

TABLE 7-10: EAC (2026) PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Monroe St.	n/o 62nd Av.	Sensitive	62.3	62.7	0.4	3.0	No
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	61.3	61.8	0.5	n/a	No
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.3	69.4	0.1	1.5	No
4	Harrison St.	n/o Airport Bl.	Sensitive	66.8	67.2	0.4	1.5	No
5	Harrison St.	n/o 58th Av.	Sensitive	65.9	66.8	0.9	1.5	No
6	Harrison St.	n/o 60th Av.	Non-Sensitive	65.9	66.9	1.0	n/a	No
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	65.4	66.6	1.2	n/a	No
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	65.2	66.9	1.7	n/a	No
9	Harrison St.	n/o 66th Av.	Non-Sensitive	65.5	65.7	0.2	n/a	No
10	Harrison St.	s/o 66th Av.	Non-Sensitive	68.6	68.7	0.1	n/a	No
11	Harrison St.	s/o Middleton St.	Non-Sensitive	69.2	69.3	0.1	n/a	No
12	Harrison St.	s/o Desert Empire Homes	Sensitive	67.6	67.8	0.2	1.5	No
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.0	61.1	1.1	n/a	No
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	64.6	68.5	3.9	n/a	No
15	Tyler St.	n/o 66th Av.	Sensitive	61.0	62.6	1.6	3.0	No
16	Polk St.	n/o 62nd Av.	Non-Sensitive	62.6	63.6	1.0	n/a	No
17	Pierce St.	s/o 66th Av.	Non-Sensitive	63.8	64.3	0.5	n/a	No
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	68.6	68.7	0.1	1.5	No
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.0	66.1	0.1	n/a	No
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	70.9	71.3	0.4	n/a	No
21	Airport Bl.	e/o Polk St.	Sensitive	67.9	68.7	0.8	1.5	No
22	Airport Bl.	e/o Palm St.	Sensitive	68.0	68.7	0.7	1.5	No
23	60th Av.	w/o Harrison St.	Non-Sensitive	59.8	60.4	0.6	n/a	No
24	62nd Av.	w/o Jackson St.	Non-Sensitive	59.4	60.1	0.7	n/a	No
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	57.3	58.9	1.6	n/a	No
26	62nd Av.	w/o Harrison St.	Non-Sensitive	57.3	59.6	2.3	n/a	No
27	62nd Av.	e/o Harrison St.	Non-Sensitive	60.5	64.4	3.9	n/a	No
28	62nd Av.	w/o Tyler St.	Non-Sensitive	60.5	64.5	4.0	n/a	No
29	62nd Av.	e/o Tyler St.	Non-Sensitive	60.8	65.2	4.4	n/a	No
30	62nd Av.	e/o Polk St.	Non-Sensitive	59.4	64.4	5.0	n/a	No
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	63.4	66.0	2.6	n/a	No
32	62nd Av.	e/o Pierce St.	Non-Sensitive	60.6	64.5	3.9	n/a	No
33	66th Av.	e/o Harrison St.	Non-Sensitive	64.2	64.3	0.1	n/a	No
34	66th Av.	e/o Tyler St.	Sensitive	69.3	70.0	0.7	1.5	No
35	66th Av.	e/o Pierce St.	Non-Sensitive	66.8	67.3	0.5	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing 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)?

"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 75 dBA CNEL land use compatibility criteria.

7.4 EAC (2032) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Existing plus Ambient Growth Plus Cumulative (EAC) (2032) without Project conditions CNEL noise levels. The EAC (2032) without Project exterior noise levels range from 60.4 to 72.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the EAC (2032) with Project conditions will range from 62.0 to 72.7 dBA CNEL. Table 7-11 shows that the EAC (2032) Project off-site traffic noise level increases range from 0.2 to 3.7 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to all the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the EAC (2032) Project-related traffic.

TABLE 7-11: EAC (2032) PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Monroe St.	n/o 62nd Av.	Sensitive	63.9	64.7	0.8	3.0	No
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	65.9	66.3	0.4	n/a	No
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.9	70.2	0.3	1.5	No
4	Harrison St.	n/o Airport Bl.	Sensitive	67.7	68.3	0.6	1.5	No
5	Harrison St.	n/o 58th Av.	Sensitive	66.9	68.3	1.4	1.5	No
6	Harrison St.	n/o 60th Av.	Non-Sensitive	66.8	68.4	1.6	n/a	No
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	66.1	68.0	1.9	n/a	No
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	66.1	69.5	3.4	n/a	No
9	Harrison St.	n/o 66th Av.	Non-Sensitive	66.1	66.9	0.8	n/a	No
10	Harrison St.	s/o 66th Av.	Non-Sensitive	69.3	69.6	0.3	n/a	No
11	Harrison St.	s/o Middleton St.	Non-Sensitive	70.0	70.2	0.2	n/a	No
12	Harrison St.	s/o Desert Empire Homes	Sensitive	68.6	68.8	0.2	1.5	No
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.4	62.0	1.6	n/a	No
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	65.0	68.2	3.2	n/a	No
15	Tyler St.	n/o 66th Av.	Sensitive	61.4	62.6	1.2	3.0	No
16	Polk St.	n/o 62nd Av.	Non-Sensitive	65.5	66.4	0.9	n/a	No
17	Pierce St.	s/o 66th Av.	Non-Sensitive	64.9	65.4	0.5	n/a	No
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	69.1	69.3	0.2	1.5	No
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.6	66.9	0.3	n/a	No
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	72.0	72.7	0.7	n/a	No
21	Airport Bl.	e/o Polk St.	Sensitive	68.9	70.0	1.1	1.5	No
22	Airport Bl.	e/o Palm St.	Sensitive	68.9	69.9	1.0	1.5	No
23	60th Av.	w/o Harrison St.	Non-Sensitive	62.5	63.3	0.8	n/a	No
24	62nd Av.	w/o Jackson St.	Non-Sensitive	61.7	62.8	1.1	n/a	No
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	61.5	63.2	1.7	n/a	No
26	62nd Av.	w/o Harrison St.	Non-Sensitive	61.5	63.8	2.3	n/a	No
27	62nd Av.	e/o Harrison St.	Non-Sensitive	63.5	67.1	3.6	n/a	No
28	62nd Av.	w/o Tyler St.	Non-Sensitive	63.5	67.2	3.7	n/a	No
29	62nd Av.	e/o Tyler St.	Non-Sensitive	63.8	67.4	3.6	n/a	No
30	62nd Av.	e/o Polk St.	Non-Sensitive	63.0	66.7	3.7	n/a	No
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	64.1	67.1	3.0	n/a	No
32	62nd Av.	e/o Pierce St.	Non-Sensitive	64.3	67.1	2.8	n/a	No
33	66th Av.	e/o Harrison St.	Non-Sensitive	65.1	65.8	0.7	n/a	No
34	66th Av.	e/o Tyler St.	Sensitive	70.8	71.5	0.7	1.5	No
35	66th Av.	e/o Pierce St.	Non-Sensitive	68.3	68.8	0.5	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing 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)?

"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 75 dBA CNEL land use compatibility criteria.

7.5 HY (2045) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-7 presents the Horizon Year (HY) (2045) without Project conditions CNEL noise levels. The HY (2045) without Project exterior noise levels range from 62.2 to 75.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-8 shows that the HY (2045) with Project conditions will range from 63.4 to 75.5 dBA CNEL. Table 7-12 shows that the HY (2045) Project off-site traffic noise level increases range from 0.1 to 2.5 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to all the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the HY (2045) Project-related traffic.

7.6 OFF-SITE TRAFFIC NOISE IMPACTS

The study area roadway segments that would exceed the established thresholds of significance criteria outlined on Table 4-1 are limited to the Existing with Project buildout conditions (2032) on Harrison Street north of 58th Avenue (Segment #5). All other roadway segments will experience off-site traffic noise level impacts that are considered less than significant.

It should be noted that significant off-site traffic noise level increases identified under Existing plus Project conditions do not have the potential to occur, since the Project will not be fully developed and occupied under existing conditions, but rather under future buildout 2032 conditions. Therefore, as the overall background traffic volumes increase by EAC (2026) conditions, land uses adjacent to all the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to Project-related traffic.

TABLE 7-12: HY (2045) PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Monroe St.	n/o 62nd Av.	Sensitive	63.9	64.7	0.8	3.0	No
2	Van Buren St.	n/o 62nd Av.	Non-Sensitive	65.9	66.3	0.4	n/a	No
3	Cesar Chavez St.	n/o 54th Av.	Sensitive	69.9	70.2	0.3	1.5	No
4	Harrison St.	n/o Airport Bl.	Sensitive	67.7	68.3	0.6	1.5	No
5	Harrison St.	n/o 58th Av.	Sensitive	66.9	68.3	1.4	1.5	No
6	Harrison St.	n/o 60th Av.	Non-Sensitive	66.8	68.4	1.6	n/a	No
7	Harrison St.	n/o 62nd Av.	Non-Sensitive	66.1	68.0	1.9	n/a	No
8	Harrison St.	s/o 62nd Av.	Non-Sensitive	66.1	69.5	3.4	n/a	No
9	Harrison St.	n/o 66th Av.	Non-Sensitive	66.1	66.9	0.8	n/a	No
10	Harrison St.	s/o 66th Av.	Non-Sensitive	69.3	69.6	0.3	n/a	No
11	Harrison St.	s/o Middleton St.	Non-Sensitive	70.0	70.2	0.2	n/a	No
12	Harrison St.	s/o Desert Empire Homes	Sensitive	68.6	68.8	0.2	1.5	No
13	Tyler St.	n/o 62nd Av.	Non-Sensitive	60.4	62.0	1.6	n/a	No
14	Tyler St.	s/o 62nd Av.	Non-Sensitive	65.0	68.2	3.2	n/a	No
15	Tyler St.	n/o 66th Av.	Sensitive	61.4	62.6	1.2	3.0	No
16	Polk St.	n/o 62nd Av.	Non-Sensitive	65.5	66.4	0.9	n/a	No
17	Pierce St.	s/o 66th Av.	Non-Sensitive	64.9	65.4	0.5	n/a	No
18	52nd Av.	e/o Cesar Chavez St.	Sensitive	69.1	69.3	0.2	1.5	No
19	54th Av.	w/o Cesar Chavez St.	Non-Sensitive	66.6	66.9	0.3	n/a	No
20	Airport Bl.	e/o Harrison St.	Non-Sensitive	72.0	72.7	0.7	n/a	No
21	Airport Bl.	e/o Polk St.	Sensitive	68.9	70.0	1.1	1.5	No
22	Airport Bl.	e/o Palm St.	Sensitive	68.9	69.9	1.0	1.5	No
23	60th Av.	w/o Harrison St.	Non-Sensitive	62.5	63.3	0.8	n/a	No
24	62nd Av.	w/o Jackson St.	Non-Sensitive	61.7	62.8	1.1	n/a	No
25	62nd Av.	w/o Van Buren St.	Non-Sensitive	61.5	63.2	1.7	n/a	No
26	62nd Av.	w/o Harrison St.	Non-Sensitive	61.5	63.8	2.3	n/a	No
27	62nd Av.	e/o Harrison St.	Non-Sensitive	63.5	67.1	3.6	n/a	No
28	62nd Av.	w/o Tyler St.	Non-Sensitive	63.5	67.2	3.7	n/a	No
29	62nd Av.	e/o Tyler St.	Non-Sensitive	63.8	67.4	3.6	n/a	No
30	62nd Av.	e/o Polk St.	Non-Sensitive	63.0	66.7	3.7	n/a	No
31	62nd Av.	e/o Fillmore St.	Non-Sensitive	64.1	67.1	3.0	n/a	No
32	62nd Av.	e/o Pierce St.	Non-Sensitive	64.3	67.1	2.8	n/a	No
33	66th Av.	e/o Harrison St.	Non-Sensitive	65.1	65.8	0.7	n/a	No
34	66th Av.	e/o Tyler St.	Sensitive	70.8	71.5	0.7	1.5	No
35	66th Av.	e/o Pierce St.	Non-Sensitive	68.3	68.8	0.5	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing 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)?

"n/a" Per the County of Riverside General Plan Noise Element Table N-1, a barely perceptible 3 dBA or greater noise level increase is considered a significant impact when the ambient non-noise sensitive noise level is greater than the normally acceptable 75 dBA CNEL land use compatibility criteria.

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8 ON-SITE TRAFFIC NOISE ANALYSIS

An on-site exterior noise impact analysis has been completed to determine the noise exposure levels that would result from adjacent transportation noise sources in the Project study area, and to identify potential noise abatement measures that would achieve acceptable Project exterior and interior noise levels. The primary source of on-site transportation noise affecting the Project site is anticipated to be from Harrison Street, Tyler Street, 62nd Avenue and 64th Avenue. The Project would also be exposed to nominal traffic noise from the Project's internal roads. However, due to the distance, topography and low traffic volume/speed, traffic noise from these roads will not make a substantive contribution to ambient noise conditions.

8.1 EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-4 to 6-5, the expected future exterior noise levels for the on-site Project land uses were estimated. Table 8-1 presents a summary of future unmitigated exterior noise levels within each of the Project planning areas located adjacent to Harrison Street, Tyler Street, 62nd Avenue and 64th Avenue. The on-site traffic noise analysis calculations are provided in Appendix 8.1.

Since the residential lot locations are not known currently, all future residential uses will require detailed analysis as a component of noise studies that evaluate the implementing projects within each planning area. These final noise studies would utilize any recommendations identified in this study in combination with precise grading plans and actual building design specifications to identify any additional noise abatement measures, such as exterior noise barriers and/or building materials (e.g., sound transmission class ratings for windows and doors), if necessary.

TABLE 8-1: UNMITIGATED FUTURE EXTERIOR NOISE LEVELS

Planning Area	Land Use[1]	Noise-Sensitive Land Use?	Roadway	Unmitigated Exterior Noise Level (dBA CNEL)[2]
2	Low Density Residential (LDR)	Yes	Harrison St.	78
			Tyler St.	71
			62nd Av.	78
3	Medium Density Residential (MDR)	Yes	Tyler St.	71
4	High Density Residential (HDR)	Yes	64th Av.	75
5	High Density Residential (HDR) Tourist Commercial (CT)	Yes	Harrison St.	78
			64th Av.	75
6	Commercial Retail (CR)	No	Harrison St.	78

[1] Project land uses as shown on Exhibit 1-C.
[2] Unmitigated on-site exterior traffic noise level calculations are included in Appendix 8.1.

8.1.1 RESIDENTIAL LAND USE (LDR, MDR, HDR)

The on-site exterior traffic noise analysis indicates that the noise sensitive outdoor living areas (backyards) for residential land uses within Planning Areas 2, 3 and 4 adjacent to Harrison Street, Tyler Street, 62nd Avenue and 64th Avenue will experience future General Plan Buildout unmitigated exterior noise levels of ranging from 71 to 78 dBA CNEL. According to the *Land Use Compatibility for Community Noise Exposure* matrix shown previously on Exhibit 3-A, residential land use is considered *normally acceptable* or *clearly unacceptable* without mitigation.

Therefore, to satisfy the County of Riverside 65 dBA CNEL exterior noise level standards for the noise sensitive residential land use, the construction of 6 to 10-foot-high noise barriers is required for the outdoor living areas (backyards) of noise sensitive residential uses. The Tourist Commercial (CT) land uses within Planning Area 5 may include a combination of hotel and high-density residential use. Since the hotel and high-density residential land use are not expected to include any private outdoor living areas (backyards), noise mitigation will be limited to the interior areas of the noise sensitive uses.

With the recommended noise barriers shown on Exhibit 8-A, Table 8-2 shows that the mitigated future exterior noise levels at the outdoor living areas (backyards) of the residential land uses will range from 62 to 65 dBA CNEL. Alternative noise mitigation measures such as increasing the setback distance from the adjacent roads or using berms in combination with noise barriers may also be used to satisfy the County of Riverside 65 dBA CNEL exterior noise level standards. This noise analysis shows that the recommended noise barriers will not exceed the County of Riverside 65 dBA CNEL exterior noise level standards for residential land use. The recommendations identify the minimum required noise barrier height to satisfy the County of Riverside exterior noise level standards consistent with the County of Riverside Office of Industrial Hygiene *Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures*. (21)

TABLE 8-2: MITIGATED FUTURE EXTERIOR NOISE LEVELS

Planning Area	Land Use[1]	Noise-Sensitive Land Use?	Roadway	Mitigated Exterior Noise Level (dBA CNEL)[2]	Barrier Height (Feet)
2	Low Density Residential (LDR)	Yes	Harrison St.	65	10'
			Tyler St.	62	6'
			62nd Av.	65	10'
3	Medium Density Residential (MDR)	Yes	Tyler St.	62	6'
4	High Density Residential (HDR)	Yes	64th Av.	65	8'

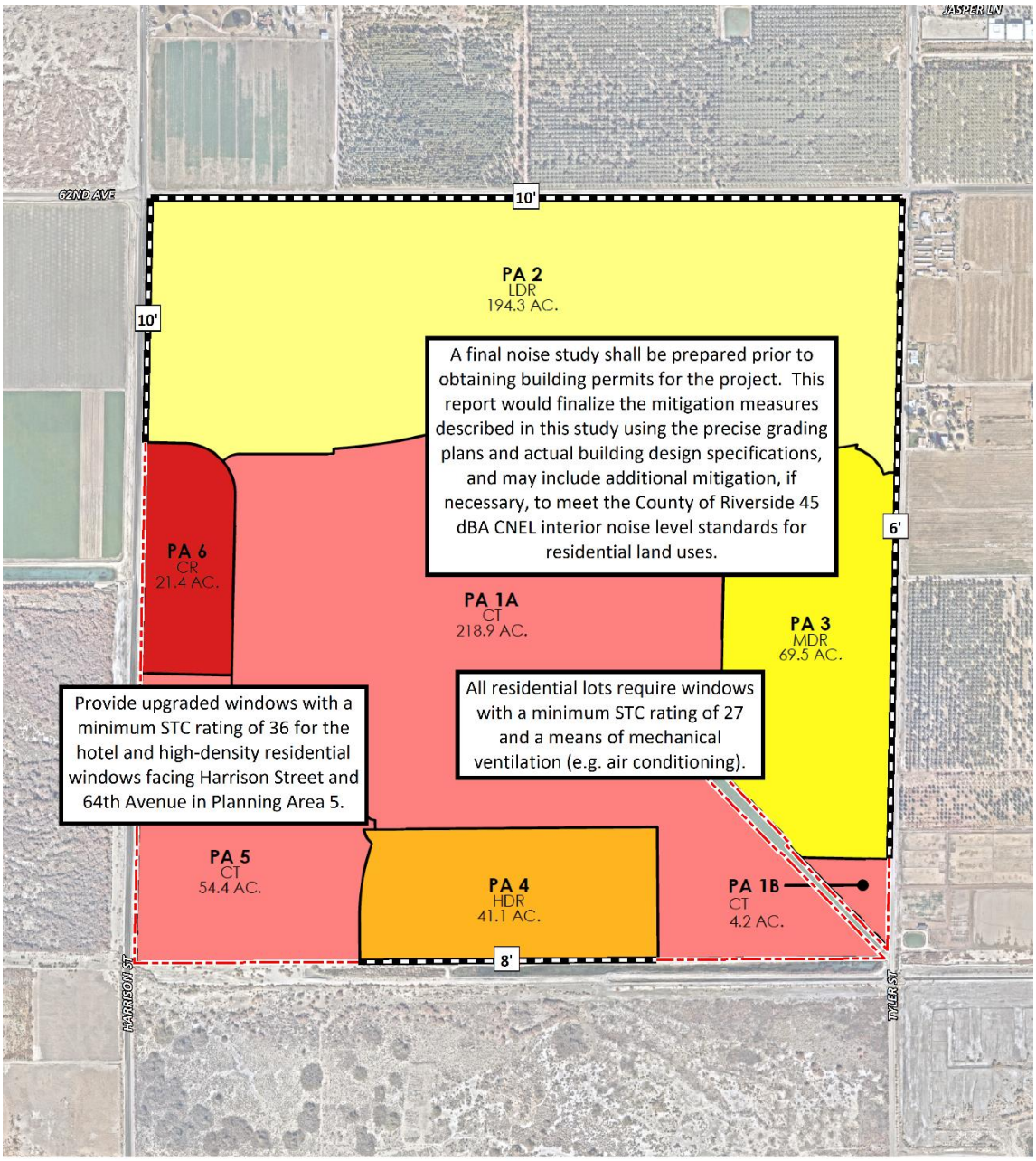
[1] Project land uses as shown on Exhibit 1-C.

[2] Unmitigated on-site exterior traffic noise level calculations are included in Appendix 8.1.

8.1.2 COMMERCIAL (CT/CR)

The County of Riverside does not identify any exterior noise level limits for the commercial land uses. The results of the on-site exterior traffic noise analysis as shown on Table 8-1 also indicate that commercial uses adjacent to Harrison Street (PA-5 and PA-6) will experience unmitigated General Plan buildout exterior noise levels approaching 78 dBA CNEL, representing *conditionally acceptable* land use.

EXHIBIT 8-A: ON-SITE NOISE MITIGATION MEASURES



MM NOI-1: ON-SITE EXTERIOR NOISE MITIGATION

Exterior noise mitigation is generally limited to the noise sensitive outdoor living areas (backyards) for single-family residential land use. All future residential uses will require detailed analysis as a component of noise studies that evaluate the implementing projects within each planning area. These final noise studies would utilize any recommendations identified in this study in combination with precise grading plans and actual building design specifications to identify any additional noise abatement measures, such as exterior noise barriers and/or building materials (e.g., sound transmission class ratings for windows and doors), if necessary, based on the site-specific noise impacts within each planning area.

The recommended noise control barriers shall be constructed so that the top of each wall extends to the recommended height above the pad elevation of the lot it is shielding. When the road is elevated above the pad elevation, the barrier shall extend to the recommended height above the highest point between the residential home and the road. The barrier shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the roadways, or a minimum transmission loss of 20 dBA. (3) The barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts shall not be made. All gaps (except for weep holes) should be filled with grout or caulking. The noise barrier shall be constructed using one of the following materials:

- Masonry block;
- Stucco veneer over wood framing (or foam core), or one-inch thick tongue and groove wood of sufficient weight per square foot;
- Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot capable of providing a minimum transmission loss of 20 dBA;
- Earthen berm;
- Any combination of these construction materials.

8.2 INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the interior noise level standards, future exterior noise levels were calculated at the estimated at the first-floor building facade locations.

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (4) (33) However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: [1] weather-stripped solid core exterior doors; [2] upgraded dual glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assembles free of cut outs or openings.

8.2.2 ON-SITE INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Table 8-3 and 8-4 indicates that the noise sensitive residential land uses adjacent to Harrison Street, Tyler Street, 62nd Avenue and 64th Avenue will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 8-3 shows that the future unmitigated noise levels at the building façade are expected to range from 62 to 78 dBA CNEL. The interior noise level analysis shows that the County of Riverside 45 dBA CNEL interior noise level standards for the planned residential uses in PA 2, PA 3 and PA 4 can generally be satisfied using standard windows with a minimum STC rating of 27. However, upgraded windows with minimum STC ratings of 36 are required for the hotel and high-density residential land use in PA 5. T

able 8-3 shows that with the standard windows for PA 2, PA 3, and PA 4 and upgraded windows for units facing Harrison Street and 64th Avenue in PA 5, the interior noise levels at the building façade are expected to range from 37.4 to 43.9 dBA CNEL. The interior noise level analysis shows that the County of Riverside 45 dBA CNEL interior noise level standards for residential uses can generally be satisfied using standard windows with a minimum STC rating of 27 and upgraded with minimum STC ratings of 36 for the windows for units facing Harrison Street and 64th Avenue in PA 5.

MM NOI-2: ON-SITE INTERIOR NOISE MITIGATION

To satisfy the County of Riverside 45 dBA CNEL interior noise level criteria, all units a windows-closed condition requiring a means of mechanical ventilation (e.g., air conditioning). Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (4) To satisfy the County of Riverside 45 dBA CNEL interior noise standards for residential land use, the Project shall provide the following or equivalent noise abatement measures:

- Windows & Glass Doors: All windows will require upgraded windows with a minimum Sound Transmission Class (STC) rating of 27. Provide upgraded windows with a minimum STC rating of 36 for the hotel and high-density residential windows facing Harrison Street and 64th Avenue in Planning Area 5.
- Doors (Non-Glass): All exterior doors shall be well weather-stripped and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating. (4)
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specification or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still maintain circulated air. A forced air circulation system (e.g. air conditioning) or active ventilation system (e.g. fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

TABLE 8-3: INTERIOR NOISE IMPACTS (CNEL)

Planning Area	Land Use[1]	Noise-Sensitive Land Use?	Roadway	Noise Level at Façade[2]	Required Interior Noise Reduction[3]	Estimated Interior Noise Reduction[4]	Upgraded Windows[5]	Interior Noise Level[6]
2	Low Density Residential (LDR)	Yes	Harrison St.	67	21.6	25.0	No	41.6
			Tyler St.	62	17.4	25.0	No	37.4
			62nd Av.	67	21.6	25.0	No	41.6
3	Medium Density Residential (MDR)	Yes	Tyler St.	62	17.4	25.0	No	37.4
4	High Density Residential (HDR)	Yes	64th Av.	66	21.0	25.0	No	41.0
5	High Density Residential (HDR)	Yes	Harrison St.	78	32.9	34.0	Yes	43.9
			64th Av.	75	30.4	34.0	Yes	41.4

[1] Project land uses as shown on Exhibit 1-C.
[2] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[3] Noise reduction required to satisfy the 45 dBA CNEL interior noise limits.
[4] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[5] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[6] Estimated interior noise level with required STC rating for all windows.

9 OFF-SITE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

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

R1: Location R1 represents existing noise sensitive residence at 61610 Harrison St, approximately 1,072 feet north of the Project site. Receiver R1 is placed in the private outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive residence at 62800 Tyler St, approximately 148 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 potential future residential land use located approximately 309 feet southeast of the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

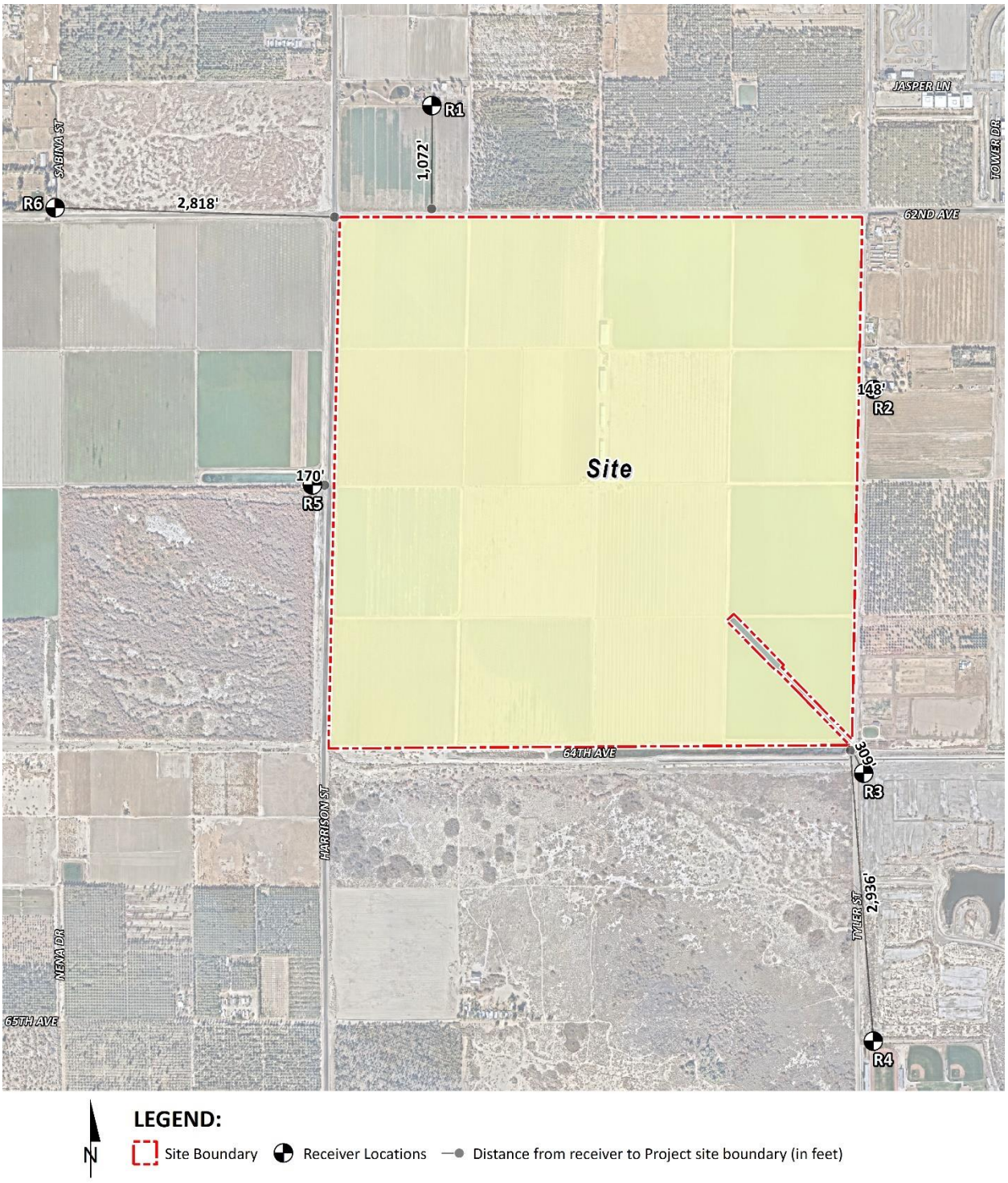
R4: Location R4 represents the Desert Mirage High School, located approximately 2,936 feet southeast of the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R5: Location R5 represents the potential future residential land use located approximately 170 feet west of the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

R6: Location R6 represents existing noise sensitive residence at 61855 Sabina St., approximately 2,818 feet northwest of the Project site. Receiver R6 is placed in the

private outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken near this location, L6, to describe the existing ambient noise environment.

