Majestic Gateway

NOISE AND VIBRATION IMPACT ANALYSIS

CITY OF BAKERSFIELD

PREPARED BY:

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

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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
NOP	Notice of Preparation
PPV	Peak Particle Velocity
Project	Majestic Gateway
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 Majestic Gateway development ("Project"). The Project site is located on the east side of State Route 99 (SR-99), north of Hosking Avenue, south of Berkshire Road, and west of South H Street in City of Bakersfield. The project applicant proposes to construct one distribution warehouse building with a maximum of 1,012,185 square feet (sf) and twelve commercial buildings with up to 187,500 sf of building space. This noise study has been prepared to satisfy applicable City of Bakersfield 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 Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

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

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1 INTRODUCTION

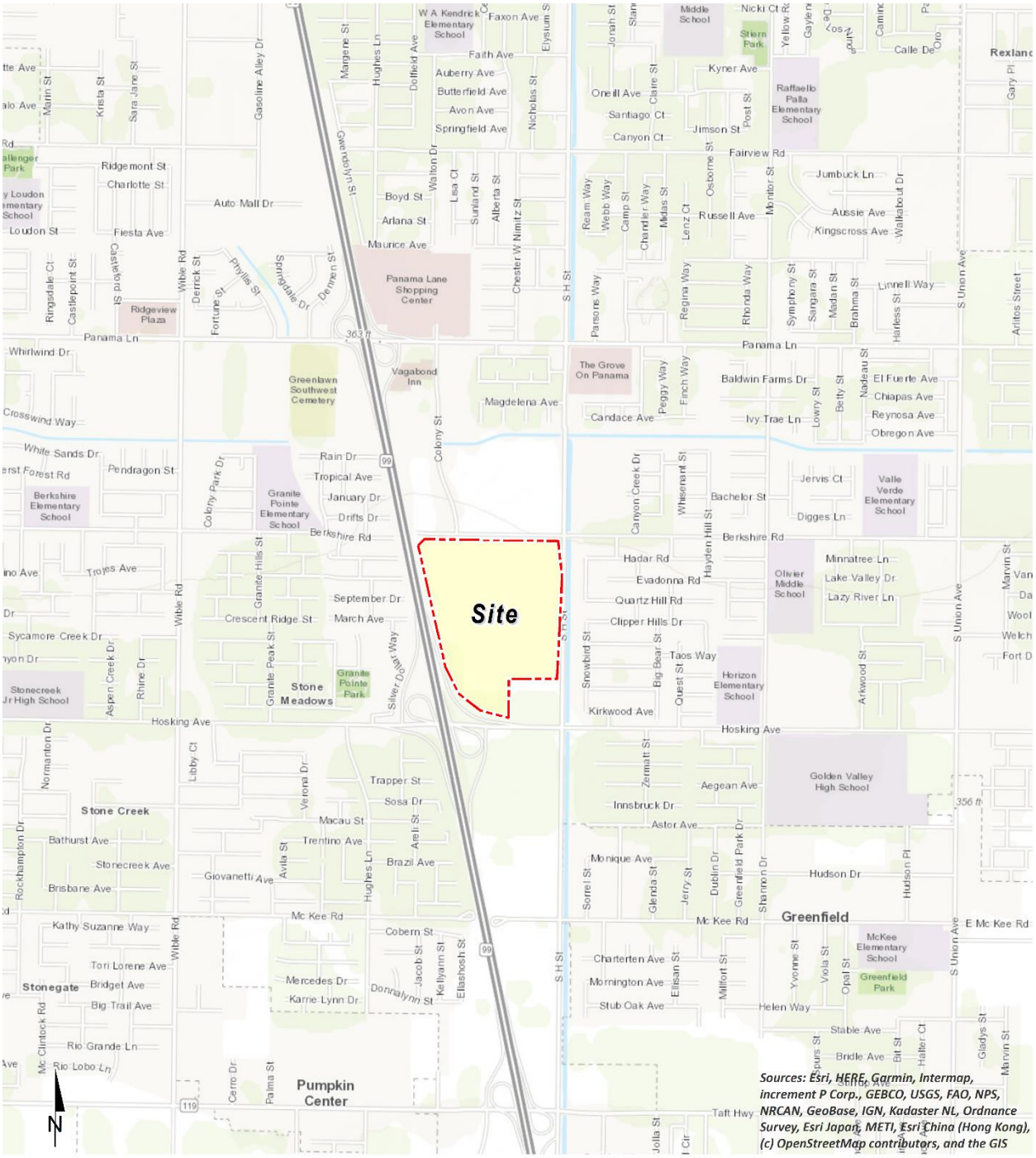
This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Majestic Gateway ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents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

1.1 SITE LOCATION

The proposed Project is located east of State Route 99 (SR-99), north of Hosking Avenue, south of Berkshire Road, and west of South H Street in City of Bakersfield, as shown on Exhibit 1-A. The Project Site is currently vacant and was used in the past (prior to 2009) for the cultivation of a variety of crops. Uses surrounding the Project Site are generally described as follows

- **North:** Land immediately north of the Project Site on the north side of Berkshire Road is vacant and is owned by Kaiser Permanente for possible medical facility development. Further north on the east and west sides of Colony Street is a commercial development that includes uses including but not limited to Floor & Décor, CarMax, Tractor Supply Co., a motel (Vagabond Inn), O-Reilly Auto Parts, and various fast food and sit-down restaurants, and a gas station/mini-mart (Chevron). Additional commercial development is north of Panama Lane including but not limited to Wal-Mart, Lowes, Aldi, and various smaller retailers, fast-food and sit-down restaurants, and a gas station/mini mart (Shell).
- **East:** To the east of the Project Site is South H Street beyond which is the Kern Island Canal, which is fenced and managed by Kern Delta Water District. East of the canal is a solid wall, behind which is a residential neighborhood of single-family residential homes. Horizon Elementary School and Golden Valley High School are both located at the intersection of Hosking Avenue and Monitor Street and Oliver Middle School is located at the intersection of Berkshire Road and Monitor Street. Monitor Street is approximately 0.5-mile east of the Project Site.
- **South:** To the south of the Project Site at the northwest corner of Hosking Avenue and South H Street is vacant land anticipated for future commercial development. South of Hosking Avenue and west of South H Street is vacant land also anticipated for future commercial development.
- **West:** To the west of the Project Site is SR 99. West of SR-99 directly west of the Project Site is a light industrial use (The Trailer Mart) and a residential community containing single-family residential homes, Granite Pointe Park, and vacant parcels.

EXHIBIT 1-A: LOCATION MAP


Site
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS
N
Panama Lane Shopping Center
Greenfield
Pumpkin Center
Stone Meadows
Stone Creek
Stonegate
Golden Valley High School
Olivier Middle School
Horizon Elementary School
Valle Verde Elementary School
Granite Pointe Elementary School
Berkshire Elementary School
Raffaello Palla Elementary School
W A Kendrick Elementary School
McKee Elementary School
Greenfield Park
Granite Pointe Park
Stiern Park
Greenlawn Southwest Cemetery
Vagabond Inn
The Grove On Panama
Ridgeview Plaza
Stonecreek Jr High School
Hosking Ave
Berkshire Rd
Panama Ln
Kirkwood Ave
Mc Kee Rd
E Mc Kee Rd
Taft Hwy
Colony St
Silver Dollar Way
Greenfield Way
S H St
S Union Ave
Hughes Ln
Walton Dr
Dolfield Ave
Nicholas St
Chester W Nimitz St
Auto Mall Dr
Gasoline Alley Dr
Fairview Rd
Kyner Ave
Jimson St
Russell Ave
Jumbuck Ln
Aussie Ave
Kingscross Ave
Linnell Way
Baldwin Farms Dr
El Fuerte Ave
Chiapas Ave
Reynosa Ave
Obregon Ave
Ivy Trae Ln
Magdelena Ave
Candace Ave
Rain Dr
Tropical Ave
January Dr
Drifts Dr
September Dr
March Ave
Crescent Ridge St
Trapper St
Sosa Dr
Macau St
Trentino Ave
Brazil Ave
Giovanetti Ave
Cobern St
Mercedes Dr
Karrie Lynn Dr
Donnalynn St
Aegean Ave
Innsbruck Dr
Astor Ave
Monique Ave
Hudson Dr
Charterten Ave
Mornington Ave
Stub Oak Ave
Helen Way
Stable Ave
Bridle Ave
Hadar Rd
Evadonna Rd
Quartz Hill Rd
Clipper Hills Dr
Taos Way
Minnatree Ln
Lake Valley Dr
Lazy River Ln
Digges Ln
Jervis Ct
Bachelor St
Ridgemont St
Charlotte St
Fiesta Ave
Loudon St
Whirlwind Dr
Crosswind Way
White Sands Dr
Pendragon St
Troies Ave
Sycamore Creek Dr
Hosking Ave
Bathurst Ave
Stonecreek Ave
Brisbane Ave
Kathy Suzanne Way
Tori Lorene Ave
Bridget Ave
Big Trail Ave
Rio Grande Ln
Rio Lobo Ln
Mc Clintock Rd
Wible Rd
Derrick St
Fortune St
Phyllis St
Spingdale Dr
Denmen St
Ringsdale Ct
Castlepoint St
Casaloma St
Colony Park Dr
Granite Hills St
Granite Peak St
Aspen Creek Dr
Rhine Dr
Libby Ct
Verona Dr
Avila St
Areli St
Hughes Ln
Jacob St
Kellyann St
Elashosh St
Cerro Dr
Palma St
Rockhampton Dr
Normanton Dr
Sorrel St
Glenda St
Jerry St
Dublin Dr
Greenfield Park Dr
Shannon Dr
Hudson Pl
Yvonne St
Viola St
Opal St
Milliort St
Elisan St
Zermatt St
Snowbird St
Big Bear St
Quest St
Arkwood St
Hayden Hill St
Whisenant St
Canyon Creek Dr
Peggy Way
Finch Way
Lowry St
Betty St
Nadeau St
Symphony St
Sangaira St
Madan St
Brahma St
Harless St
Rhonda Way
Regina Way
Parsons Way
Ream Way
Webb Way
Camp St
Chandler Way
Midas St
Lenz Ct
Osborne St
Monitor St
Walkabout Dr
Arlington St
Margene St
Faxon Ave
Elysium St
Faith Ave
Auberry Ave
Butterfield Ave
Avon Ave
Springfield Ave
Boyd St
Arlana St
Maurice Ave
Lisa Ct
Sunlaird St
Alberta St
Oneida St
Oneill Ave
Santiago Ct
Canyon Ct
Claire St
Post St
Nicki Ct
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Gary Pl
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Jorian St
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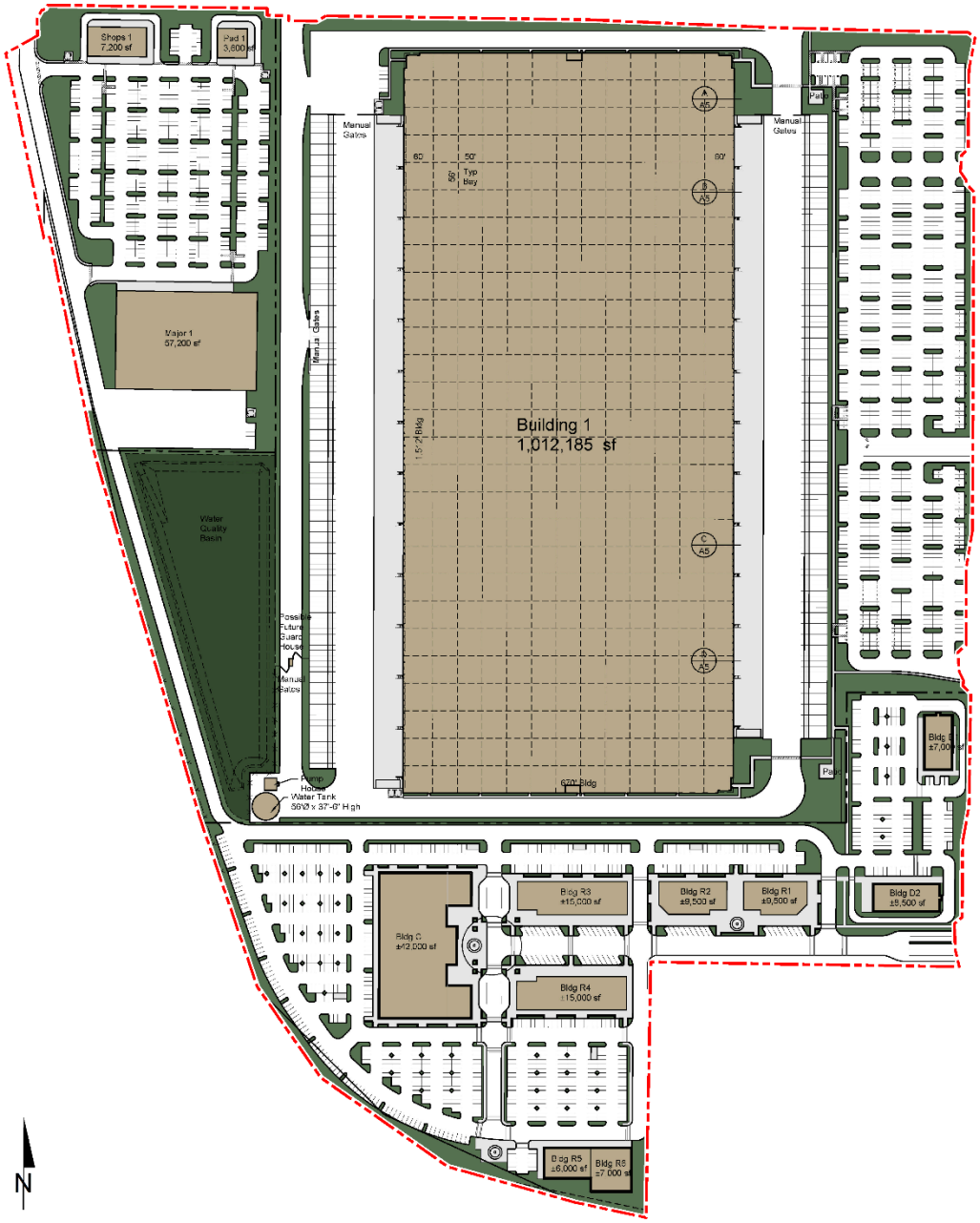
1.2 PROJECT DESCRIPTION

The Majestic Gateway Project involves the proposed development of commercial and distribution warehouse land use as shown on Exhibit 1-B. The warehouse component of the Project entails the construction and operation of one distribution warehouse building having a maximum of 1,012,185 square feet (sf) of building space. The commercial component of the Project entails the construction and operation of twelve commercial buildings collectively having a maximum of 187,500 sf of building space. Other features of the Project include an on-site detention basin, landscaping, parking areas, drive aisles, lighting, signage, and frontage improvements to Berkshire Road and South H Street. Off-site widening and improvements to South H Street between Berkshire Road and Hosking Avenue also are included as part of the Project and the Study Area.