EXHIBIT 9-A: OFF-SITE RECEIVER LOCATIONS



10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of the proposed Thermal Ranch Specific Plan Project. Exhibit 10-A identifies the noise source locations used to assess the operational noise levels.

10.1 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. Since the noise source activities and the specific locations for the noise generating tourist commercial, commercial retail are not known currently, the underlying uses within the Specific Plan are used to describe the operational noise source activities. To describe the operational noise levels at the nearest noise sensitive receiver locations, a combination of potential noise sources is placed throughout the Project site to ensure that the analysis fully considers the potential uses permitted within the Specific Plan. The on-site Project-related noise sources are expected to include: horse park activities, public address speaker system, CVWD well site, IID substation, roof-top air conditioning units, trash enclosure activity, and parking lot activity.

10.2 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 description of the reference noise levels shown on Table 10-1 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 horse park activities, public address speaker system, CVWD well site, IID substation, roof-top air conditioning units, trash enclosure activity, and parking lot activity all operating at the same time. These sources of noise activity will likely vary throughout the day.

10.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in “slow” mode to record noise levels in “A” weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS

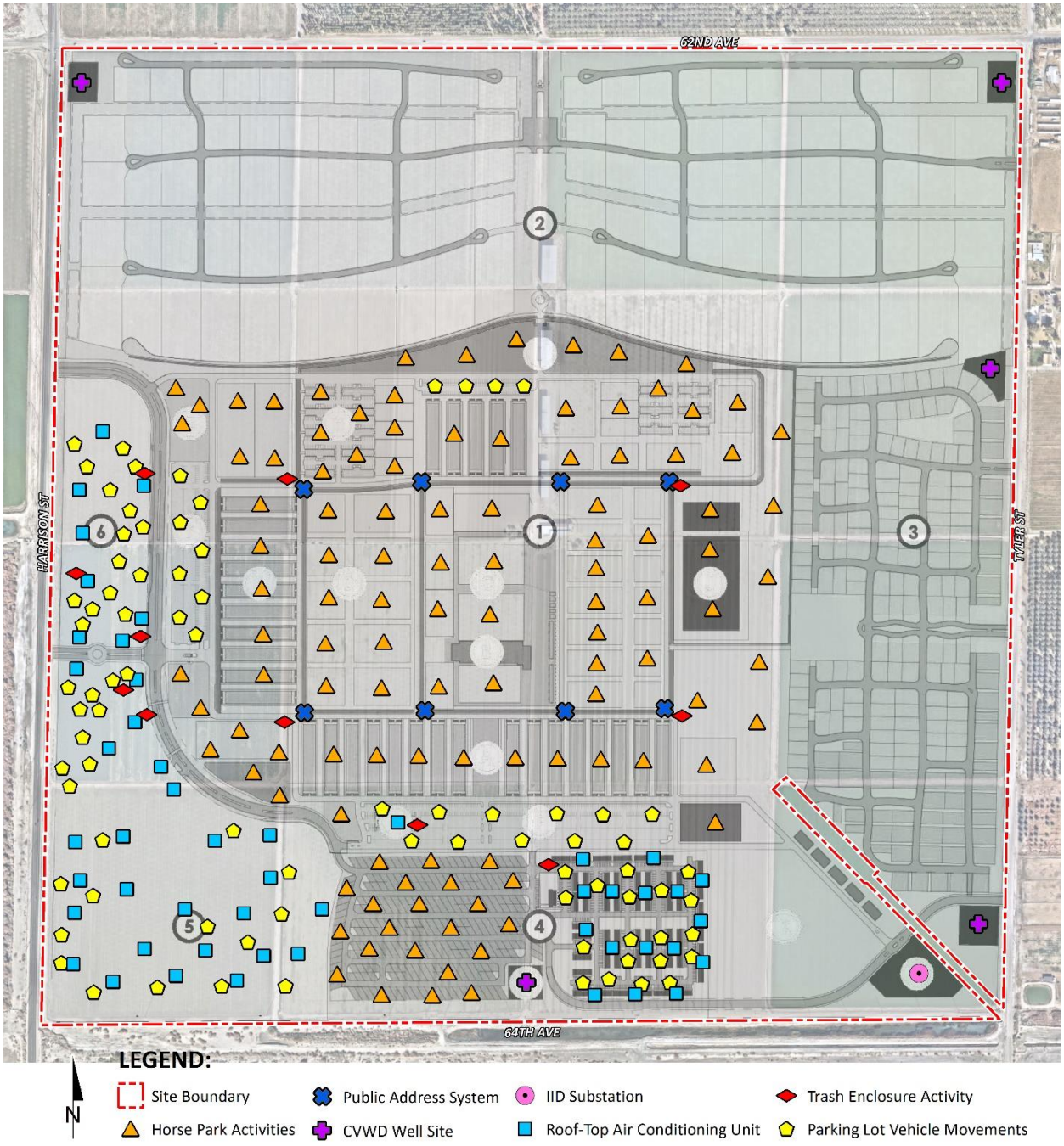


TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Horse Park Activities	5'	60	20	60.2	92.0
Public Address System	25'	60	0	68.1	100.0
CVWD Well Site	5'	60	60	45.4	77.0
IID Substation	8'	60	60	55.6	87.3
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	20	57.3	89.0
Parking Lot Vehicle Activity	5'	60	20	52.6	84.3

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

[2] 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.

10.2.2 HORSE PARK ACTIVITIES

The reference noise levels are intended to describe the noise source activities associated with the grand entry, gathering/dining commons, competition rings, warmup/jumper rings, common barns, staging areas, pastures, and grass fields. Based on reference noise levels collected by Urban Crossroads, Inc. from similar equestrian related noise source activities, a reference noise level of 60.2 dBA L_{eq} at a uniform distance of 50 feet is used to describe the horse park activities.

10.2.3 PUBLIC ADDRESS SYSTEM

To evaluate the noise levels associated with the expected public address speaker system, Urban Crossroads collected a reference noise level measurement of 68.1 dBA L_{eq} at 50 feet. The public address speaker system was mounted on a pole approximately 25 feet high. It is expected that the public address speaker system will be limited to the daytime hours between 7:00 a.m. and 10:00 p.m.

10.2.4 CVWD WELL SITE

A reference noise level measurement was taken by Urban Crossroads, Inc. at CVWD well site number 5676, located at 38-130 Portola Avenue in the City of Palm Desert to describe the well pump activity expected at the Project facilities. The two-minute reference noise level measurement indicates that well pump activity generates noise levels of 69.8 dBA L_{eq} at 3 feet. A second well pump activity reference noise level measurement was taken at CVWD well site number 5678, located at 74-885 Frank Sinatra Drive in the City of Palm Desert. A reference noise level of 64.2 dBA L_{eq} was measured for well pump activity at well site number 5678. To represent a more conservative analysis, this study relies on the higher 69.8 dBA L_{eq} reference noise level

measurement to represent peak well pump activity associated with all the Project facilities. At 50 feet, this noise level is calculated at 45.4 dBA L_{eq}.

10.2.5 IID SUBSTATION

It is expected that the primary source of noise from the IID Substation will be generated by the power transformers. These transformers typically generate a noise level ranging from 60 to 80 dBA. (21) Therefore, an unmitigated reference noise level of approximately 80.0 dBA L_{eq} at 3 feet is used in this analysis to estimate the IID Substation noise levels. At 50 feet, this noise level is calculated at 55.6 dBA L_{eq}.

10.2.6 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 level is 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours.

10.2.7 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.

10.2.8 PARKING LOT VEHICLE ACTIVITY

To describe the on-site parking lot activity, a long-term reference noise level measurement was collected in the center of activity within a large staff parking lot of an Amazon warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 52.6 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due to cars pulling in and out of parking spaces in combination with car doors opening and closing.

10.3 CADNAA NOISE PREDICTION MODEL

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

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs including the planned screenwall used to estimate the Project operational noise levels presented in this section.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include horse park activities, public address speaker system, CVWD well site, IID substation, roof-top air conditioning units, trash enclosure activity, and parking lot activity, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The unmitigated daytime hourly exterior noise levels at the off-site receiver locations are expected to range from 35.8 to 47.7 dBA L_{eq}.

TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Horse Park Activities	36.1	39.4	37.4	32.4	42.6	32.4
Public Address System	34.6	38.0	36.0	30.8	40.5	30.9
CVWD Well Site	10.5	24.7	15.7	4.4	7.5	4.2
IID Substation	5.4	14.1	27.8	14.5	8.8	2.3
Roof-Top Air Conditioning Units	27.3	28.8	32.6	27.5	41.7	26.5
Trash Enclosure Activity	22.5	24.3	23.5	18.7	37.4	20.7
Parking Lot Vehicle Activity	25.7	26.6	29.4	24.1	39.7	24.2
Total (All Noise Sources)	**39.1**	**42.3**	**41.1**	**35.9**	**47.7**	**35.8**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

Table 10-3 shows the unmitigated Project operational exterior 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 38.4 to 41.6 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 10-1 and Appendix 10.1.

TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Horse Park Activities	30.3	33.6	31.6	26.7	36.9	26.6
Public Address System	0.0	0.0	0.0	0.0	0.0	0.0
CVWD Well Site	10.5	24.7	15.7	4.4	7.5	4.2
IID Substation	5.4	14.1	27.8	14.5	8.8	2.3
Roof-Top Air Conditioning Units	24.9	26.4	30.2	25.1	39.3	24.1
Trash Enclosure Activity	16.8	18.6	17.8	12.9	31.6	15.0
Parking Lot Vehicle Activity	24.8	25.6	28.4	23.1	38.7	23.2
Total (All Noise Sources)	**32.4**	**35.4**	**35.9**	**30.2**	**43.5**	**29.8**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

10.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of Riverside exterior noise level standards at nearby noise-sensitive receiver locations. Table 10-4 shows the operational noise levels associated with Thermal Ranch Specific Plan Project will not exceed the County of Riverside daytime and nighttime exterior noise level standards.

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	39.1	32.4	55	45	No	No
R2	42.3	35.4	55	45	No	No
R3	41.1	35.9	55	45	No	No
R4	35.9	30.2	55	45	No	No
R5	47.7	43.5	55	45	No	No
R6	35.8	29.8	55	45	No	No

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

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

10.6 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. (2) Instead, they must be logarithmically added using the following base equation:

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 10-5 and 10-6, respectively. As indicated on Table 10-5, the Project will generate a daytime operational noise level increases ranging from 0.0 to 0.1 dBA L_{eq} at the nearest receiver locations. Table 10-6 shows that the Project is not expected to generate a measurable nighttime operational noise level increase at the nearest receiver locations. Project-related operational noise level increases will not exceed the operational noise level increase significance criteria presented in Table 4-1, and, therefore, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	39.1	L1	62.7	62.7	0.0	5.0	No
R2	42.3	L2	70.4	70.4	0.0	1.5	No
R3	41.1	L3	67.0	67.0	0.0	1.5	No
R4	35.9	L4	64.7	64.7	0.0	5.0	No
R5	47.7	L5	66.2	66.3	0.1	1.5	No
R6	35.8	L6	63.2	63.2	0.0	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	32.4	L1	61.1	61.1	0.0	5.0	No
R2	35.4	L2	67.4	67.4	0.0	1.5	No
R3	35.9	L3	63.7	63.7	0.0	5.0	No
R4	30.2	L4	61.7	61.7	0.0	5.0	No
R5	43.5	L5	66.3	66.3	0.0	1.5	No
R6	29.8	L6	61.3	61.3	0.0	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 10-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the on-site construction noise source activity including the off-site roadway and utility improvements in relation to the nearest sensitive receiver locations previously described in Section 8. According to Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (11)

11.1 CONSTRUCTION NOISE LEVELS

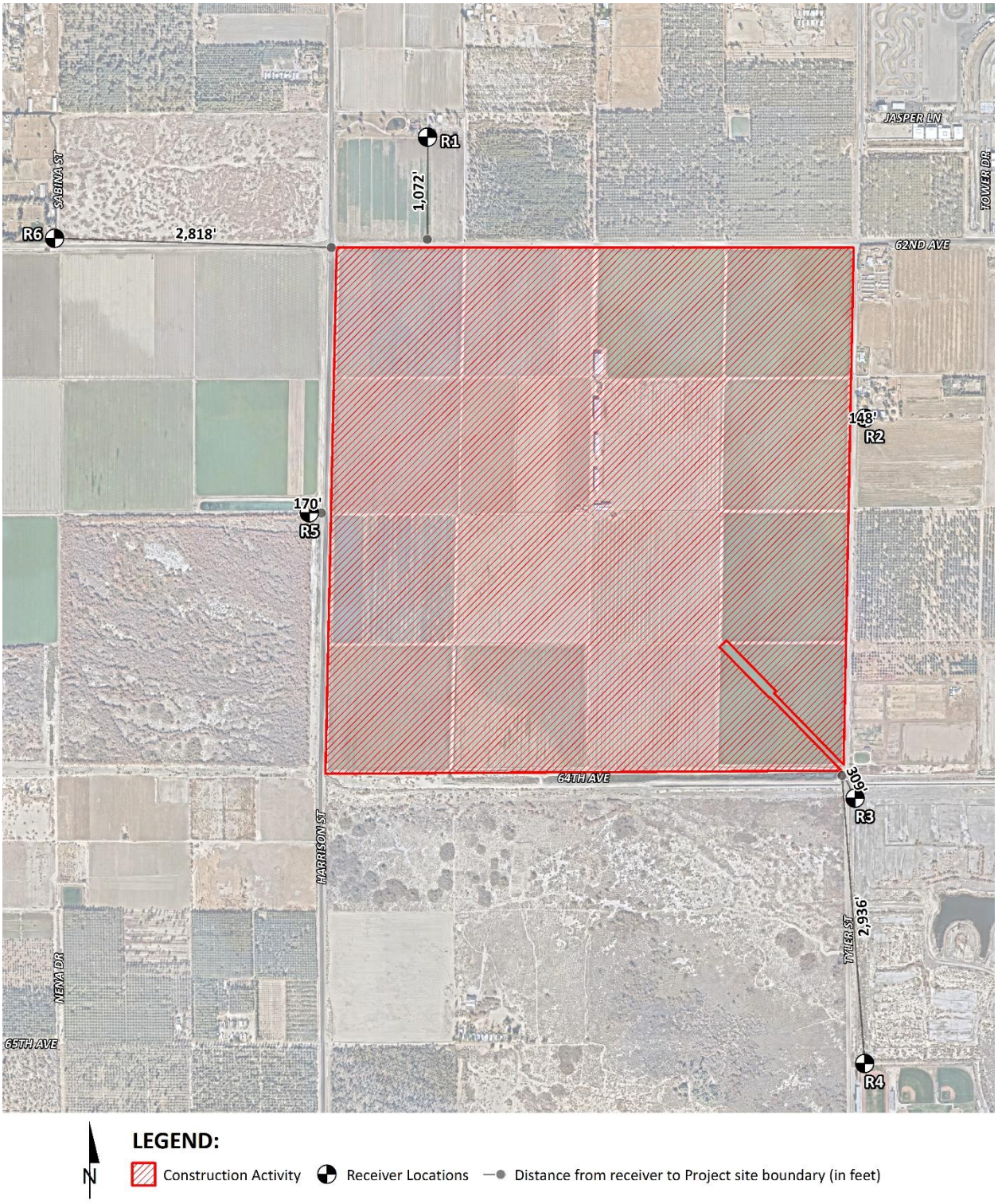
The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed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

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

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (21) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 11-A: CONSTRUCTION NOISE SOURCE LOCATIONS



11.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 11-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 11-2, the construction noise levels are expected to range from 39.4 to 62.9 dBA L_{eq} at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

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

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

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Off-Site Utilities	Highest Levels[2]
R1	49.3	52.3	50.3	52.3	47.3	52.3
R2	59.9	62.9	60.9	62.9	57.9	62.9
R3	56.7	59.7	57.7	59.7	54.7	59.7
R4	41.4	44.4	42.4	44.4	39.4	44.4
R5	59.4	62.4	60.4	62.4	57.4	62.4
R6	41.8	44.8	42.8	44.8	39.8	44.8

[1] Construction noise source and receiver locations are shown on Exhibit 11-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 11-3: PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	52.3	80	No
R2	62.9	80	No
R3	59.7	80	No
R4	44.4	80	No
R5	62.4	80	No
R6	44.8	80	No

[1] Construction noise source and receiver locations are shown on Exhibit 11-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 11-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The 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 11-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 11-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 11-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 148 to 2,936 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.000 to 0.015 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	1,072'	0.000	0.000	0.000	0.000	0.001	0.001	0.3	No
R2	148'	0.000	0.002	0.005	0.006	0.015	0.015	0.3	No
R3	309'	0.000	0.001	0.002	0.002	0.005	0.005	0.3	No
R4	2,936'	0.000	0.000	0.000	0.000	0.000	0.000	0.3	No
R5	170'	0.000	0.002	0.004	0.005	0.012	0.012	0.3	No
R6	2,818'	0.000	0.000	0.000	0.000	0.000	0.000	0.3	No

[1] Construction noise source and receiver locations are shown on Exhibit 11-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Thermal Ranch Specific Plan 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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AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
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INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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Chapter 9.52 NOISE REGULATION

Sections:

9.52.010 Intent.

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

(Ord. 847 § 1, 2006)

9.52.020 Exemptions.

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

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

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

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

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

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

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

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

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

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

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

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

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

L. Heating and air conditioning equipment;

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

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

(Ord. 847 § 2, 2006)

9.52.030 Definitions.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(Ord. 847 § 3, 2006)

9.52.040 General sound level standards.

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

TABLE 1

Sound Level Standards (Db L_{max})

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

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

(Ord. 847 § 4, 2006)

9.52.050 Sound level measurement methodology.

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

(Ord. 847 § 5, 2006)

9.52.060 Special sound sources standards.

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

A. Motor Vehicles.

1. Off-Highway Vehicles.

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

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

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

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

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

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

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

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

(Ord. 847 § 6, 2006)

9.52.070 Exceptions.

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

A. Application and Processing.

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

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

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

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

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

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

(Ord. 847 § 7, 2006)

9.52.080 Enforcement.

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

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

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

9.52.090 Duty to cooperate.

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

(Ord. 847 § 9, 2006)

9.52.100 Violations and penalties.

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

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

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

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

(Ord. 847 § 10, 2006)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[redacted]

a. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the Director of Building and Safety on forms provided by the Building and Safety Department and shall be accompanied by the appropriate filing fee. No public hearing is required.
2. Single Event Exceptions. An application for a single event exception shall be made to and considered by the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. No public hearing is required.

[redacted]

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

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

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

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

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

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

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

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

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

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

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

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN:14497

14497_L1_A 1.North
33, 36' 3.620000"116, 10' 52.480000"

14497_L1_A 2.South
33, 36' 3.620000"116, 10' 52.530000"

14497_L1_A 3.East
33, 36' 3.630000"116, 10' 52.510000"

14497_L1_A 4.West
33, 36' 3.580000"116, 10' 52.620000"

JN:14497

14497_L2_B 1.North
33, 35' 44.530000"116, 9' 50.430000"

14497_L2_B 2.South
33, 35' 44.340000"116, 9' 50.430000"

14497_L2_B 3.East
33, 35' 44.490000"116, 9' 50.380000"

14497_L2_B 4.West
33, 35' 44.520000"116, 9' 50.430000"

JN:14497

14497_L3_C 1.North
33, 35' 27.960000"116, 9' 50.760000"

14497_L3_C 2.South
33, 35' 27.900000"116, 9' 50.760000"

14497_L3_C 3.East
33, 35' 27.930000"116, 9' 50.730000"

14497_L3_C 4.West
33, 35' 27.780000"116, 9' 50.760000"

JN:14497

14497_L4_D 1.North
33, 34' 31.900000"116, 9' 51.340000"

14497_L4_D 2.South
33, 34' 31.750000"116, 9' 51.340000"

14497_L4_D 3.East
33, 34' 31.790000"116, 9' 51.340000"

14497_L4_D 4.West
33, 34' 31.820000"116, 9' 51.370000"

JN:14497

14497_L5_F 1.North
33, 35' 13.910000"116, 10' 53.710000"

14497_L5_F 2.South
33, 35' 13.890000"116, 10' 53.660000"

14497_L5_F 3.East
33, 35' 13.910000"116, 10' 53.630000"

14497_L5_F 4.West
33, 35' 13.910000"116, 10' 53.630000"

JN:14497

14497_L6_I 1.North
33, 35' 54.600000"116, 11' 24.640000"

14497_L6_I 2.South
33, 35' 54.560000"116, 11' 24.670000"

14497_L6_I 3.East
33, 35' 54.540000"116, 11' 24.640000"

14497_L6_I 4.West
33, 35' 54.530000"116, 11' 24.670000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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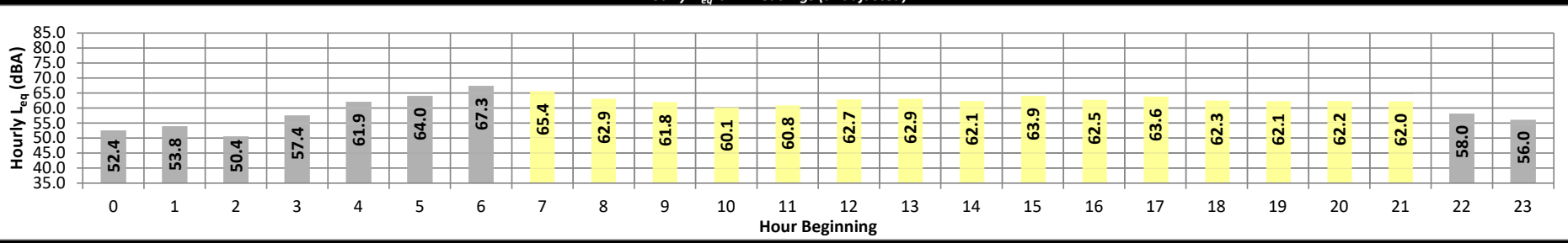
24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L1 - Located northwest of the site near the residence at 61610 *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* Harrison St. *Analyst:* Z. Ibrahim

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	52.4	64.9	35.0	64.6	63.7	60.2	57.6	48.5	41.9	36.0	35.5	35.2	52.4	10.0	62.4
	1	53.8	67.1	33.8	66.9	66.1	61.8	58.0	46.6	40.9	34.8	34.2	33.8	53.8	10.0	63.8
	2	50.4	63.1	33.8	62.8	62.1	58.3	55.1	45.5	40.0	34.7	34.4	33.9	50.4	10.0	60.4
	3	57.4	69.5	36.1	69.1	68.3	65.6	62.9	53.8	46.4	38.1	37.1	36.2	57.4	10.0	67.4
	4	61.9	74.1	40.7	73.7	72.9	69.6	66.9	59.7	52.1	42.8	41.7	40.8	61.9	10.0	71.9
	5	64.0	73.9	47.8	73.6	73.0	70.8	69.2	64.0	58.6	50.1	48.8	48.1	64.0	10.0	74.0
	6	67.3	76.4	54.5	76.0	75.4	72.8	71.5	68.3	64.7	57.1	55.8	54.7	67.3	10.0	77.3
Day	7	65.4	75.6	51.0	75.3	74.6	71.9	70.3	65.7	60.5	52.7	51.9	51.2	65.4	0.0	65.4
	8	62.9	73.0	45.3	72.6	72.0	70.0	68.3	62.7	57.1	47.6	46.3	45.5	62.9	0.0	62.9
	9	61.8	73.0	43.4	72.5	71.6	68.8	66.9	61.2	55.7	45.7	44.6	43.6	61.8	0.0	61.8
	10	60.1	71.4	40.5	71.0	70.2	67.4	65.6	58.9	51.4	42.7	41.7	40.7	60.1	0.0	60.1
	11	60.8	71.5	40.7	71.1	70.5	68.0	66.2	60.3	53.3	43.2	42.1	41.0	60.8	0.0	60.8
	12	62.7	74.3	42.3	74.0	73.4	70.4	67.7	61.0	54.7	44.9	43.7	42.6	62.7	0.0	62.7
	13	62.9	73.8	44.1	73.3	72.5	70.2	68.4	62.2	56.7	47.0	45.6	44.4	62.9	0.0	62.9
	14	62.1	72.6	45.5	72.2	71.5	68.8	66.7	62.1	57.6	48.9	47.1	45.7	62.1	0.0	62.1
	15	63.9	73.3	47.6	72.9	72.3	69.9	68.6	64.4	60.5	51.8	49.7	47.9	63.9	0.0	63.9
	16	62.5	73.1	46.9	72.7	71.8	69.1	67.2	62.5	58.1	49.8	48.4	47.2	62.5	0.0	62.5
	17	63.6	75.9	48.5	75.0	73.6	69.3	67.8	63.1	58.7	51.1	49.9	48.8	63.6	0.0	63.6
	18	62.3	72.4	47.4	72.1	71.4	68.8	67.3	62.5	57.4	49.5	48.5	47.6	62.3	0.0	62.3
	19	62.1	72.2	46.9	71.9	71.2	69.0	67.4	61.8	56.3	48.7	47.8	47.0	62.1	5.0	67.1
	20	62.2	72.9	48.0	72.6	71.9	69.0	67.2	61.6	56.4	50.3	49.3	48.2	62.2	5.0	67.2
	21	62.0	73.5	45.3	73.1	72.2	69.2	67.1	61.1	54.2	47.1	46.3	45.6	62.0	5.0	67.0
Night	22	58.0	70.2	41.5	69.7	68.7	65.1	63.2	55.8	49.7	43.6	42.6	41.7	58.0	10.0	68.0
	23	56.0	67.5	41.0	67.3	66.5	63.8	61.4	53.0	47.9	42.9	42.0	41.2	56.0	10.0	66.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.1	71.4	40.5	71.0	70.2	67.4	65.6	58.9	51.4	42.7	41.7	40.7
	Max	65.4	75.9	51.0	75.3	74.6	71.9	70.3	65.7	60.5	52.7	51.9	51.2
Energy Average		62.7	Average:		72.8	72.0	69.3	67.5	62.1	56.6	48.1	46.9	45.8
Night	Min	50.4	63.1	33.8	62.8	62.1	58.3	55.1	45.5	40.0	34.7	34.2	33.8
	Max	67.3	76.4	54.5	76.0	75.4	72.8	71.5	68.3	64.7	57.1	55.8	54.7
Energy Average		61.1	Average:		69.3	68.5	65.3	62.9	55.0	49.1	42.2	41.4	40.6

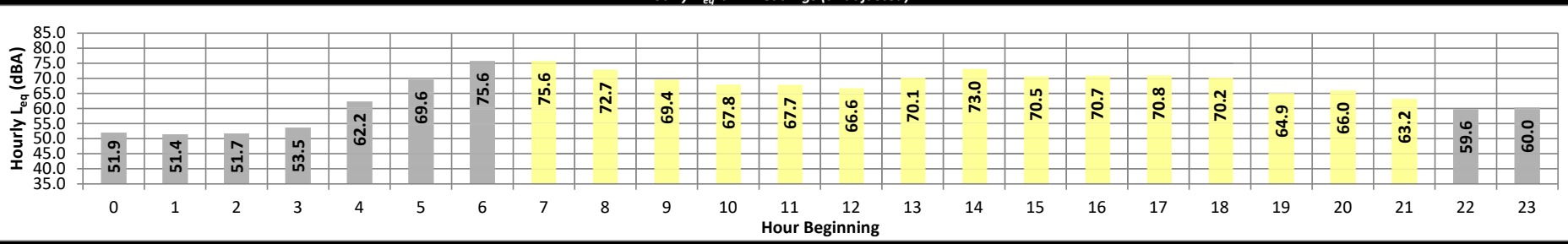
24-Hour CNEL	*Leq (dBA) Daytime (7am-10pm)*	*Leq (dBA) Nighttime (10pm-7am)*
68.1	**62.7**	**61.1**

24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L2 - Located East of the site near the residence at 62800 Tyler *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* St. *Analyst:* Z. Ibrahim