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

EXHIBIT 1-B: SITE PLAN



2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

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

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

2.2 NOISE DESCRIPTORS

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

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

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

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

2.3.2 GROUND ABSORPTION

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

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

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

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

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

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

2.6 LAND USE COMPATIBILITY WITH NOISE

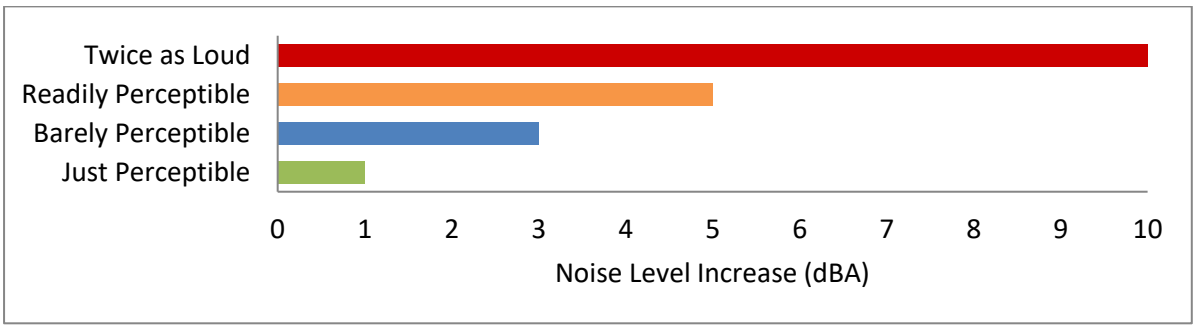
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development,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

2.7 COMMUNITY RESPONSE TO NOISE

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

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

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



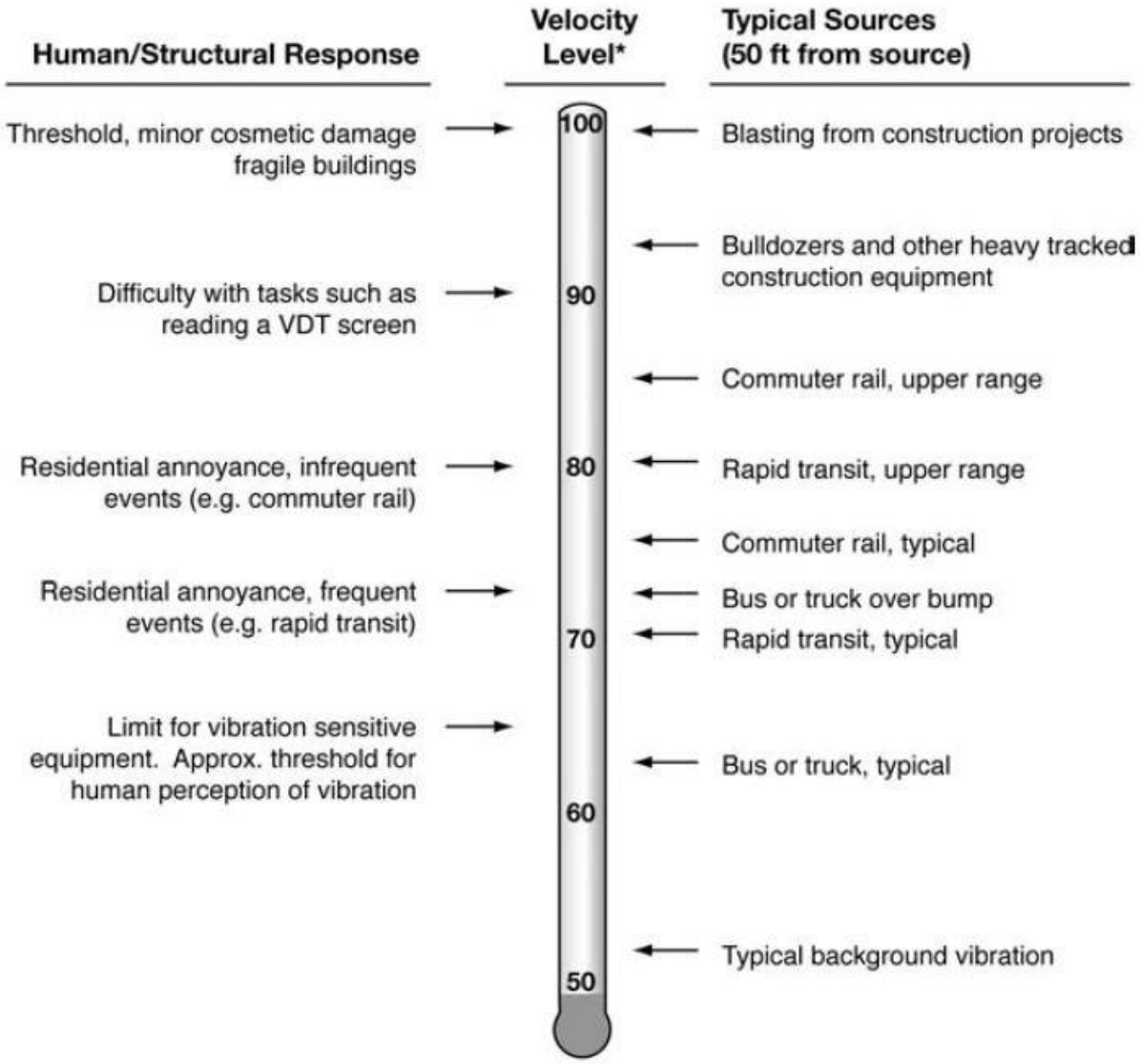
2.8 VIBRATION

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

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

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

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



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

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

3 REGULATORY SETTING

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 CITY OF BAKERSFIELD GENERAL PLAN NOISE ELEMENT

The City of Bakersfield has adopted a Noise Element of the General Plan to protect local citizens from the harmful effect of excessive noise exposure. (10) The Noise Element identifies the following two goals.

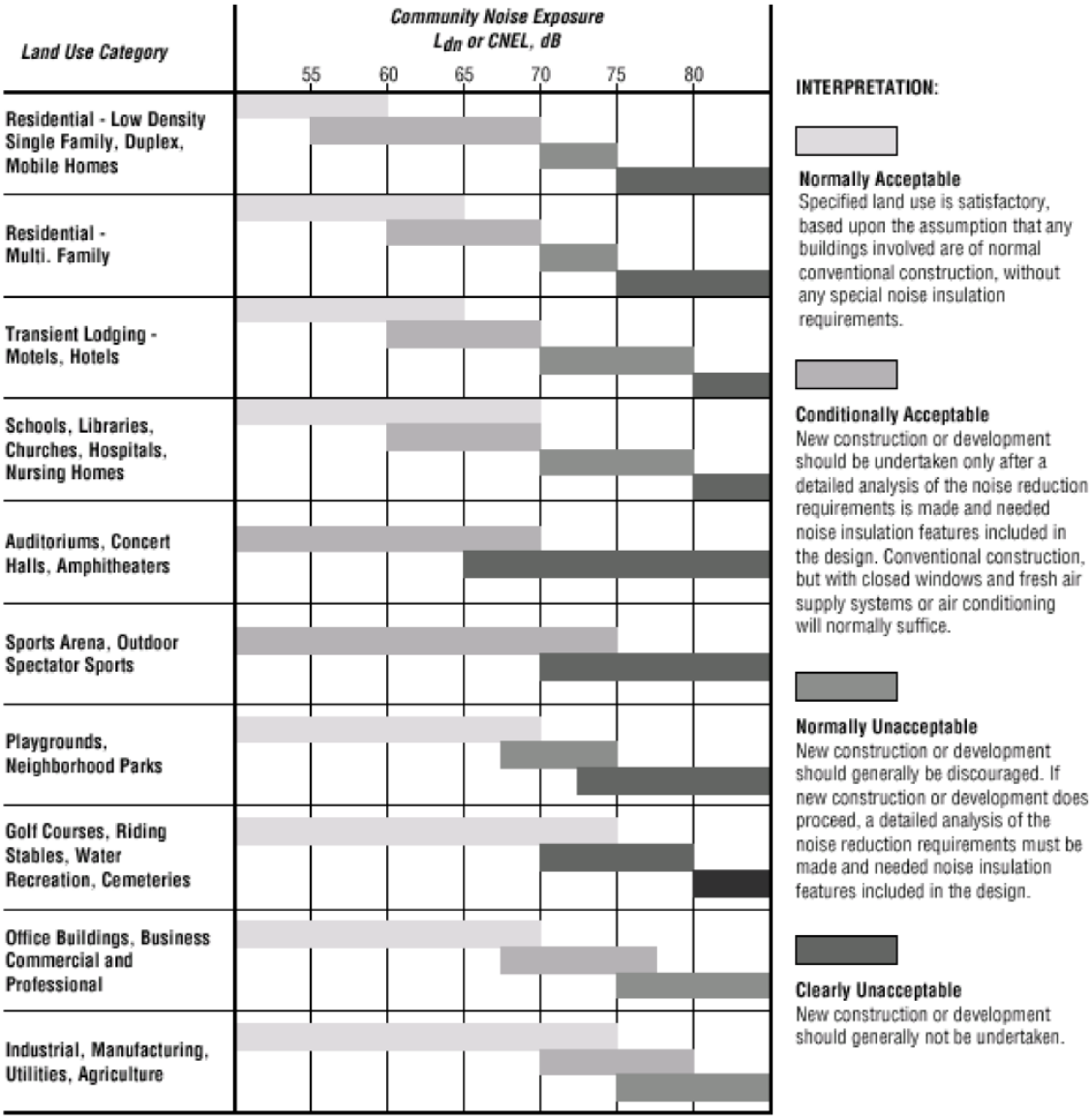
1. Ensure that residents of the Bakersfield Metropolitan Area are protected from excessive noise and existing moderate levels of noise are maintained.
2. Protect citizens of the planning area from the harmful effects of exposure to excessive noise and protect the economic base of the area by preventing the encroachment of incompatible land uses near known noise-producing roadways, industries, railroads, airports, and other sources.

The policies and implementation measures specified in the City of Bakersfield Noise Element are designed to satisfy these goals. For example, Policy 3 involves review of discretionary industrial, commercial, or other noise-generating land use project for compatibility with nearby noise-sensitive land use. Additional implementation measures include requiring proposed commercial and industrial uses to be designed or arranged so that they will not subject residential or noise sensitive land use to exterior noise levels in excess of the noise level performance standards in Table VII-2 (Table 3-1).

3.2.1 LAND USE COMPATIBILITY GUIDELINES

To ensure that residents are protected from excessive noise, the City of Bakersfield General Plan Noise Element provides guidelines to evaluate the *Land Use Compatibility for Community Noise Environments* (Figure VII-1). These guidelines presented on Exhibit 3-A are based on the Governor's Office of Planning and Research (9) and are used to describe land use categories of compatibility and not specific noise standards. According to the *Land Use Compatibility for Community Noise Environment* guidelines, noise sensitive land uses such as single-family residences are *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. The City of Bakersfield General Plan Noise Element is included in Appendix 3.1.

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



Source: OPR General Plan Guidelines, Appendix D: Noise Element Guidelines, Figure 2.

3.3.2 NOISE LEVEL PERFORMANCE STANDARDS

The City of Bakersfield General Plan Table VII-2 establishes the exterior noise level standards for stationary noise sources. Since the Project's land use could potentially impact nearby noise-sensitive uses in the Project study area, this noise study relies on the noise-sensitive residential stationary noise level standards given in the General Plan to describe Project related operational noise impacts. For residential properties, the exterior noise level shall not exceed 55 dBA L_{eq} during the daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA L_{eq} during the nighttime hours (10:00 p.m. to 7:00 a.m.).

The exterior noise level standards apply for a cumulative period of 30 minutes in any hour, as well as the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. The City of Bakersfield stationary source noise level standards are shown on Table 3-1 and included in Appendix 3.2.

TABLE 3-1: NOISE LEVEL PERFORMANCE STANDARDS

Time Period	Exterior Noise Level Standards (dBA)[1]				
	L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
Daytime (7:00 a.m. to 10:00 p.m.)	55	60	65	70	75
Nighttime (10:00 p.m. to 7:00 a.m.)	50	55	60	65	70

[1] City of Bakersfield General Plan Noise Element Table VII-2 Noise Level Performance Standards (Appendix 3.1). The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{50} is the noise level exceeded 50% of the time.

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, because the Project's operational activities are assumed to be relatively constant in intensity and do not involve loud bursts of single-event noise, the L_{50} or average L_{eq} noise level metrics best describe the outdoor loading dock activity, roof-top air conditioning units, drive-through speakerphone activity, trash enclosure activity, parking lot vehicle movements, and truck movements. In addition, the L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project operational noise levels.

3.3 CITY OF BAKERSFIELD MUNICIPAL CODE

Chapter 9.22, Noise of the City of Bakersfield Municipal Code included in Appendix 3.2 finds that excessive, unnecessary, and annoying noise levels are detrimental to the public health, welfare and safety and contrary to the public interest.

3.3.1 NOISE GENERALLY

In addition to the noise level performance standards outlined in Table VII-2 of the General Plan Noise Element, the Municipal Code identifies the following provisions to protect persons from excessive levels of noise.

- Section 9.22.030[A]: It is unlawful for any person to willfully make or continue, or allow to be made or continued, any loud, unnecessary noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to persons residing within one thousand feet of the noise source.
- Section 9.22.030[C]: Refrigerator trucks shall be permitted to operate in any commercial or manufacturing zone at all hours; provided, however, that such use does not emit noise or vibration detrimentally impacting neighboring residential properties and the occupants thereof between ten p.m. and seven a.m.

3.3.2 NOISE DURING CONSTRUCTION

To control noise impacts associated with construction, which would include construction of the proposed Project, Section 9.22.050 of the Municipal Code has established limits to the hours of construction activities. Section 9.22.050[A] states that it is unlawful for any person, firm or corporation to erect, demolish, alter or repair any building, or to grade or excavate land, streets or highways, other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends. According to Section 9.22.050[C], limits to the hours of construction shall not apply to any work of construction performed one thousand feet or more from the nearest residential dwelling.

3.4 CONSTRUCTION NOISE STANDARDS

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)

3.5 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 Majestic Gateway, vibration-generating activities are appropriately evaluated

against standards established under a City's Municipal Code, if such standards exist. However, the City of Bakersfield does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (11 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).

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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 the noise impact significant.* (12) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged.

The Federal Interagency Committee on Noise (FICON) (13) 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 the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (12) 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.

According to the General Plan Noise Element *Standards for Project Noise Impacts for Mobile Sources* (10 p. VII_13), the off-site traffic noise level increase criteria is limited to existing noise-sensitive land uses. In addition, these levels of increases and their perceived acceptance are consistent with the guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (14 p. 2_48).

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration impacts originating from the construction of Majestic Gateway, 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)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the Bakersfield Municipal Airport located roughly 2.5 miles northeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold 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	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site Traffic[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	
Operational	Exterior Noise Level Standards[2]	55 dBA L_{eq}	50 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	Construction activities are restricted within 1,000 feet of residential dwellings other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends[3]		
	Noise Level Threshold[4]	80 dBA L_{eq}	70 dBA L_{eq}
	Vibration Level Threshold[5]	0.3 PPV (in/sec)	

[1] FICON, 1992 and the City of Bakersfield Noise Element Standards for Project Noise Impacts for Mobile Sources. Consistent with the General Plan Noise Element (VII-13), off-site traffic noise level increase criteria are limited to existing noise-sensitive land uses.
[2] Metropolitan Bakersfield Noise Element Table VII-2 Noise Level Performance Standards.
[3] City of Bakersfield Municipal Code Section 9.22.050[A].
[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 7:00 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 nine locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, July 28, 2021. These measurements are intended to describe the baseline noise conditions existing at the time of the Project Notice of Preparation (NOP). 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. 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. (15)

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 hourly energy average 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

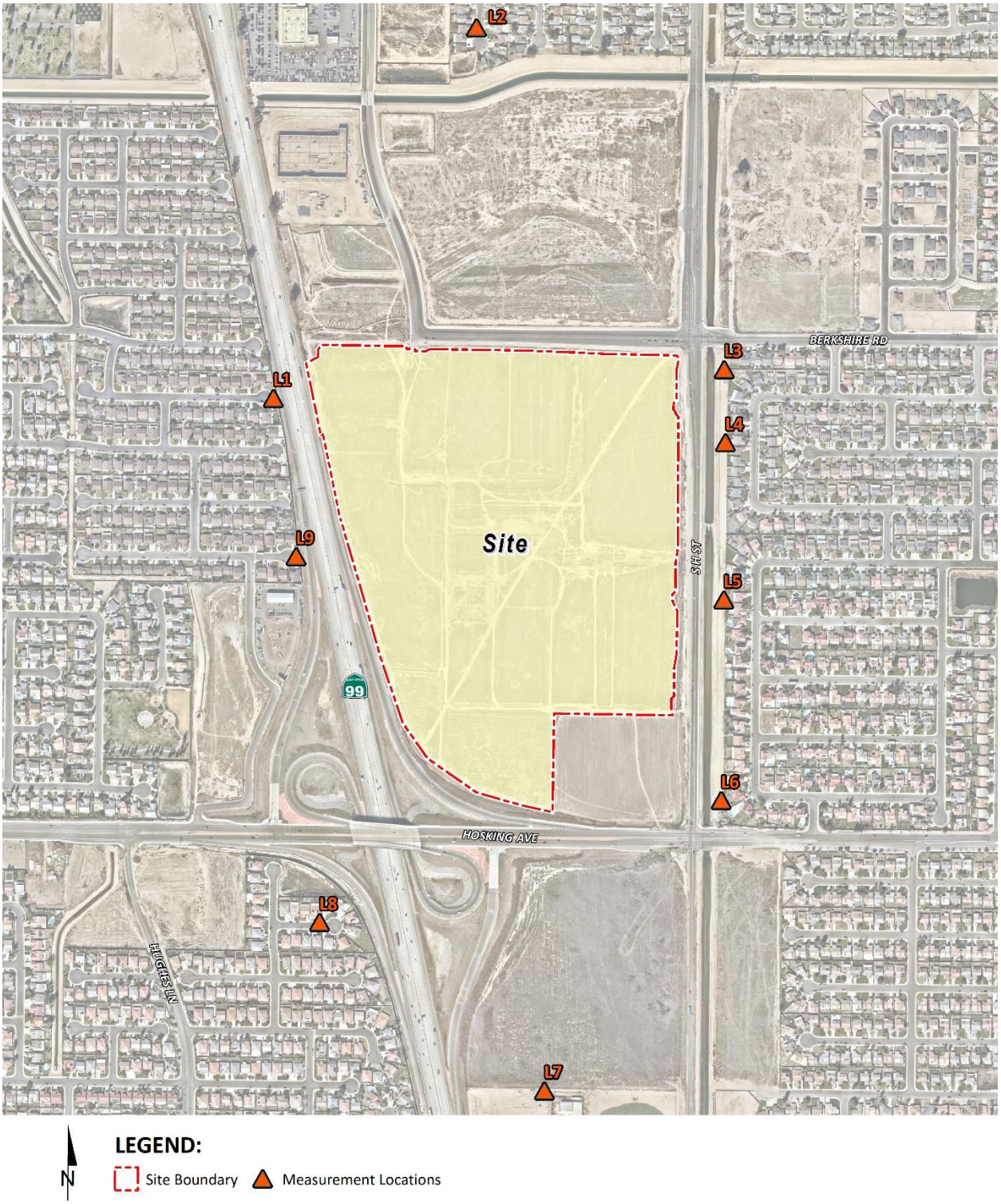
Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located west of the Project site near single-family residence at 2402 Basque Hills Drive.	58.3	57.7
L2	Located north of the Project site near single-family residence at 6801 Gretchen Court.	46.4	48.3
L3	Located east of the Project site near single-family residence at 1609 Berkshire Road.	60.9	61.9
L4	Located east of the Project site near single-family residence at 7417 Cross Glade Street.	59.8	60.2
L5	Located east of the Project site near single-family residence at 7719 Snowbird Street.	60.8	59.3
L6	Located east of the Project site near single-family residence at 8017 Snowbird Street.	65.8	65.0
L7	Located south of the Project site near Guru Nanak Mission Sikh Center at 8601 South H Street.	53.6	56.0
L8	Located southwest of the Project site near single-family residence at 2208 McGwire Court.	53.8	55.1
L9	Located west of the Project site near single-family residence at 2303 March Avenue.	63.3	63.0

[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 of the daytime and nighttime hours.

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 City of Bakersfield *Land Use Compatibility for Community Noise Environments* Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (16) This methodology is commonly used to describe the off-site traffic noise levels throughout California and is consistent with the City of Bakersfield General Plan Noise Element.

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. (17) 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. (18)

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 twenty off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the Metropolitan Bakersfield General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on the Traffic Study for a Proposed Industrial/Warehouse and Retail Commercial Land Development at South H Street & Hosking Avenue, prepared by Ruettgers & Schuler Civil Engineers ("Traffic Study") for the following traffic scenarios. (19)

1. Existing (2021)
2. Existing (2021) + Full Project (Phases 1&2)
3. Year 2024 + Cumulative Other Projects
4. Year 2024 + Cumulative Other Projects + Full Project (Phases 1&2)
5. Year 2029 + Cumulative Other Projects

6. Year 2029 + Cumulative Other Projects + Full Project (Phases 1&2)
7. Year 2042 + Cumulative Other Projects
8. Year 2042 + Cumulative Other Projects + Full Project (Phases 1&2)

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

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Distance from Centerline to Receiving Land Use (Feet)	Vehicle Speed (mph)
1	S. H St.	n/o Fairview Rd.	Arterial	55'	45
2	S. H St.	n/o Panama Ln.	Arterial	55'	45
3	S. H St.	s/o Panama Ln.	Arterial	55'	50
4	S. H St.	n/o Hosking Av.	Arterial	160'	50
5	S. H St.	s/o Hosking Av.	Arterial	160'	50
6	S. H St.	n/o Taft Hwy.	Arterial	160'	50
7	Panama Ln.	w/o Akers Rd.	Arterial	55'	50
8	Panama Ln.	w/o Wible Rd.	Arterial	55'	50
9	Panama Ln.	e/o Wible Rd.	Arterial	55'	50
10	Panama Ln.	w/o Colony St.	Arterial	55'	50
11	Panama Ln.	w/o S. H St.	Arterial	55'	50
12	Panama Ln.	e/o S. H St.	Arterial	55'	45
13	Berkshire Rd.	w/o S. H St.	Collector	37'	45
14	Berkshire Rd.	e/o S. H St.	Collector	37'	45
15	Berkshire Rd.	e/o Monitor St.	Collector	37'	45
16	Hosking Av.	w/o Akers Rd.	Arterial	55'	50
17	Hosking Av.	w/o Wible Rd.	Arterial	55'	50
18	Hosking Av.	e/o Wible Rd.	Arterial	55'	50
19	Hosking Av.	w/o S. H St.	Arterial	55'	50
20	Hosking Av.	e/o S. H St.	Arterial	55'	50

[1] Metropolitan Bakersfield General Plan Circulation Element

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

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]							
			Existing		Year 2024 + Cumulative		Year 2029 + Cumulative		Year 2042 + Cumulative	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
1	S. H St.	n/o Fairview Rd.	18,902	21,205	19,087	21,390	19,147	21,450	19,343	21,646
2	S. H St.	n/o Panama Ln.	14,867	17,655	15,757	18,545	16,400	19,188	18,680	21,468
3	S. H St.	s/o Panama Ln.	8,958	14,776	10,153	15,971	10,447	16,265	11,472	17,290
4	S. H St.	n/o Hosking Av.	9,020	15,238	10,367	16,585	10,625	16,843	11,515	17,733
5	S. H St.	s/o Hosking Av.	6,251	6,493	8,950	9,192	9,632	9,874	12,351	12,593
6	S. H St.	n/o Taft Hwy.	6,263	6,505	6,497	6,739	6,544	6,786	6,699	6,941
7	Panama Ln.	w/o Akers Rd.	34,139	35,230	35,656	36,747	37,147	38,238	42,441	43,532
8	Panama Ln.	w/o Wible Rd.	31,594	32,564	32,819	33,789	33,927	34,897	37,794	38,764
9	Panama Ln.	e/o Wible Rd.	40,269	41,481	40,432	41,644	40,379	41,591	40,208	41,420
10	Panama Ln.	w/o Colony St.	30,064	32,910	30,900	33,746	31,316	34,162	32,708	35,554
11	Panama Ln.	w/o S. H St.	29,962	32,265	30,741	33,044	31,304	33,607	33,205	35,508
12	Panama Ln.	e/o S. H St.	21,669	22,396	22,257	22,984	22,604	23,331	23,772	24,499
13	Berkshire Rd.	w/o S. H St.	7,012	7,776	8,147	8,911	8,291	9,055	8,780	9,544
14	Berkshire Rd.	e/o S. H St.	7,113	7,234	7,776	7,897	8,394	8,515	10,766	10,887
15	Berkshire Rd.	e/o Monitor St.	7,144	7,265	7,876	7,997	8,654	8,775	11,760	11,881
16	Hosking Av.	w/o Akers Rd.	9,458	10,912	11,185	12,639	12,521	13,975	18,135	19,589
17	Hosking Av.	w/o Wible Rd.	11,286	13,104	13,543	15,361	15,138	16,956	21,836	23,654
18	Hosking Av.	e/o Wible Rd.	15,627	18,051	18,031	20,455	20,239	22,663	29,514	31,938
19	Hosking Av.	w/o S. H St.	16,096	19,266	19,417	22,587	21,691	24,861	31,244	34,414
20	Hosking Av.	e/o S. H St.	14,587	15,557	16,816	17,786	18,876	19,846	27,534	28,504

[1] Traffic Study for a Proposed Industrial/Warehouse and Retail Commercial Development at South H Street and Hosking Avenue, Bakersfield, Ruettgers & Schuler.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-8 show the vehicle mixes used for the with Project traffic scenarios. Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

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

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

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos[1]	Medium Trucks[2]	Heavy Trucks[3]	
All Segments	92.00%	3.00%	5.00%	100.00%

[1] All vehicles with two axles and four wheels designed primarily for transportation of nine or fewer passengers (automobiles) or transportation of cargo (light trucks).
[2] All vehicles with two axles and six wheels designed for transportation of cargo.
[3] All vehicles with three or more axles designed for the transportation of cargo.