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	51.9	65.4	36.1	65.1	64.3	60.2	55.7	42.4	39.6	37.2	36.8	36.3	51.9	10.0	61.9
	1	51.4	65.3	35.1	64.8	63.9	59.3	55.0	41.8	37.8	36.0	35.7	35.3	51.4	10.0	61.4
	2	51.7	65.2	35.0	65.0	63.9	59.6	55.4	44.3	40.2	36.5	36.0	35.4	51.7	10.0	61.7
	3	53.5	67.1	35.4	66.6	65.7	61.6	57.5	45.6	40.5	36.9	36.3	35.7	53.5	10.0	63.5
	4	62.2	76.0	40.4	75.5	74.3	70.1	66.4	54.3	47.8	42.5	41.7	40.8	62.2	10.0	72.2
	5	69.6	83.0	45.7	82.5	81.4	77.4	74.4	64.1	54.9	47.4	46.7	45.9	69.6	10.0	79.6
	6	75.6	86.1	59.3	85.6	84.8	82.5	80.9	75.4	70.2	61.7	60.6	59.5	75.6	10.0	85.6
Day	7	75.6	86.1	58.5	85.5	84.6	82.5	81.1	75.7	69.2	60.5	59.4	58.6	75.6	0.0	75.6
	8	72.7	84.1	50.0	83.6	82.5	80.1	78.5	71.7	63.0	52.6	51.4	50.2	72.7	0.0	72.7
	9	69.4	82.5	45.2	81.9	80.7	77.2	74.6	65.1	55.3	47.0	46.2	45.4	69.4	0.0	69.4
	10	67.8	80.9	44.8	80.2	79.1	75.5	72.7	64.2	55.2	47.3	46.3	45.2	67.8	0.0	67.8
	11	67.7	80.2	41.8	79.7	78.6	75.7	73.5	64.0	54.0	44.2	43.1	42.0	67.7	0.0	67.7
	12	66.6	79.9	40.2	79.4	78.2	74.6	72.0	60.2	49.5	41.8	41.1	40.4	66.6	0.0	66.6
	13	70.1	82.1	46.5	81.5	80.3	77.6	75.6	68.5	61.3	49.8	48.0	46.7	70.1	0.0	70.1
	14	73.0	83.3	49.8	82.7	81.7	79.8	78.5	73.3	66.8	53.1	51.6	50.1	73.0	0.0	73.0
	15	70.5	81.7	46.9	81.2	80.2	77.9	76.3	69.9	60.8	49.5	48.4	47.1	70.5	0.0	70.5
	16	70.7	82.0	50.3	81.5	80.4	78.3	76.8	69.3	61.6	53.7	51.9	50.6	70.7	0.0	70.7
	17	70.8	82.3	56.4	81.8	80.7	78.0	76.2	69.1	64.2	58.9	57.9	56.8	70.8	0.0	70.8
	18	70.2	81.8	56.9	81.3	80.2	77.4	75.5	68.1	63.9	59.3	58.5	57.3	70.2	0.0	70.2
	19	64.9	78.6	44.2	77.9	76.7	72.8	69.8	57.9	51.2	46.1	45.4	44.5	64.9	5.0	69.9
	20	66.0	79.4	44.8	78.9	77.7	73.7	70.8	59.8	53.1	47.2	46.2	45.1	66.0	5.0	71.0
	21	63.2	77.0	43.3	76.5	75.5	71.0	66.8	55.5	50.6	45.1	44.4	43.6	63.2	5.0	68.2
Night	22	59.6	72.6	38.6	71.9	71.2	68.3	65.1	51.3	45.0	40.0	39.4	38.8	59.6	10.0	69.6
	23	60.0	72.3	41.2	71.8	71.1	67.9	65.0	56.9	50.8	43.5	42.6	41.4	60.0	10.0	70.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	63.2	77.0	40.2	76.5	75.5	71.0	66.8	55.5	49.5	41.8	41.1	40.4
	Max	75.6	86.1	58.5	85.5	84.6	82.5	81.1	75.7	69.2	60.5	59.4	58.6
Energy Average		70.4	Average:		80.9	79.8	76.8	74.6	66.2	58.6	50.4	49.3	48.2
Night	Min	51.4	65.2	35.0	64.8	63.9	59.3	55.0	41.8	37.8	36.0	35.7	35.3
	Max	75.6	86.1	59.3	85.6	84.8	82.5	80.9	75.4	70.2	61.7	60.6	59.5
Energy Average		67.4	Average:		72.1	71.2	67.4	63.9	52.9	47.4	42.4	41.8	41.0

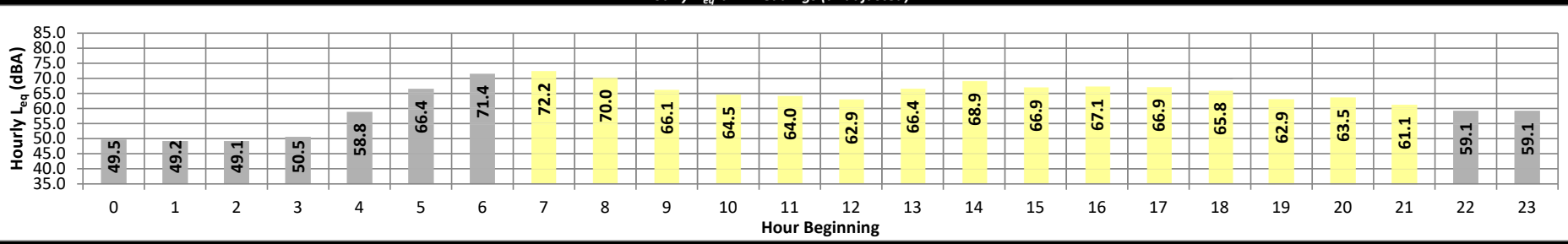
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
74.5	**70.4**	**67.4**

24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L3 - Located east of the Project site south of the residence at *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* 62800 Tyler St. *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	49.5	63.4	41.8	62.8	61.4	56.5	49.8	43.4	42.7	42.1	42.0	41.9	49.5	10.0	59.5
	1	49.2	62.4	41.8	61.9	60.9	56.4	51.5	44.0	42.7	42.1	42.0	41.9	49.2	10.0	59.2
	2	49.1	63.2	41.8	62.3	61.1	56.4	47.4	44.0	43.1	42.1	42.0	41.9	49.1	10.0	59.1
	3	50.5	63.3	41.7	62.9	62.0	58.3	54.7	44.6	42.6	42.0	41.9	41.8	50.5	10.0	60.5
	4	58.8	73.9	42.2	73.1	71.3	65.9	60.9	48.9	43.9	42.5	42.4	42.3	58.8	10.0	68.8
	5	66.4	80.4	44.4	79.8	78.3	73.9	70.9	59.6	52.8	45.4	44.9	44.5	66.4	10.0	76.4
	6	71.4	81.9	54.8	81.4	80.4	78.1	76.7	71.3	65.5	57.3	55.9	55.0	71.4	10.0	81.4
Day	7	72.2	82.7	55.3	82.3	81.4	79.2	77.7	71.9	65.8	57.2	56.3	55.5	72.2	0.0	72.2
	8	70.0	81.0	47.8	80.4	79.5	77.5	75.9	69.4	61.1	50.2	49.2	48.0	70.0	0.0	70.0
	9	66.1	78.6	44.8	78.1	77.1	74.0	71.5	62.4	53.5	46.1	45.5	45.0	66.1	0.0	66.1
	10	64.5	77.3	43.8	76.7	75.6	72.2	69.8	61.1	52.0	44.9	44.4	44.0	64.5	0.0	64.5
	11	64.0	76.5	42.7	75.9	74.9	71.9	69.8	60.1	51.0	43.8	43.3	42.8	64.0	0.0	64.0
	12	62.9	76.0	42.1	75.5	74.4	71.1	68.2	56.4	48.2	43.1	42.5	42.2	62.9	0.0	62.9
	13	66.4	77.8	45.9	77.3	76.2	74.0	72.2	64.9	57.4	48.0	47.0	46.1	66.4	0.0	66.4
	14	68.9	79.6	47.0	79.1	78.0	75.6	74.3	69.1	62.3	49.9	48.2	47.2	68.9	0.0	68.9
	15	66.9	77.5	45.8	77.0	76.1	74.1	72.7	66.6	58.4	48.0	46.8	46.0	66.9	0.0	66.9
	16	67.1	78.5	53.1	77.9	76.8	74.4	72.8	66.1	58.4	53.6	53.4	53.2	67.1	0.0	67.1
	17	66.9	78.5	55.4	78.0	77.1	74.4	72.4	64.7	59.5	56.2	55.9	55.6	66.9	0.0	66.9
	18	65.8	77.5	55.2	76.9	76.0	73.3	71.2	63.5	58.0	55.6	55.5	55.3	65.8	0.0	65.8
	19	62.9	75.7	55.3	75.2	74.0	70.2	66.9	58.4	56.2	55.6	55.5	55.4	62.9	5.0	67.9
	20	63.5	76.3	55.5	75.8	74.6	70.8	67.6	59.0	57.0	55.9	55.8	55.6	63.5	5.0	68.5
	21	61.1	73.9	55.4	73.3	72.2	67.6	63.5	56.8	56.1	55.7	55.6	55.5	61.1	5.0	66.1
Night	22	59.1	70.8	55.3	70.3	69.2	64.9	61.4	56.1	55.7	55.5	55.4	55.4	59.1	10.0	69.1
	23	59.1	70.6	55.4	70.1	68.9	64.6	61.5	56.6	55.9	55.6	55.6	55.5	59.1	10.0	69.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	61.1	73.9	42.1	73.3	72.2	67.6	63.5	56.4	48.2	43.1	42.5	42.2
	Max	72.2	82.7	55.5	82.3	81.4	79.2	77.7	71.9	65.8	57.2	56.3	55.6
Energy Average		67.0	Average:		77.3	76.3	73.4	71.1	63.4	57.0	50.9	50.3	49.8
Night	Min	49.1	62.4	41.7	61.9	60.9	56.4	47.4	43.4	42.6	42.0	41.9	41.8
	Max	71.4	81.9	55.4	81.4	80.4	78.1	76.7	71.3	65.5	57.3	55.9	55.5
Energy Average		63.7	Average:		69.4	68.2	63.9	59.4	52.1	49.4	47.2	46.9	46.7

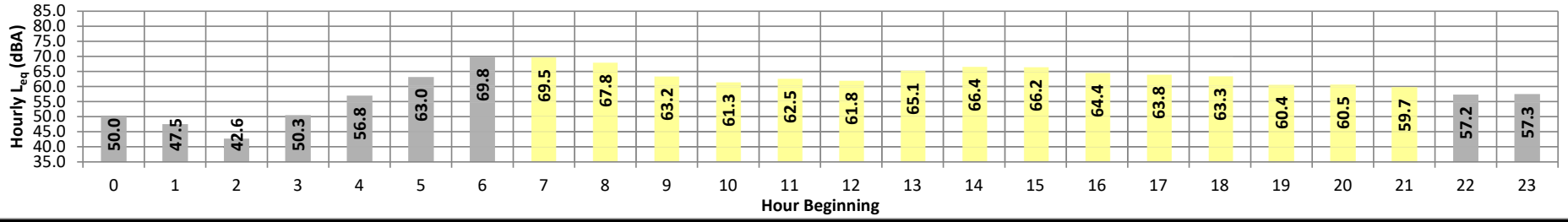
24-Hour CNEL	*Leq (dBA) Daytime (7am-10pm)*	*Leq (dBA) Nighttime (10pm-7am)*
70.9	**67.0**	**63.7**

24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L4 - Located southeast of the Project site near the Desert *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* Mirage High School *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	50.0	64.4	32.6	63.8	62.6	57.5	52.3	40.1	36.1	33.4	33.0	32.7	50.0	10.0	60.0
	1	47.5	60.9	32.5	60.6	59.6	55.3	51.5	39.6	35.1	33.2	32.9	32.6	47.5	10.0	57.5
	2	42.6	53.7	32.9	53.5	53.1	50.5	47.5	39.3	36.8	34.1	33.8	33.2	42.6	10.0	52.6
	3	50.3	64.3	31.4	63.9	62.8	58.3	54.1	40.6	35.2	32.3	32.0	31.5	50.3	10.0	60.3
	4	56.8	70.8	34.4	70.3	69.4	65.0	60.5	45.9	39.3	35.4	35.0	34.5	56.8	10.0	66.8
	5	63.0	75.6	39.8	75.2	74.3	71.1	68.3	57.9	49.8	41.9	41.1	40.1	63.0	10.0	73.0
	6	69.8	80.2	51.1	79.7	78.8	76.6	75.2	70.0	63.0	53.3	52.3	51.4	69.8	10.0	79.8
Day	7	69.5	80.2	50.8	79.7	78.8	76.6	75.1	69.1	62.8	52.6	51.7	50.9	69.5	0.0	69.5
	8	67.8	79.3	44.0	78.8	77.8	75.1	73.6	66.5	58.2	46.5	45.2	44.2	67.8	0.0	67.8
	9	63.2	76.1	37.8	75.6	74.5	71.3	68.9	58.0	47.9	40.1	38.9	38.0	63.2	0.0	63.2
	10	61.3	74.3	35.7	73.9	72.9	69.4	66.7	54.8	45.5	37.4	36.4	35.9	61.3	0.0	61.3
	11	62.5	75.3	38.0	74.7	73.6	70.4	68.0	58.7	47.7	39.7	39.1	38.4	62.5	0.0	62.5
	12	61.8	75.0	35.9	74.5	73.3	69.7	66.9	56.9	46.9	37.2	36.7	36.0	61.8	0.0	61.8
	13	65.1	77.1	41.7	76.6	75.6	72.6	70.5	63.6	54.8	44.8	43.0	42.0	65.1	0.0	65.1
	14	66.4	77.0	47.7	76.5	75.6	73.1	71.6	66.3	60.7	50.9	49.0	47.9	66.4	0.0	66.4
	15	66.2	77.9	44.5	77.3	76.3	73.5	71.6	65.1	57.4	47.6	46.1	44.8	66.2	0.0	66.2
	16	64.4	76.1	38.4	75.6	74.6	71.8	70.1	63.0	53.4	41.0	39.5	38.6	64.4	0.0	64.4
	17	63.8	76.4	38.9	75.8	74.6	71.6	69.4	60.8	52.2	41.2	40.1	39.1	63.8	0.0	63.8
	18	63.3	76.1	41.2	75.6	74.5	70.9	68.6	59.6	50.8	43.2	42.4	41.6	63.3	0.0	63.3
	19	60.4	73.8	37.9	73.4	72.3	68.5	65.0	54.1	47.5	39.8	39.0	38.1	60.4	5.0	65.4
	20	60.5	74.2	37.7	73.7	72.5	68.5	65.0	53.4	45.6	39.6	38.8	37.9	60.5	5.0	65.5
	21	59.7	73.9	35.9	73.4	72.3	67.5	63.3	50.2	42.3	37.2	36.7	36.0	59.7	5.0	64.7
Night	22	57.2	71.3	33.4	70.7	69.5	65.2	61.2	48.6	38.9	34.5	34.0	33.5	57.2	10.0	67.2
	23	57.3	71.2	33.3	70.8	69.6	65.5	61.5	46.6	39.5	35.0	34.4	33.5	57.3	10.0	67.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.7	73.8	35.7	73.4	72.3	67.5	63.3	50.2	42.3	37.2	36.4	35.9
	Max	69.5	80.2	50.8	79.7	78.8	76.6	75.1	69.1	62.8	52.6	51.7	50.9
Energy Average		64.7	Average:		75.7	74.6	71.4	69.0	60.0	51.6	42.6	41.5	40.6
Night	Min	42.6	53.7	31.4	53.5	53.1	50.5	47.5	39.3	35.1	32.3	32.0	31.5
	Max	69.8	80.2	51.1	79.7	78.8	76.6	75.2	70.0	63.0	53.3	52.3	51.4
Energy Average		61.7	Average:		67.6	66.6	62.8	59.1	47.6	41.5	37.0	36.5	35.9

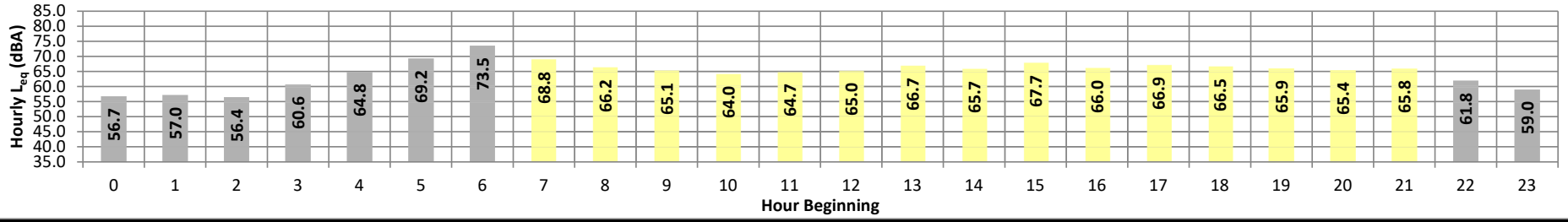
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
68.8	**64.7**	**61.7**

24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L5 - Located west of the Project site north of 64th Av. *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* *Analyst:* Z. Ibrahim

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	56.7	69.2	41.4	68.7	67.6	64.6	62.1	52.9	46.6	42.1	41.7	41.4	56.7	10.0	66.7
	1	57.0	70.1	40.7	69.6	68.5	65.3	62.2	50.8	44.0	41.0	40.8	40.6	57.0	10.0	67.0
	2	56.4	69.6	40.8	69.1	68.0	64.6	61.3	49.9	45.0	41.3	41.0	40.7	56.4	10.0	66.4
	3	60.6	73.7	41.1	73.1	72.0	68.4	65.6	55.7	48.5	42.2	41.7	41.1	60.6	10.0	70.6
	4	64.8	78.3	44.7	77.3	75.6	72.1	69.2	61.8	53.8	46.0	45.3	44.8	64.8	10.0	74.8
	5	69.2	79.1	50.6	78.5	77.8	76.0	74.5	69.7	64.0	53.1	51.7	50.8	69.2	10.0	79.2
	6	73.5	84.2	57.1	83.6	82.4	79.3	77.5	73.9	69.8	60.6	58.6	57.3	73.5	10.0	83.5
Day	7	68.8	79.8	52.2	79.3	78.2	75.7	74.1	68.4	62.3	54.2	53.2	52.4	68.8	0.0	68.8
	8	66.2	77.9	47.5	77.3	76.3	73.2	71.4	65.4	58.7	49.5	48.6	47.7	66.2	0.0	66.2
	9	65.1	76.7	44.9	76.1	75.0	72.4	70.5	64.2	57.2	47.1	46.0	45.1	65.1	0.0	65.1
	10	64.0	76.1	44.1	75.5	74.3	71.3	69.3	62.5	54.3	45.9	45.0	44.2	64.0	0.0	64.0
	11	64.7	76.3	43.8	75.8	74.6	71.7	69.8	63.9	57.2	45.9	44.8	43.9	64.7	0.0	64.7
	12	65.0	76.7	44.6	76.1	75.0	71.9	70.1	64.5	57.7	46.7	45.6	44.8	65.0	0.0	65.0
	13	66.7	79.1	45.7	78.4	77.2	73.8	71.4	65.2	59.0	48.4	47.1	45.9	66.7	0.0	66.7
	14	65.7	77.4	47.1	76.8	75.6	72.2	70.3	65.5	59.6	49.5	48.2	47.2	65.7	0.0	65.7
	15	67.7	77.5	50.6	76.9	75.9	73.7	72.3	68.5	64.0	54.4	52.8	50.9	67.7	0.0	67.7
	16	66.0	76.2	48.3	75.8	74.8	72.3	70.8	66.5	61.1	51.3	49.7	48.5	66.0	0.0	66.0
	17	66.9	78.3	48.5	77.4	76.1	73.2	71.5	67.0	61.8	52.0	50.1	48.7	66.9	0.0	66.9
	18	66.5	77.9	47.8	77.4	76.3	73.3	71.3	66.1	60.1	50.6	49.4	48.2	66.5	0.0	66.5
	19	65.9	77.1	49.7	76.3	75.2	72.5	70.9	65.8	59.7	51.7	50.8	49.9	65.9	5.0	70.9
	20	65.4	76.4	49.3	75.9	74.8	72.2	70.5	65.1	59.2	51.8	50.7	49.6	65.4	5.0	70.4
	21	65.8	78.0	48.8	77.5	76.6	73.0	70.4	64.2	57.8	50.7	49.9	49.1	65.8	5.0	70.8
Night	22	61.8	74.0	45.9	73.4	72.2	69.3	67.4	59.4	52.7	47.4	46.8	46.0	61.8	10.0	71.8
	23	59.0	72.0	44.7	71.3	69.9	66.5	64.0	55.0	49.7	45.7	45.2	44.8	59.0	10.0	69.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	64.0	76.1	43.8	75.5	74.3	71.3	69.3	62.5	54.3	45.9	44.8	43.9
	Max	68.8	79.8	52.2	79.3	78.2	75.7	74.1	68.5	64.0	54.4	53.2	52.4
Energy Average		66.2	Average:		76.8	75.7	72.8	71.0	65.5	59.3	50.0	48.8	47.7
Night	Min	56.4	69.2	40.7	68.7	67.6	64.6	61.3	49.9	44.0	41.0	40.8	40.6
	Max	73.5	84.2	57.1	83.6	82.4	79.3	77.5	73.9	69.8	60.6	58.6	57.3
Energy Average		66.3	Average:		73.8	72.7	69.6	67.1	58.8	52.7	46.6	45.9	45.3

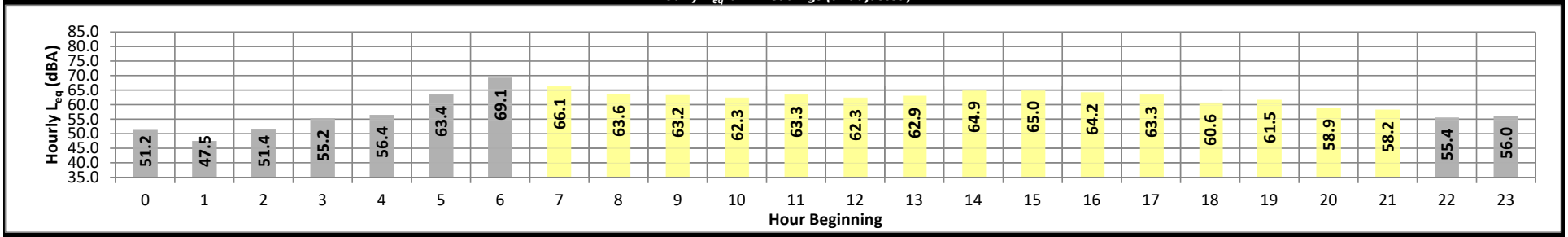
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
72.9	**66.2**	**66.3**

24-Hour Noise Level Measurement Summary

Date: Thursday, March 23, 2023 *Location:* L6 - Located northwest of the Project site near the residence *Meter:* Piccolo II *JN:* 14497

Project: Ave 62/Harrison Street Specific Plan *Source:* at 61855 Sabina St. *Analyst:* Z. Ibrahim

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	51.2	65.1	31.7	64.7	63.8	59.3	54.1	41.2	35.4	32.3	32.1	31.8	51.2	10.0	61.2
	1	47.5	61.0	30.7	60.7	60.0	56.1	51.6	35.8	32.2	31.1	30.9	30.8	47.5	10.0	57.5
	2	51.4	65.3	30.8	65.0	64.1	59.6	53.8	40.4	36.1	31.4	31.1	30.9	51.4	10.0	61.4
	3	55.2	69.4	30.9	68.9	67.9	63.3	58.4	41.4	34.6	31.4	31.2	30.9	55.2	10.0	65.2
	4	56.4	70.0	32.8	69.5	68.6	64.7	61.0	46.1	36.4	33.4	33.2	32.9	56.4	10.0	66.4
	5	63.4	76.6	38.2	76.1	75.1	71.7	68.9	55.7	46.6	39.7	38.7	38.3	63.4	10.0	73.4
	6	69.1	80.8	48.6	80.3	79.2	76.7	75.1	67.1	58.6	51.1	50.0	49.0	69.1	10.0	79.1
Day	7	66.1	78.4	45.0	77.9	76.9	74.2	72.0	62.1	53.9	46.8	46.0	45.2	66.1	0.0	66.1
	8	63.6	76.3	42.8	75.9	75.0	71.8	69.1	57.7	50.8	44.9	44.1	43.2	63.6	0.0	63.6
	9	63.2	76.6	38.1	76.0	74.9	71.2	68.1	57.3	47.7	40.1	39.3	38.3	63.2	0.0	63.2
	10	62.3	75.5	37.2	75.1	74.2	70.4	67.1	56.0	46.4	39.2	38.3	37.4	62.3	0.0	62.3
	11	63.3	77.0	36.3	76.4	75.3	71.5	68.0	55.4	45.1	38.5	37.4	36.6	63.3	0.0	63.3
	12	62.3	75.1	36.0	74.7	73.7	70.9	68.2	54.7	44.9	38.0	37.2	36.4	62.3	0.0	62.3
	13	62.9	76.0	38.2	75.5	74.4	71.0	68.3	57.1	46.6	40.2	39.3	38.5	62.9	0.0	62.9
	14	64.9	77.2	39.3	76.7	75.8	72.8	70.5	61.7	53.9	42.4	40.7	39.5	64.9	0.0	64.9
	15	65.0	77.0	41.6	76.6	75.6	72.8	70.6	62.4	52.5	44.0	43.0	41.9	65.0	0.0	65.0
	16	64.2	76.6	40.9	76.2	75.2	72.3	70.0	59.0	49.2	42.6	42.0	41.2	64.2	0.0	64.2
	17	63.3	76.3	40.9	75.9	74.8	71.3	68.5	58.4	50.0	42.5	41.8	41.1	63.3	0.0	63.3
	18	60.6	74.5	39.9	74.0	72.8	68.6	64.2	52.7	49.2	43.9	42.6	40.6	60.6	0.0	60.6
	19	61.5	75.2	40.0	74.7	73.6	69.1	66.0	53.9	47.9	41.7	41.1	40.4	61.5	5.0	66.5
	20	58.9	72.6	40.8	72.1	71.3	67.1	62.5	50.5	45.6	42.9	42.3	41.4	58.9	5.0	63.9
	21	58.2	72.0	37.2	71.5	70.3	66.2	62.4	48.7	42.1	39.0	38.4	37.7	58.2	5.0	63.2
Night	22	55.4	69.6	36.5	69.1	68.1	63.4	58.6	44.3	41.0	38.5	37.9	37.2	55.4	10.0	65.4
	23	56.0	70.3	34.9	69.9	68.7	63.5	58.3	45.5	40.6	37.2	36.4	35.4	56.0	10.0	66.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	58.2	72.0	36.0	71.5	70.3	66.2	62.4	48.7	42.1	38.0	37.2	36.4
	Max	66.1	78.4	45.0	77.9	76.9	74.2	72.0	62.4	53.9	46.8	46.0	45.2
Energy Average		63.2	Average:		75.3	74.3	70.7	67.7	56.5	48.4	41.8	40.9	40.0
Night	Min	47.5	61.0	30.7	60.7	60.0	56.1	51.6	35.8	32.2	31.1	30.9	30.8
	Max	69.1	80.8	48.6	80.3	79.2	76.7	75.1	67.1	58.6	51.1	50.0	49.0
Energy Average		61.3	Average:		69.4	68.4	64.2	60.0	46.4	40.2	36.2	35.7	35.2

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
68.2	**63.2**	**61.3**

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	117 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-11.73	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-28.97	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-32.92	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:	57.6	56.7	55.3	49.3	57.8	58.4
Medium Trucks:	51.2	48.4	40.8	49.6	55.8	55.8
Heavy Trucks:	51.6	48.6	45.2	49.9	56.1	56.2
Vehicle Noise:	59.3	57.8	55.9	54.4	61.4	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	133
CNEL:	14	30	65	140

Wednesday, May 3, 2023

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	156 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-10.48	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-27.72	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-31.67	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:	58.8	57.9	56.6	50.6	59.0	59.6
Medium Trucks:	52.4	49.6	42.1	50.9	57.0	57.1
Heavy Trucks:	52.8	49.9	46.5	51.1	57.3	57.4
Vehicle Noise:	60.5	59.1	57.1	55.6	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	75	162
CNEL:	17	37	79	170

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	133 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-11.18	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-28.42	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-32.38	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:	58.1	57.2	55.9	49.9	58.3	58.9
Medium Trucks:	51.7	48.9	41.4	50.1	56.3	56.4
Heavy Trucks:	52.1	49.2	45.8	50.4	56.6	56.7
Vehicle Noise:	59.8	58.4	56.4	54.9	61.9	62.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	31	67	145
CNEL:	15	33	71	152

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	148 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-10.70	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-27.94	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-31.89	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:	58.6	57.7	56.4	50.4	58.8	59.4
Medium Trucks:	52.2	49.4	41.9	50.6	56.8	56.8
Heavy Trucks:	52.6	49.7	46.3	50.9	57.1	57.2
Vehicle Noise:	60.3	58.8	56.9	55.4	62.4	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	73	156
CNEL:	16	35	76	164

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-9.51	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-26.75	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-30.70	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:	59.8	58.9	57.6	51.6	60.0	60.6
Medium Trucks:	53.4	50.6	43.1	51.8	58.0	58.0
Heavy Trucks:	53.8	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	61.5	60.0	58.1	56.6	63.6	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	188
CNEL:	20	42	91	197

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	234 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-8.72	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.95	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.91	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	59.7	58.4	52.3	60.8	61.4
Medium Trucks:	54.2	51.4	43.9	52.6	58.8	58.8
Heavy Trucks:	54.6	51.6	48.2	52.9	59.1	59.2
Vehicle Noise:	62.3	60.8	58.9	57.4	64.4	64.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	212
CNEL:	22	48	103	222

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	928 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-2.73	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-19.97	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-23.93	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:	66.6	65.7	64.3	58.3	66.7	67.4
Medium Trucks:	60.2	57.3	49.8	58.6	64.8	64.8
Heavy Trucks:	60.6	57.6	54.2	58.9	65.1	65.2
Vehicle Noise:	68.3	66.8	64.9	63.4	70.4	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	246	531
CNEL:	56	120	259	558

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Monroe St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	959 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-2.59	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-19.83	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-23.78	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:	66.7	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	60.3	57.5	50.0	58.7	64.9	65.0
Heavy Trucks:	60.7	57.8	54.4	59.0	65.2	65.3
Vehicle Noise:	68.4	67.0	65.0	63.5	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	252	543
CNEL:	57	123	265	570

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	109 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-12.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-29.26	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-33.22	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.4	55.4	54.1	48.1	56.5	57.1
Medium Trucks:	49.9	47.1	39.6	48.4	54.5	54.6
Heavy Trucks:	50.4	47.4	44.0	48.6	54.8	54.9
Vehicle Noise:	58.1	56.6	54.7	53.1	60.2	60.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	28	60	130
CNEL:	14	29	64	137

Wednesday, May 3, 2023

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	148 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-10.70	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-27.94	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-31.89	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	56.8	55.4	49.4	57.8	58.5
Medium Trucks:	51.3	48.4	40.9	49.7	55.9	55.9
Heavy Trucks:	51.7	48.7	45.3	50.0	56.2	56.3
Vehicle Noise:	59.4	57.9	56.0	54.5	61.5	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	160
CNEL:	17	36	78	168

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	133 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-11.18	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-28.42	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-32.38	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.2	56.3	55.0	48.9	57.4	58.0
Medium Trucks:	50.8	48.0	40.5	49.2	55.4	55.4
Heavy Trucks:	51.2	48.2	44.8	49.5	55.7	55.8
Vehicle Noise:	58.9	57.4	55.5	54.0	61.0	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	72	156

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	148 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-10.70	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-27.94	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-31.89	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	56.8	55.4	49.4	57.8	58.5
Medium Trucks:	51.3	48.4	40.9	49.7	55.9	55.9
Heavy Trucks:	51.7	48.7	45.3	50.0	56.2	56.3
Vehicle Noise:	59.4	57.9	56.0	54.5	61.5	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	160
CNEL:	17	36	78	168

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	382 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.59	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-23.82	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-27.78	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	60.9	59.6	53.5	62.0	62.6
Medium Trucks:	55.4	52.6	45.0	53.8	60.0	60.0
Heavy Trucks:	55.8	52.8	49.4	54.1	60.3	60.4
Vehicle Noise:	63.5	62.0	60.1	58.6	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	300
CNEL:	32	68	146	315

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	421 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.16	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-23.40	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-27.36	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	61.3	60.0	54.0	62.4	63.0
Medium Trucks:	55.8	53.0	45.5	54.2	60.4	60.4
Heavy Trucks:	56.2	53.3	49.8	54.5	60.7	60.8
Vehicle Noise:	63.9	62.4	60.5	59.0	66.0	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	149	320
CNEL:	34	73	156	337

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	835 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.19	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.43	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.39	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	64.3	62.9	56.9	65.4	66.0
Medium Trucks:	58.8	55.9	48.4	57.2	63.4	63.4
Heavy Trucks:	59.2	56.2	52.8	57.5	63.7	63.8
Vehicle Noise:	66.9	65.4	63.5	62.0	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	506
CNEL:	53	114	246	531

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Van Buren St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	874 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.00	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.23	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.19	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	64.5	63.1	57.1	65.6	66.2
Medium Trucks:	59.0	56.1	48.6	57.4	63.6	63.6
Heavy Trucks:	59.4	56.4	53.0	57.7	63.9	64.0
Vehicle Noise:	67.1	65.6	63.7	62.2	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	242	521
CNEL:	55	118	254	547

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

Scenario: E
Road Name: Cesar Chavez St.
Road Segment: n/o 54th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,466 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.16	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.40	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.35	-4.45	-1.20	-5.14	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	64.0	62.7	56.7	65.1	65.8
Medium Trucks:	58.4	55.5	48.0	56.8	63.0	63.0
Heavy Trucks:	58.4	55.4	52.0	56.7	62.9	63.0
Vehicle Noise:	66.5	65.1	63.2	61.5	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	881
CNEL:	93	200	430	927

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

Scenario: E+P
Road Name: Cesar Chavez St.
Road Segment: n/o 54th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,576 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.85	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.09	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.04	-4.45	-1.20	-5.14	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:	65.3	64.3	63.0	57.0	65.4	66.1
Medium Trucks:	58.7	55.8	48.3	57.1	63.3	63.3
Heavy Trucks:	58.7	55.7	52.3	57.0	63.2	63.3
Vehicle Noise:	66.9	65.4	63.5	61.8	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	199	429	924
CNEL:	97	209	451	972

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

Scenario: EAC (2026)
Road Name: Cesar Chavez St.
Road Segment: n/o 54th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,599 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.78	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.02	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.98	-4.45	-1.20	-5.14	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:	65.3	64.4	63.1	57.1	65.5	66.1
Medium Trucks:	58.7	55.9	48.4	57.2	63.3	63.4
Heavy Trucks:	58.8	55.8	52.4	57.0	63.2	63.3
Vehicle Noise:	66.9	65.5	63.6	61.9	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	433	933
CNEL:	98	212	456	982

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

Scenario: EAPC (2026)
Road Name: Cesar Chavez St.
Road Segment: n/o 54th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,646 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.66	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.90	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.85	-4.45	-1.20	-5.14	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:	65.5	64.5	63.2	57.2	65.6	66.3
Medium Trucks:	58.9	56.0	48.5	57.3	63.5	63.5
Heavy Trucks:	58.9	55.9	52.5	57.2	63.4	63.5
Vehicle Noise:	67.0	65.6	63.7	62.0	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	205	442	951
CNEL:	100	216	465	1,001

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Cesar Chavez St. | Job Number: 14497
Road Segment: n/o 54th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,864 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.12	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.36	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.31	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	65.1	63.8	57.7	66.2	66.8
Medium Trucks:	59.4	56.6	49.1	57.8	64.0	64.0
Heavy Trucks:	59.4	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	67.6	66.1	64.2	62.5	69.6	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	223	480	1,034
CNEL:	109	234	505	1,087

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Cesar Chavez St. | Job Number: 14497
Road Segment: n/o 54th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,973 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.13	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.11	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.06	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	65.3	64.0	58.0	66.4	67.0
Medium Trucks:	59.6	56.8	49.3	58.1	64.2	64.3
Heavy Trucks:	59.7	56.7	53.3	58.0	64.2	64.3
Vehicle Noise:	67.8	66.4	64.5	62.8	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	498	1,074
CNEL:	113	243	524	1,130

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Cesar Chavez St. | Job Number: 14497
Road Segment: n/o 54th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,276 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.33	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-14.91	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.86	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	67.5	66.2	60.2	68.6	69.2
Medium Trucks:	61.8	59.0	51.5	60.3	66.4	66.5
Heavy Trucks:	61.9	58.9	55.5	60.2	66.4	66.5
Vehicle Noise:	70.0	68.6	66.7	65.0	72.0	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	151	324	699	1,505
CNEL:	158	341	735	1,584

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Cesar Chavez St. | Job Number: 14497
Road Segment: n/o 54th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,377 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.46	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-14.77	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.73	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.6	67.7	66.3	60.3	68.7	69.4
Medium Trucks:	62.0	59.2	51.6	60.4	66.6	66.6
Heavy Trucks:	62.0	59.0	55.6	60.3	66.5	66.6
Vehicle Noise:	70.2	68.7	66.8	65.1	72.2	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	154	331	713	1,536
CNEL:	162	348	750	1,616

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	811 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.73	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.97	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.93	-4.45	-1.20	-5.14	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:	62.4	61.5	60.1	54.1	62.6	63.2
Medium Trucks:	55.8	53.0	45.5	54.2	60.4	60.4
Heavy Trucks:	55.8	52.9	49.4	54.1	60.3	60.4
Vehicle Noise:	64.0	62.5	60.6	58.9	66.0	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	276	594
CNEL:	62	135	290	624

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	975 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.93	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.17	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.13	-4.45	-1.20	-5.14	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:	63.2	62.3	60.9	54.9	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.0	61.2	61.2
Heavy Trucks:	56.6	53.7	50.2	54.9	61.1	61.2
Vehicle Noise:	64.8	63.3	61.4	59.7	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	311	671
CNEL:	71	152	328	706

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	913 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.22	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.46	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.41	-4.45	-1.20	-5.14	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:	62.9	62.0	60.7	54.6	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.7	60.9	60.9
Heavy Trucks:	56.3	53.4	50.0	54.6	60.8	60.9
Vehicle Noise:	64.5	63.0	61.1	59.4	66.5	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	298	642
CNEL:	68	146	314	675

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	991 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.86	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.10	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.06	-4.45	-1.20	-5.14	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:	63.3	62.3	61.0	55.0	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.1	61.3	61.3
Heavy Trucks:	56.7	53.7	50.3	55.0	61.2	61.3
Vehicle Noise:	64.8	63.4	61.5	59.8	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	315	678
CNEL:	71	154	331	713

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,115 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.35	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-19.59	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.54	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.8	62.8	61.5	55.5	63.9	64.6
Medium Trucks:	57.2	54.3	46.8	55.6	61.8	61.8
Heavy Trucks:	57.2	54.2	50.8	55.5	61.7	61.8
Vehicle Noise:	65.4	63.9	62.0	60.3	67.4	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	341	734
CNEL:	77	166	358	772

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,279 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.75	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.99	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.95	-4.45	-1.20	-5.14	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:	64.4	63.4	62.1	56.1	64.5	65.2
Medium Trucks:	57.8	54.9	47.4	56.2	62.4	62.4
Heavy Trucks:	57.8	54.8	51.4	56.1	62.3	62.4
Vehicle Noise:	65.9	64.5	62.6	60.9	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	373	804
CNEL:	85	182	393	846

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,340 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.87	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.37	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.32	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.1	64.7	58.7	67.2	67.8
Medium Trucks:	60.4	57.6	50.1	58.8	65.0	65.0
Heavy Trucks:	60.4	57.5	54.0	58.7	64.9	65.0
Vehicle Noise:	68.6	67.1	65.2	63.5	70.6	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	120	259	558	1,203
CNEL:	127	273	587	1,265

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o Airport Bl.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,504 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.16	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.07	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.03	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.4	65.0	59.0	67.4	68.1
Medium Trucks:	60.7	57.9	50.3	59.1	65.3	65.3
Heavy Trucks:	60.7	57.7	54.3	59.0	65.2	65.3
Vehicle Noise:	68.9	67.4	65.5	63.8	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	271	584	1,258
CNEL:	132	285	614	1,324

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	647 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.71	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.95	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.90	-4.45	-1.20	-5.14	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:	61.4	60.5	59.2	53.2	61.6	62.2
Medium Trucks:	54.8	52.0	44.5	53.2	59.4	59.4
Heavy Trucks:	54.8	51.9	48.5	53.1	59.3	59.4
Vehicle Noise:	63.0	61.5	59.7	57.9	65.0	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	237	511
CNEL:	54	116	249	537

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,006 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.80	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.03	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.99	-4.45	-1.20	-5.14	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:	63.3	62.4	61.1	55.1	63.5	64.1
Medium Trucks:	56.7	53.9	46.4	55.1	61.3	61.4
Heavy Trucks:	56.8	53.8	50.4	55.0	61.2	61.3
Vehicle Noise:	64.9	63.5	61.6	59.9	66.9	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	148	318	685
CNEL:	72	155	335	721

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	741 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.12	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.36	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.32	-4.45	-1.20	-5.14	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:	62.0	61.1	59.8	53.7	62.2	62.8
Medium Trucks:	55.4	52.6	45.1	53.8	60.0	60.0
Heavy Trucks:	55.4	52.5	49.1	53.7	59.9	60.0
Vehicle Noise:	63.6	62.1	60.2	58.5	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	59	127	273	588

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	913 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.22	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.46	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.41	-4.45	-1.20	-5.14	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:	62.9	62.0	60.7	54.6	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.7	60.9	60.9
Heavy Trucks:	56.3	53.4	50.0	54.6	60.8	60.9
Vehicle Noise:	64.5	63.0	61.1	59.4	66.5	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	298	642
CNEL:	68	146	314	675

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	928 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.15	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.38	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.34	-4.45	-1.20	-5.14	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:	63.0	62.0	60.7	54.7	63.1	63.8
Medium Trucks:	56.4	53.5	46.0	54.8	61.0	61.0
Heavy Trucks:	56.4	53.4	50.0	54.7	60.9	61.0
Vehicle Noise:	64.6	63.1	61.2	59.5	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	301	649
CNEL:	68	147	317	683

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,287 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.73	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.97	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.92	-4.45	-1.20	-5.14	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:	64.4	63.5	62.2	56.1	64.6	65.2
Medium Trucks:	57.8	55.0	47.5	56.2	62.4	62.4
Heavy Trucks:	57.8	54.9	51.5	56.1	62.3	62.4
Vehicle Noise:	66.0	64.5	62.6	60.9	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	174	375	807
CNEL:	85	183	394	849

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,161 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.52	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.72	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.67	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.7	64.4	58.4	66.8	67.4
Medium Trucks:	60.0	57.2	49.7	58.5	64.6	64.7
Heavy Trucks:	60.1	57.1	53.7	58.4	64.6	64.7
Vehicle Noise:	68.2	66.8	64.9	63.2	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	114	246	529	1,141
CNEL:	120	259	557	1,200

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 58th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,519 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.19	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.05	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.00	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.4	65.1	59.1	67.5	68.1
Medium Trucks:	60.7	57.9	50.4	59.1	65.3	65.3
Heavy Trucks:	60.7	57.8	54.4	59.0	65.2	65.3
Vehicle Noise:	68.9	67.5	65.6	63.8	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	587	1,264
CNEL:	133	286	617	1,329

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	632 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.82	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.06	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.01	-4.45	-1.20	-5.14	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:	61.3	60.4	59.1	53.0	61.5	62.1
Medium Trucks:	54.7	51.9	44.4	53.1	59.3	59.3
Heavy Trucks:	54.7	51.8	48.4	53.0	59.2	59.3
Vehicle Noise:	62.9	61.4	59.5	57.8	64.9	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	233	503
CNEL:	53	114	245	529

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,022 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.73	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-19.97	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.92	-4.45	-1.20	-5.14	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:	63.4	62.5	61.1	55.1	63.6	64.2
Medium Trucks:	56.8	54.0	46.5	55.2	61.4	61.4
Heavy Trucks:	56.8	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	65.0	63.5	61.6	59.9	67.0	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	321	692
CNEL:	73	157	338	728

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	733 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.17	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.41	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.36	-4.45	-1.20	-5.14	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:	62.0	61.0	59.7	53.7	62.1	62.7
Medium Trucks:	55.3	52.5	45.0	53.8	59.9	60.0
Heavy Trucks:	55.4	52.4	49.0	53.7	59.9	60.0
Vehicle Noise:	63.5	62.1	60.2	58.5	65.5	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	120	258	555
CNEL:	58	126	271	584

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	920 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.18	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.42	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.38	-4.45	-1.20	-5.14	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:	62.9	62.0	60.7	54.7	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.8	60.9	61.0
Heavy Trucks:	56.4	53.4	50.0	54.7	60.8	60.9
Vehicle Noise:	64.5	63.1	61.2	59.5	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	646
CNEL:	68	146	315	679

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	913 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.22	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.46	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.41	-4.45	-1.20	-5.14	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:	62.9	62.0	60.7	54.6	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.7	60.9	60.9
Heavy Trucks:	56.3	53.4	50.0	54.6	60.8	60.9
Vehicle Noise:	64.5	63.0	61.1	59.4	66.5	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	298	642
CNEL:	68	146	314	675

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,303 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.67	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.91	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.87	-4.45	-1.20	-5.14	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:	64.4	63.5	62.2	56.2	64.6	65.2
Medium Trucks:	57.8	55.0	47.5	56.3	62.4	62.5
Heavy Trucks:	57.9	54.9	51.5	56.2	62.4	62.5
Vehicle Noise:	66.0	64.6	62.7	61.0	68.0	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	175	378	814
CNEL:	86	184	397	856

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,176 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.55	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.68	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.64	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	65.7	64.4	58.4	66.8	67.5
Medium Trucks:	60.1	57.2	49.7	58.5	64.7	64.7
Heavy Trucks:	60.1	57.1	53.7	58.4	64.6	64.7
Vehicle Noise:	68.3	66.8	64.9	63.2	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	115	247	532	1,146
CNEL:	121	260	560	1,206

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 60th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,566 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.27	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-15.97	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-19.92	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.5	65.1	59.1	67.6	68.2
Medium Trucks:	60.8	58.0	50.5	59.2	65.4	65.4
Heavy Trucks:	60.8	57.9	54.4	59.1	65.3	65.4
Vehicle Noise:	69.0	67.5	65.6	63.9	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	276	594	1,279
CNEL:	135	290	625	1,346

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	577 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.21	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.45	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.40	-4.45	-1.20	-5.14	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:	60.9	60.0	58.7	52.7	61.1	61.7
Medium Trucks:	54.3	51.5	44.0	52.7	58.9	58.9
Heavy Trucks:	54.3	51.4	48.0	52.6	58.8	58.9
Vehicle Noise:	62.5	61.1	59.2	57.4	64.5	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	50	107	231	498

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,006 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.80	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.03	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.99	-4.45	-1.20	-5.14	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:	63.3	62.4	61.1	55.1	63.5	64.1
Medium Trucks:	56.7	53.9	46.4	55.1	61.3	61.4
Heavy Trucks:	56.8	53.8	50.4	55.0	61.2	61.3
Vehicle Noise:	64.9	63.5	61.6	59.9	66.9	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	148	318	685
CNEL:	72	155	335	721

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	663 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.61	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.85	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.80	-4.45	-1.20	-5.14	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:	61.5	60.6	59.3	53.3	61.7	62.3
Medium Trucks:	54.9	52.1	44.6	53.3	59.5	59.5
Heavy Trucks:	54.9	52.0	48.6	53.2	59.4	59.5
Vehicle Noise:	63.1	61.7	59.8	58.0	65.1	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	112	241	519
CNEL:	55	118	253	546

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	858 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.49	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.73	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.68	-4.45	-1.20	-5.14	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:	62.6	61.7	60.4	54.4	62.8	63.4
Medium Trucks:	56.0	53.2	45.7	54.5	60.6	60.7
Heavy Trucks:	56.1	53.1	49.7	54.3	60.5	60.6
Vehicle Noise:	64.2	62.8	60.9	59.2	66.2	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	286	616
CNEL:	65	140	301	648

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	772 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.95	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.18	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.14	-4.45	-1.20	-5.14	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:	62.2	61.2	59.9	53.9	62.3	63.0
Medium Trucks:	55.6	52.7	45.2	54.0	60.2	60.2
Heavy Trucks:	55.6	52.6	49.2	53.9	60.1	60.2
Vehicle Noise:	63.8	62.3	60.4	58.7	65.8	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	124	267	574
CNEL:	60	130	280	604

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,201 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.03	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-19.26	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.22	-4.45	-1.20	-5.14	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:	64.1	63.2	61.9	55.8	64.3	64.9
Medium Trucks:	57.5	54.7	47.2	55.9	62.1	62.1
Heavy Trucks:	57.5	54.6	51.2	55.8	62.0	62.1
Vehicle Noise:	65.7	64.2	62.3	60.6	67.7	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	166	358	771
CNEL:	81	175	377	811

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,051 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.30	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.94	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.90	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	65.5	64.2	58.2	66.6	67.2
Medium Trucks:	59.8	57.0	49.5	58.2	64.4	64.4
Heavy Trucks:	59.8	56.9	53.5	58.1	64.3	64.4
Vehicle Noise:	68.0	66.6	64.7	62.9	70.0	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	511	1,102
CNEL:	116	250	538	1,159

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,480 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.12	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.12	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.07	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	66.3	65.0	59.0	67.4	68.0
Medium Trucks:	60.6	57.8	50.3	59.1	65.2	65.3
Heavy Trucks:	60.7	57.7	54.3	59.0	65.2	65.3
Vehicle Noise:	68.8	67.4	65.5	63.8	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	125	269	580	1,251
CNEL:	132	283	611	1,316

Wednesday, May 3, 2023

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

Scenario: E
Road Name: Harrison St.
Road Segment: s/o 62nd Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-5.58	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-22.81	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-26.77	-4.45	-1.20	*-5.14*	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:	60.5	59.6	58.3	52.3	60.7	61.3
Medium Trucks:	53.9	51.1	43.6	52.4	58.5	58.6
Heavy Trucks:	54.0	51.0	47.6	52.3	58.5	58.6
Vehicle Noise:	62.1	60.7	58.8	57.1	64.1	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	45	96	208	447
CNEL:	47	101	218	470

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

Scenario: E+P
Road Name: Harrison St.
Road Segment: s/o 62nd Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,459 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-1.18	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-18.42	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-22.38	-4.45	-1.20	*-5.14*	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	64.0	62.7	56.7	65.1	65.7
Medium Trucks:	58.3	55.5	48.0	56.8	62.9	63.0
Heavy Trucks:	58.4	55.4	52.0	56.6	62.8	62.9
Vehicle Noise:	66.5	65.1	63.2	61.5	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	88	189	407	878
CNEL:	92	199	429	923

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

Scenario: EAC (2026)
Road Name: Harrison St.
Road Segment: s/o 62nd Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	624 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-4.87	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-22.11	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-26.06	-4.45	-1.20	*-5.14*	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:	61.3	60.3	59.0	53.0	61.4	62.0
Medium Trucks:	54.6	51.8	44.3	53.1	59.2	59.3
Heavy Trucks:	54.7	51.7	48.3	53.0	59.2	59.3
Vehicle Noise:	62.8	61.4	59.5	57.8	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	50	107	231	498
CNEL:	52	113	243	524

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

Scenario: EAPC (2026)
Road Name: Harrison St.
Road Segment: s/o 62nd Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	920 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-3.18	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-20.42	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-24.38	-4.45	-1.20	*-5.14*	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:	62.9	62.0	60.7	54.7	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.8	60.9	61.0
Heavy Trucks:	56.4	53.4	50.0	54.7	60.8	60.9
Vehicle Noise:	64.5	63.1	61.2	59.5	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	65	139	300	646
CNEL:	68	146	315	679

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.90	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.14	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.10	-4.45	-1.20	-5.14	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:	62.2	61.3	60.0	54.0	62.4	63.0
Medium Trucks:	55.6	52.8	45.3	54.0	60.2	60.2
Heavy Trucks:	55.6	52.7	49.3	53.9	60.1	60.2
Vehicle Noise:	63.8	62.4	60.5	58.8	65.8	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	268	578
CNEL:	61	131	282	608

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,708 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.50	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.74	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.69	-4.45	-1.20	-5.14	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:	65.6	64.7	63.4	57.4	65.8	66.4
Medium Trucks:	59.0	56.2	48.7	57.4	63.6	63.7
Heavy Trucks:	59.1	56.1	52.7	57.3	63.5	63.6
Vehicle Noise:	67.2	65.8	63.9	62.2	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	210	453	975
CNEL:	103	221	476	1,026

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,137 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.48	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.76	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.72	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.7	64.4	58.3	66.8	67.4
Medium Trucks:	60.0	57.2	49.7	58.4	64.6	64.6
Heavy Trucks:	60.0	57.1	53.7	58.3	64.5	64.6
Vehicle Noise:	68.2	66.7	64.8	63.1	70.2	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	113	244	526	1,132
CNEL:	119	257	553	1,191

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,065 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.04	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-15.20	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-19.15	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	67.2	65.9	59.9	68.3	69.0
Medium Trucks:	61.6	58.7	51.2	60.0	66.2	66.2
Heavy Trucks:	61.6	58.6	55.2	59.9	66.1	66.2
Vehicle Noise:	69.7	68.3	66.4	64.7	71.8	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	144	310	668	1,440
CNEL:	151	326	703	1,515

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	585 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.15	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.39	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.35	-4.45	-1.20	-5.14	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:	61.0	60.0	58.7	52.7	61.1	61.8
Medium Trucks:	54.4	51.5	44.0	52.8	59.0	59.0
Heavy Trucks:	54.4	51.4	48.0	52.7	58.9	59.0
Vehicle Noise:	62.5	61.1	59.2	57.5	64.6	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	477
CNEL:	50	108	233	502

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	741 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.12	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.36	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.32	-4.45	-1.20	-5.14	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:	62.0	61.1	59.8	53.7	62.2	62.8
Medium Trucks:	55.4	52.6	45.1	53.8	60.0	60.0
Heavy Trucks:	55.4	52.5	49.1	53.7	59.9	60.0
Vehicle Noise:	63.6	62.1	60.2	58.5	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	59	127	273	588

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	679 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.51	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.74	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.70	-4.45	-1.20	-5.14	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:	61.6	60.7	59.4	53.4	61.8	62.4
Medium Trucks:	55.0	52.2	44.7	53.4	59.6	59.6
Heavy Trucks:	55.0	52.1	48.7	53.3	59.5	59.6
Vehicle Noise:	63.2	61.8	59.9	58.1	65.2	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	245	527
CNEL:	55	119	257	554

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	702 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.36	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.60	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.55	-4.45	-1.20	-5.14	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:	61.8	60.8	59.5	53.5	61.9	62.6
Medium Trucks:	55.2	52.3	44.8	53.6	59.8	59.8
Heavy Trucks:	55.2	52.2	48.8	53.5	59.7	59.8
Vehicle Noise:	63.3	61.9	60.0	58.3	65.4	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	539
CNEL:	57	122	263	567

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.90	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.14	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.10	-4.45	-1.20	-5.14	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:	62.2	61.3	60.0	54.0	62.4	63.0
Medium Trucks:	55.6	52.8	45.3	54.0	60.2	60.2
Heavy Trucks:	55.6	52.7	49.3	53.9	60.1	60.2
Vehicle Noise:	63.8	62.4	60.5	58.8	65.8	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	268	578
CNEL:	61	131	282	608

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	936 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.11	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.35	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.30	-4.45	-1.20	-5.14	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:	63.0	62.1	60.8	54.8	63.2	63.8
Medium Trucks:	56.4	53.6	46.1	54.8	61.0	61.0
Heavy Trucks:	56.4	53.5	50.1	54.7	60.9	61.0
Vehicle Noise:	64.6	63.2	61.3	59.5	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	141	303	653
CNEL:	69	148	319	687

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,215 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.63	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.61	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.56	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.8	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	60.1	57.3	49.8	58.6	64.7	64.8
Heavy Trucks:	60.2	57.2	53.8	58.5	64.7	64.8
Vehicle Noise:	68.3	66.9	65.0	63.3	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	250	538	1,160
CNEL:	122	263	566	1,220

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,371 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.93	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.31	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.27	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.1	64.8	58.8	67.2	67.8
Medium Trucks:	60.4	57.6	50.1	58.9	65.0	65.1
Heavy Trucks:	60.5	57.5	54.1	58.8	65.0	65.1
Vehicle Noise:	68.6	67.2	65.3	63.6	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	563	1,214
CNEL:	128	275	593	1,277

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	702 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.95	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-21.18	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.14	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.1	63.1	61.8	55.8	64.2	64.9
Medium Trucks:	57.6	54.8	47.3	56.1	62.2	62.3
Heavy Trucks:	58.1	55.1	51.7	56.4	62.6	62.6
Vehicle Noise:	65.8	64.3	62.4	60.9	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	214	462
CNEL:	48	104	225	485

Wednesday, May 3, 2023

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	772 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.53	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-20.77	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.73	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	63.6	62.2	56.2	64.6	65.3
Medium Trucks:	58.1	55.2	47.7	56.5	62.7	62.7
Heavy Trucks:	58.5	55.5	52.1	56.8	63.0	63.1
Vehicle Noise:	66.2	64.7	62.8	61.3	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	228	492
CNEL:	52	111	240	517

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	764 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.58	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-20.81	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.77	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.4	63.5	62.2	56.2	64.6	65.2
Medium Trucks:	58.0	55.2	47.7	56.4	62.6	62.7
Heavy Trucks:	58.4	55.5	52.1	56.7	62.9	63.0
Vehicle Noise:	66.1	64.7	62.7	61.2	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	227	489
CNEL:	51	111	238	513

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.49	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-20.73	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.68	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	63.6	62.3	56.3	64.7	65.3
Medium Trucks:	58.1	55.3	47.8	56.5	62.7	62.7
Heavy Trucks:	58.5	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	66.2	64.8	62.8	61.3	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	230	495
CNEL:	52	112	241	520

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	897 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.88	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-20.12	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.07	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	64.2	62.9	56.9	65.3	65.9
Medium Trucks:	58.7	55.9	48.4	57.1	63.3	63.4
Heavy Trucks:	59.1	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	66.8	65.4	63.4	61.9	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	252	544
CNEL:	57	123	265	571