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	S. H St.	n/o Fairview Rd.	92.87%	2.67%	4.46%	100.00%
2	S. H St.	n/o Panama Ln.	93.26%	2.53%	4.21%	100.00%
3	S. H St.	s/o Panama Ln.	95.15%	1.82%	3.03%	100.00%
4	S. H St.	n/o Hosking Av.	91.84%	1.78%	6.39%	100.00%
5	S. H St.	s/o Hosking Av.	92.30%	2.89%	4.81%	100.00%
6	S. H St.	n/o Taft Hwy.	92.30%	2.89%	4.81%	100.00%
7	Panama Ln.	w/o Akers Rd.	92.25%	2.91%	4.85%	100.00%
8	Panama Ln.	w/o Wible Rd.	92.24%	2.91%	4.85%	100.00%
9	Panama Ln.	e/o Wible Rd.	92.23%	2.91%	4.85%	100.00%
10	Panama Ln.	w/o Colony St.	92.52%	2.74%	4.74%	100.00%
11	Panama Ln.	w/o S. H St.	92.57%	2.79%	4.64%	100.00%
12	Panama Ln.	e/o S. H St.	92.26%	2.90%	4.84%	100.00%
13	Berkshire Rd.	w/o S. H St.	86.07%	2.71%	11.22%	100.00%
14	Berkshire Rd.	e/o S. H St.	92.13%	2.95%	4.92%	100.00%
15	Berkshire Rd.	e/o Monitor St.	92.13%	2.95%	4.92%	100.00%
16	Hosking Av.	w/o Akers Rd.	93.07%	2.60%	4.33%	100.00%
17	Hosking Av.	w/o Wible Rd.	93.11%	2.58%	4.31%	100.00%
18	Hosking Av.	e/o Wible Rd.	93.07%	2.60%	4.33%	100.00%
19	Hosking Av.	w/o S. H St.	91.96%	2.51%	5.53%	100.00%
20	Hosking Av.	e/o S. H St.	92.50%	2.81%	4.69%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: YEAR 2024 WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	S. H St.	n/o Fairview Rd.	92.86%	2.68%	4.46%	100.00%
2	S. H St.	n/o Panama Ln.	93.20%	2.55%	4.25%	100.00%
3	S. H St.	s/o Panama Ln.	94.91%	1.91%	3.18%	100.00%
4	S. H St.	n/o Hosking Av.	91.85%	1.88%	6.27%	100.00%
5	S. H St.	s/o Hosking Av.	92.21%	2.92%	4.87%	100.00%
6	S. H St.	n/o Taft Hwy.	92.29%	2.89%	4.82%	100.00%
7	Panama Ln.	w/o Akers Rd.	92.24%	2.91%	4.85%	100.00%
8	Panama Ln.	w/o Wible Rd.	92.23%	2.91%	4.86%	100.00%
9	Panama Ln.	e/o Wible Rd.	92.23%	2.91%	4.85%	100.00%
10	Panama Ln.	w/o Colony St.	92.50%	2.75%	4.75%	100.00%
11	Panama Ln.	w/o S. H St.	92.56%	2.79%	4.65%	100.00%
12	Panama Ln.	e/o S. H St.	92.25%	2.91%	4.84%	100.00%
13	Berkshire Rd.	w/o S. H St.	86.83%	2.74%	10.43%	100.00%
14	Berkshire Rd.	e/o S. H St.	92.12%	2.95%	4.92%	100.00%
15	Berkshire Rd.	e/o Monitor St.	92.12%	2.95%	4.92%	100.00%
16	Hosking Av.	w/o Akers Rd.	92.92%	2.65%	4.42%	100.00%
17	Hosking Av.	w/o Wible Rd.	92.95%	2.64%	4.41%	100.00%
18	Hosking Av.	e/o Wible Rd.	92.95%	2.64%	4.41%	100.00%
19	Hosking Av.	w/o S. H St.	91.97%	2.58%	5.45%	100.00%
20	Hosking Av.	e/o S. H St.	92.44%	2.84%	4.73%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: YEAR 2029 WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	S. H St.	n/o Fairview Rd.	92.86%	2.68%	4.46%	100.00%
2	S. H St.	n/o Panama Ln.	93.16%	2.56%	4.27%	100.00%
3	S. H St.	s/o Panama Ln.	94.86%	1.93%	3.21%	100.00%
4	S. H St.	n/o Hosking Av.	91.85%	1.89%	6.25%	100.00%
5	S. H St.	s/o Hosking Av.	92.20%	2.93%	4.88%	100.00%
6	S. H St.	n/o Taft Hwy.	92.29%	2.89%	4.82%	100.00%
7	Panama Ln.	w/o Akers Rd.	92.23%	2.91%	4.86%	100.00%
8	Panama Ln.	w/o Wible Rd.	92.22%	2.92%	4.86%	100.00%
9	Panama Ln.	e/o Wible Rd.	92.23%	2.91%	4.85%	100.00%
10	Panama Ln.	w/o Colony St.	92.50%	2.75%	4.75%	100.00%
11	Panama Ln.	w/o S. H St.	92.55%	2.79%	4.66%	100.00%
12	Panama Ln.	e/o S. H St.	92.25%	2.91%	4.84%	100.00%
13	Berkshire Rd.	w/o S. H St.	86.91%	2.75%	10.34%	100.00%
14	Berkshire Rd.	e/o S. H St.	92.11%	2.96%	4.93%	100.00%
15	Berkshire Rd.	e/o Monitor St.	92.11%	2.96%	4.93%	100.00%
16	Hosking Av.	w/o Akers Rd.	92.83%	2.69%	4.48%	100.00%
17	Hosking Av.	w/o Wible Rd.	92.86%	2.68%	4.46%	100.00%
18	Hosking Av.	e/o Wible Rd.	92.86%	2.68%	4.47%	100.00%
19	Hosking Av.	w/o S. H St.	91.97%	2.62%	5.41%	100.00%
20	Hosking Av.	e/o S. H St.	92.39%	2.85%	4.76%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-8: YEAR 2042 WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	S. H St.	n/o Fairview Rd.	92.85%	2.68%	4.47%	100.00%
2	S. H St.	n/o Panama Ln.	93.04%	2.61%	4.35%	100.00%
3	S. H St.	s/o Panama Ln.	94.69%	1.99%	3.32%	100.00%
4	S. H St.	n/o Hosking Av.	91.86%	1.95%	6.19%	100.00%
5	S. H St.	s/o Hosking Av.	92.15%	2.94%	4.90%	100.00%
6	S. H St.	n/o Taft Hwy.	92.28%	2.90%	4.83%	100.00%
7	Panama Ln.	w/o Akers Rd.	92.20%	2.92%	4.87%	100.00%
8	Panama Ln.	w/o Wible Rd.	92.20%	2.92%	4.87%	100.00%
9	Panama Ln.	e/o Wible Rd.	92.23%	2.91%	4.85%	100.00%
10	Panama Ln.	w/o Colony St.	92.48%	2.76%	4.76%	100.00%
11	Panama Ln.	w/o S. H St.	92.52%	2.81%	4.68%	100.00%
12	Panama Ln.	e/o S. H St.	92.24%	2.91%	4.85%	100.00%
13	Berkshire Rd.	w/o S. H St.	87.17%	2.76%	10.07%	100.00%
14	Berkshire Rd.	e/o S. H St.	92.09%	2.97%	4.94%	100.00%
15	Berkshire Rd.	e/o Monitor St.	92.08%	2.97%	4.95%	100.00%
16	Hosking Av.	w/o Akers Rd.	92.59%	2.78%	4.63%	100.00%
17	Hosking Av.	w/o Wible Rd.	92.61%	2.77%	4.62%	100.00%
18	Hosking Av.	e/o Wible Rd.	92.61%	2.77%	4.62%	100.00%
19	Hosking Av.	w/o S. H St.	91.98%	2.72%	5.30%	100.00%
20	Hosking Av.	e/o S. H St.	92.27%	2.90%	4.83%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the Traffic Study for a Proposed Industrial/Warehouse and Retail Commercial Land Development at South H Street & Hosking Avenue, prepared by Ruettgers & Schuler Civil Engineers. (19) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 to 7-8 present a summary of the exterior traffic noise levels for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.7	83	178	384
2	S. H St.	n/o Panama Ln.	71.6	70	152	327
3	S. H St.	s/o Panama Ln.	70.3	58	125	268
4	S. H St.	n/o Hosking Av.	62.7	RW	RW	241
5	S. H St.	s/o Hosking Av.	61.1	RW	RW	189
6	S. H St.	n/o Taft Hwy.	61.1	RW	RW	189
7	Panama Ln.	w/o Akers Rd.	76.1	141	304	655
8	Panama Ln.	w/o Wible Rd.	75.8	134	289	622
9	Panama Ln.	e/o Wible Rd.	76.9	157	339	731
10	Panama Ln.	w/o Colony St.	75.6	130	279	601
11	Panama Ln.	w/o S. H St.	75.6	129	279	600
12	Panama Ln.	e/o S. H St.	73.2	91	195	420
13	Berkshire Rd.	w/o S. H St.	71.0	43	92	199
14	Berkshire Rd.	e/o S. H St.	71.0	43	93	201
15	Berkshire Rd.	e/o Monitor St.	71.0	43	94	202
16	Hosking Av.	w/o Akers Rd.	70.6	60	129	278
17	Hosking Av.	w/o Wible Rd.	71.3	67	145	313
18	Hosking Av.	e/o Wible Rd.	72.7	84	180	389

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
19	Hosking Av.	w/o S. H St.	72.9	85	184	397
20	Hosking Av.	e/o S. H St.	72.4	80	172	371

[1] The CNEL is calculated at the boundary 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 WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.8	85	183	394
2	S. H St.	n/o Panama Ln.	71.9	73	158	340
3	S. H St.	s/o Panama Ln.	71.2	66	143	308
4	S. H St.	n/o Hosking Av.	65.4	RW	170	366
5	S. H St.	s/o Hosking Av.	61.1	RW	RW	191
6	S. H St.	n/o Taft Hwy.	61.2	RW	RW	191
7	Panama Ln.	w/o Akers Rd.	76.2	142	306	660
8	Panama Ln.	w/o Wible Rd.	75.8	135	291	626
9	Panama Ln.	e/o Wible Rd.	76.9	159	342	736
10	Panama Ln.	w/o Colony St.	75.8	134	289	623
11	Panama Ln.	w/o S. H St.	75.7	132	284	611
12	Panama Ln.	e/o S. H St.	73.3	91	197	423
13	Berkshire Rd.	w/o S. H St.	73.7	65	141	304
14	Berkshire Rd.	e/o S. H St.	71.0	43	94	202
15	Berkshire Rd.	e/o Monitor St.	71.1	44	94	202
16	Hosking Av.	w/o Akers Rd.	70.8	62	134	288
17	Hosking Av.	w/o Wible Rd.	71.6	70	151	325
18	Hosking Av.	e/o Wible Rd.	73.0	87	187	403
19	Hosking Av.	w/o S. H St.	73.8	99	213	459
20	Hosking Av.	e/o S. H St.	72.5	81	175	377

[1] The CNEL is calculated at the boundary 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: YEAR 2024 WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.7	83	179	386
2	S. H St.	n/o Panama Ln.	71.9	73	158	340
3	S. H St.	s/o Panama Ln.	70.9	63	135	292
4	S. H St.	n/o Hosking Av.	63.3	RW	RW	265
5	S. H St.	s/o Hosking Av.	62.6	RW	RW	240
6	S. H St.	n/o Taft Hwy.	61.3	RW	RW	194
7	Panama Ln.	w/o Akers Rd.	76.3	145	313	674
8	Panama Ln.	w/o Wible Rd.	76.0	137	296	638
9	Panama Ln.	e/o Wible Rd.	76.9	158	340	733
10	Panama Ln.	w/o Colony St.	75.7	132	284	613
11	Panama Ln.	w/o S. H St.	75.7	132	283	610
12	Panama Ln.	e/o S. H St.	73.4	92	199	428
13	Berkshire Rd.	w/o S. H St.	71.6	47	102	220
14	Berkshire Rd.	e/o S. H St.	71.4	46	99	213
15	Berkshire Rd.	e/o Monitor St.	71.5	46	100	215
16	Hosking Av.	w/o Akers Rd.	71.3	67	144	311
17	Hosking Av.	w/o Wible Rd.	72.1	76	164	353
18	Hosking Av.	e/o Wible Rd.	73.4	92	199	428
19	Hosking Av.	w/o S. H St.	73.7	97	209	449
20	Hosking Av.	e/o S. H St.	73.1	88	190	408

[1] The CNEL is calculated at the boundary 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: YEAR 2024 WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.9	85	184	396
2	S. H St.	n/o Panama Ln.	72.1	76	164	353
3	S. H St.	s/o Panama Ln.	71.7	71	153	330
4	S. H St.	n/o Hosking Av.	65.7	RW	179	385
5	S. H St.	s/o Hosking Av.	62.7	RW	RW	242
6	S. H St.	n/o Taft Hwy.	61.3	RW	RW	196
7	Panama Ln.	w/o Akers Rd.	76.4	146	315	679
8	Panama Ln.	w/o Wible Rd.	76.0	138	298	642
9	Panama Ln.	e/o Wible Rd.	76.9	159	343	738
10	Panama Ln.	w/o Colony St.	75.9	137	294	634
11	Panama Ln.	w/o S. H St.	75.8	134	288	621
12	Panama Ln.	e/o S. H St.	73.4	93	200	431
13	Berkshire Rd.	w/o S. H St.	74.1	69	149	321
14	Berkshire Rd.	e/o S. H St.	71.4	46	99	214
15	Berkshire Rd.	e/o Monitor St.	71.5	47	100	216
16	Hosking Av.	w/o Akers Rd.	71.5	69	149	321
17	Hosking Av.	w/o Wible Rd.	72.3	79	169	364
18	Hosking Av.	e/o Wible Rd.	73.6	95	205	441
19	Hosking Av.	w/o S. H St.	74.5	109	236	508
20	Hosking Av.	e/o S. H St.	73.1	89	192	414

[1] The CNEL is calculated at the boundary 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: YEAR 2029 WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.7	83	180	387
2	S. H St.	n/o Panama Ln.	72.0	75	162	349
3	S. H St.	s/o Panama Ln.	71.0	64	138	297
4	S. H St.	n/o Hosking Av.	63.4	RW	RW	269
5	S. H St.	s/o Hosking Av.	63.0	RW	RW	252
6	S. H St.	n/o Taft Hwy.	61.3	RW	RW	195
7	Panama Ln.	w/o Akers Rd.	76.5	149	321	692
8	Panama Ln.	w/o Wible Rd.	76.1	140	303	652
9	Panama Ln.	e/o Wible Rd.	76.9	158	340	732
10	Panama Ln.	w/o Colony St.	75.8	133	287	618
11	Panama Ln.	w/o S. H St.	75.8	133	287	618
12	Panama Ln.	e/o S. H St.	73.4	93	201	432
13	Berkshire Rd.	w/o S. H St.	71.7	48	103	223
14	Berkshire Rd.	e/o S. H St.	71.7	48	104	225
15	Berkshire Rd.	e/o Monitor St.	71.9	49	106	229
16	Hosking Av.	w/o Akers Rd.	71.8	72	156	335
17	Hosking Av.	w/o Wible Rd.	72.6	82	177	381
18	Hosking Av.	e/o Wible Rd.	73.9	100	214	462
19	Hosking Av.	w/o S. H St.	74.2	104	225	484
20	Hosking Av.	e/o S. H St.	73.6	95	205	441

[1] The CNEL is calculated at the boundary 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: YEAR 2029 WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.9	86	184	397
2	S. H St.	n/o Panama Ln.	72.3	78	168	362
3	S. H St.	s/o Panama Ln.	71.8	72	156	335
4	S. H St.	n/o Hosking Av.	65.8	RW	180	388
5	S. H St.	s/o Hosking Av.	63.0	RW	RW	254
6	S. H St.	n/o Taft Hwy.	61.3	RW	RW	197
7	Panama Ln.	w/o Akers Rd.	76.5	150	324	697
8	Panama Ln.	w/o Wible Rd.	76.2	141	305	656
9	Panama Ln.	e/o Wible Rd.	76.9	159	342	737
10	Panama Ln.	w/o Colony St.	76.0	138	297	639
11	Panama Ln.	w/o S. H St.	75.9	135	292	628
12	Panama Ln.	e/o S. H St.	73.5	94	202	435
13	Berkshire Rd.	w/o S. H St.	74.1	70	150	323
14	Berkshire Rd.	e/o S. H St.	71.8	49	105	225
15	Berkshire Rd.	e/o Monitor St.	71.9	50	107	230
16	Hosking Av.	w/o Akers Rd.	72.0	74	160	345
17	Hosking Av.	w/o Wible Rd.	72.8	84	182	391
18	Hosking Av.	e/o Wible Rd.	74.0	102	220	475
19	Hosking Av.	w/o S. H St.	74.9	116	251	540
20	Hosking Av.	e/o S. H St.	73.6	96	207	446

[1] The CNEL is calculated at the boundary 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: YEAR 2042 WITHOUT PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.8	84	181	390
2	S. H St.	n/o Panama Ln.	72.6	82	177	381
3	S. H St.	s/o Panama Ln.	71.4	68	147	316
4	S. H St.	n/o Hosking Av.	63.7	RW	RW	284
5	S. H St.	s/o Hosking Av.	64.0	RW	RW	298
6	S. H St.	n/o Taft Hwy.	61.4	RW	RW	198
7	Panama Ln.	w/o Akers Rd.	77.1	163	351	757
8	Panama Ln.	w/o Wible Rd.	76.6	151	325	701
9	Panama Ln.	e/o Wible Rd.	76.8	157	339	730
10	Panama Ln.	w/o Colony St.	75.9	137	295	636
11	Panama Ln.	w/o S. H St.	76.0	138	298	643
12	Panama Ln.	e/o S. H St.	73.7	96	208	447
13	Berkshire Rd.	w/o S. H St.	71.9	50	107	231
14	Berkshire Rd.	e/o S. H St.	72.8	57	123	265
15	Berkshire Rd.	e/o Monitor St.	73.2	61	130	281
16	Hosking Av.	w/o Akers Rd.	73.4	93	199	429
17	Hosking Av.	w/o Wible Rd.	74.2	105	226	486
18	Hosking Av.	e/o Wible Rd.	75.5	128	276	594
19	Hosking Av.	w/o S. H St.	75.7	133	286	617
20	Hosking Av.	e/o S. H St.	75.2	122	263	567

[1] The CNEL is calculated at the boundary 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: YEAR 2042 WITH PROJECT CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	S. H St.	n/o Fairview Rd.	72.9	86	186	400
2	S. H St.	n/o Panama Ln.	72.8	85	182	393
3	S. H St.	s/o Panama Ln.	72.1	76	164	353
4	S. H St.	n/o Hosking Av.	66.0	RW	186	401
5	S. H St.	s/o Hosking Av.	64.1	RW	RW	299
6	S. H St.	n/o Taft Hwy.	61.4	RW	RW	200
7	Panama Ln.	w/o Akers Rd.	77.1	164	353	761
8	Panama Ln.	w/o Wible Rd.	76.6	152	327	705
9	Panama Ln.	e/o Wible Rd.	76.9	158	341	735
10	Panama Ln.	w/o Colony St.	76.2	142	305	657
11	Panama Ln.	w/o S. H St.	76.1	141	303	653
12	Panama Ln.	e/o S. H St.	73.7	97	209	450
13	Berkshire Rd.	w/o S. H St.	74.3	71	153	330
14	Berkshire Rd.	e/o S. H St.	72.8	57	123	266
15	Berkshire Rd.	e/o Monitor St.	73.2	61	131	282
16	Hosking Av.	w/o Akers Rd.	73.5	94	203	437
17	Hosking Av.	w/o Wible Rd.	74.3	107	230	495
18	Hosking Av.	e/o Wible Rd.	75.6	130	281	605
19	Hosking Av.	w/o S. H St.	76.3	144	310	668
20	Hosking Av.	e/o S. H St.	75.3	123	265	572

[1] The CNEL is calculated at the boundary 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 Study. 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 2029 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 61.1 to 76.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 61.1 to 76.9 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases range from 0.0 to 2.7 dBA CNEL on the study area roadway segments.

Based on the significance criteria for off-site traffic noise presented in Section 4.1, existing noise sensitive land uses adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to the unmitigated Project-related traffic noise levels. According to the General Plan Noise Element *Standards for Project Noise Impacts for Mobile*

Sources (10 p. VII_13), the off-site traffic noise level increase criteria is limited to existing noise-sensitive land uses. Therefore, off-site traffic noise level impacts are limited to existing noise sensitive receivers that are likely to perceive an increase in traffic noise levels.

While the analysis shows that Berkshire Road west of S. H Street (Segment #13) will experience a noise level increase of 2.7 dBA CNEL, the land to the south is represented by the Project and the land to the north is vacant and is owned by Kaiser Permanente for possible medical facility development. Therefore, the off-site traffic noise level increase of 2.7 dBA CNEL on Berkshire Road west of S. H Street (Segment #13) is not considered a significant noise level impact since there are no existing adjacent noise sensitive receivers that will experience this increase over time.

7.3 2024 Traffic Noise Level Increases

Table 7-3 presents the 2024 without Project conditions CNEL noise levels. The 2024 without Project exterior noise levels range from 61.3 to 76.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the 2024 with Project conditions will range from 61.3 to 76.9 dBA CNEL. Table 7-10 shows that the Project off-site traffic noise level increases range from 0.0 to 2.5 dBA CNEL.

Based on the significance criteria for off-site traffic noise presented in Section 4.1, land use adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to the unmitigated Project-related traffic noise levels. While the analysis shows that Berkshire Road west of S. H Street (Segment #13) will experience a noise level increase of 2.5 dBA CNEL, the land to the south is represented by the Project and the land to the north is vacant and is owned by Kaiser Permanente for possible medical facility development. Therefore, the off-site traffic noise level increase of 2.5 dBA CNEL on Berkshire Road west of S. H Street (Segment #13) is not considered a significant noise level impact since there are no existing adjacent noise sensitive receivers that will experience this increase over time.

7.4 2029 Traffic Noise Level Increases

Table 7-5 presents the 2029 without Project conditions CNEL noise levels. The 2029 without Project exterior noise levels range from 61.3 to 76.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the 2029 with Project conditions will range from 61.3 to 76.9 dBA CNEL. Table 7-11 shows that the Project off-site traffic noise level increases range from 0.0 to 2.4 dBA CNEL.

Based on the significance criteria for off-site traffic noise presented in Section 4.1, land use adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to the unmitigated Project-related traffic noise levels. While the analysis shows that Berkshire Road west of S. H Street (Segment #13) will experience a noise level increase of 2.4 dBA CNEL, the land to the south is represented by the Project and the land to the north is vacant and is owned by Kaiser Permanente for possible medical facility development. Therefore, the off-site traffic noise level increase of 2.4 dBA CNEL on Berkshire Road west of S. H Street (Segment #13)

is not considered a significant noise level impact since there are no existing adjacent noise sensitive receivers that will experience this increase over time.

7.5 2042 TRAFFIC NOISE LEVEL INCREASES

Table 7-7 presents the 2042 without Project conditions CNEL noise levels. The 2042 without Project exterior noise levels range from 61.4 to 77.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-8 shows that the 2042 with Project conditions will range from 61.4 to 77.1 dBA CNEL. Table 7-12 shows that the Project off-site traffic noise level increases range from 0.0 to 2.4 dBA CNEL.

Based on the significance criteria for off-site traffic noise presented in Section 4.1, land use adjacent to the study area roadway segments would experience *less than significant* noise level impacts due to the unmitigated Project-related traffic noise levels. While the analysis shows that Berkshire Road west of S. H Street (Segment #13) will experience a noise level increase of 2.4 dBA CNEL, the land to the south is represented by the Project and the land to the north is vacant and is owned by Kaiser Permanente for possible medical facility development. Therefore, the off-site traffic noise level increase of 2.4 dBA CNEL on Berkshire Road west of S. H Street (Segment #13) is not considered a significant noise level impact since there are no existing adjacent noise sensitive receivers that will experience this increase over time.

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

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	S. H St.	n/o Fairview Rd.	72.7	72.8	0.1	1.5	No
2	S. H St.	n/o Panama Ln.	71.6	71.9	0.3	1.5	No
3	S. H St.	s/o Panama Ln.	70.3	71.2	0.9	1.5	No
4	S. H St.	n/o Hosking Av.	62.7	65.4	2.7	3.0	No
5	S. H St.	s/o Hosking Av.	61.1	61.1	0.0	3.0	No
6	S. H St.	n/o Taft Hwy.	61.1	61.2	0.1	3.0	No
7	Panama Ln.	w/o Akers Rd.	76.1	76.2	0.1	1.5	No
8	Panama Ln.	w/o Wible Rd.	75.8	75.8	0.0	1.5	No
9	Panama Ln.	e/o Wible Rd.	76.9	76.9	0.0	1.5	No
10	Panama Ln.	w/o Colony St.	75.6	75.8	0.2	1.5	No
11	Panama Ln.	w/o S. H St.	75.6	75.7	0.1	1.5	No
12	Panama Ln.	e/o S. H St.	73.2	73.3	0.1	1.5	No
13	Berkshire Rd.	w/o S. H St.	71.0	73.7	2.7	-[3]	-[3]
14	Berkshire Rd.	e/o S. H St.	71.0	71.0	0.0	1.5	No
15	Berkshire Rd.	e/o Monitor St.	71.0	71.1	0.1	1.5	No
16	Hosking Av.	w/o Akers Rd.	70.6	70.8	0.2	1.5	No
17	Hosking Av.	w/o Wible Rd.	71.3	71.6	0.3	1.5	No
18	Hosking Av.	e/o Wible Rd.	72.7	73.0	0.3	1.5	No
19	Hosking Av.	w/o S. H St.	72.9	73.8	0.9	1.5	No
20	Hosking Av.	e/o S. H St.	72.4	72.5	0.1	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria in Section 4.1?
[3] Off-site traffic noise level increase threshold is limited to existing noise-sensitive land uses (General Plan Noise Element Standards for Project Noise Impacts for Mobile Sources) (VII_13).

TABLE 7-10: 2024 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	S. H St.	n/o Fairview Rd.	72.7	72.9	0.2	1.5	No
2	S. H St.	n/o Panama Ln.	71.9	72.1	0.2	1.5	No
3	S. H St.	s/o Panama Ln.	70.9	71.7	0.8	1.5	No
4	S. H St.	n/o Hosking Av.	63.3	65.7	2.4	3.0	No
5	S. H St.	s/o Hosking Av.	62.6	62.7	0.1	3.0	No
6	S. H St.	n/o Taft Hwy.	61.3	61.3	0.0	3.0	No
7	Panama Ln.	w/o Akers Rd.	76.3	76.4	0.1	1.5	No
8	Panama Ln.	w/o Wible Rd.	76.0	76.0	0.0	1.5	No
9	Panama Ln.	e/o Wible Rd.	76.9	76.9	0.0	1.5	No
10	Panama Ln.	w/o Colony St.	75.7	75.9	0.2	1.5	No
11	Panama Ln.	w/o S. H St.	75.7	75.8	0.1	1.5	No
12	Panama Ln.	e/o S. H St.	73.4	73.4	0.0	1.5	No
13	Berkshire Rd.	w/o S. H St.	71.6	74.1	2.5	-[3]	-[3]
14	Berkshire Rd.	e/o S. H St.	71.4	71.4	0.0	1.5	No
15	Berkshire Rd.	e/o Monitor St.	71.5	71.5	0.0	1.5	No
16	Hosking Av.	w/o Akers Rd.	71.3	71.5	0.2	1.5	No
17	Hosking Av.	w/o Wible Rd.	72.1	72.3	0.2	1.5	No
18	Hosking Av.	e/o Wible Rd.	73.4	73.6	0.2	1.5	No
19	Hosking Av.	w/o S. H St.	73.7	74.5	0.8	1.5	No
20	Hosking Av.	e/o S. H St.	73.1	73.1	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria in Section 4.1?
[3] Off-site traffic noise level increase threshold is limited to existing noise-sensitive land uses (General Plan Noise Element Standards for Project Noise Impacts for Mobile Sources) (VII_13).

TABLE 7-11: 2029 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	S. H St.	n/o Fairview Rd.	72.7	72.9	0.2	1.5	No
2	S. H St.	n/o Panama Ln.	72.0	72.3	0.3	1.5	No
3	S. H St.	s/o Panama Ln.	71.0	71.8	0.8	1.5	No
4	S. H St.	n/o Hosking Av.	63.4	65.8	2.4	3.0	No
5	S. H St.	s/o Hosking Av.	63.0	63.0	0.0	3.0	No
6	S. H St.	n/o Taft Hwy.	61.3	61.3	0.0	3.0	No
7	Panama Ln.	w/o Akers Rd.	76.5	76.5	0.0	1.5	No
8	Panama Ln.	w/o Wible Rd.	76.1	76.2	0.1	1.5	No
9	Panama Ln.	e/o Wible Rd.	76.9	76.9	0.0	1.5	No
10	Panama Ln.	w/o Colony St.	75.8	76.0	0.2	1.5	No
11	Panama Ln.	w/o S. H St.	75.8	75.9	0.1	1.5	No
12	Panama Ln.	e/o S. H St.	73.4	73.5	0.1	1.5	No
13	Berkshire Rd.	w/o S. H St.	71.7	74.1	2.4	-[3]	-[3]
14	Berkshire Rd.	e/o S. H St.	71.7	71.8	0.1	1.5	No
15	Berkshire Rd.	e/o Monitor St.	71.9	71.9	0.0	1.5	No
16	Hosking Av.	w/o Akers Rd.	71.8	72.0	0.2	1.5	No
17	Hosking Av.	w/o Wible Rd.	72.6	72.8	0.2	1.5	No
18	Hosking Av.	e/o Wible Rd.	73.9	74.0	0.1	1.5	No
19	Hosking Av.	w/o S. H St.	74.2	74.9	0.7	1.5	No
20	Hosking Av.	e/o S. H St.	73.6	73.6	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria in Section 4.1?
[3] Off-site traffic noise level increase threshold is limited to existing noise-sensitive land uses (General Plan Noise Element Standards for Project Noise Impacts for Mobile Sources) (VII_13).

TABLE 7-12: 2042 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	S. H St.	n/o Fairview Rd.	72.8	72.9	0.1	1.5	No
2	S. H St.	n/o Panama Ln.	72.6	72.8	0.2	1.5	No
3	S. H St.	s/o Panama Ln.	71.4	72.1	0.7	1.5	No
4	S. H St.	n/o Hosking Av.	63.7	66.0	2.3	3.0	No
5	S. H St.	s/o Hosking Av.	64.0	64.1	0.1	3.0	No
6	S. H St.	n/o Taft Hwy.	61.4	61.4	0.0	3.0	No
7	Panama Ln.	w/o Akers Rd.	77.1	77.1	0.0	1.5	No
8	Panama Ln.	w/o Wible Rd.	76.6	76.6	0.0	1.5	No
9	Panama Ln.	e/o Wible Rd.	76.8	76.9	0.1	1.5	No
10	Panama Ln.	w/o Colony St.	75.9	76.2	0.3	1.5	No
11	Panama Ln.	w/o S. H St.	76.0	76.1	0.1	1.5	No
12	Panama Ln.	e/o S. H St.	73.7	73.7	0.0	1.5	No
13	Berkshire Rd.	w/o S. H St.	71.9	74.3	2.4	-[3]	-[3]
14	Berkshire Rd.	e/o S. H St.	72.8	72.8	0.0	1.5	No
15	Berkshire Rd.	e/o Monitor St.	73.2	73.2	0.0	1.5	No
16	Hosking Av.	w/o Akers Rd.	73.4	73.5	0.1	1.5	No
17	Hosking Av.	w/o Wible Rd.	74.2	74.3	0.1	1.5	No
18	Hosking Av.	e/o Wible Rd.	75.5	75.6	0.1	1.5	No
19	Hosking Av.	w/o S. H St.	75.7	76.3	0.6	1.5	No
20	Hosking Av.	e/o S. H St.	75.2	75.3	0.1	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria in Section 4.1?
[3] Off-site traffic noise level increase threshold is limited to existing noise-sensitive land uses (General Plan Noise Element Standards for Project Noise Impacts for Mobile Sources) (VII_13).