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	967 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.55	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.79	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.75	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	64.5	63.2	57.2	65.6	66.3
Medium Trucks:	59.0	56.2	48.7	57.5	63.6	63.7
Heavy Trucks:	59.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	67.2	65.7	63.8	62.3	69.3	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	265	572
CNEL:	60	129	279	600

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,980 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.33	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-14.91	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.86	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.3	69.4	68.1	62.1	70.5	71.1
Medium Trucks:	63.9	61.1	53.6	62.4	68.5	68.6
Heavy Trucks:	64.3	61.4	58.0	62.6	68.8	68.9
Vehicle Noise:	72.0	70.6	68.6	67.1	74.2	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	121	261	562	1,211
CNEL:	127	274	590	1,271

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,042 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.42	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-14.82	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.77	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	69.5	68.2	62.2	70.6	71.2
Medium Trucks:	64.0	61.2	53.7	62.4	68.6	68.7
Heavy Trucks:	64.4	61.5	58.1	62.7	68.9	69.0
Vehicle Noise:	72.1	70.7	68.7	67.2	74.2	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	123	264	570	1,227
CNEL:	129	278	598	1,289

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.90	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.14	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.10	-1.84	-1.20	-5.25	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:	64.8	63.9	62.6	56.6	65.0	65.6
Medium Trucks:	58.2	55.4	47.9	56.7	62.8	62.9
Heavy Trucks:	58.3	55.3	51.9	56.5	62.7	62.8
Vehicle Noise:	66.4	65.0	63.1	61.4	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	128	277	596
CNEL:	63	135	291	627

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	835 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.61	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.85	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.80	-1.84	-1.20	-5.25	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	64.2	62.9	56.9	65.3	65.9
Medium Trucks:	58.5	55.7	48.2	56.9	63.1	63.2
Heavy Trucks:	58.6	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	66.7	65.3	63.4	61.7	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	290	624
CNEL:	66	141	305	656

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	866 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.45	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.69	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.64	-1.84	-1.20	-5.25	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:	65.3	64.3	63.0	57.0	65.4	66.1
Medium Trucks:	58.7	55.9	48.3	57.1	63.3	63.3
Heavy Trucks:	58.7	55.7	52.3	57.0	63.2	63.3
Vehicle Noise:	66.9	65.4	63.5	61.8	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	639
CNEL:	67	145	312	673

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	889 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.33	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.57	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.53	-1.84	-1.20	-5.25	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:	65.4	64.5	63.2	57.1	65.6	66.2
Medium Trucks:	58.8	56.0	48.5	57.2	63.4	63.4
Heavy Trucks:	58.8	55.9	52.5	57.1	63.3	63.4
Vehicle Noise:	67.0	65.5	63.6	61.9	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	302	651
CNEL:	68	147	318	685

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,045 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.63	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.87	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.82	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	65.2	63.9	57.8	66.3	66.9
Medium Trucks:	59.5	56.7	49.2	57.9	64.1	64.1
Heavy Trucks:	59.5	56.6	53.2	57.8	64.0	64.1
Vehicle Noise:	67.7	66.2	64.3	62.6	69.7	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	156	336	725
CNEL:	76	164	354	762

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,100 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.41	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.65	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.60	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	59.7	56.9	49.4	58.1	64.3	64.4
Heavy Trucks:	59.8	56.8	53.4	58.0	64.2	64.3
Vehicle Noise:	67.9	66.5	64.6	62.9	69.9	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	162	348	750
CNEL:	79	170	366	789

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,855 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.73	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-15.51	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-19.46	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	69.5	68.2	62.2	70.6	71.3
Medium Trucks:	63.9	61.0	53.5	62.3	68.5	68.5
Heavy Trucks:	63.9	60.9	57.5	62.2	68.4	68.5
Vehicle Noise:	72.0	70.6	68.7	67.0	74.1	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	142	305	657	1,416
CNEL:	149	321	692	1,490

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Middleton St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,909 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.82	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-15.42	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-19.38	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	69.6	68.3	62.3	70.7	71.3
Medium Trucks:	63.9	61.1	53.6	62.4	68.5	68.6
Heavy Trucks:	64.0	61.0	57.6	62.3	68.5	68.6
Vehicle Noise:	72.1	70.7	68.8	67.1	74.1	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	143	309	666	1,434
CNEL:	151	325	700	1,509

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	538 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.51	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.75	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.71	-1.84	-1.20	-5.25	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:	63.2	62.3	61.0	55.0	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.0	61.2	61.3
Heavy Trucks:	56.6	53.7	50.3	54.9	61.1	61.2
Vehicle Noise:	64.8	63.4	61.5	59.7	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	100	216	466
CNEL:	49	106	227	490

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	585 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.15	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.39	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.35	-1.84	-1.20	-5.25	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	61.3	55.3	63.7	64.4
Medium Trucks:	57.0	54.2	46.6	55.4	61.6	61.6
Heavy Trucks:	57.0	54.0	50.6	55.3	61.5	61.6
Vehicle Noise:	65.2	63.7	61.8	60.1	67.2	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	492
CNEL:	52	112	240	518

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	601 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.04	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.27	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.23	-1.84	-1.20	-5.25	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	62.8	61.4	55.4	63.9	64.5
Medium Trucks:	57.1	54.3	46.8	55.5	61.7	61.7
Heavy Trucks:	57.1	54.2	50.8	55.4	61.6	61.7
Vehicle Noise:	65.3	63.8	61.9	60.2	67.3	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	233	501
CNEL:	53	114	245	527

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Harrison St. | Job Number: 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	624 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.87	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.11	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.06	-1.84	-1.20	-5.25	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	61.6	55.6	64.0	64.6
Medium Trucks:	57.3	54.4	46.9	55.7	61.9	61.9
Heavy Trucks:	57.3	54.3	50.9	55.6	61.8	61.9
Vehicle Noise:	65.4	64.0	62.1	60.4	67.5	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	111	239	514
CNEL:	54	116	251	541

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

Scenario: EAC (2032) | *Project Name:* Thermal Ranch SP
Road Name: Harrison St. | *Job Number:* 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	749 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-4.08	-1.85	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	82.40	-21.32	-1.84	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-25.27	-1.84	-1.20	*-5.25*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.6	63.7	62.4	56.4	64.8	65.4
Medium Trucks:	58.0	55.2	47.7	56.5	62.6	62.7
Heavy Trucks:	58.1	55.1	51.7	56.4	62.6	62.7
Vehicle Noise:	66.2	64.8	62.9	61.2	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	58	125	269	580
CNEL:	61	132	283	610

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

Scenario: EAPC (2032) | *Project Name:* Thermal Ranch SP
Road Name: Harrison St. | *Job Number:* 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	796 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-3.82	-1.85	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	82.40	-21.05	-1.84	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-25.01	-1.84	-1.20	*-5.25*	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	64.0	62.7	56.7	65.1	65.7
Medium Trucks:	58.3	55.5	48.0	56.7	62.9	62.9
Heavy Trucks:	58.3	55.4	52.0	56.6	62.8	62.9
Vehicle Noise:	66.5	65.1	63.2	61.4	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	60	130	280	604
CNEL:	64	137	295	636

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

Scenario: HY (2045) | *Project Name:* Thermal Ranch SP
Road Name: Harrison St. | *Job Number:* 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,488 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	1.14	-1.85	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	82.40	-16.10	-1.84	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-20.06	-1.84	-1.20	*-5.25*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.9	68.9	67.6	61.6	70.0	70.7
Medium Trucks:	63.3	60.4	52.9	61.7	67.9	67.9
Heavy Trucks:	63.3	60.3	56.9	61.6	67.8	67.9
Vehicle Noise:	71.4	70.0	68.1	66.4	73.5	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	129	278	600	1,292
CNEL:	136	293	631	1,359

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

Scenario: HY+P (2045) | *Project Name:* Thermal Ranch SP
Road Name: Harrison St. | *Job Number:* 14497
Road Segment: s/o Desert Empire Homes

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,527 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	1.20	-1.85	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	82.40	-16.03	-1.84	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-19.99	-1.84	-1.20	*-5.25*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.9	69.0	67.7	61.7	70.1	70.7
Medium Trucks:	63.3	60.5	53.0	61.8	67.9	68.0
Heavy Trucks:	63.4	60.4	57.0	61.6	67.8	67.9
Vehicle Noise:	71.5	70.1	68.2	66.5	73.5	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	131	281	606	1,306
CNEL:	137	296	638	1,374

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	47 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-15.71	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-32.94	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-36.90	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:	53.6	52.7	51.4	45.4	53.8	54.4
Medium Trucks:	47.2	44.4	36.9	45.6	51.8	51.8
Heavy Trucks:	47.6	44.6	41.2	45.9	52.1	52.2
Vehicle Noise:	55.3	53.8	51.9	50.4	57.4	57.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	16	34	72
CNEL:	8	16	35	76

Wednesday, May 3, 2023

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	86 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-13.07	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-30.31	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-34.27	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:	56.2	55.3	54.0	48.0	56.4	57.0
Medium Trucks:	49.8	47.0	39.5	48.3	54.4	54.5
Heavy Trucks:	50.2	47.3	43.9	48.5	54.7	54.8
Vehicle Noise:	57.9	56.5	54.5	53.0	60.0	60.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	23	50	109
CNEL:	11	25	53	114

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	78 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-13.49	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-30.73	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-34.68	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:	55.8	54.9	53.6	47.6	56.0	56.6
Medium Trucks:	49.4	46.6	39.1	47.8	54.0	54.1
Heavy Trucks:	49.8	46.9	43.5	48.1	54.3	54.4
Vehicle Noise:	57.5	56.1	54.1	52.6	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	22	47	102
CNEL:	11	23	50	107

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-12.35	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-29.59	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-33.54	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:	57.0	56.0	54.7	48.7	57.1	57.8
Medium Trucks:	50.6	47.7	40.2	49.0	55.2	55.2
Heavy Trucks:	51.0	48.0	44.6	49.3	55.5	55.6
Vehicle Noise:	58.7	57.2	55.3	53.8	60.8	61.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	12	26	56	121
CNEL:	13	27	59	127

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	86 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-13.07	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-30.31	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-34.27	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:	56.2	55.3	54.0	48.0	56.4	57.0
Medium Trucks:	49.8	47.0	39.5	48.3	54.4	54.5
Heavy Trucks:	50.2	47.3	43.9	48.5	54.7	54.8
Vehicle Noise:	57.9	56.5	54.5	53.0	60.0	60.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	23	50	109
CNEL:	11	25	53	114

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	125 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-11.45	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-28.68	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-32.64	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:	57.9	56.9	55.6	49.6	58.0	58.7
Medium Trucks:	51.5	48.6	41.1	49.9	56.1	56.1
Heavy Trucks:	51.9	48.9	45.5	50.2	56.4	56.5
Vehicle Noise:	59.6	58.1	56.2	54.7	61.7	62.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	65	139
CNEL:	15	32	68	146

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	133 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-11.18	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-28.42	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-32.38	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:	58.1	57.2	55.9	49.9	58.3	58.9
Medium Trucks:	51.7	48.9	41.4	50.1	56.3	56.4
Heavy Trucks:	52.1	49.2	45.8	50.4	56.6	56.7
Vehicle Noise:	59.8	58.4	56.4	54.9	61.9	62.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	31	67	145
CNEL:	15	33	71	152

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	172 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-10.06	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-27.30	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-31.26	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:	59.3	58.3	57.0	51.0	59.4	60.0
Medium Trucks:	52.8	50.0	42.5	51.3	57.4	57.5
Heavy Trucks:	53.3	50.3	46.9	51.5	57.7	57.8
Vehicle Noise:	61.0	59.5	57.6	56.0	63.1	63.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	172
CNEL:	18	39	84	181

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-9.51	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-26.75	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-30.70	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:	59.8	58.9	57.6	51.6	60.0	60.6
Medium Trucks:	53.4	50.6	43.1	51.8	58.0	58.0
Heavy Trucks:	53.8	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	61.5	60.0	58.1	56.6	63.6	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	188
CNEL:	20	42	91	197

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	468 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-5.71	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-22.94	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-26.90	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	62.7	61.4	55.4	63.8	64.4
Medium Trucks:	57.2	54.4	46.9	55.6	61.8	61.8
Heavy Trucks:	57.6	54.6	51.2	55.9	62.1	62.2
Vehicle Noise:	65.3	63.8	61.9	60.4	67.4	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	72	156	336
CNEL:	35	76	164	353

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	226 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-8.86	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-26.10	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-30.06	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:	60.5	59.5	58.2	52.2	60.6	61.2
Medium Trucks:	54.0	51.2	43.7	52.5	58.6	58.7
Heavy Trucks:	54.5	51.5	48.1	52.7	58.9	59.0
Vehicle Noise:	62.2	60.7	58.7	57.2	64.3	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	96	207
CNEL:	22	47	101	218

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	554 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-4.98	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-22.21	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-26.17	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:	64.3	63.4	62.1	56.1	64.5	65.1
Medium Trucks:	57.9	55.1	47.6	56.4	62.5	62.6
Heavy Trucks:	58.3	55.4	52.0	56.6	62.8	62.9
Vehicle Noise:	66.0	64.6	62.6	61.1	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	81	175	376
CNEL:	40	85	183	395

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	250 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-8.44	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.67	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.63	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:	60.9	59.9	58.6	52.6	61.0	61.7
Medium Trucks:	54.5	51.6	44.1	52.9	59.1	59.1
Heavy Trucks:	54.9	51.9	48.5	53.2	59.4	59.5
Vehicle Noise:	62.6	61.1	59.2	57.7	64.7	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	48	103	221
CNEL:	23	50	108	232

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	523 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-5.23	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-22.47	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-26.42	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:	64.1	63.2	61.8	55.8	64.3	64.9
Medium Trucks:	57.7	54.9	47.3	56.1	62.3	62.3
Heavy Trucks:	58.1	55.1	51.7	56.4	62.6	62.7
Vehicle Noise:	65.8	64.3	62.4	60.9	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	168	362
CNEL:	38	82	176	380

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	335 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-7.15	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-24.39	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-28.35	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:	62.2	61.2	59.9	53.9	62.3	63.0
Medium Trucks:	55.7	52.9	45.4	54.2	60.3	60.4
Heavy Trucks:	56.2	53.2	49.8	54.5	60.7	60.7
Vehicle Noise:	63.9	62.4	60.5	59.0	66.0	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	125	269
CNEL:	28	61	131	283

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: s/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	601 vehicles
Vehicle Speed:	50 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	70.20	-4.62	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.86	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.82	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:	64.7	63.8	62.4	56.4	64.9	65.5
Medium Trucks:	58.3	55.5	47.9	56.7	62.9	62.9
Heavy Trucks:	58.7	55.7	52.3	57.0	63.2	63.3
Vehicle Noise:	66.4	64.9	63.0	61.5	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	184	397
CNEL:	42	90	194	417

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

Scenario: E
Road Name: Tyler St.
Road Segment: n/o 66th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	133 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-10.21	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-27.45	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-31.41	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:	55.4	54.5	53.2	47.2	55.6	56.2
Medium Trucks:	49.4	46.6	39.1	47.8	54.0	54.0
Heavy Trucks:	50.7	47.8	44.4	49.0	55.2	55.3
Vehicle Noise:	57.4	55.9	53.8	52.8	59.7	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	22	48	104
CNEL:	11	23	50	108

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

Scenario: E+P
Road Name: Tyler St.
Road Segment: n/o 66th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-8.54	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-25.78	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-29.73	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:	57.1	56.2	54.8	48.8	57.2	57.9
Medium Trucks:	51.1	48.3	40.7	49.5	55.7	55.7
Heavy Trucks:	52.4	49.4	46.0	50.7	56.9	57.0
Vehicle Noise:	59.1	57.5	55.5	54.5	61.4	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	29	62	134
CNEL:	14	30	65	140

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

Scenario: EAC (2026)
Road Name: Tyler St.
Road Segment: n/o 66th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-9.30	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-26.53	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-30.49	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:	56.3	55.4	54.1	48.1	56.5	57.1
Medium Trucks:	50.3	47.5	40.0	48.7	54.9	55.0
Heavy Trucks:	51.6	48.7	45.3	49.9	56.1	56.2
Vehicle Noise:	58.3	56.8	54.8	53.8	60.7	61.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	26	55	119
CNEL:	12	27	58	125

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

Scenario: EAPC (2026)
Road Name: Tyler St.
Road Segment: n/o 66th Av.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	242 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-7.60	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-24.84	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-28.80	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:	58.0	57.1	55.8	49.8	58.2	58.8
Medium Trucks:	52.0	49.2	41.7	50.4	56.6	56.6
Heavy Trucks:	53.3	50.4	47.0	51.6	57.8	57.9
Vehicle Noise:	60.0	58.5	56.5	55.4	62.4	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	72	155
CNEL:	16	35	75	162

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	179 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-8.90	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.14	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-30.10	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:	56.7	55.8	54.5	48.5	56.9	57.5
Medium Trucks:	50.7	47.9	40.4	49.1	55.3	55.4
Heavy Trucks:	52.0	49.1	45.7	50.3	56.5	56.6
Vehicle Noise:	58.7	57.2	55.2	54.1	61.1	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	27	59	127
CNEL:	13	29	62	133

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	242 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-7.60	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-24.84	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-28.80	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:	58.0	57.1	55.8	49.8	58.2	58.8
Medium Trucks:	52.0	49.2	41.7	50.4	56.6	56.6
Heavy Trucks:	53.3	50.4	47.0	51.6	57.8	57.9
Vehicle Noise:	60.0	58.5	56.5	55.4	62.4	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	72	155
CNEL:	16	35	75	162

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	218 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-8.05	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-25.29	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-29.24	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:	57.6	56.6	55.3	49.3	57.7	58.4
Medium Trucks:	51.6	48.7	41.2	50.0	56.2	56.2
Heavy Trucks:	52.9	49.9	46.5	51.2	57.4	57.5
Vehicle Noise:	59.6	58.0	56.0	55.0	61.9	62.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	145
CNEL:	15	33	70	151

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Tyler St. | Job Number: 14497
Road Segment: n/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	289 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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	-6.84	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-24.07	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-28.03	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:	58.8	57.9	56.5	50.5	59.0	59.6
Medium Trucks:	52.8	50.0	42.5	51.2	57.4	57.4
Heavy Trucks:	54.1	51.1	47.7	52.4	58.6	58.7
Vehicle Noise:	60.8	59.2	57.2	56.2	63.1	63.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	38	81	174
CNEL:	18	39	84	182

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	109 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-12.03	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-29.26	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-33.22	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.0	55.1	53.7	47.7	56.2	56.8
Medium Trucks:	49.6	46.7	39.2	48.0	54.2	54.2
Heavy Trucks:	50.0	47.0	43.6	48.3	54.5	54.6
Vehicle Noise:	57.7	56.2	54.3	52.8	59.8	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	134
CNEL:	14	30	65	140

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-9.51	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-26.75	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-30.70	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.5	57.6	56.3	50.3	58.7	59.3
Medium Trucks:	52.1	49.3	41.8	50.5	56.7	56.7
Heavy Trucks:	52.5	49.5	46.1	50.8	57.0	57.1
Vehicle Noise:	60.2	58.7	56.8	55.3	62.3	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	42	91	197
CNEL:	21	44	96	206

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-9.51	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-26.75	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-30.70	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.5	57.6	56.3	50.3	58.7	59.3
Medium Trucks:	52.1	49.3	41.8	50.5	56.7	56.7
Heavy Trucks:	52.5	49.5	46.1	50.8	57.0	57.1
Vehicle Noise:	60.2	58.7	56.8	55.3	62.3	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	42	91	197
CNEL:	21	44	96	206

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	242 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-8.57	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-25.81	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-29.77	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	58.5	57.2	51.2	59.6	60.2
Medium Trucks:	53.0	50.2	42.7	51.4	57.6	57.7
Heavy Trucks:	53.4	50.5	47.1	51.7	57.9	58.0
Vehicle Noise:	61.1	59.7	57.7	56.2	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	227
CNEL:	24	51	111	238

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	374 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.68	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-23.91	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-27.87	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.3	60.4	59.1	53.1	61.5	62.1
Medium Trucks:	54.9	52.1	44.6	53.3	59.5	59.6
Heavy Trucks:	55.3	52.4	49.0	53.6	59.8	59.9
Vehicle Noise:	63.0	61.6	59.6	58.1	65.1	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	141	304
CNEL:	32	69	148	319

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	460 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.78	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-23.02	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.97	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	61.3	60.0	54.0	62.4	63.0
Medium Trucks:	55.8	53.0	45.5	54.2	60.4	60.5
Heavy Trucks:	56.2	53.3	49.9	54.5	60.7	60.8
Vehicle Noise:	63.9	62.5	60.5	59.0	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	348
CNEL:	37	79	170	366

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,747 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.01	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.22	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.18	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	67.1	65.8	59.8	68.2	68.8
Medium Trucks:	61.6	58.8	51.3	60.0	66.2	66.2
Heavy Trucks:	62.0	59.1	55.7	60.3	66.5	66.6
Vehicle Noise:	69.7	68.3	66.3	64.8	71.8	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	183	394	848
CNEL:	89	192	413	891

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Polk St. | Job Number: 14497
Road Segment: n/o 62nd Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,825 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.20	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-17.03	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.99	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	67.3	66.0	60.0	68.4	69.0
Medium Trucks:	61.8	59.0	51.5	60.2	66.4	66.4
Heavy Trucks:	62.2	59.3	55.8	60.5	66.7	66.8
Vehicle Noise:	69.9	68.4	66.5	65.0	72.0	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	188	405	873
CNEL:	92	198	426	917

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	218 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-9.02	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-26.25	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-30.21	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	58.1	56.8	50.7	59.2	59.8
Medium Trucks:	52.6	49.8	42.2	51.0	57.2	57.2
Heavy Trucks:	53.0	50.0	46.6	51.3	57.5	57.6
Vehicle Noise:	60.7	59.2	57.3	55.8	62.8	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	212
CNEL:	22	48	103	223

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	257 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-8.30	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-25.54	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-29.50	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	58.8	57.5	51.5	59.9	60.5
Medium Trucks:	53.3	50.5	43.0	51.7	57.9	57.9
Heavy Trucks:	53.7	50.7	47.3	52.0	58.2	58.3
Vehicle Noise:	61.4	59.9	58.0	56.5	63.5	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	110	237
CNEL:	25	54	115	248

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	257 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-8.30	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-25.54	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-29.50	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	58.8	57.5	51.5	59.9	60.5
Medium Trucks:	53.3	50.5	43.0	51.7	57.9	57.9
Heavy Trucks:	53.7	50.7	47.3	52.0	58.2	58.3
Vehicle Noise:	61.4	59.9	58.0	56.5	63.5	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	110	237
CNEL:	25	54	115	248

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	289 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-7.81	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-25.04	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-29.00	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.2	59.3	58.0	52.0	60.4	61.0
Medium Trucks:	53.8	51.0	43.5	52.2	58.4	58.4
Heavy Trucks:	54.2	51.2	47.8	52.5	58.7	58.8
Vehicle Noise:	61.9	60.4	58.5	57.0	64.0	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	55	119	255
CNEL:	27	58	124	268

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	328 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-7.26	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-24.49	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-28.45	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.8	59.8	58.5	52.5	60.9	61.6
Medium Trucks:	54.3	51.5	44.0	52.8	58.9	59.0
Heavy Trucks:	54.8	51.8	48.4	53.0	59.2	59.3
Vehicle Noise:	62.5	61.0	59.1	57.5	64.6	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	129	278
CNEL:	29	63	135	292

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	367 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-6.77	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-24.00	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-27.96	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.2	60.3	59.0	53.0	61.4	62.0
Medium Trucks:	54.8	52.0	44.5	53.3	59.4	59.5
Heavy Trucks:	55.2	52.3	48.9	53.5	59.7	59.8
Vehicle Noise:	62.9	61.5	59.5	58.0	65.1	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	299
CNEL:	31	68	146	314

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	484 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.56	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-22.80	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.76	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.5	61.5	60.2	54.2	62.6	63.2
Medium Trucks:	56.0	53.2	45.7	54.5	60.6	60.7
Heavy Trucks:	56.4	53.5	50.1	54.7	60.9	61.0
Vehicle Noise:	64.2	62.7	60.7	59.2	66.3	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	78	167	360
CNEL:	38	81	176	378

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Pierce St. | Job Number: 14497
Road Segment: s/o 66th Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	523 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.23	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-22.47	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.42	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	61.9	60.5	54.5	63.0	63.6
Medium Trucks:	56.4	53.5	46.0	54.8	61.0	61.0
Heavy Trucks:	56.8	53.8	50.4	55.1	61.3	61.4
Vehicle Noise:	64.5	63.0	61.1	59.6	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	176	379
CNEL:	40	86	185	398

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	881 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.96	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-20.20	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.15	-1.84	-1.20	-5.25	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:	64.2	63.3	61.9	55.9	64.4	65.0
Medium Trucks:	57.8	54.9	47.4	56.2	62.4	62.4
Heavy Trucks:	58.2	55.2	51.8	56.5	62.7	62.8
Vehicle Noise:	65.9	64.4	62.5	61.0	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	59	126	272	587

Wednesday, May 3, 2023

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	913 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.81	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-20.04	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.00	-1.84	-1.20	-5.25	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:	64.3	63.4	62.1	56.1	64.5	65.1
Medium Trucks:	57.9	55.1	47.6	56.3	62.5	62.6
Heavy Trucks:	58.3	55.4	52.0	56.6	62.8	62.9
Vehicle Noise:	66.0	64.6	62.6	61.1	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	265	572
CNEL:	60	129	279	600

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	944 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.66	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.90	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.85	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	63.6	62.2	56.2	64.7	65.3
Medium Trucks:	58.1	55.2	47.7	56.5	62.7	62.7
Heavy Trucks:	58.5	55.5	52.1	56.8	63.0	63.1
Vehicle Noise:	66.2	64.7	62.8	61.3	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	585
CNEL:	61	132	285	614

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	959 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.59	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.83	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.78	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.6	63.6	62.3	56.3	64.7	65.4
Medium Trucks:	58.1	55.3	47.8	56.6	62.7	62.8
Heavy Trucks:	58.6	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	66.3	64.8	62.9	61.3	68.4	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	591
CNEL:	62	134	288	621

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,069 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.12	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.36	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.31	-1.84	-1.20	-5.25	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	64.1	62.8	56.8	65.2	65.8
Medium Trucks:	58.6	55.8	48.3	57.0	63.2	63.2
Heavy Trucks:	59.0	56.1	52.7	57.3	63.5	63.6
Vehicle Noise:	66.7	65.3	63.3	61.8	68.8	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	635
CNEL:	67	144	310	667

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.00	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.23	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.19	-1.84	-1.20	-5.25	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	64.2	62.9	56.9	65.3	65.9
Medium Trucks:	58.7	55.9	48.4	57.2	63.3	63.4
Heavy Trucks:	59.1	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	66.9	65.4	63.5	61.9	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	68	146	316	680

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,693 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.12	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-17.36	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.32	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.1	64.8	58.8	67.2	67.8
Medium Trucks:	60.6	57.8	50.3	59.0	65.2	65.2
Heavy Trucks:	61.0	58.1	54.7	59.3	65.5	65.6
Vehicle Noise:	68.7	67.2	65.3	63.8	70.8	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	186	401	863
CNEL:	91	195	421	906

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 52nd Av. | Job Number: 14497
Road Segment: e/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,724 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.04	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-17.28	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.24	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	66.2	64.9	58.9	67.3	67.9
Medium Trucks:	60.7	57.9	50.3	59.1	65.3	65.3
Heavy Trucks:	61.1	58.1	54.7	59.4	65.6	65.7
Vehicle Noise:	68.8	67.3	65.4	63.9	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	188	405	873
CNEL:	92	198	426	917

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	476 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.63	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-22.87	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.83	-1.84	-1.20	-5.25	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:	61.5	60.6	59.3	53.3	61.7	62.3
Medium Trucks:	55.1	52.3	44.8	53.5	59.7	59.7
Heavy Trucks:	55.5	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	63.2	61.7	59.8	58.3	65.3	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	172	370
CNEL:	39	84	180	389

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	507 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.36	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-22.60	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.55	-1.84	-1.20	-5.25	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:	61.8	60.9	59.5	53.5	62.0	62.6
Medium Trucks:	55.4	52.5	45.0	53.8	60.0	60.0
Heavy Trucks:	55.8	52.8	49.4	54.1	60.3	60.4
Vehicle Noise:	63.5	62.0	60.1	58.6	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	83	179	386
CNEL:	41	87	188	406

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	515 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.29	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-22.53	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.49	-1.84	-1.20	-5.25	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:	61.9	60.9	59.6	53.6	62.0	62.6
Medium Trucks:	55.4	52.6	45.1	53.9	60.0	60.1
Heavy Trucks:	55.8	52.9	49.5	54.1	60.3	60.4
Vehicle Noise:	63.6	62.1	60.2	58.6	65.7	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	181	390
CNEL:	41	88	190	410

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-5.16	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-22.40	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.36	-1.84	-1.20	-5.25	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:	62.0	61.1	59.7	53.7	62.2	62.8
Medium Trucks:	55.6	52.7	45.2	54.0	60.2	60.2
Heavy Trucks:	56.0	53.0	49.6	54.3	60.5	60.6
Vehicle Noise:	63.7	62.2	60.3	58.8	65.8	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	185	398
CNEL:	42	90	194	418

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	601 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.62	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-21.86	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.82	-1.84	-1.20	-5.25	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:	62.5	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	56.1	53.3	45.8	54.5	60.7	60.7
Heavy Trucks:	56.5	53.6	50.2	54.8	61.0	61.1
Vehicle Noise:	64.2	62.8	60.8	59.3	66.3	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	201	433
CNEL:	45	98	211	454

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	632 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.40	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-21.64	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.60	-1.84	-1.20	-5.25	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:	62.7	61.8	60.5	54.5	62.9	63.5
Medium Trucks:	56.3	53.5	46.0	54.7	60.9	61.0
Heavy Trucks:	56.7	53.8	50.4	55.0	61.2	61.3
Vehicle Noise:	64.4	63.0	61.0	59.5	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	96	208	447
CNEL:	47	101	218	470

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,092 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.03	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.26	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.22	-1.84	-1.20	-5.25	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	64.2	62.9	56.9	65.3	65.9
Medium Trucks:	58.7	55.9	48.4	57.1	63.3	63.3
Heavy Trucks:	59.1	56.2	52.7	57.4	63.6	63.7
Vehicle Noise:	66.8	65.3	63.4	61.9	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	644
CNEL:	68	146	314	677

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 54th Av. | Job Number: 14497
Road Segment: w/o Cesar Chavez St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,123 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.90	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	81.00	-19.14	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.10	-1.84	-1.20	-5.25	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	64.3	63.0	57.0	65.4	66.0
Medium Trucks:	58.8	56.0	48.5	57.2	63.4	63.5
Heavy Trucks:	59.2	56.3	52.9	57.5	63.7	63.8
Vehicle Noise:	66.9	65.5	63.5	62.0	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	141	305	657
CNEL:	69	149	320	689

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	616 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.93	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.16	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.12	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.8	62.9	61.6	55.5	64.0	64.6
Medium Trucks:	57.2	54.4	46.9	55.6	61.8	61.8
Heavy Trucks:	57.2	54.3	50.9	55.5	61.7	61.8
Vehicle Noise:	65.4	63.9	62.0	60.3	67.4	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	237	510
CNEL:	54	115	249	536

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	913 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.22	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.46	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.41	-1.84	-1.20	-5.25	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:	65.5	64.6	63.3	57.3	65.7	66.3
Medium Trucks:	58.9	56.1	48.6	57.3	63.5	63.5
Heavy Trucks:	58.9	56.0	52.6	57.2	63.4	63.5
Vehicle Noise:	67.1	65.6	63.8	62.0	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	143	307	662
CNEL:	70	150	323	697

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,271 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.78	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.02	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.97	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	66.0	64.7	58.7	67.1	67.7
Medium Trucks:	60.3	57.5	50.0	58.8	64.9	65.0
Heavy Trucks:	60.4	57.4	54.0	58.7	64.9	65.0
Vehicle Noise:	68.5	67.1	65.2	63.5	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	178	383	826
CNEL:	87	187	403	869

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,412 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.32	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-18.56	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.52	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.5	65.2	59.1	67.6	68.2
Medium Trucks:	60.8	58.0	50.5	59.2	65.4	65.4
Heavy Trucks:	60.8	57.9	54.5	59.1	65.3	65.4
Vehicle Noise:	69.0	67.5	65.6	63.9	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	191	411	886
CNEL:	93	201	432	932

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,661 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.62	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.86	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.81	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	67.2	65.9	59.9	68.3	68.9
Medium Trucks:	61.5	58.7	51.2	59.9	66.1	66.1
Heavy Trucks:	61.5	58.6	55.2	59.8	66.0	66.1
Vehicle Noise:	69.7	68.2	66.4	64.6	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	213	458	987
CNEL:	104	224	482	1,039

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,958 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.10	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.14	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.10	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	67.9	66.6	60.6	69.0	69.6
Medium Trucks:	62.2	59.4	51.9	60.6	66.8	66.9
Heavy Trucks:	62.3	59.3	55.9	60.5	66.7	66.8
Vehicle Noise:	70.4	69.0	67.1	65.4	72.4	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	511	1,101
CNEL:	116	250	538	1,159

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,401 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.49	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-14.75	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.70	-1.84	-1.20	-5.25	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:	71.2	70.3	69.0	63.0	71.4	72.0
Medium Trucks:	64.6	61.8	54.3	63.0	69.2	69.3
Heavy Trucks:	64.7	61.7	58.3	62.9	69.1	69.2
Vehicle Noise:	72.8	71.4	69.5	67.8	74.8	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	159	343	739	1,592
CNEL:	167	361	777	1,674

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	47,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	3,697 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.86	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-14.38	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.34	-1.84	-1.20	-5.25	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:	71.6	70.7	69.3	63.3	71.7	72.4
Medium Trucks:	65.0	62.2	54.7	63.4	69.6	69.6
Heavy Trucks:	65.0	62.1	58.6	63.3	69.5	69.6
Vehicle Noise:	73.2	71.7	69.8	68.1	75.2	75.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	168	363	781	1,683
CNEL:	177	381	822	1,770

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	554 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.39	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.63	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.58	-1.84	-1.20	-5.25	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:	63.3	62.4	61.1	55.1	63.5	64.1
Medium Trucks:	56.7	53.9	46.4	55.2	61.3	61.4
Heavy Trucks:	56.8	53.8	50.4	55.1	61.3	61.4
Vehicle Noise:	64.9	63.5	61.6	59.9	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	475
CNEL:	50	108	232	499

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	772 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.95	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.18	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.14	-1.84	-1.20	-5.25	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:	64.8	63.9	62.5	56.5	64.9	65.6
Medium Trucks:	58.2	55.4	47.9	56.6	62.8	62.8
Heavy Trucks:	58.2	55.3	51.8	56.5	62.7	62.8
Vehicle Noise:	66.4	64.9	63.0	61.3	68.4	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	275	592
CNEL:	62	134	289	623

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	647 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.71	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.95	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.90	-1.84	-1.20	-5.25	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:	64.0	63.1	61.8	55.8	64.2	64.8
Medium Trucks:	57.4	54.6	47.1	55.8	62.0	62.1
Heavy Trucks:	57.4	54.5	51.1	55.7	61.9	62.0
Vehicle Noise:	65.6	64.2	62.3	60.6	67.6	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	244	527
CNEL:	55	119	257	554

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	764 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.99	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.23	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.18	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	63.8	62.5	56.5	64.9	65.5
Medium Trucks:	58.1	55.3	47.8	56.6	62.7	62.8
Heavy Trucks:	58.2	55.2	51.8	56.5	62.7	62.8
Vehicle Noise:	66.3	64.9	63.0	61.3	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	273	588
CNEL:	62	133	287	619

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	811 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.73	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.97	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.93	-1.84	-1.20	-5.25	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	64.1	62.8	56.7	65.2	65.8
Medium Trucks:	58.4	55.6	48.1	56.8	63.0	63.0
Heavy Trucks:	58.4	55.5	52.1	56.7	62.9	63.0
Vehicle Noise:	66.6	65.1	63.2	61.5	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	284	612
CNEL:	64	139	299	644

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.70	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.93	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.89	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	65.1	63.8	57.8	66.2	66.8
Medium Trucks:	59.4	56.6	49.1	57.9	64.0	64.1
Heavy Trucks:	59.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	67.6	66.2	64.3	62.6	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	333	718
CNEL:	75	163	350	755

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,669 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.60	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.84	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.79	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	67.2	65.9	59.9	68.3	68.9
Medium Trucks:	61.5	58.7	51.2	60.0	66.1	66.2
Heavy Trucks:	61.6	58.6	55.2	59.8	66.0	66.1
Vehicle Noise:	69.7	68.3	66.4	64.7	71.7	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	213	460	990
CNEL:	104	224	484	1,042

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,888 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.06	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.30	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.26	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	67.7	66.4	60.4	68.8	69.5
Medium Trucks:	62.1	59.2	51.7	60.5	66.7	66.7
Heavy Trucks:	62.1	59.1	55.7	60.4	66.6	66.7
Vehicle Noise:	70.2	68.8	66.9	65.2	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	232	499	1,075
CNEL:	113	244	525	1,131

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	585 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.15	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.39	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.35	-1.84	-1.20	-5.25	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	61.3	55.3	63.7	64.4
Medium Trucks:	57.0	54.2	46.6	55.4	61.6	61.6
Heavy Trucks:	57.0	54.0	50.6	55.3	61.5	61.6
Vehicle Noise:	65.2	63.7	61.8	60.1	67.2	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	492
CNEL:	52	112	240	518

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	788 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.86	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.10	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.05	-1.84	-1.20	-5.25	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	62.6	56.6	65.0	65.7
Medium Trucks:	58.3	55.4	47.9	56.7	62.9	62.9
Heavy Trucks:	58.3	55.3	51.9	56.6	62.8	62.9
Vehicle Noise:	66.4	65.0	63.1	61.4	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	279	600
CNEL:	63	136	293	632

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	663 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.61	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.85	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.80	-1.84	-1.20	-5.25	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:	64.1	63.2	61.9	55.9	64.3	64.9
Medium Trucks:	57.5	54.7	47.2	55.9	62.1	62.2
Heavy Trucks:	57.6	54.6	51.2	55.8	62.0	62.1
Vehicle Noise:	65.7	64.3	62.4	60.7	67.7	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	115	248	535
CNEL:	56	121	261	563

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	772 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.95	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.18	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.14	-1.84	-1.20	-5.25	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:	64.8	63.9	62.5	56.5	64.9	65.6
Medium Trucks:	58.2	55.4	47.9	56.6	62.8	62.8
Heavy Trucks:	58.2	55.3	51.8	56.5	62.7	62.8
Vehicle Noise:	66.4	64.9	63.0	61.3	68.4	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	275	592
CNEL:	62	134	289	623

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	811 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.73	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.97	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.93	-1.84	-1.20	-5.25	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	64.1	62.8	56.7	65.2	65.8
Medium Trucks:	58.4	55.6	48.1	56.8	63.0	63.0
Heavy Trucks:	58.4	55.5	52.1	56.7	62.9	63.0
Vehicle Noise:	66.6	65.1	63.2	61.5	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	284	612
CNEL:	64	139	299	644

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,014 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.76	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.00	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.96	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	65.0	63.7	57.7	66.1	66.8
Medium Trucks:	59.4	56.5	49.0	57.8	64.0	64.0
Heavy Trucks:	59.4	56.4	53.0	57.7	63.9	64.0
Vehicle Noise:	67.5	66.1	64.2	62.5	69.6	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	153	330	710
CNEL:	75	161	347	747

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,911 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.01	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.25	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.20	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	67.8	66.5	60.5	68.9	69.5
Medium Trucks:	62.1	59.3	51.8	60.5	66.7	66.8
Heavy Trucks:	62.1	59.2	55.8	60.4	66.6	66.7
Vehicle Noise:	70.3	68.9	67.0	65.3	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	234	503	1,084
CNEL:	114	246	529	1,140

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: Airport Bl. | Job Number: 14497
Road Segment: e/o Palm St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,114 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.43	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-16.81	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.77	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.2	68.2	66.9	60.9	69.3	69.9
Medium Trucks:	62.6	59.7	52.2	61.0	67.2	67.2
Heavy Trucks:	62.6	59.6	56.2	60.9	67.1	67.2
Vehicle Noise:	70.7	69.3	67.4	65.7	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	250	538	1,159
CNEL:	122	263	566	1,219

Wednesday, May 3, 2023

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

Scenario: E
Road Name: 60th Av.
Road Segment: w/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	39 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-16.50	-0.99	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-33.74	-0.97	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-37.69	-0.97	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.5	50.6	49.3	43.3	51.7	52.3
Medium Trucks:	45.1	42.3	34.8	43.5	49.7	49.7
Heavy Trucks:	45.5	42.5	39.1	43.8	50.0	50.1
Vehicle Noise:	53.2	51.7	49.8	48.3	55.3	55.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	7	14	31	67
CNEL:	7	15	33	71

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

Scenario: E+P
Road Name: 60th Av.
Road Segment: w/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	78 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-13.49	-0.99	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-30.73	-0.97	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-34.68	-0.97	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	54.5	53.6	52.3	46.3	54.7	55.3
Medium Trucks:	48.1	45.3	37.8	46.5	52.7	52.7
Heavy Trucks:	48.5	45.6	42.2	46.8	53.0	53.1
Vehicle Noise:	56.2	54.8	52.8	51.3	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	23	50	107
CNEL:	11	24	52	112

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

Scenario: EAC (2026)
Road Name: 60th Av.
Road Segment: w/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-12.35	-0.99	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-29.59	-0.97	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-33.54	-0.97	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	54.7	53.4	47.4	55.8	56.5
Medium Trucks:	49.2	46.4	38.9	47.7	53.8	53.9
Heavy Trucks:	49.7	46.7	43.3	47.9	54.1	54.2
Vehicle Noise:	57.4	55.9	54.0	52.5	59.5	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	27	59	127
CNEL:	13	29	62	134

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

Scenario: EAPC (2026)
Road Name: 60th Av.
Road Segment: w/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	117 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-11.73	-0.99	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-28.97	-0.97	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-32.92	-0.97	-1.20	*-5.31*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.3	55.4	54.0	48.0	56.5	57.1
Medium Trucks:	49.9	47.0	39.5	48.3	54.5	54.5
Heavy Trucks:	50.3	47.3	43.9	48.6	54.8	54.9
Vehicle Noise:	58.0	56.5	54.6	53.1	60.1	60.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	30	65	140
CNEL:	15	32	68	147

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 60th Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	187 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-9.69	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-26.92	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-30.88	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.3	57.4	56.1	50.1	58.5	59.1
Medium Trucks:	51.9	49.1	41.6	50.3	56.5	56.5
Heavy Trucks:	52.3	49.4	46.0	50.6	56.8	56.9
Vehicle Noise:	60.0	58.6	56.6	55.1	62.1	62.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	191
CNEL:	20	43	93	201

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 60th Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	226 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-8.86	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-26.10	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-30.06	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	58.2	56.9	50.9	59.3	59.9
Medium Trucks:	52.7	49.9	42.4	51.2	57.3	57.4
Heavy Trucks:	53.1	50.2	46.8	51.4	57.6	57.7
Vehicle Noise:	60.9	59.4	57.4	55.9	63.0	63.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	49	106	228

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 60th Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	975 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.52	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.76	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.71	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	64.6	63.3	57.2	65.7	66.3
Medium Trucks:	59.1	56.3	48.7	57.5	63.7	63.7
Heavy Trucks:	59.5	56.5	53.1	57.8	64.0	64.1
Vehicle Noise:	67.2	65.7	63.8	62.3	69.3	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	124	267	575
CNEL:	60	130	280	604

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 60th Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,014 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.35	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.59	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.54	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	64.7	63.4	57.4	65.8	66.5
Medium Trucks:	59.2	56.4	48.9	57.7	63.8	63.9
Heavy Trucks:	59.7	56.7	53.3	57.9	64.1	64.2
Vehicle Noise:	67.4	65.9	64.0	62.5	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	62	134	288	620

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	125 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-11.86	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-29.10	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-33.05	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.3	53.3	52.0	46.0	54.4	55.1
Medium Trucks:	47.7	44.8	37.3	46.1	52.3	52.3
Heavy Trucks:	47.7	44.7	41.3	46.0	52.2	52.3
Vehicle Noise:	55.8	54.4	52.5	50.8	57.9	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	83	179

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	203 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-9.75	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-26.99	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-30.95	-4.45	-1.20	-5.14	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:	56.4	55.4	54.1	48.1	56.5	57.2
Medium Trucks:	49.8	46.9	39.4	48.2	54.4	54.4
Heavy Trucks:	49.8	46.8	43.4	48.1	54.3	54.4
Vehicle Noise:	57.9	56.5	54.6	52.9	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	109	236
CNEL:	25	53	115	248

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-10.68	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.92	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.87	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.4	54.5	53.2	47.2	55.6	56.2
Medium Trucks:	48.8	46.0	38.5	47.3	53.4	53.5
Heavy Trucks:	48.9	45.9	42.5	47.2	53.4	53.4
Vehicle Noise:	57.0	55.6	53.7	52.0	59.0	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	21	46	100	215

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-9.92	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.16	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.12	-4.45	-1.20	-5.14	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:	56.2	55.3	54.0	47.9	56.4	57.0
Medium Trucks:	49.6	46.8	39.3	48.0	54.2	54.2
Heavy Trucks:	49.6	46.7	43.3	47.9	54.1	54.2
Vehicle Noise:	57.8	56.3	54.4	52.7	59.8	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	107	229
CNEL:	24	52	112	241

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	281 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.34	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-25.58	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.53	-4.45	-1.20	-5.14	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:	57.8	56.9	55.5	49.5	57.9	58.6
Medium Trucks:	51.2	48.4	40.8	49.6	55.8	55.8
Heavy Trucks:	51.2	48.2	44.8	49.5	55.7	55.8
Vehicle Noise:	59.4	57.9	56.0	54.3	61.4	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	136	293
CNEL:	31	66	143	308

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	359 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-7.27	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-24.51	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.47	-4.45	-1.20	-5.14	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:	58.8	57.9	56.6	50.6	59.0	59.6
Medium Trucks:	52.2	49.4	41.9	50.7	56.8	56.9
Heavy Trucks:	52.3	49.3	45.9	50.6	56.8	56.9
Vehicle Noise:	60.4	59.0	57.1	55.4	62.4	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	160	345
CNEL:	36	78	168	363

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,264 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.81	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-19.04	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.00	-4.45	-1.20	-5.14	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:	64.3	63.4	62.1	56.1	64.5	65.1
Medium Trucks:	57.7	54.9	47.4	56.1	62.3	62.3
Heavy Trucks:	57.7	54.8	51.4	56.0	62.2	62.3
Vehicle Noise:	65.9	64.5	62.6	60.8	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	172	370	798
CNEL:	84	181	389	839

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Jackson St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,334 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.57	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.81	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.77	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.5	63.6	62.3	56.3	64.7	65.3
Medium Trucks:	57.9	55.1	47.6	56.4	62.5	62.6
Heavy Trucks:	58.0	55.0	51.6	56.3	62.5	62.6
Vehicle Noise:	66.1	64.7	62.8	61.1	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	178	384	827
CNEL:	87	187	404	870

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	62 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-14.87	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-32.11	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-36.06	-4.45	-1.20	-5.14	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:	51.3	50.3	49.0	43.0	51.4	52.0
Medium Trucks:	44.6	41.8	34.3	43.1	49.2	49.3
Heavy Trucks:	44.7	41.7	38.3	43.0	49.2	49.3
Vehicle Noise:	52.8	51.4	49.5	47.8	54.8	55.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	23	50	107
CNEL:	11	24	52	113

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-9.92	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.16	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.12	-4.45	-1.20	-5.14	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:	56.2	55.3	54.0	47.9	56.4	57.0
Medium Trucks:	49.6	46.8	39.3	48.0	54.2	54.2
Heavy Trucks:	49.6	46.7	43.3	47.9	54.1	54.2
Vehicle Noise:	57.8	56.3	54.4	52.7	59.8	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	107	229
CNEL:	24	52	112	241

Wednesday, May 3, 2023

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-12.76	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-30.00	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-33.96	-4.45	-1.20	-5.14	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:	53.4	52.4	51.1	45.1	53.5	54.1
Medium Trucks:	46.7	43.9	36.4	45.2	51.4	51.4
Heavy Trucks:	46.8	43.8	40.4	45.1	51.3	51.4
Vehicle Noise:	54.9	53.5	51.6	49.9	57.0	57.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	72	156

Wednesday, May 3, 2023

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	148 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-11.11	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-28.35	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-32.31	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.0	54.1	52.8	46.8	55.2	55.8
Medium Trucks:	48.4	45.6	38.1	46.8	53.0	53.0
Heavy Trucks:	48.4	45.5	42.1	46.7	52.9	53.0
Vehicle Noise:	56.6	55.1	53.3	51.5	58.6	58.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	191
CNEL:	20	43	93	201

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	265 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.59	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-25.83	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.78	-4.45	-1.20	-5.14	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:	57.5	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	50.9	48.1	40.6	49.4	55.5	55.6
Heavy Trucks:	51.0	48.0	44.6	49.2	55.4	55.5
Vehicle Noise:	59.1	57.7	55.8	54.1	61.1	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	61	131	282
CNEL:	30	64	138	296

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	398 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.83	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-24.06	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.02	-4.45	-1.20	-5.14	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:	59.3	58.4	57.1	51.0	59.5	60.1
Medium Trucks:	52.7	49.9	42.4	51.1	57.3	57.3
Heavy Trucks:	52.7	49.8	46.4	51.0	57.2	57.3
Vehicle Noise:	60.9	59.4	57.5	55.8	62.9	63.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	171	369
CNEL:	39	84	180	388

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,373 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.45	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.68	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.64	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	63.7	62.4	56.4	64.8	65.5
Medium Trucks:	58.1	55.2	47.7	56.5	62.7	62.7
Heavy Trucks:	58.1	55.1	51.7	56.4	62.6	62.7
Vehicle Noise:	66.3	64.8	62.9	61.2	68.3	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	182	391	843
CNEL:	89	191	412	887

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Van Buren St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,505 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.05	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.28	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.24	-4.45	-1.20	-5.14	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	62.8	56.8	65.2	65.9
Medium Trucks:	58.5	55.6	48.1	56.9	63.1	63.1
Heavy Trucks:	58.5	55.5	52.1	56.8	63.0	63.1
Vehicle Noise:	66.7	65.2	63.3	61.6	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	193	416	896
CNEL:	94	203	438	943

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	70 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-14.36	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-31.60	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-35.55	-4.45	-1.20	-5.14	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:	51.8	50.8	49.5	43.5	51.9	52.6
Medium Trucks:	45.2	42.3	34.8	43.6	49.8	49.8
Heavy Trucks:	45.2	42.2	38.8	43.5	49.7	49.8
Vehicle Noise:	53.3	51.9	50.0	48.3	55.4	55.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	12	25	54	116
CNEL:	12	26	57	122

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	257 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.72	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-25.95	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.91	-4.45	-1.20	-5.14	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:	57.4	56.5	55.2	49.1	57.6	58.2
Medium Trucks:	50.8	48.0	40.5	49.2	55.4	55.4
Heavy Trucks:	50.8	47.9	44.5	49.1	55.3	55.4
Vehicle Noise:	59.0	57.5	55.7	53.9	61.0	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	59	128	276
CNEL:	29	63	135	291

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-12.76	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-30.00	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-33.96	-4.45	-1.20	-5.14	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:	53.4	52.4	51.1	45.1	53.5	54.1
Medium Trucks:	46.7	43.9	36.4	45.2	51.4	51.4
Heavy Trucks:	46.8	43.8	40.4	45.1	51.3	51.4
Vehicle Noise:	54.9	53.5	51.6	49.9	57.0	57.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	72	156

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	172 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-10.48	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.72	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.67	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	54.7	53.4	47.4	55.8	56.4
Medium Trucks:	49.0	46.2	38.7	47.5	53.6	53.7
Heavy Trucks:	49.1	46.1	42.7	47.4	53.6	53.7
Vehicle Noise:	57.2	55.8	53.9	52.2	59.2	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	98	211
CNEL:	22	48	103	222

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	265 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.59	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-25.83	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.78	-4.45	-1.20	-5.14	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:	57.5	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	50.9	48.1	40.6	49.4	55.5	55.6
Heavy Trucks:	51.0	48.0	44.6	49.2	55.4	55.5
Vehicle Noise:	59.1	57.7	55.8	54.1	61.1	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	61	131	282
CNEL:	30	64	138	296

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	452 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.27	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.51	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.46	-4.45	-1.20	-5.14	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:	59.9	58.9	57.6	51.6	60.0	60.6
Medium Trucks:	53.2	50.4	42.9	51.7	57.8	57.9
Heavy Trucks:	53.3	50.3	46.9	51.6	57.8	57.9
Vehicle Noise:	61.4	60.0	58.1	56.4	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	87	187	402
CNEL:	42	91	196	423

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,591 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.81	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.04	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.00	-4.45	-1.20	-5.14	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:	65.3	64.4	63.1	57.1	65.5	66.1
Medium Trucks:	58.7	55.9	48.4	57.1	63.3	63.3
Heavy Trucks:	58.7	55.8	52.4	57.0	63.2	63.3
Vehicle Noise:	66.9	65.5	63.6	61.8	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	200	432	930
CNEL:	98	211	454	979

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,778 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.32	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.56	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.52	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	64.9	63.6	57.5	66.0	66.6
Medium Trucks:	59.2	56.4	48.9	57.6	63.8	63.8
Heavy Trucks:	59.2	56.3	52.9	57.5	63.7	63.8
Vehicle Noise:	67.4	65.9	64.0	62.3	69.4	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	216	465	1,002
CNEL:	105	227	489	1,054

Wednesday, May 3, 2023

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

Scenario: E
Road Name: 62nd Av.
Road Segment: e/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	179 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-10.28	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-27.52	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-31.48	-4.45	-1.20	*-5.14*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.8	54.9	53.6	47.6	56.0	56.6
Medium Trucks:	49.2	46.4	38.9	47.7	53.8	53.9
Heavy Trucks:	49.3	46.3	42.9	47.5	53.7	53.8
Vehicle Noise:	57.4	56.0	54.1	52.4	59.4	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	47	101	217
CNEL:	23	49	106	228

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

Scenario: E+P
Road Name: 62nd Av.
Road Segment: e/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	725 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-4.22	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-21.46	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-25.41	-4.45	-1.20	*-5.14*	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:	61.9	61.0	59.7	53.6	62.1	62.7
Medium Trucks:	55.3	52.5	45.0	53.7	59.9	59.9
Heavy Trucks:	55.3	52.4	49.0	53.6	59.8	59.9
Vehicle Noise:	63.5	62.0	60.1	58.4	65.5	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	55	119	256	551
CNEL:	58	125	269	580

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

Scenario: EAC (2026)
Road Name: 62nd Av.
Road Segment: e/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	211 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-9.59	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-26.83	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-30.78	-4.45	-1.20	*-5.14*	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:	56.5	55.6	54.3	48.3	56.7	57.3
Medium Trucks:	49.9	47.1	39.6	48.4	54.5	54.6
Heavy Trucks:	50.0	47.0	43.6	48.2	54.4	54.5
Vehicle Noise:	58.1	56.7	54.8	53.1	60.1	60.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	24	52	112	242
CNEL:	25	55	118	254

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

Scenario: EAPC (2026)
Road Name: 62nd Av.
Road Segment: e/o Harrison St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	523 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-5.64	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-22.88	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-26.83	-4.45	-1.20	*-5.14*	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:	60.5	59.5	58.2	52.2	60.6	61.3
Medium Trucks:	53.9	51.1	43.5	52.3	58.5	58.5
Heavy Trucks:	53.9	50.9	47.5	52.2	58.4	58.5
Vehicle Noise:	62.1	60.6	58.7	57.0	64.1	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	206	443
CNEL:	47	100	216	466

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	429 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.50	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.74	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.69	-4.45	-1.20	-5.14	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:	59.6	58.7	57.4	51.4	59.8	60.4
Medium Trucks:	53.0	50.2	42.7	51.4	57.6	57.7
Heavy Trucks:	53.0	50.1	46.7	51.3	57.5	57.6
Vehicle Noise:	61.2	59.8	57.9	56.2	63.2	63.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	180	388
CNEL:	41	88	190	408

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	975 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.93	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.17	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.13	-4.45	-1.20	-5.14	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:	63.2	62.3	60.9	54.9	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.0	61.2	61.2
Heavy Trucks:	56.6	53.7	50.2	54.9	61.1	61.2
Vehicle Noise:	64.8	63.3	61.4	59.7	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	311	671
CNEL:	71	152	328	706

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.09	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.33	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.29	-4.45	-1.20	-5.14	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	64.1	62.8	56.8	65.2	65.8
Medium Trucks:	58.4	55.6	48.1	56.9	63.0	63.1
Heavy Trucks:	58.5	55.5	52.1	56.7	62.9	63.0
Vehicle Noise:	66.6	65.2	63.3	61.6	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	94	202	435	936

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,036 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.26	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.97	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.93	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	65.5	64.1	58.1	66.6	67.2
Medium Trucks:	59.8	57.0	49.4	58.2	64.4	64.4
Heavy Trucks:	59.8	56.8	53.4	58.1	64.3	64.4
Vehicle Noise:	68.0	66.5	64.6	62.9	70.0	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	236	509	1,096
CNEL:	115	248	535	1,153

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	179 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-10.28	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.52	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.48	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.8	54.9	53.6	47.6	56.0	56.6
Medium Trucks:	49.2	46.4	38.9	47.7	53.8	53.9
Heavy Trucks:	49.3	46.3	42.9	47.5	53.7	53.8
Vehicle Noise:	57.4	56.0	54.1	52.4	59.4	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	49	106	228

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	741 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.12	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.36	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.32	-4.45	-1.20	-5.14	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:	62.0	61.1	59.8	53.7	62.2	62.8
Medium Trucks:	55.4	52.6	45.1	53.8	60.0	60.0
Heavy Trucks:	55.4	52.5	49.1	53.7	59.9	60.0
Vehicle Noise:	63.6	62.1	60.2	58.5	65.6	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	559
CNEL:	59	127	273	588