8 SENSITIVE RECEIVER LOCATIONS

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

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

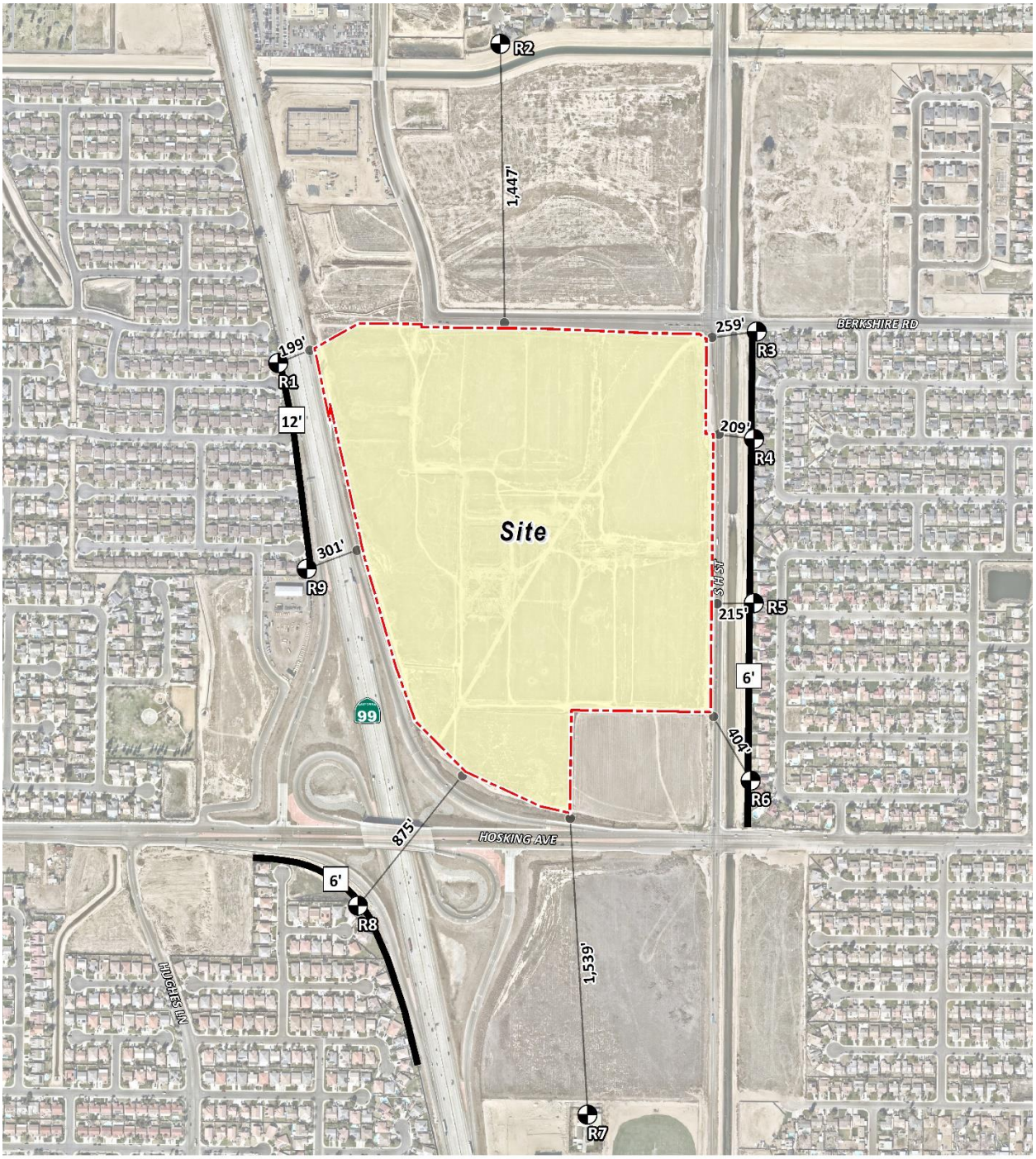
R1: Location R1 represents the existing noise sensitive residence at 2402 Basque Hills Drive, approximately 199 feet west of the Project site. R1 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive residence at 6816 Gretchen Court, approximately 1,447 feet north of the Project site. R2 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise sensitive residence at 1609 Berkshire Road, approximately 259 feet east of the Project site. R3 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive residence at 7503 Cross Glade Street, approximately 209 feet east of the Project site. R4 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



R5: Location R5 represents the existing noise sensitive residence at 7719 Snowbird Street, approximately 215 feet east of the Project site. R5 is placed in the private outdoor living areas (backyard) facing 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 the existing noise sensitive residence at 8013 Snowbird Street, approximately 404 feet east of the Project site. R6 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L6, to describe the existing ambient noise environment.

R7: Location R7 represents the existing noise sensitive Guru Nanak Mission Sikh Center at 8601 South H Street, approximately 1,539 feet south of the Project site. R7 is placed on the Gurdwara's building façade closest to the Project site. A 24-hour noise measurement was taken near this location, L7, to describe the existing ambient noise environment.

R8: Location R8 represents the existing noise sensitive residence at 2204 McGwire Court, approximately 875 feet southwest of the Project site. R8 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L8, to describe the existing ambient noise environment.

R9: Location R9 represents the existing noise sensitive residence at 2303 March Avenue, approximately 301 feet west of the Project site. R9 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L9, to describe the existing ambient noise environment.

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9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Majestic Gateway Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: outdoor loading dock activity, roof-top air conditioning units, drive-through speakerphone activity, trash enclosure activity, parking lot vehicle movements, and truck movements.

9.2 REFERENCE NOISE LEVELS

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

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using 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. (15)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

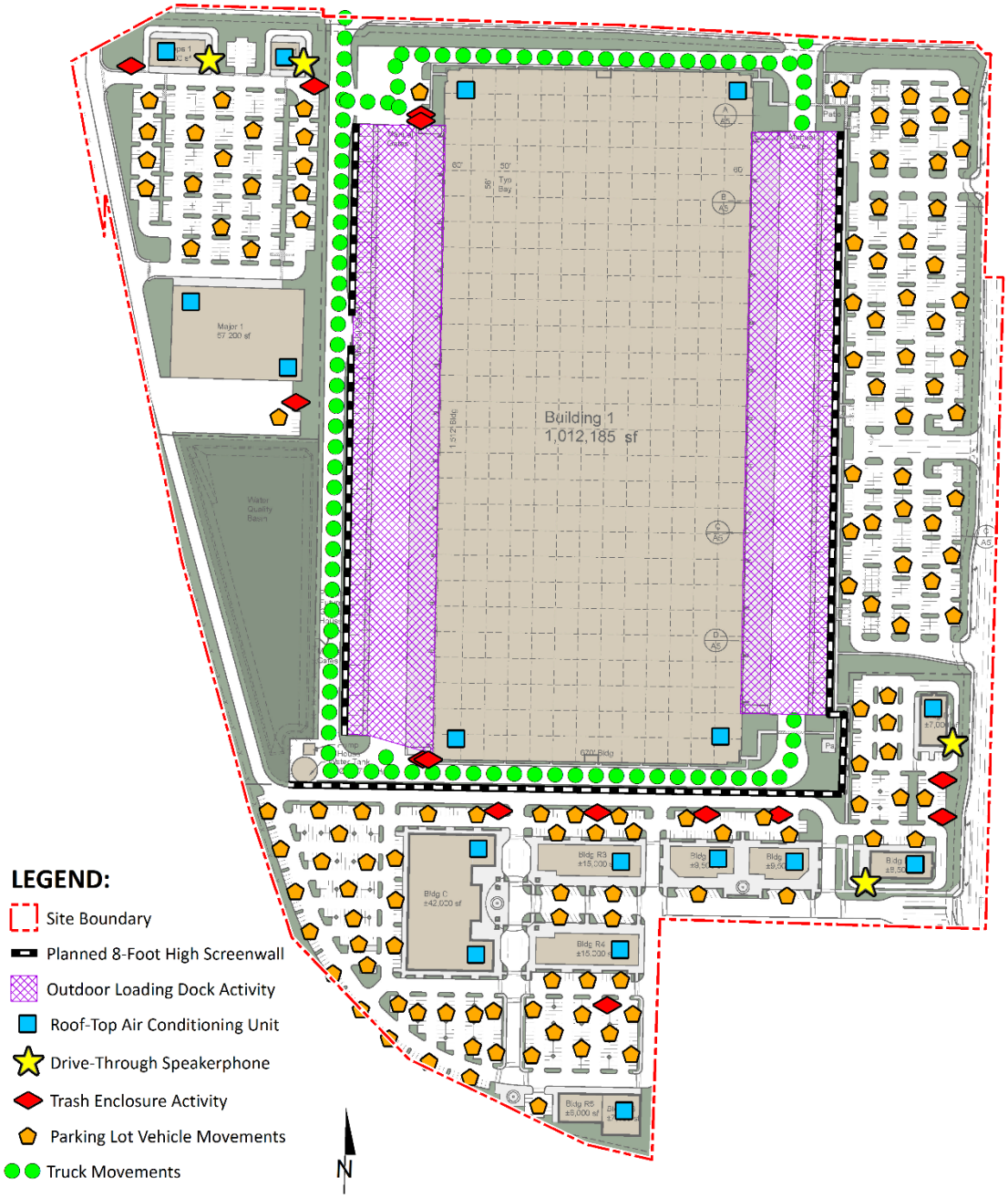

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./ Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[3]
		Day	Night		
Outdoor Loading Dock Activity	8'	60	60	64.4	109.7
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Drive-Through Speakerphone Activity	3'	60	60	50.0	84.0
Trash Enclosure Activity	5'	10	10	57.3	89.0
Parking Lot Vehicle Movements	5'	60	60	55.7	87.8
Truck Movements	8'	60	60	59.9	91.6

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

9.2.2 OUTDOOR LOADING DOCK ACTIVITY

To describe the outdoor loading dock activities, reference noise level measurements were collected at the Tejon Ranch Commerce Center located west of the I-5 Freeway in unincorporated Kern County. The 24-hour reference noise level measurements were collected adjacent to the Dollar General Distribution Center loading docks entry gate and represent the typical outdoor operational noise activities associated with the planned Project warehouse land uses. This includes heavy tractor trailer truck deliveries, air brakes, backup alarms, trailer docking and background operation activities. To ensure that the reference noise level accurately describes the peak hourly noise source activities, sixty of the highest one-minutes individual measurements observed over the 1,440 minute or 24-hour measurement period, were used to describe the outdoor loading dock activities. At a uniform distance of 50 feet from the source the outdoor loading dock activities representing multiple concurrent noise sources produced a combined noise level of 64.4 dBA L_{eq}.

The outdoor loading dock activity reference noise level measurements collected at the Tejon Ranch Commerce Center are generally consistent with similar levels collected by Urban Crossroads, Inc. This includes the noise levels generated by cold storage loading dock activity that can be slightly higher due to the use of refrigerated trucks or reefers. Previous measurements collected at the Nature's Best distribution facility located at 16081 Fern Avenue in the City of Chino suggest that reefer activity (refrigerator truck/cold storage) generate a combined noise level of 65.7 dBA L_{eq} at a uniform distance of 50 feet. Since the warehouse floor space is reasonably expected to be occupied by 90% fulfillment center and 10% cold storage (19), a reference noise level of 65.7 dBA L_{eq} is used in this operational noise analysis to fully describe all the Project outdoor loading dock activities.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units, reference noise level measurements were collected from a Lennox SCA120 series 10-ton model packaged air conditioning unit. At 5 feet from the roof-top air conditioning unit, the exterior noise levels were measured at 77.2 dBA L_{eq}. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings. This reference noise level describes the expected roof-top air conditioning units located 5 feet above the roof for the planned air conditioning units at the Project site.

9.2.4 DRIVE-THROUGH SPEAKERPHONE ACTIVITY

To describe the potential noise level impacts associated with the planned drive-thru speakerphones, this analysis relies on the drive-through intercom system manufactured by HME. This type of system is commonly used by the quick service restaurant (QSR) industry for drive-thru communications. The HME SPP2 speaker post intercom system produces a maximum noise level of 84 dBA at one foot from the speaker post. The system may also be equipped with an automatic volume control that can automatically reduce the sound levels as the ambient noise level decreases. The reference speakerphone noise level describes continuous drive-through operations and does not include any periods of inactivity.

9.2.5 TRASH ENCLOSURE ACTIVITY

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

9.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot vehicle movement activity, a long-term 24-hour reference noise level measurement was collected in the center of activity within the employee parking lot of the Dollar General Distribution Center. To ensure that the reference noise level accurately describes the peak hourly noise source activities, sixty of the highest one-minutes individual

measurements observed over the 1,440 minute or 24-hour measurement period, were used to describe the parking lot vehicle movements. At 50 feet from the center of activity, the parking lot produced a reference noise level of 55.7 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected on Tejon Industrial Drive at the intersection of Industrial Parkway Drive. The truck movements at this location include the heavy tractor trailers truck movements associated with the Dollar General, Vision Media, and the IKEA distribution centers. Using the sixty highest one-minute measurements collected over a 24-hour period, the heavy trucks entering and exiting the outdoor loading dock area produced a reference noise level of 59.9 dBA L_{eq} at 50 feet

9.3 CADNAA NOISE PREDICTION MODEL

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

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

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

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include outdoor loading dock activity, roof-top air conditioning units, drive-through speakerphone activity, trash enclosure activity, parking lot vehicle movements, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 36.8 to 48.1 dBA L_{eq}. This includes the additional noise attenuation provided by the existing noise barriers shown on Exhibit 8-A and the planned 8-foot-high screen walls shown on Exhibit 9-A.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Outdoor Loading Dock Activity	35.0	42.7	44.8	46.9	46.4	39.6	36.6	38.6	40.6
Roof-Top Air Conditioning Units	25.7	28.1	28.8	28.7	34.6	32.0	28.7	28.7	28.4
Drive-Through Speakerphone Activity	6.6	16.9	12.7	13.3	23.5	19.5	12.5	9.1	11.1
Trash Enclosure Activity	17.1	20.1	14.0	17.5	25.1	22.2	15.1	17.0	17.1
Parking Lot Vehicle Movements	30.7	34.2	39.3	41.8	40.6	36.0	34.5	35.1	34.4
Truck Movements	22.4	30.7	30.4	27.8	23.2	21.1	19.1	23.9	25.0
Total (All Noise Sources)	**36.8**	**43.4**	**46.0**	**48.1**	**47.7**	**41.7**	**39.1**	**40.5**	**41.8**

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

Tables 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 36.6 to 48.1 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Outdoor Loading Dock Activity	35.0	42.7	44.8	46.9	46.4	39.6	36.6	38.6	40.6
Roof-Top Air Conditioning Units	23.3	25.7	26.4	26.3	32.2	29.6	26.3	26.3	26.0
Drive-Through Speakerphone Activity	6.6	16.9	12.7	13.3	23.5	19.5	12.5	9.1	11.1
Trash Enclosure Activity	16.2	19.2	13.0	16.5	24.2	21.2	14.1	16.0	16.1
Parking Lot Vehicle Movements	30.7	34.2	39.3	41.8	40.6	36.0	34.5	35.1	34.4
Truck Movements	22.4	30.7	30.4	27.8	23.2	21.1	19.1	23.9	25.0
Total (All Noise Sources)	**36.6**	**43.4**	**45.9**	**48.1**	**47.6**	**41.5**	**39.0**	**40.4**	**41.7**

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Bakersfield exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-4 shows the operational noise levels associated with Majestic Gateway Project will satisfy the City of Bakersfield daytime and nighttime exterior noise level standards. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: 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	36.8	36.6	55	50	No	No
R2	43.4	43.4	55	50	No	No
R3	46.0	45.9	55	50	No	No
R4	48.1	48.1	55	50	No	No
R5	47.7	47.6	55	50	No	No
R6	41.7	41.5	55	50	No	No
R7	39.1	39.0	55	50	No	No
R8	40.5	40.4	55	50	No	No
R9	41.8	41.7	55	50	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.
[3] City of Bakersfield Noise Element Table VII-2 Noise Level Performance Standards (Table 3-1).
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

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

Where “SPL1,” “SPL2,” etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively.

As indicated on Tables 9-5, the Project will generate a daytime operational noise level increases ranging from 0.0 to 1.8 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime operational noise level increases ranging from 0.0 to 1.2 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-5: 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	36.8	L1	58.3	58.3	0.0	5.0	No
R2	43.4	L2	46.4	48.2	1.8	5.0	No
R3	46.0	L3	60.9	61.0	0.1	3.0	No
R4	48.1	L4	59.8	60.1	0.3	5.0	No
R5	47.7	L5	60.8	61.0	0.2	3.0	No
R6	41.7	L6	65.8	65.8	0.0	1.5	No
R7	39.1	L7	53.6	53.8	0.2	5.0	No
R8	40.5	L8	53.8	54.0	0.2	5.0	No
R9	41.8	L9	63.3	63.3	0.0	3.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-2.
[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 9-6: 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	36.6	L1	57.7	57.7	0.0	5.0	No
R2	43.4	L2	48.3	49.5	1.2	5.0	No
R3	45.9	L3	61.9	62.0	0.1	3.0	No
R4	48.1	L4	60.2	60.5	0.3	3.0	No
R5	47.6	L5	59.3	59.6	0.3	5.0	No
R6	41.5	L6	65.0	65.0	0.0	1.5	No
R7	39.0	L7	56.0	56.1	0.1	5.0	No
R8	40.4	L8	55.1	55.2	0.1	5.0	No
R9	41.7	L9	63.0	63.0	0.0	3.0	No

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

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the limits of construction noise source activities in relation to the nearby sensitive receiver locations previously described in Section 8. The limits of construction include the off-site roadway and utility improvements needed to support the Project development. According to Section 9.22.050[A] of the City of Bakersfield Municipal Code, it is unlawful for any person, firm or corporation to erect, demolish, alter or repair any building, or to grade or excavate land, streets or highways, other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends within one thousand feet of a residential dwelling. Section 9.22.050[C], limits to hours of construction shall not apply to any work of construction performed one thousand feet or more from the nearest residential dwelling.