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	211 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-9.59	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-26.83	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-30.78	-4.45	-1.20	-5.14	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:	56.5	55.6	54.3	48.3	56.7	57.3
Medium Trucks:	49.9	47.1	39.6	48.4	54.5	54.6
Heavy Trucks:	50.0	47.0	43.6	48.2	54.4	54.5
Vehicle Noise:	58.1	56.7	54.8	53.1	60.1	60.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	112	242
CNEL:	25	55	118	254

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	538 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.51	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.75	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.71	-4.45	-1.20	-5.14	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	59.7	58.4	52.4	60.8	61.4
Medium Trucks:	54.0	51.2	43.7	52.4	58.6	58.6
Heavy Trucks:	54.0	51.1	47.7	52.3	58.5	58.6
Vehicle Noise:	62.2	60.7	58.9	57.1	64.2	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	452
CNEL:	48	102	220	475

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	429 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.50	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.74	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.69	-4.45	-1.20	-5.14	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:	59.6	58.7	57.4	51.4	59.8	60.4
Medium Trucks:	53.0	50.2	42.7	51.4	57.6	57.7
Heavy Trucks:	53.0	50.1	46.7	51.3	57.5	57.6
Vehicle Noise:	61.2	59.8	57.9	56.2	63.2	63.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	84	180	388
CNEL:	41	88	190	408

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	991 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.86	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.10	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.06	-4.45	-1.20	-5.14	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:	63.3	62.3	61.0	55.0	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.1	61.3	61.3
Heavy Trucks:	56.7	53.7	50.3	55.0	61.2	61.3
Vehicle Noise:	64.8	63.4	61.5	59.8	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	315	678
CNEL:	71	154	331	713

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.09	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.33	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.29	-4.45	-1.20	-5.14	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	64.1	62.8	56.8	65.2	65.8
Medium Trucks:	58.4	55.6	48.1	56.9	63.0	63.1
Heavy Trucks:	58.5	55.5	52.1	56.7	62.9	63.0
Vehicle Noise:	66.6	65.2	63.3	61.6	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	413	890
CNEL:	94	202	435	936

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: w/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,051 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.30	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.94	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.90	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	65.5	64.2	58.2	66.6	67.2
Medium Trucks:	59.8	57.0	49.5	58.2	64.4	64.4
Heavy Trucks:	59.8	56.9	53.5	58.1	64.3	64.4
Vehicle Noise:	68.0	66.6	64.7	62.9	70.0	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	511	1,102
CNEL:	116	250	538	1,159

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

Scenario: E
Road Name: 62nd Av.
Road Segment: e/o Tyler St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	187 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-10.10	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-27.34	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-31.29	-4.45	-1.20	*-5.14*	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:	56.0	55.1	53.8	47.8	56.2	56.8
Medium Trucks:	49.4	46.6	39.1	47.8	54.0	54.1
Heavy Trucks:	49.4	46.5	43.1	47.7	53.9	54.0
Vehicle Noise:	57.6	56.2	54.3	52.6	59.6	59.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	48	104	223
CNEL:	23	51	109	235

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

Scenario: E+P
Road Name: 62nd Av.
Road Segment: e/o Tyler St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	788 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-3.86	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-21.10	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-25.05	-4.45	-1.20	*-5.14*	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:	62.3	61.3	60.0	54.0	62.4	63.1
Medium Trucks:	55.7	52.8	45.3	54.1	60.3	60.3
Heavy Trucks:	55.7	52.7	49.3	54.0	60.2	60.3
Vehicle Noise:	63.8	62.4	60.5	58.8	65.9	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	58	125	270	582
CNEL:	61	132	284	612

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

Scenario: EAC (2026)
Road Name: 62nd Av.
Road Segment: e/o Tyler St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	226 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-9.28	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-26.52	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-30.47	-4.45	-1.20	*-5.14*	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:	56.8	55.9	54.6	48.6	57.0	57.6
Medium Trucks:	50.2	47.4	39.9	48.7	54.8	54.9
Heavy Trucks:	50.3	47.3	43.9	48.6	54.8	54.8
Vehicle Noise:	58.4	57.0	55.1	53.4	60.4	60.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	55	118	253
CNEL:	27	57	124	267

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

Scenario: EAPC (2026)
Road Name: 62nd Av.
Road Segment: e/o Tyler St.
Project Name: Thermal Ranch SP
Job Number: 14497

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	632 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-4.82	-4.46	-1.20	*-4.78*	0.000	0.000
Medium Trucks:	82.40	-22.06	-4.45	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-26.01	-4.45	-1.20	*-5.14*	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:	61.3	60.4	59.1	53.0	61.5	62.1
Medium Trucks:	54.7	51.9	44.4	53.1	59.3	59.3
Heavy Trucks:	54.7	51.8	48.4	53.0	59.2	59.3
Vehicle Noise:	62.9	61.4	59.5	57.8	64.9	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	50	108	233	503
CNEL:	53	114	245	529

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	452 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.27	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.51	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.46	-4.45	-1.20	-5.14	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:	59.9	58.9	57.6	51.6	60.0	60.6
Medium Trucks:	53.2	50.4	42.9	51.7	57.8	57.9
Heavy Trucks:	53.3	50.3	46.9	51.6	57.8	57.9
Vehicle Noise:	61.4	60.0	58.1	56.4	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	87	187	402
CNEL:	42	91	196	423

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,053 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.60	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-19.84	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.79	-4.45	-1.20	-5.14	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:	63.5	62.6	61.3	55.3	63.7	64.3
Medium Trucks:	56.9	54.1	46.6	55.3	61.5	61.6
Heavy Trucks:	56.9	54.0	50.6	55.2	61.4	61.5
Vehicle Noise:	65.1	63.7	61.8	60.1	67.1	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	152	328	706
CNEL:	74	160	345	743

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,513 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.02	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-18.26	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.22	-4.45	-1.20	-5.14	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	64.2	62.9	56.8	65.3	65.9
Medium Trucks:	58.5	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	58.5	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	66.7	65.2	63.3	61.6	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	194	418	900
CNEL:	95	204	439	946

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,114 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.43	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.81	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.77	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	59.9	57.1	49.6	58.4	64.5	64.6
Heavy Trucks:	60.0	57.0	53.6	58.3	64.5	64.6
Vehicle Noise:	68.1	66.7	64.8	63.1	70.1	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	112	242	522	1,124
CNEL:	118	255	549	1,182

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-12.76	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-30.00	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-33.96	-4.45	-1.20	-5.14	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:	53.4	52.4	51.1	45.1	53.5	54.1
Medium Trucks:	46.7	43.9	36.4	45.2	51.4	51.4
Heavy Trucks:	46.8	43.8	40.4	45.1	51.3	51.4
Vehicle Noise:	54.9	53.5	51.6	49.9	57.0	57.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	72	156

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	624 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.87	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.11	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.06	-4.45	-1.20	-5.14	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:	61.3	60.3	59.0	53.0	61.4	62.0
Medium Trucks:	54.6	51.8	44.3	53.1	59.2	59.3
Heavy Trucks:	54.7	51.7	48.3	53.0	59.2	59.3
Vehicle Noise:	62.8	61.4	59.5	57.8	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	231	498
CNEL:	52	113	243	524

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-10.68	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-27.92	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.87	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.4	54.5	53.2	47.2	55.6	56.2
Medium Trucks:	48.8	46.0	38.5	47.3	53.4	53.5
Heavy Trucks:	48.9	45.9	42.5	47.2	53.4	53.4
Vehicle Noise:	57.0	55.6	53.7	52.0	59.0	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	21	46	100	215

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	523 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.64	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.88	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.83	-4.45	-1.20	-5.14	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:	60.5	59.5	58.2	52.2	60.6	61.3
Medium Trucks:	53.9	51.1	43.5	52.3	58.5	58.5
Heavy Trucks:	53.9	50.9	47.5	52.2	58.4	58.5
Vehicle Noise:	62.1	60.6	58.7	57.0	64.1	64.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	206	443
CNEL:	47	100	216	466

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	374 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-7.09	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-24.33	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.28	-4.45	-1.20	-5.14	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:	59.0	58.1	56.8	50.8	59.2	59.8
Medium Trucks:	52.4	49.6	42.1	50.9	57.0	57.1
Heavy Trucks:	52.5	49.5	46.1	50.7	56.9	57.0
Vehicle Noise:	60.6	59.2	57.3	55.6	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	165	355
CNEL:	37	80	173	373

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	897 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.29	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.53	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.49	-4.45	-1.20	-5.14	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:	62.8	61.9	60.6	54.6	63.0	63.6
Medium Trucks:	56.2	53.4	45.9	54.6	60.8	60.9
Heavy Trucks:	56.3	53.3	49.9	54.5	60.7	60.8
Vehicle Noise:	64.4	63.0	61.1	59.4	66.4	66.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	137	295	635
CNEL:	67	144	310	668

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,934 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.04	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.20	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.15	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	65.2	63.9	57.9	66.3	67.0
Medium Trucks:	59.6	56.7	49.2	58.0	64.2	64.2
Heavy Trucks:	59.6	56.6	53.2	57.9	64.1	64.2
Vehicle Noise:	67.7	66.3	64.4	62.7	69.8	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	106	228	492	1,060
CNEL:	111	240	517	1,115

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Polk St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,457 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	1.08	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.16	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.11	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	66.3	65.0	58.9	67.4	68.0
Medium Trucks:	60.6	57.8	50.3	59.0	65.2	65.2
Heavy Trucks:	60.6	57.7	54.3	58.9	65.1	65.2
Vehicle Noise:	68.8	67.3	65.4	63.7	70.8	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	124	268	577	1,243
CNEL:	131	282	607	1,307

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	125 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-11.86	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-29.10	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-33.05	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.3	53.3	52.0	46.0	54.4	55.1
Medium Trucks:	47.7	44.8	37.3	46.1	52.3	52.3
Heavy Trucks:	47.7	44.7	41.3	46.0	52.2	52.3
Vehicle Noise:	55.8	54.4	52.5	50.8	57.9	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	83	179

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	616 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.93	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.16	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.12	-4.45	-1.20	-5.14	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:	61.2	60.3	59.0	52.9	61.4	62.0
Medium Trucks:	54.6	51.8	44.3	53.0	59.2	59.2
Heavy Trucks:	54.6	51.7	48.3	52.9	59.1	59.2
Vehicle Noise:	62.8	61.3	59.4	57.7	64.8	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	494
CNEL:	52	112	241	520

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	413 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.66	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.90	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.85	-4.45	-1.20	-5.14	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:	59.5	58.5	57.2	51.2	59.6	60.3
Medium Trucks:	52.9	50.0	42.5	51.3	57.5	57.5
Heavy Trucks:	52.9	49.9	46.5	51.2	57.4	57.5
Vehicle Noise:	61.0	59.6	57.7	56.0	63.1	63.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	176	379
CNEL:	40	86	185	398

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	757 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.03	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-21.27	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.23	-4.45	-1.20	-5.14	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:	62.1	61.2	59.8	53.8	62.3	62.9
Medium Trucks:	55.5	52.7	45.2	53.9	60.1	60.1
Heavy Trucks:	55.5	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	63.7	62.2	60.3	58.6	65.7	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	122	263	567
CNEL:	60	128	277	596

Wednesday, May 3, 2023

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	484 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.98	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.22	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.17	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.1	59.2	57.9	51.9	60.3	60.9
Medium Trucks:	53.5	50.7	43.2	52.0	58.1	58.2
Heavy Trucks:	53.6	50.6	47.2	51.9	58.1	58.1
Vehicle Noise:	61.7	60.3	58.4	56.7	63.7	64.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	91	195	420
CNEL:	44	95	205	442

Wednesday, May 3, 2023

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	975 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.93	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.17	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.13	-4.45	-1.20	-5.14	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:	63.2	62.3	60.9	54.9	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.0	61.2	61.2
Heavy Trucks:	56.6	53.7	50.2	54.9	61.1	61.2
Vehicle Noise:	64.8	63.3	61.4	59.7	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	311	671
CNEL:	71	152	328	706

Wednesday, May 3, 2023

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,810 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.25	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.48	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.44	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.9	63.6	57.6	66.0	66.7
Medium Trucks:	59.3	56.4	48.9	57.7	63.9	63.9
Heavy Trucks:	59.3	56.3	52.9	57.6	63.8	63.9
Vehicle Noise:	67.5	66.0	64.1	62.4	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	101	218	470	1,013
CNEL:	107	230	495	1,066

Wednesday, May 3, 2023

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Fillmore St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,301 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.80	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.44	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.40	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	66.0	64.7	58.7	67.1	67.7
Medium Trucks:	60.3	57.5	50.0	58.7	64.9	64.9
Heavy Trucks:	60.3	57.4	54.0	58.6	64.8	64.9
Vehicle Noise:	68.5	67.1	65.2	63.4	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	256	552	1,190
CNEL:	125	270	581	1,251

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	133 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-11.60	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-28.84	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-32.79	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.5	53.6	52.3	46.3	54.7	55.3
Medium Trucks:	47.9	45.1	37.6	46.3	52.5	52.6
Heavy Trucks:	48.0	45.0	41.6	46.2	52.4	52.5
Vehicle Noise:	56.1	54.7	52.8	51.1	58.1	58.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	82	177
CNEL:	19	40	87	187

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	608 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.98	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.22	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.17	-4.45	-1.20	-5.14	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:	61.1	60.2	58.9	52.9	61.3	61.9
Medium Trucks:	54.5	51.7	44.2	53.0	59.1	59.2
Heavy Trucks:	54.6	51.6	48.2	52.9	59.1	59.1
Vehicle Noise:	62.7	61.3	59.4	57.7	64.7	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	227	490
CNEL:	52	111	239	515

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	218 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-9.43	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-26.67	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-30.62	-4.45	-1.20	-5.14	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:	56.7	55.8	54.4	48.4	56.9	57.5
Medium Trucks:	50.1	47.3	39.8	48.5	54.7	54.7
Heavy Trucks:	50.1	47.2	43.7	48.4	54.6	54.7
Vehicle Noise:	58.3	56.8	54.9	53.2	60.3	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	53	115	248
CNEL:	26	56	121	260

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	538 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.51	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-22.75	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.71	-4.45	-1.20	-5.14	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	59.7	58.4	52.4	60.8	61.4
Medium Trucks:	54.0	51.2	43.7	52.4	58.6	58.6
Heavy Trucks:	54.0	51.1	47.7	52.3	58.5	58.6
Vehicle Noise:	62.2	60.7	58.9	57.1	64.2	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	452
CNEL:	48	102	220	475

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	507 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.77	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-23.01	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.97	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.3	59.4	58.1	52.1	60.5	61.1
Medium Trucks:	53.7	50.9	43.4	52.2	58.3	58.4
Heavy Trucks:	53.8	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	61.9	60.5	58.6	56.9	63.9	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	201	434
CNEL:	46	98	212	456

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	983 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.90	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-20.14	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.09	-4.45	-1.20	-5.14	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:	63.2	62.3	61.0	55.0	63.4	64.0
Medium Trucks:	56.6	53.8	46.3	55.0	61.2	61.3
Heavy Trucks:	56.6	53.7	50.3	54.9	61.1	61.2
Vehicle Noise:	64.8	63.4	61.5	59.8	66.8	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	675
CNEL:	71	153	329	710

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,685 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.56	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-17.80	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.75	-4.45	-1.20	-5.14	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:	65.6	64.6	63.3	57.3	65.7	66.4
Medium Trucks:	59.0	56.1	48.6	57.4	63.6	63.6
Heavy Trucks:	59.0	56.0	52.6	57.3	63.5	63.6
Vehicle Noise:	67.1	65.7	63.8	62.1	69.2	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	97	208	449	966
CNEL:	102	219	472	1,017

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 62nd Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,153 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	110.0 feet
Centerline Dist. to Observer:	110.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	97.591
Medium Trucks:	97.500
Heavy Trucks:	97.509

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	0.51	-4.46	-1.20	-4.78	0.000	0.000
Medium Trucks:	82.40	-16.73	-4.45	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-20.69	-4.45	-1.20	-5.14	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.7	64.4	58.4	66.8	67.4
Medium Trucks:	60.0	57.2	49.7	58.4	64.6	64.7
Heavy Trucks:	60.1	57.1	53.7	58.3	64.5	64.6
Vehicle Noise:	68.2	66.8	64.9	63.2	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	114	245	528	1,138
CNEL:	120	258	556	1,197

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	187 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-10.10	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-27.34	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-31.29	-1.84	-1.20	-5.25	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:	58.6	57.7	56.4	50.4	58.8	59.4
Medium Trucks:	52.0	49.2	41.7	50.5	56.6	56.7
Heavy Trucks:	52.1	49.1	45.7	50.3	56.5	56.6
Vehicle Noise:	60.2	58.8	56.9	55.2	62.2	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	107	230
CNEL:	24	52	112	242

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	250 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.85	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-26.09	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-30.04	-1.84	-1.20	-5.25	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:	59.9	58.9	57.6	51.6	60.0	60.7
Medium Trucks:	53.3	50.5	42.9	51.7	57.9	57.9
Heavy Trucks:	53.3	50.3	46.9	51.6	57.8	57.9
Vehicle Noise:	61.5	60.0	58.1	56.4	63.5	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	130	279
CNEL:	29	63	136	293

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	273 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.46	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-25.70	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.66	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.3	59.3	58.0	52.0	60.4	61.1
Medium Trucks:	53.7	50.8	43.3	52.1	58.3	58.3
Heavy Trucks:	53.7	50.7	47.3	52.0	58.2	58.3
Vehicle Noise:	61.8	60.4	58.5	56.8	63.9	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	137	296
CNEL:	31	67	145	312

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	281 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-8.34	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-25.58	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-29.53	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	59.5	58.1	52.1	60.6	61.2
Medium Trucks:	53.8	51.0	43.5	52.2	58.4	58.4
Heavy Trucks:	53.8	50.9	47.5	52.1	58.3	58.4
Vehicle Noise:	62.0	60.5	58.6	56.9	64.0	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	32	68	147	317

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	335 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-7.57	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-24.81	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.76	-1.84	-1.20	-5.25	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:	61.2	60.2	58.9	52.9	61.3	62.0
Medium Trucks:	54.6	51.7	44.2	53.0	59.2	59.2
Heavy Trucks:	54.6	51.6	48.2	52.9	59.1	59.2
Vehicle Noise:	62.7	61.3	59.4	57.7	64.8	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	340
CNEL:	36	77	166	357

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	398 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.83	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-24.06	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.02	-1.84	-1.20	-5.25	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:	61.9	61.0	59.7	53.6	62.1	62.7
Medium Trucks:	55.3	52.5	45.0	53.7	59.9	59.9
Heavy Trucks:	55.3	52.4	49.0	53.6	59.8	59.9
Vehicle Noise:	63.5	62.0	60.1	58.4	65.5	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	82	177	381
CNEL:	40	86	186	400

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	452 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.27	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-23.51	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.46	-1.84	-1.20	-5.25	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:	62.5	61.5	60.2	54.2	62.6	63.3
Medium Trucks:	55.9	53.0	45.5	54.3	60.5	60.5
Heavy Trucks:	55.9	52.9	49.5	54.2	60.4	60.5
Vehicle Noise:	64.0	62.6	60.7	59.0	66.1	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	89	193	415
CNEL:	44	94	203	436

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Harrison St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	515 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.71	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.94	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.90	-1.84	-1.20	-5.25	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:	63.0	62.1	60.8	54.8	63.2	63.8
Medium Trucks:	56.4	53.6	46.1	54.8	61.0	61.1
Heavy Trucks:	56.5	53.5	50.1	54.7	60.9	61.0
Vehicle Noise:	64.6	63.2	61.3	59.6	66.6	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	452
CNEL:	48	102	221	476

Wednesday, May 3, 2023

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	608 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.98	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.22	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.17	-1.84	-1.20	-5.25	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	62.8	61.5	55.5	63.9	64.5
Medium Trucks:	57.1	54.3	46.8	55.6	61.7	61.8
Heavy Trucks:	57.2	54.2	50.8	55.5	61.7	61.8
Vehicle Noise:	65.3	63.9	62.0	60.3	67.3	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	505
CNEL:	53	115	247	532

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	842 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.57	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.81	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.76	-1.84	-1.20	-5.25	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	64.2	62.9	56.9	65.3	66.0
Medium Trucks:	58.6	55.7	48.2	57.0	63.2	63.2
Heavy Trucks:	58.6	55.6	52.2	56.9	63.1	63.2
Vehicle Noise:	66.7	65.3	63.4	61.7	68.8	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	135	291	628
CNEL:	66	142	307	660

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	889 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.33	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.57	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.53	-1.84	-1.20	-5.25	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:	65.4	64.5	63.2	57.1	65.6	66.2
Medium Trucks:	58.8	56.0	48.5	57.2	63.4	63.4
Heavy Trucks:	58.8	55.9	52.5	57.1	63.3	63.4
Vehicle Noise:	67.0	65.5	63.6	61.9	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	302	651
CNEL:	68	147	318	685

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,045 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.63	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.87	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.82	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	65.2	63.9	57.8	66.3	66.9
Medium Trucks:	59.5	56.7	49.2	57.9	64.1	64.1
Heavy Trucks:	59.5	56.6	53.2	57.8	64.0	64.1
Vehicle Noise:	67.7	66.2	64.3	62.6	69.7	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	156	336	725
CNEL:	76	164	354	762

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,248 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.86	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.10	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.05	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	65.9	64.6	58.6	67.0	67.7
Medium Trucks:	60.3	57.4	49.9	58.7	64.9	64.9
Heavy Trucks:	60.3	57.3	53.9	58.6	64.8	64.9
Vehicle Noise:	68.4	67.0	65.1	63.4	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	176	379	816
CNEL:	86	185	398	858

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,482 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.11	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-18.35	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.31	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	66.7	65.4	59.4	67.8	68.4
Medium Trucks:	61.0	58.2	50.7	59.4	65.6	65.7
Heavy Trucks:	61.0	58.1	54.7	59.3	65.5	65.6
Vehicle Noise:	69.2	67.8	65.9	64.1	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	197	425	915
CNEL:	96	207	447	962

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,500 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,521 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-1.00	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-18.24	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-22.20	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	66.8	65.5	59.5	67.9	68.5
Medium Trucks:	61.1	58.3	50.8	59.6	65.7	65.8
Heavy Trucks:	61.2	58.2	54.8	59.4	65.6	65.7
Vehicle Noise:	69.3	67.9	66.0	64.3	71.3	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	931
CNEL:	98	211	454	979

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Tyler St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,771 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-0.34	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-17.58	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-21.54	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	67.5	66.1	60.1	68.5	69.2
Medium Trucks:	61.8	59.0	51.5	60.2	66.4	66.4
Heavy Trucks:	61.8	58.9	55.5	60.1	66.3	66.4
Vehicle Noise:	70.0	68.5	66.6	64.9	72.0	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	222	478	1,030
CNEL:	108	233	503	1,084

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

Scenario: E | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,800 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	374 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-7.09	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-24.33	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-28.28	-1.84	-1.20	-5.25	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:	61.6	60.7	59.4	53.4	61.8	62.4
Medium Trucks:	55.0	52.2	44.7	53.5	59.6	59.7
Heavy Trucks:	55.1	52.1	48.7	53.4	59.6	59.7
Vehicle Noise:	63.2	61.8	59.9	58.2	65.2	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	170	366
CNEL:	38	83	179	385

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

Scenario: E+P | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	460 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-6.19	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-23.43	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.39	-1.84	-1.20	-5.25	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:	62.5	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	55.9	53.1	45.6	54.4	60.5	60.6
Heavy Trucks:	56.0	53.0	49.6	54.3	60.5	60.5
Vehicle Noise:	64.1	62.7	60.8	59.1	66.1	66.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	90	195	420
CNEL:	44	95	205	441

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

Scenario: EAC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	499 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.84	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-23.08	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-27.03	-1.84	-1.20	-5.25	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:	62.9	62.0	60.6	54.6	63.1	63.7
Medium Trucks:	56.3	53.5	46.0	54.7	60.9	60.9
Heavy Trucks:	56.3	53.4	50.0	54.6	60.8	60.9
Vehicle Noise:	64.5	63.0	61.1	59.4	66.5	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	206	443
CNEL:	47	100	216	466

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

Scenario: EAPC (2026) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	554 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-5.39	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-22.63	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-26.58	-1.84	-1.20	-5.25	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:	63.3	62.4	61.1	55.1	63.5	64.1
Medium Trucks:	56.7	53.9	46.4	55.2	61.3	61.4
Heavy Trucks:	56.8	53.8	50.4	55.1	61.3	61.4
Vehicle Noise:	64.9	63.5	61.6	59.9	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	475
CNEL:	50	108	232	499

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

Scenario: EAC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,100 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	710 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-4.31	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.55	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.51	-1.84	-1.20	-5.25	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:	64.4	63.5	62.2	56.2	64.6	65.2
Medium Trucks:	57.8	55.0	47.5	56.2	62.4	62.5
Heavy Trucks:	57.8	54.9	51.5	56.1	62.3	62.4
Vehicle Noise:	66.0	64.6	62.7	61.0	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	560
CNEL:	59	127	273	589

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

Scenario: EAPC (2032) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	796 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.82	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-21.05	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-25.01	-1.84	-1.20	-5.25	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	64.0	62.7	56.7	65.1	65.7
Medium Trucks:	58.3	55.5	48.0	56.7	62.9	62.9
Heavy Trucks:	58.3	55.4	52.0	56.6	62.8	62.9
Vehicle Noise:	66.5	65.1	63.2	61.4	68.5	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	280	604
CNEL:	64	137	295	636

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

Scenario: HY (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	959 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-3.00	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-20.24	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-24.20	-1.84	-1.20	-5.25	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:	65.7	64.8	63.5	57.5	65.9	66.5
Medium Trucks:	59.1	56.3	48.8	57.6	63.7	63.8
Heavy Trucks:	59.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	67.3	65.9	64.0	62.3	69.3	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	147	318	685
CNEL:	72	155	334	720

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

Scenario: HY+P (2045) | Project Name: Thermal Ranch SP
Road Name: 66th Av. | Job Number: 14497
Road Segment: e/o Pierce St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,037 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	78 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 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:	75.6%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

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:	65.422
Medium Trucks:	65.286
Heavy Trucks:	65.299

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	-2.66	-1.85	-1.20	-4.73	0.000	0.000
Medium Trucks:	82.40	-19.90	-1.84	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-23.86	-1.84	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	65.1	63.8	57.8	66.2	66.9
Medium Trucks:	59.5	56.6	49.1	57.9	64.1	64.1
Heavy Trucks:	59.5	56.5	53.1	57.8	64.0	64.1
Vehicle Noise:	67.6	66.2	64.3	62.6	69.7	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	335	721
CNEL:	76	163	352	759

APPENDIX 8.1:

ON-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Harrison St.
Lot No: PA-2, 5, 6

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	65,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	5,101 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**10.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	102.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	89.427
Medium Trucks:	89.163
Heavy Trucks:	88.803

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	5.39	-2.59	0.00	2.65	-13.145	-16.145
Medium Trucks:	76.31	-9.48	-2.58	0.00	2.47	-12.911	-15.911
Heavy Trucks:	81.16	-7.26	-2.56	0.00	2.06	-12.378	-15.378

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	69.2	67.9	61.9	70.3	70.9
Medium Trucks:	64.3	61.4	53.6	62.8	68.9	69.0
Heavy Trucks:	71.3	68.4	60.7	69.9	76.0	76.1
Vehicle Noise:	74.3	72.2	68.8	71.2	77.7	77.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	56.1	54.8	48.8	57.2	57.8
Medium Trucks:	51.3	48.4	40.7	49.9	56.0	56.1
Heavy Trucks:	59.0	56.1	48.3	57.5	63.6	63.7
Vehicle Noise:	61.5	59.4	55.8	58.6	65.1	65.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Tyler St.
Lot No: PA-2, 3

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,615 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.472
Medium Trucks:	57.235
Heavy Trucks:	57.131

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	0.64	-0.67	0.00	0.71	-9.340	-12.340
Medium Trucks:	76.31	-16.60	-0.66	0.00	0.56	-8.800	-11.800
Heavy Trucks:	81.16	-20.55	-0.65	0.00	0.27	-7.290	-10.290

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.4	65.1	59.1	67.5	68.1
Medium Trucks:	59.1	56.2	48.7	57.5	63.7	63.7
Heavy Trucks:	60.0	57.0	53.6	58.2	64.4	64.5
Vehicle Noise:	68.6	67.2	65.5	63.1	70.3	70.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	57.1	55.7	49.7	58.2	58.8
Medium Trucks:	50.3	47.4	39.9	48.7	54.9	54.9
Heavy Trucks:	52.7	49.7	46.3	51.0	57.2	57.2
Vehicle Noise:	59.6	58.2	56.3	54.7	61.7	62.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: 62nd Av.
Lot No: PA-2

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	65,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	5,101 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**10.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	102.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	89.427
Medium Trucks:	89.163
Heavy Trucks:	88.803

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	5.39	-2.59	0.00	2.65	-13.145	-16.145
Medium Trucks:	76.31	-9.48	-2.58	0.00	2.47	-12.911	-15.911
Heavy Trucks:	81.16	-7.26	-2.56	0.00	2.06	-12.378	-15.378

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	69.2	67.9	61.9	70.3	70.9
Medium Trucks:	64.3	61.4	53.6	62.8	68.9	69.0
Heavy Trucks:	71.3	68.4	60.7	69.9	76.0	76.1
Vehicle Noise:	74.3	72.2	68.8	71.2	77.7	77.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	56.1	54.8	48.8	57.2	57.8
Medium Trucks:	51.3	48.4	40.7	49.9	56.0	56.1
Heavy Trucks:	59.0	56.1	48.3	57.5	63.6	63.7
Vehicle Noise:	61.5	59.4	55.8	58.6	65.1	65.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: 64th Av.
Lot No: PA-4

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,129 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**8.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	69.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	65.669
Medium Trucks:	65.379
Heavy Trucks:	65.078

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.59	-1.25	0.00	1.62	-11.540	-14.540
Medium Trucks:	76.31	-13.27	-1.23	0.00	1.42	-11.140	-14.140
Heavy Trucks:	81.16	-11.05	-1.21	0.00	0.98	-10.240	-13.240

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	66.8	65.5	59.5	67.9	68.5
Medium Trucks:	61.8	58.9	51.1	60.3	66.5	66.5
Heavy Trucks:	68.9	66.0	58.2	67.4	73.6	73.6
Vehicle Noise:	71.8	69.8	66.4	68.7	75.2	75.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.2	55.2	53.9	47.9	56.3	57.0
Medium Trucks:	50.7	47.8	40.0	49.2	55.3	55.4
Heavy Trucks:	58.7	55.8	48.0	57.2	63.3	63.4
Vehicle Noise:	61.0	58.9	55.0	58.2	64.7	64.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Harrison St.
Lot No: PA-2, 5, 6

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	65,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	5,101 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**10.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	112.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.410
Medium Trucks:	98.146
Heavy Trucks:	97.786

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	5.39	-3.01	0.00	*1.65*	-11.600	-14.600
Medium Trucks:	76.31	-9.48	-3.00	0.00	*1.48*	-11.260	-14.260
Heavy Trucks:	81.16	-7.26	-2.98	0.00	*1.08*	-10.460	-13.460

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	68.8	67.5	61.5	69.9	70.5
Medium Trucks:	63.8	60.9	53.2	62.4	68.5	68.6
Heavy Trucks:	70.9	68.0	60.2	69.4	75.6	75.6
Vehicle Noise:	73.8	71.8	68.4	70.8	77.3	77.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.1	57.2	55.9	49.9	58.3	58.9
Medium Trucks:	52.6	49.7	41.9	51.1	57.3	57.3
Heavy Trucks:	60.5	57.6	49.8	59.0	65.1	65.2
Vehicle Noise:	62.9	60.7	57.0	60.1	66.5	66.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Tyler St.
Lot No: PA-2, 3

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	1,615 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	70.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	67.256
Medium Trucks:	67.018
Heavy Trucks:	66.914

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	0.64	-1.36	0.00	*0.51*	-8.550	-11.550
Medium Trucks:	76.31	-16.60	-1.34	0.00	*0.35*	-7.750	-10.750
Heavy Trucks:	81.16	-20.55	-1.33	0.00	*0.08*	-5.800	-8.800

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.7	64.4	58.4	66.8	67.4
Medium Trucks:	58.4	55.6	48.1	56.8	63.0	63.0
Heavy Trucks:	59.3	56.3	52.9	57.6	63.8	63.9
Vehicle Noise:	67.9	66.5	64.8	62.4	69.6	70.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.1	57.2	55.9	49.8	58.3	58.9
Medium Trucks:	50.6	47.8	40.3	49.1	55.2	55.3
Heavy Trucks:	53.5	50.5	47.1	51.8	58.0	58.1
Vehicle Noise:	59.9	58.4	56.5	55.1	62.1	62.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: 62nd Av.
Lot No: PA-2

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	65,400 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	5,101 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	102 feet

Site Data

Barrier Height:	**10.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	92.0 feet
Centerline Dist. to Observer:	112.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.410
Medium Trucks:	98.146
Heavy Trucks:	97.786

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	5.39	-3.01	0.00	*1.65*	-11.600	-14.600
Medium Trucks:	76.31	-9.48	-3.00	0.00	*1.48*	-11.260	-14.260
Heavy Trucks:	81.16	-7.26	-2.98	0.00	*1.08*	-10.460	-13.460

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	68.8	67.5	61.5	69.9	70.5
Medium Trucks:	63.8	60.9	53.2	62.4	68.5	68.6
Heavy Trucks:	70.9	68.0	60.2	69.4	75.6	75.6
Vehicle Noise:	73.8	71.8	68.4	70.8	77.3	77.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.1	57.2	55.9	49.9	58.3	58.9
Medium Trucks:	52.6	49.7	41.9	51.1	57.3	57.3
Heavy Trucks:	60.5	57.6	49.8	59.0	65.1	65.2
Vehicle Noise:	62.9	60.7	57.0	60.1	66.5	66.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: 64th Av.
Lot No: PA-4

Project Name: Thermal Ranch
Job Number: 14497
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,300 vehicles
Peak Hour Percentage:	7.80%
Peak Hour Volume:	2,129 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**8.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	79.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	3.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	10
Medium Trucks (2 Axles):	10
Heavy Trucks (3+ Axles):	10

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	75.104
Medium Trucks:	74.814
Heavy Trucks:	74.514

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.59	-1.84	0.00	*1.07*	-10.440	-13.440
Medium Trucks:	76.31	-13.27	-1.82	0.00	*0.87*	-9.910	-12.910
Heavy Trucks:	81.16	-11.05	-1.80	0.00	*0.45*	-8.250	-11.250

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	66.2	64.9	58.9	67.3	67.9
Medium Trucks:	61.2	58.3	50.5	59.7	65.9	65.9
Heavy Trucks:	68.3	65.4	57.6	66.8	73.0	73.0
Vehicle Noise:	71.2	69.2	65.8	68.2	74.6	74.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	55.7	54.4	48.4	56.8	57.5
Medium Trucks:	51.3	48.4	40.6	49.8	56.0	56.0
Heavy Trucks:	60.1	57.2	49.4	58.6	64.7	64.8
Vehicle Noise:	62.1	59.8	55.8	59.5	65.9	66.0

APPENDIX 10.1:

CADNAA OPERATIONAL SOURCE NOISE MODEL INPUTS

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14497 - Thermal Ranch

CadnaA Noise Prediction Model: 14497-02.cna
Date: 08.05.23
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2743.20**
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	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R01	39.1	32.4	40.2	55.0	45.0	0.0				5.00	a	6583571.86	2162439.75	5.00
RECEIVERS		R02	42.3	35.5	43.4	55.0	45.0	0.0				5.00	a	6587943.06	2159633.60	5.00
RECEIVERS		R03	41.1	35.9	43.3	55.0	45.0	0.0				5.00	a	6587846.04	2155836.73	5.00
RECEIVERS		R04	35.9	30.2	37.7	55.0	45.0	0.0				5.00	a	6587940.35	2153186.05	5.00
RECEIVERS		R05	47.7	43.5	50.5	55.0	45.0	0.0				5.00	a	6582392.19	2158688.40	5.00
RECEIVERS		R06	35.8	29.8	37.4	55.0	45.0	0.0				5.00	a	6579847.12	2161430.84	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583486.01	2157071.79	20.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583781.04	2157101.29	20.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583784.73	2156872.64	20.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583640.90	2156680.87	20.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6584061.32	2156703.00	20.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583932.25	2156463.28	20.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583747.85	2156452.22	20.00
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583604.02	2156319.45	20.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583434.38	2156481.72	20.00
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583275.80	2156345.27	20.00
POINTSOURCE		AC11	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583323.74	2156703.00	20.00
POINTSOURCE		AC12	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583106.15	2156489.10	20.00
POINTSOURCE		AC13	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582936.51	2156312.08	20.00
POINTSOURCE		AC14	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582722.61	2156407.96	20.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC15	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582729.98	2156684.56	20.00
POINTSOURCE		AC16	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582759.49	2156857.89	20.00
POINTSOURCE		AC17	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583010.27	2156809.95	20.00
POINTSOURCE		AC18	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582991.83	2157093.92	20.00
POINTSOURCE		AC19	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582733.67	2157064.41	20.00
POINTSOURCE		AC20	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6586108.12	2156857.89	20.00
POINTSOURCE		AC21	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6586100.75	2156640.30	20.00
POINTSOURCE		AC22	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6586111.81	2156419.03	20.00
POINTSOURCE		AC23	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585967.98	2156249.38	20.00
POINTSOURCE		AC24	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585746.70	2156245.69	20.00
POINTSOURCE		AC25	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585529.12	2156242.01	20.00
POINTSOURCE		AC26	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585481.17	2156592.36	20.00
POINTSOURCE		AC27	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585625.00	2156496.47	20.00
POINTSOURCE		AC28	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585805.71	2156496.47	20.00
POINTSOURCE		AC29	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585956.92	2156492.78	20.00
POINTSOURCE		AC30	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585975.36	2156798.88	20.00
POINTSOURCE		AC31	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585802.02	2156791.51	20.00
POINTSOURCE		AC32	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585625.00	2156798.88	20.00
POINTSOURCE		AC33	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585473.80	2156798.88	20.00
POINTSOURCE		AC34	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585846.28	2156979.59	20.00
POINTSOURCE		AC35	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6585466.42	2156972.21	20.00
POINTSOURCE		AC36	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6584470.68	2157171.36	20.00
POINTSOURCE		AC37	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583264.73	2157348.38	20.00
POINTSOURCE		AC38	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583194.66	2157470.08	20.00
POINTSOURCE		AC39	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582914.38	2157569.66	20.00
POINTSOURCE		AC40	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583054.52	2157709.80	20.00
POINTSOURCE		AC41	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582988.14	2158148.66	20.00
POINTSOURCE		AC42	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583091.40	2158266.67	20.00
POINTSOURCE		AC43	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583061.90	2157938.45	20.00
POINTSOURCE		AC44	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582741.05	2157997.46	20.00
POINTSOURCE		AC45	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582755.80	2158167.10	20.00
POINTSOURCE		AC46	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582800.06	2158469.51	20.00
POINTSOURCE		AC47	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582774.24	2158727.66	20.00
POINTSOURCE		AC48	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582755.80	2158960.00	20.00
POINTSOURCE		AC49	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6583102.46	2158982.13	20.00
POINTSOURCE		AC50	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	20.00	a	6582881.19	2159273.48	20.00
POINTSOURCE		CAR01	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582659.91	2156566.54	5.00
POINTSOURCE		CAR02	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582656.23	2156839.45	5.00
POINTSOURCE		CAR03	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583663.03	2156525.98	5.00
POINTSOURCE		CAR04	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583445.44	2156610.80	5.00
POINTSOURCE		CAR05	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582829.56	2156776.75	5.00
POINTSOURCE		CAR06	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583843.74	2156677.18	5.00
POINTSOURCE		CAR07	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583884.30	2156902.14	5.00
POINTSOURCE		CAR08	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582881.19	2157075.48	5.00
POINTSOURCE		CAR09	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583585.58	2157127.11	5.00
POINTSOURCE		CAR10	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583865.86	2156289.95	5.00
POINTSOURCE		CAR11	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583522.89	2156289.95	5.00
POINTSOURCE		CAR12	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583176.22	2156282.57	5.00
POINTSOURCE		CAR13	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582832.45	2156256.10	5.00
POINTSOURCE		CAR14	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582658.83	2156414.40	5.00
POINTSOURCE		CAR15	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585466.42	2156308.39	5.00
POINTSOURCE		CAR16	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585606.56	2156326.83	5.00
POINTSOURCE		CAR17	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585783.58	2156301.01	5.00
POINTSOURCE		CAR18	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585934.79	2156308.39	5.00
POINTSOURCE		CAR19	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6586052.80	2156448.53	5.00
POINTSOURCE		CAR20	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6586056.49	2156570.23	5.00
POINTSOURCE		CAR21	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585883.16	2156426.40	5.00
POINTSOURCE		CAR22	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585886.85	2156551.79	5.00
POINTSOURCE		CAR23	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585709.83	2156426.40	5.00
POINTSOURCE		CAR24	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585724.58	2156540.73	5.00
POINTSOURCE		CAR25	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585470.11	2156500.16	5.00
POINTSOURCE		CAR26	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6586049.11	2156750.94	5.00
POINTSOURCE		CAR27	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6586034.36	2156905.83	5.00
POINTSOURCE		CAR28	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585890.53	2156806.26	5.00
POINTSOURCE		CAR29	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585717.20	2156769.38	5.00
POINTSOURCE		CAR30	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585706.14	2156913.21	5.00
POINTSOURCE		CAR31	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585543.87	2156832.07	5.00
POINTSOURCE		CAR32	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585374.22	2156765.69	5.00
POINTSOURCE		CAR33	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585370.54	2156905.83	5.00
POINTSOURCE		CAR34	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585149.26	2159520.57	5.00
POINTSOURCE		CAR35	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584994.37	2159520.57	5.00
POINTSOURCE		CAR36	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584835.79	2159520.57	5.00
POINTSOURCE		CAR37	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584669.83	2159520.57	5.00
POINTSOURCE		CAR38	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583013.95	2157971.64	5.00
POINTSOURCE		CAR39	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582936.51	2157934.76	5.00
POINTSOURCE		CAR40	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582825.87	2157857.32	5.00
POINTSOURCE		CAR41	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582862.75	2157776.18	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		CAR42	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582663.60	2157462.71	5.00
POINTSOURCE		CAR43	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582704.17	2157366.82	5.00
POINTSOURCE		CAR44	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582811.12	2157484.83	5.00
POINTSOURCE		CAR45	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582774.24	2157628.66	5.00
POINTSOURCE		CAR46	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582759.49	2157779.87	5.00
POINTSOURCE		CAR47	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582696.79	2157897.88	5.00
POINTSOURCE		CAR48	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582825.87	2158318.31	5.00
POINTSOURCE		CAR49	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582729.98	2158366.25	5.00
POINTSOURCE		CAR50	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582774.24	2158237.17	5.00
POINTSOURCE		CAR51	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583002.89	2158292.49	5.00
POINTSOURCE		CAR52	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582921.76	2158406.82	5.00
POINTSOURCE		CAR53	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583084.03	2158502.70	5.00
POINTSOURCE		CAR54	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582969.70	2158576.46	5.00
POINTSOURCE		CAR55	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582995.51	2158723.98	5.00
POINTSOURCE		CAR56	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583098.78	2158760.86	5.00
POINTSOURCE		CAR57	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583028.71	2158849.37	5.00
POINTSOURCE		CAR58	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582921.76	2158960.00	5.00
POINTSOURCE		CAR59	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583058.21	2159085.39	5.00
POINTSOURCE		CAR60	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582991.83	2159184.97	5.00
POINTSOURCE		CAR61	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582796.37	2159085.39	5.00
POINTSOURCE		CAR62	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6582729.98	2159207.09	5.00
POINTSOURCE		CAR63	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585838.90	2157215.62	5.00
POINTSOURCE		CAR64	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585687.70	2157064.41	5.00
POINTSOURCE		CAR65	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585573.37	2157211.93	5.00
POINTSOURCE		CAR66	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585422.17	2157071.79	5.00
POINTSOURCE		CAR67	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585326.28	2157219.30	5.00
POINTSOURCE		CAR68	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6585138.20	2157075.48	5.00
POINTSOURCE		CAR69	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584979.62	2157215.62	5.00
POINTSOURCE		CAR70	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584795.22	2157064.41	5.00
POINTSOURCE		CAR71	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584691.96	2157226.68	5.00
POINTSOURCE		CAR72	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584544.44	2157071.79	5.00
POINTSOURCE		CAR73	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6584385.86	2157245.12	5.00
POINTSOURCE		CAR74	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583382.75	2158181.85	5.00
POINTSOURCE		CAR75	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583294.24	2158274.05	5.00
POINTSOURCE		CAR76	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583415.94	2158384.69	5.00
POINTSOURCE		CAR77	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583294.24	2158510.08	5.00
POINTSOURCE		CAR78	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583415.94	2158635.47	5.00
POINTSOURCE		CAR79	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583297.92	2158786.67	5.00
POINTSOURCE		CAR80	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583408.56	2158893.62	5.00
POINTSOURCE		CAR81	84.3	84.3	84.3	Lw	84.3		900.00	0.00	540.00	5.00	a	6583297.92	2159037.45	5.00
POINTSOURCE		HORSE00	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583806.86	2159129.65	5.00
POINTSOURCE		HORSE01	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583803.17	2159435.75	5.00
POINTSOURCE		HORSE01	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584964.87	2156961.15	5.00
POINTSOURCE		HORSE02	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583618.77	2159140.71	5.00
POINTSOURCE		HORSE02	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584647.70	2156964.84	5.00
POINTSOURCE		HORSE03	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583607.71	2159439.43	5.00
POINTSOURCE		HORSE03	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584511.25	2156846.82	5.00
POINTSOURCE		HORSE04	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583308.99	2159317.73	5.00
POINTSOURCE		HORSE04	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584754.65	2156846.82	5.00
POINTSOURCE		HORSE05	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583404.87	2159417.31	5.00
POINTSOURCE		HORSE05	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585090.25	2156857.89	5.00
POINTSOURCE		HORSE06	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583275.80	2159509.50	5.00
POINTSOURCE		HORSE06	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584902.17	2156732.50	5.00
POINTSOURCE		HORSE07	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584164.59	2157215.62	5.00
POINTSOURCE		HORSE07	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584585.01	2156732.50	5.00
POINTSOURCE		HORSE08	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583832.67	2157315.19	5.00
POINTSOURCE		HORSE08	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584337.92	2156732.50	5.00
POINTSOURCE		HORSE09	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583692.53	2157440.58	5.00
POINTSOURCE		HORSE09	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584422.74	2156603.42	5.00
POINTSOURCE		HORSE10	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583828.99	2157547.53	5.00
POINTSOURCE		HORSE10	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585068.13	2156621.86	5.00
POINTSOURCE		HORSE11	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583618.77	2157665.54	5.00
POINTSOURCE		HORSE11	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584754.65	2156603.42	5.00
POINTSOURCE		HORSE12	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583460.19	2157562.28	5.00
POINTSOURCE		HORSE12	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584916.92	2156478.03	5.00
POINTSOURCE		HORSE13	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583408.56	2157787.24	5.00
POINTSOURCE		HORSE13	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584562.88	2156481.72	5.00
POINTSOURCE		HORSE14	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583301.61	2157971.64	5.00
POINTSOURCE		HORSE14	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584315.79	2156492.78	5.00
POINTSOURCE		HORSE15	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584739.90	2156363.71	5.00
POINTSOURCE		HORSE16	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584865.29	2156253.07	5.00
POINTSOURCE		HORSE17	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584655.08	2156238.32	5.00
POINTSOURCE		HORSE18	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584382.17	2156242.01	5.00
POINTSOURCE		HORSE19	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584142.46	2156352.64	5.00
POINTSOURCE		HORSE20	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584160.90	2156584.98	5.00
POINTSOURCE		HORSE21	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584194.09	2156817.32	5.00
POINTSOURCE		HORSE22	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584371.11	2156957.46	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		HORSE23	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586178.19	2157171.36	5.00
POINTSOURCE		HORSE24	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586130.25	2157481.15	5.00
POINTSOURCE		HORSE25	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586403.15	2157709.80	5.00
POINTSOURCE		HORSE26	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586082.31	2157827.81	5.00
POINTSOURCE		HORSE27	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586414.22	2158034.34	5.00
POINTSOURCE		HORSE28	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586462.16	2158491.64	5.00
POINTSOURCE		HORSE29	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586491.66	2158875.18	5.00
POINTSOURCE		HORSE30	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586532.23	2159273.48	5.00
POINTSOURCE		HORSE31	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586163.44	2158318.31	5.00
POINTSOURCE		HORSE32	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586148.69	2158639.15	5.00
POINTSOURCE		HORSE33	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586152.38	2158853.05	5.00
POINTSOURCE		HORSE34	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585813.09	2158052.77	5.00
POINTSOURCE		HORSE35	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585813.09	2158381.00	5.00
POINTSOURCE		HORSE36	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585816.78	2158712.91	5.00
POINTSOURCE		HORSE37	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585536.49	2157861.00	5.00
POINTSOURCE		HORSE38	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585540.18	2158026.96	5.00
POINTSOURCE		HORSE39	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585543.87	2158192.92	5.00
POINTSOURCE		HORSE40	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585536.49	2158358.87	5.00
POINTSOURCE		HORSE41	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585536.49	2158539.58	5.00
POINTSOURCE		HORSE42	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585532.81	2158687.10	5.00
POINTSOURCE		HORSE43	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585543.87	2158878.87	5.00
POINTSOURCE		HORSE44	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584975.93	2158860.43	5.00
POINTSOURCE		HORSE45	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584986.99	2158576.46	5.00
POINTSOURCE		HORSE46	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584964.87	2158288.80	5.00
POINTSOURCE		HORSE47	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584983.30	2157920.01	5.00
POINTSOURCE		HORSE48	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584688.27	2157901.57	5.00
POINTSOURCE		HORSE49	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584684.58	2158318.31	5.00
POINTSOURCE		HORSE50	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584699.33	2158569.08	5.00
POINTSOURCE		HORSE51	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584695.65	2158856.74	5.00
POINTSOURCE		HORSE52	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586056.49	2159387.80	5.00
POINTSOURCE		HORSE53	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585872.09	2159505.82	5.00
POINTSOURCE		HORSE54	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586270.39	2159159.15	5.00
POINTSOURCE		HORSE55	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586299.89	2159432.06	5.00
POINTSOURCE		HORSE56	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585967.98	2159148.09	5.00
POINTSOURCE		HORSE57	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585665.57	2159144.40	5.00
POINTSOURCE		HORSE58	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585669.26	2159409.93	5.00
POINTSOURCE		HORSE59	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585400.04	2159133.34	5.00
POINTSOURCE		HORSE60	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585374.22	2159398.87	5.00
POINTSOURCE		HORSE61	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6586023.30	2159638.58	5.00
POINTSOURCE		HORSE62	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585658.19	2159701.28	5.00
POINTSOURCE		HORSE63	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585414.79	2159738.16	5.00
POINTSOURCE		HORSE64	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585108.69	2159771.35	5.00
POINTSOURCE		HORSE65	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584839.48	2159686.52	5.00
POINTSOURCE		HORSE66	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584511.25	2159671.77	5.00
POINTSOURCE		HORSE67	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585023.87	2159236.60	5.00
POINTSOURCE		HORSE68	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584773.09	2159262.41	5.00
POINTSOURCE		HORSE69	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584452.24	2159089.08	5.00
POINTSOURCE		HORSE70	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584452.24	2159295.60	5.00
POINTSOURCE		HORSE71	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584452.24	2159468.94	5.00
POINTSOURCE		HORSE72	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584382.17	2157894.19	5.00
POINTSOURCE		HORSE73	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584083.45	2157905.26	5.00
POINTSOURCE		HORSE74	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584079.76	2158133.91	5.00
POINTSOURCE		HORSE75	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584393.24	2158141.29	5.00
POINTSOURCE		HORSE76	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584382.17	2158369.94	5.00
POINTSOURCE		HORSE77	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584098.20	2158381.00	5.00
POINTSOURCE		HORSE78	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584098.20	2158609.65	5.00
POINTSOURCE		HORSE79	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584393.24	2158605.96	5.00
POINTSOURCE		HORSE80	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584404.30	2158845.68	5.00
POINTSOURCE		HORSE81	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584094.52	2158849.37	5.00
POINTSOURCE		HORSE82	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585790.96	2157503.27	5.00
POINTSOURCE		HORSE83	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585562.31	2157510.65	5.00
POINTSOURCE		HORSE84	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585329.97	2157514.34	5.00
POINTSOURCE		HORSE85	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6585101.32	2157518.03	5.00
POINTSOURCE		HORSE86	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584824.72	2157518.03	5.00
POINTSOURCE		HORSE87	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584581.32	2157529.09	5.00
POINTSOURCE		HORSE88	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584356.36	2157532.78	5.00
POINTSOURCE		HORSE89	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584124.02	2157536.47	5.00
POINTSOURCE		HORSE90	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583747.85	2157964.26	5.00
POINTSOURCE		HORSE91	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583744.16	2158181.85	5.00
POINTSOURCE		HORSE92	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583736.79	2158428.94	5.00
POINTSOURCE		HORSE93	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583729.41	2158657.59	5.00
POINTSOURCE		HORSE94	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6583729.41	2158882.56	5.00
POINTSOURCE		HORSE95	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584065.01	2159059.58	5.00
POINTSOURCE		HORSE96	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584249.41	2159151.78	5.00
POINTSOURCE		HORSE97	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584053.95	2159269.79	5.00
POINTSOURCE		HORSE98	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584264.16	2159373.05	5.00
POINTSOURCE		HORSE99	92.0	92.0	92.0	Lw	92		900.00	0.00	180.00	5.00	a	6584053.95	2159487.38	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PA01	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6585905.29	2157783.56	25.00
POINTSOURCE		PA02	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6585931.10	2159004.26	25.00
POINTSOURCE		PA03	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6585370.54	2157768.80	25.00
POINTSOURCE		PA04	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6585344.72	2159004.26	25.00
POINTSOURCE		PA05	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6584596.07	2159004.26	25.00
POINTSOURCE		PA06	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6584614.51	2157772.49	25.00
POINTSOURCE		PA07	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6583965.44	2157761.43	25.00
POINTSOURCE		PA08	100.0	100.0	100.0	Lw	100		900.00	0.00	0.00	25.00	a	6583961.75	2158963.69	25.00
POINTSOURCE		SUB01	87.3	87.3	87.3	Lw	87.3					8.00	a	6587273.50	2156356.33	8.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6584573.95	2157156.61	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6585278.34	2156942.71	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6585997.48	2157742.99	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6585990.11	2158982.13	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6583858.49	2157709.80	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6583873.24	2159019.01	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6583117.22	2157750.37	5.00
POINTSOURCE		TRASH08	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6582991.83	2157883.13	5.00
POINTSOURCE		TRASH09	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6583084.03	2158170.79	5.00
POINTSOURCE		TRASH10	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6582737.36	2158510.08	5.00
POINTSOURCE		TRASH11	89.0	89.0	89.0	Lw	89		900.00	0.00	180.00	5.00	a	6583106.15	2159048.51	5.00
POINTSOURCE		WELL01	77.0	77.0	77.0	Lw	77					5.00	a	6587657.05	2159612.77	5.00
POINTSOURCE		WELL02	77.0	77.0	77.0	Lw	77					5.00	a	6585160.33	2156308.39	5.00
POINTSOURCE		WELL03	77.0	77.0	77.0	Lw	77					5.00	a	6587594.35	2156621.86	5.00
POINTSOURCE		WELL04	77.0	77.0	77.0	Lw	77					5.00	a	6587719.74	2161150.63	5.00
POINTSOURCE		WELL05	77.0	77.0	77.0	Lw	77					5.00	a	6582766.86	2161150.63	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)

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

Area Source(s)

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

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

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates			
							Begin	x	y	z	Ground
							(ft)	(ft)	(ft)	(ft)	(ft)

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APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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14497 - Thermal Ranch

CadnaA Noise Prediction Model: 14497-02_Construction.cna
Date: 08.05.23
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2743.20**
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	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R01	52.3	52.3	59.0	55.0	45.0	0.0				5.00	a	6583571.86	2162439.75	5.00
RECEIVERS		R02	62.9	62.9	69.6	55.0	45.0	0.0				5.00	a	6587943.06	2159633.60	5.00
RECEIVERS		R03	59.7	59.7	66.4	55.0	45.0	0.0				5.00	a	6587846.04	2155836.73	5.00
RECEIVERS		R04	44.4	44.4	51.0	55.0	45.0	0.0				5.00	a	6587940.35	2153186.05	5.00
RECEIVERS		R05	62.4	62.4	69.0	55.0	45.0	0.0				5.00	a	6582392.19	2158688.40	5.00
RECEIVERS		R06	44.8	44.8	51.5	55.0	45.0	0.0				5.00	a	6579847.12	2161430.84	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
		CONS01	115.0	115.0	115.0	Lw	115					8.00	a	6582744.60	2158689.35	8.00
		CONS02	115.0	115.0	115.0	Lw	115					8.00	a	6583230.39	2161245.01	8.00
		CONS03	115.0	115.0	115.0	Lw	115					8.00	a	6587616.55	2159696.13	8.00
		CONS04	115.0	115.0	115.0	Lw	115					8.00	a	6587539.11	2156204.09	8.00

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	115.0	115.0	115.0	51.0	51.0	51.0	Lw	115					8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	CONSTRUCTION	8.00	a			6582663.09	2161337.15	8.00	0.00
						6587828.20	2161336.20	8.00	0.00
						6587727.73	2156171.77	8.00	0.00
						6587033.84	2156886.28	8.00	0.00
						6587053.37	2156907.11	8.00	0.00
						6586559.45	2157413.03	8.00	0.00
						6586487.83	2157347.92	8.00	0.00
						6586978.29	2156845.54	8.00	0.00
						6586994.56	2156842.28	8.00	0.00
						6587707.55	2156113.00	8.00	0.00
						6582549.81	2156079.17	8.00	0.00