Neither the General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual is used for analysis of daytime construction impacts. The FTA considers a daytime exterior construction noise level of 80 dBA Leq as a reasonable threshold for noise sensitive residential land use. (8 p. 179)

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) (24). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 10-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (25) to describe the construction activities for each stage of Project construction.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

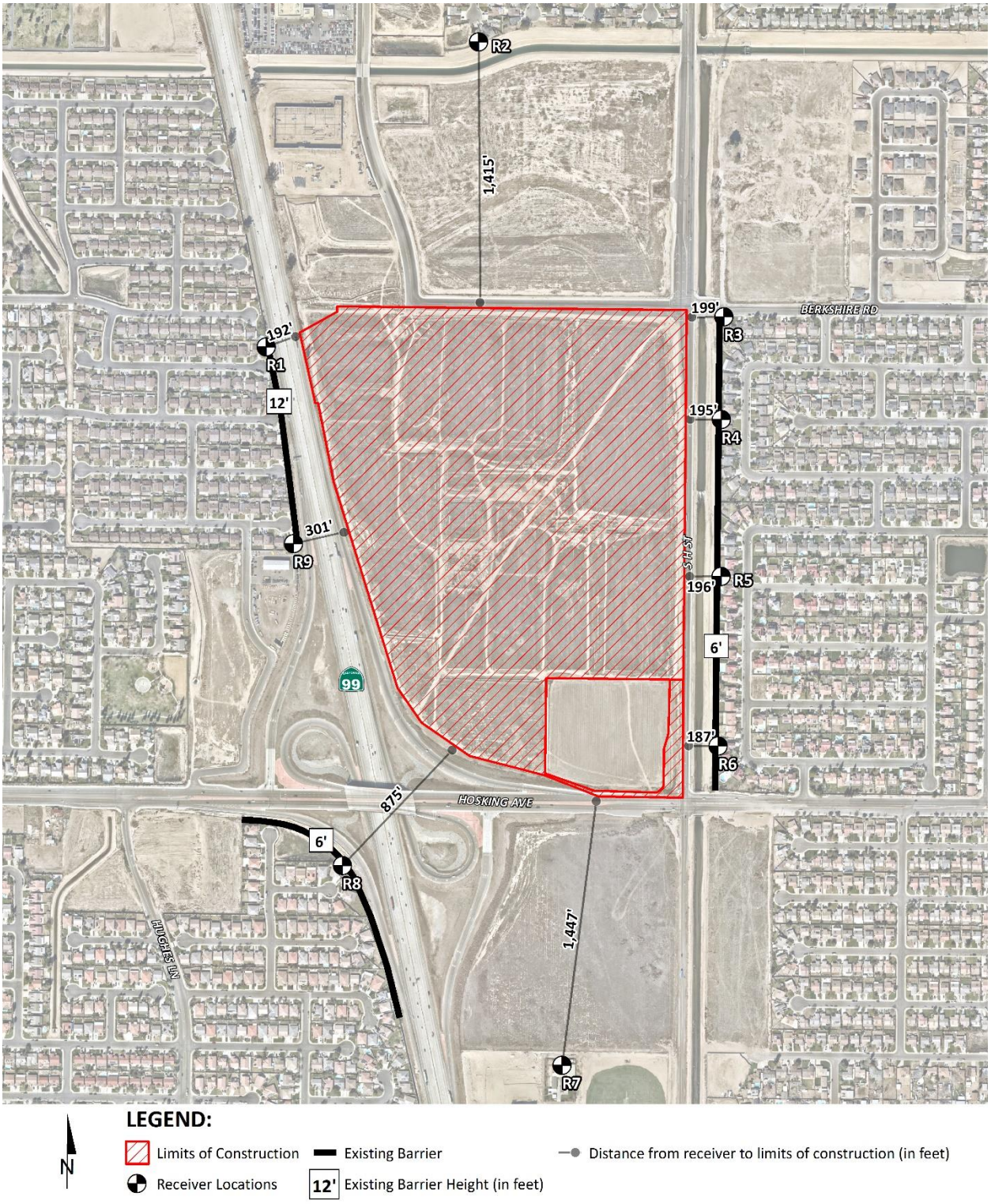

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]
Site Preparation	Crawler Tractors	77	79
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	74
	Tractors	72	
	Welders	65	
Paving	Pavers	70	74
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	72
	Air Compressors	67	
	Generator Sets	67	

[1] Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) expressed in hourly average L_{eq} based on estimated usage factors from the 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 for general construction noise assessment.

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when multiple pieces of equipment with the highest reference noise level are operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise levels for all equipment, assuming they operate at the same time at the Project site boundary, which although not realistic in a practical sense is a worst-case assumption for analytical purposes in determining the highest possible noise level experienced at nearby receiver locations. As shown on Table 10-2, the construction noise levels are expected to range from 53.3 to 68.9 dBA L_{eq}, and the highest construction levels are expected to range from 60.3 to 68.9 dBA L_{eq} at the nearby receiver locations. This includes the additional noise attenuation provided by the existing noise barriers shown on Exhibit 10-A. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	60.3	60.3	55.3	55.3	53.3	60.3
R2	65.4	65.4	60.4	60.4	58.4	65.4
R3	67.2	67.2	62.2	62.2	60.2	67.2
R4	68.7	68.7	63.7	63.7	61.7	68.7
R5	68.9	68.9	63.9	63.9	61.9	68.9
R6	67.9	67.9	62.9	62.9	60.9	67.9
R7	64.3	64.3	59.3	59.3	57.3	64.3
R8	62.9	62.9	57.9	57.9	55.9	62.9
R9	64.0	64.0	59.0	59.0	57.0	64.0

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

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

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

It is expected that the nearest sensitive receiver locations may also experience additional background construction noise impacts due to other project construction activities. However, it is unlikely that combined cumulative construction noise levels of multiple concurrent projects would not exceed the reasonable daytime 80 dBA L_{eq} significance threshold at the nearby receiver locations. In addition, the Municipal Code Section 9.22.050[A] limits the days and hours of construction activity to avoid disturbances during the noise sensitive nighttime hours. Because construction activities are typically limited to weekdays, during daylight hours, the direct and cumulative construction noise impacts are considered a nuisance or annoying, rather than a significant impact upon surrounding land uses

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	60.3	80	No
R2	65.4	80	No
R3	67.2	80	No
R4	68.7	80	No
R5	68.9	80	No
R6	67.9	80	No
R7	64.3	80	No
R8	62.9	80	No
R9	64.0	80	No

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

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area.. Since the nighttime concrete pours will take place during the restricted City of Bakersfield Municipal Code Section 9.22.050[A] hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends, the Project Applicant will be required to obtain authorization for nighttime work from the City of Bakersfield. Any nighttime construction noise activities are evaluated against the FTA nighttime exterior construction noise level threshold of 70 dBA L_{eq} for noise sensitive residential land use (8 p. 179).

10.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

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

To describe the nighttime concrete pour noise levels associated with the construction of the Majestic Gateway, this analysis relies on reference noise levels of 67.7 dBA L_{eq} at 50 feet with a noise source height of 6 feet. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the sample reference noise levels of 67.7 dBA L_{eq} is used to describe the expected Project nighttime concrete pour noise activities.

10.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 49.0 to 57.6 dBA $L_{eq.}$ This includes the additional noise attenuation provided by the existing noise barriers shown on Exhibit 10-A. The analysis shows that the unmitigated nighttime concrete pour activities will satisfy the FTA 70 dBA L_{eq} nighttime residential noise level threshold at all the nearest noise sensitive receiver locations. Appendix 10.2 includes the CadnaA nighttime concrete pour noise model inputs.

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Concrete Pour Construction Noise Levels (dBA L_{eq})		
	Exterior Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	49.0	70	No
R2	54.1	70	No
R3	55.9	70	No
R4	57.4	70	No
R5	57.6	70	No
R6	56.6	70	No
R7	53.0	70	No
R8	51.6	70	No
R9	52.7	70	No

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

10.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA.

To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 187 to 1,447 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.000 to 0.004 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site. Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

TABLE 10-6: PROJECT CONSTRUCTION VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	192'	0.000	0.002	0.004	0.004	0.004	0.3	No
R2	1,415'	0.000	0.000	0.000	0.000	0.000	0.3	No
R3	199'	0.000	0.002	0.003	0.004	0.004	0.3	No
R4	195'	0.000	0.002	0.003	0.004	0.004	0.3	No
R5	196'	0.000	0.002	0.003	0.004	0.004	0.3	No
R6	187'	0.000	0.002	0.004	0.004	0.004	0.3	No
R7	1,447'	0.000	0.000	0.000	0.000	0.000	0.3	No
R8	875'	0.000	0.000	0.000	0.000	0.000	0.3	No
R9	301'	0.000	0.001	0.002	0.002	0.002	0.3	No

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

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11 REFERENCES

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

12 CERTIFICATION

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

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

EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF BAKERSFIELD GENERAL PLAN NOISE ELEMENT

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CHAPTER VII - NOISE ELEMENT

STATUTORY REQUIREMENTS

The contents of a Noise Element have been determined by the requirements of Section 65302(f) of the California Government Code and by "Guidelines for the Preparation and Content of Noise Elements of the General Plan" published by the California Office of Noise Control (ONC) in 1976. The Government Code and ONC Guidelines require that certain major noise sources and areas containing noise sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected levels of activity within the community.

Pursuant to the Government Code and ONC Guidelines, the following major noise sources were considered in the preparation of the Noise Element:

- Highways and freeways
- Primary arterials and major local streets
- Railroad operations
- Aircraft and airport operations
- Local industrial facilities
- Other stationary sources

Due to the size and scale of the noise contour maps (1"=400'), they are not reproduced in this document, but can be referenced in the City of Bakersfield Planning Department or the Kern County Department of Planning and Development Services.

Also considered in the preparation of the Noise Element are areas containing the following noise sensitive land uses:

- Schools
- Hospitals
- Rest homes
- Long-term medical or mental care facilities
- Other uses deemed noise sensitive by the local jurisdiction

The purpose of this Noise Element is to provide a means for protecting local citizens from the harmful effects of excessive exposure to noise.

OVERVIEW OF EXISTING CONDITIONS

MAJOR NOISE SOURCES

Based on discussions with government officials and the results of field studies by Brown-Buntin Associates (BBA), it was determined that there are four major sources of community noise within the study area. These sources are traffic on state highways and major local streets, railroad operations, airport operations and local industrial activities. Specific noise sources selected for study are listed.

STATE HIGHWAYS

- State Route 58
- State Route 99
- State Route 119
- State Route 178
- State Route 184
- State Route 204

MAJOR LOCAL STREETS
RAILROAD OPERATIONS

- Burlington Northern Santa Fe Railway (B.N.S.E.)
-Southern Pacific Transportation Company (SPTCo.)

AIRPORT OPERATIONS

- Kern County Airport (Meadows Field)
- Bakersfield Airpark

INDUSTRIAL FACILITIES AND OTHER MAJOR STATIONARY NOISE SOURCES

- Lake Ming Boat Races
- Mesa Marin Raceway
- Burlington Northern Santa Fe Classification Yard
- Southern Pacific Classification Yard
- Kern Rock Company
- Calcrete
- Coors Recycling Center
- United States Cold Storage

A combination of noise monitoring and analytical noise modeling techniques were used to develop generalized noise exposure contours around the major noise sources identified above for existing (1985 or 1986) and future (2010) conditions.

The analytical methods used in this report closely follow recommendations made by ONC, and were supplemented where appropriate by field-measured noise level data to account for local conditions. It should be noted that the noise exposure contours presented in this report are based upon annual average or in some cases maximum noise level conditions, and are not intended to be site-specific where local topography, vegetation or intervening structures may significantly affect noise exposure at a particular location.

1. Highways and Major Local Streets

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Community Noise Equivalent Level (CNEL) contours for state highways and major local streets within the study area.

The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within plus or minus 1.5 dB. To predict CNEL values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Traffic volumes and truck percentages for existing (1985-86) and future (2010) conditions on the state highways in the study area were obtained from Caltrans. Future projections of annual average daily traffic volumes on state highways are based upon a yearly growth factor of 3.6 percent which is the five-year average for 1979-1984 as published by Caltrans. Traffic volumes for existing and future conditions on major local streets were obtained from the City of Bakersfield and County of Kern Roads Departments.

Using existing traffic data and the FHWA methodology, traffic noise levels as defined by CNEL were calculated for existing (1985-86) and projected future (2010) traffic volumes on the state highways and the major local streets identified for study.

The approximate locations of the 60 and 65 dB CNEL contours for these roadways have been plotted on 400 scale maps. Only those contours which are located at distances of greater than 75 feet from the center of the roadway are shown on the 400 scale maps. It should be noted that since the methodology used to develop generalized contours did not take into consideration shielding which may be caused by buildings or topography in some areas, the distances on the 400 scale maps should be considered as worst-case estimates of traffic noise exposure in the community.

2. Railroad Operations

Two rail companies provide service in the Bakersfield area. Noise measurements of Burlington Northern Santa Fe and Southern Pacific Transportation Co. trains were conducted in Bakersfield in May 1986 to document noise levels generated by individual rail movements in the community. Noise level measurements of branch line operations conducted.

Noise exposure levels as defined by CNEL for railroad operations in the study area were calculated using the Simplified Procedure for Assessment of Noise Emitted by On-Line Railroad Operations, prepared by Wyle Laboratories (Report No. 59197-1) in March 1974 and railroad operational data. The Wyle Methodology is an analytical method used to predict railway noise which is based upon reference energy emission levels for diesel locomotives and freight/passenger cars with consideration given to numbers of locomotives and cars, speed, track conditions, and distance to the receiver. The approximate locations of the 65 and 60 CNEL contours for 1986 conditions are shown on the 400 scale maps.

As in the case of traffic noise contours, railroad noise contours should be considered as estimates of worst-case exposure since no adjustments have been made for shielding provided by intervening topography or buildings. CNEL contours for the McKittrick and Oildale branch lines have not been illustrated on the 400 scale maps.

Although noise levels from individual train movements on these branch lines produce short term noise impacts when they occur, such impacts do not occur frequently enough to produce a significant noise exposure as defined by CNEL.

TABLE VII-1

Distance (Feet) from Center of Track to CNEL Contour Values for Existing (1986) Railroad Operations

Railroad	Segment	CNEL 65 dB	CNEL 60 dB
Southern Pacific Transportation Co.	SPTCo. Mainline Yard to the northwest within 1,000' of grade crossings)	342 (631)	730 (1,360)
Southern Pacific Transportation Co. and Burlington Northern Santa Fe	SPTCo. Mainline Combined Operations Yard to Edison (within 1,000' of grade crossings)	464 (858)	1,000 (1,848)
Burlington Northern Santa Fe	AT&SF Mainline Yard to the northwest (within 1,000' of grade crossings)	342 (631)	730 (1,360)
Burlington Northern Santa Fe	SPTCo. Arvin Branchline (within 1,000' of grade crossings)	369 (681)	794 (1,468)
Southern Pacific Transportation Co.	SPTCo. McKittrick Branchline (within 1,000' of grade crossings)	25 (46)	54 (100)
Burlington Northern	SPTCo. Oildale Branchline (within 1,000' of grade crossings)	25 (46)	54 (100)

Source: Brown-Buntin Associates.

3. Airport Operations

Two airports are located within the planning area. Meadows Field is owned and operated by Kern County. Bakersfield Municipal Airport is owned and operated by the City of Bakersfield.

In 1996, the City and County adopted the Airport Land Use Compatibility Plan (ALUCP). This document was prepared using the materials entitled "Kern County Airport Land Use Compatibility Plan" dated June 1994. It includes material, including noise contours, prepared by Hodges and Shutt, an aviation consulting firm under contract to the Kern Council of Governments (Kern COG).

The noise contours contained in the ALUCP are calculated based on aircraft activity forecasts which are set forth in an airport master plan or which are considered by the local agency to be plausible.

The locations of CNEL contours are one of the factors used to define compatibility zone boundaries and criteria. It is intended that noise compatibility criteria be applied at the general plan level. Because of the inherent variability of flight paths and other factors that influence noise emissions, the depicted contour boundaries are not absolute determinants of the compatibility of a given land use.

4. Industrial Facilities and Other Stationary Noise Sources

a. Calcrete

The Calcrete plant is located near the intersection of Pacheco and Wible Roads. The most significant sources of noise associated with this operation are vibrators located in the sand and cement bins to keep materials moving through the system.

Maximum noise levels during the operation of the cement bin vibrator were 60-65 dB(A) at approximately 500 feet northwest of the plant. Based upon the above-described noise level data and operational data, a generalized 60 dB CNEL contour was prepared depicting a worst case condition with a 12-hour work shift beginning at 7 a.m.

b. Lake Ming Boat Races

Lake Ming, located about nine miles northeast of central Bakersfield, is operated by the Kern County Parks and Recreation Department as a recreational lake for both power and sail boats. Several times each year, boat racing consisting of circle boat or drag boat racing, is permitted on the lake. On April 19, 1986, Brown-Buntin Associates monitored noise levels from drag racing events at four different locations around the lake in order to determine maximum noise levels (L_{max}).

The noise levels recorded by Brown-Buntin Associates and Kern County indicate that drag boat racing activity on Lake Ming can conflict with noise-sensitive land uses in the area. A generalized 75 dB(A) maximum noise level contour for boat racing activities at Lake Ming is shown on the 400 scale 1986 and 2010 noise exposure contour maps. 75 dB(A) represents the maximum exterior daytime noise level currently allowed by the City of Bakersfield Noise Element for residential properties. CNEL contours for boat racing on Lake Ming were not prepared since such activities occur only a few times per year.

c. Mesa Marin Raceway

Mesa Marin Raceway is located near the intersection of State Routes 178 and 184 about 8 miles east of central Bakersfield. Classes of modified stock cars racing at the track include Street Stocks, Super Modified Stocks, and Open Competition Stocks

Noise level measurements near Mesa Marin Raceway were conducted by Brown-Buntin Associates during the evening of April 19, 1986. Typical median (L_{50}) noise levels recorded ranged from 61 to 70 dB(A) with typical maximum levels reaching 87 dB(A). At El Dorado Estates, about 2 miles from Mesa Marin maximum noise levels of 48-52 dB(A) were recorded. At a site 0.9 miles west of the raceway, maximum noise levels ranged from 58-62 dB(A).

In the parking lot of the raceway, maximum noise levels of 60-67 dB(A) were recorded. It should be noted that at this location the earthen berm which borders the southern portion of the oval track considerably reduces noise levels. Based upon the above-described topographical factors and noise level data, the worst case 70 and 75 dB(A) maximum noise level contours were plotted on 400 scale maps. CNEL contours were not prepared for this facility due to the relatively infrequent use of the track.

d. Kern Rock Company

The Kern Rock Company sand and gravel operation is located approximately 1,500 feet west of the intersection of Wible and Pacheco Roads. Noise generating activities include truck traffic (hauling sand and gravel to the stockpile area, picking up loads of bulk cement and hauling concrete ready-mix), and the operation of the plant itself. Based upon noise levels and plant operational data, the location of the 60 dB CNEL contour was estimated to be 300 feet from the plant.

e. Burlington Northern Santa Fe: Railroad Classification Yard

The Burlington Northern Santa Fe railroad yard is located east of Oak Street between 16th Street and California Avenue. Generalized CNEL contours for this facility were prepared using operational data obtained from the railroad for existing conditions. These are shown on the 400 scale noise exposure maps for 1986 and 2010. Operational data obtained from the railroad were intended to be representative of annual average conditions, although it was recognized that activity varies considerably with seasonal demands and economic conditions

f. Southern Pacific Transportation Company: Railroad Classification Yard

The SPTCo. railroad classification yard is located east of Beale Avenue between Sumner and Kentucky Streets in Bakersfield. The Wyle methodology was used to develop generalized CNEL contours around the facility for existing levels of yard operations, which are shown on the large scale map.

Operational data were obtained from the railroad to represent annual average conditions, although it was recognized that activity varies considerably throughout the year due to seasonal demands and economic conditions.

g. Jack Frost Ice Co.

The Jack Frost Ice Co. facility is located at the southwest intersection of Stine Road and District Boulevard. Noise sources associated with the plant include two compressors located on the roof of the building and truck traffic entering and leaving the loading dock area.

Noise measurements with both compressors operating at a distance of 140 feet from the approximate center of the plant resulted in a noise level of 64.1 dB(A) L_{eq}. The approximate location of the 60 dB CNEL contour based upon the above-described noise level and operational data are shown on the large scale map.

h. Joey Recycling Center

This facility is located on the south side of White Lane between Hughes Lane and South H Street. Noise generating activities consist of the unloading and crushing of aluminum cans using a hydraulic press. Noise measurements 400 feet from the facility were conducted on the morning of May 14, 1986, while the crusher was in operation. The measured Leq at this location was 64.7 dB(A). Based upon the above-described noise level and operational data, a generalized 60 dB CNEL contour was prepared and is shown on the 400 scale maps.

NOISE SENSITIVE AREAS

The following noise sensitive land uses have been identified in the study area:

- Residential areas
- Schools
- Convalescent and acute care hospitals
- Parks and recreational areas

As suggested by the Office of Noise Control Guidelines, a community noise survey was conducted in March 1986 to document existing noise exposure in areas of the community containing noise sensitive land uses. The purpose of the community noise survey was to define the existing noise environment in areas of the community outside the Ldn 60 dB contour where noise sensitive land uses are located; to provide a numerical check of noise levels determined by mathematical modeling techniques and to serve as a basis for establishing quantitative land use compatibility criteria and noise performance standards consistent with existing noise levels in the community. Since the geographic scope of the study area is over 400 square miles, including both developed and undeveloped lands, noise measurements were conducted only in urbanized areas.

The results of the community noise survey indicate that the mean noise level as defined by CNEL in areas of the community where noise sensitive land uses are located is approximately 57 dB, ranging from 44 to 64 dB. Such levels are typical of suburban residential neighborhoods and are considered normally acceptable for all noise sensitive land uses according to criteria suggested by the Office of Noise Control Guidelines (Figure VII-1).

The median noise level (L_{50}) is the criterion commonly used in noise ordinances or in other types of performance standards to assess the acceptability of noise sensitive land uses located in proximity to commercial or industrial noise sources. During the survey, median (L_{50}) noise levels at the sites monitored continuously for 24 hours or more ranged from 38 to 49 dB(A) during the daytime hours (7 a.m. to 10 p.m.). During the nighttime hours (10 p.m. to 7 a.m.), L_{50} levels ranged from 24 to 48 dB(A).

Maintenance of desirable noise exposures for sensitive areas are addressed through consideration of sporadic noise normally associated with stationary land uses. Table VII-2 provides a method of determining land use compatibility for sensitive uses through the assignment of noise exceedence levels and time restrictions.

TABLE VII-2

NOISE LEVEL PERFORMANCE STANDARDS*
Exterior Noise Level Standards

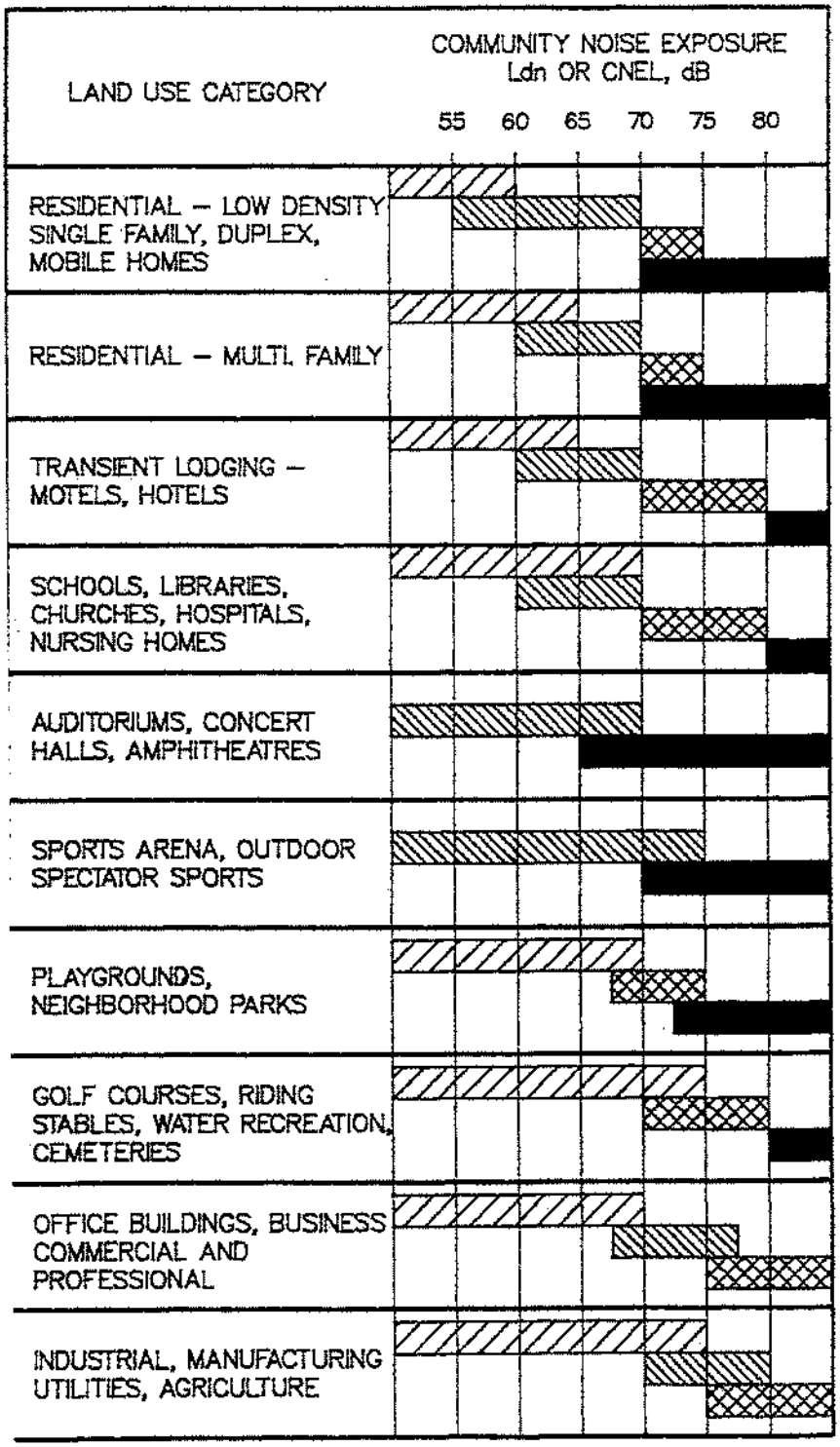
Category	Cumulative Number of minutes in any one-hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	55	50
2	15	60	55
3	5	65	60
4	1	70	65
5	0	75	70

* Each of the noise level standards specified in this table shall be reduced by five (5) dB(A) for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards should be applied at a residential or other noise-sensitive land use and not on the property of a noise-generating land use.

SUMMARY

Existing and projected future traffic volumes, as well as noise sources from industry, trains, aircraft and recreational activities have the potential to increase noise to unacceptable levels in residential and other noise-sensitive areas of the plan area. Similarly, the expansion of residential uses near industry and airports may displace these activities if improper land use planning with regard to noise occurs. A series of policies and implementation measures have been prepared to address these issues.

LAND USE COMPATABLILTY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

(Source: Office of Noise Control, California Department of Health)

FIGURE VII–1

NOISE ISSUES

The following issues have been identified regarding noise:

- Noise exposure from conflicting land uses and transportation corridors.
- Maintenance of acceptable noise levels.

GOALS AND POLICIES

The following presents the goals and policies for noise in the planning area. Implementing programs are contained in the following subsection.

At the end of each policy is listed in parenthesis a code beginning with the letter "I" followed by a number. This code refers to the pertinent implementing program.

GOALS

1. Ensure that residents of the Bakersfield Metropolitan Area are protected from excessive noise and existing moderate levels of noise are maintained.

2. Protect the citizens of the planning area from the harmful effects of exposure to excessive noise, and protect the economic base of the area by preventing the encroachment of incompatible land uses near known noise-producing roadways, industries, railroads, airports and other sources.

POLICIES

Goals will be achieved through the following policies which set more specific directions and guide actions.

1. Identify noise-impact areas exposed to existing or projected noise levels exceeding 65 dB CNEL (exterior) or the performance standards described in Table VII-2. The noise exposure contour maps on file at the City of Bakersfield and County of Kern indicate areas where existing and projected noise exposures exceed 65 dB CNEL (exterior) for the major noise sources identified (I-1).

2. Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into project design to reduce noise to acceptable levels. (I-2, I-3, I-6, I-7).

3. Review discretionary industrial, commercial or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.

Additionally, the development of new noise-generating land uses which are not preempted from local noise regulation will be reviewed if resulting noise levels will exceed the performance standards contained within Table VII-2 in areas containing residential or other noise-sensitive land uses (I-3, I-6, I-7).

4. Require noise level criteria applied to land uses other than residential or other n noise-sensitive uses to be consistent with the recommendations of the California Office of Noise Control (see Figure VII-1 (I-4)).

5. Encourage vegetation and landscaping along roadways and adjacent to other noise sources in order to increase absorption of noise (I-7).

6. Encourage interjurisdictional coordination and cooperation with regard to noise impact issues (I-8).

7. Establish threshold standards for the determination of the existence of project and cumulative noise impacts for mobile noise generating land uses that are significant, and will therefore require mitigation to achieve acceptable noise standards that do not exceed the standards contained in this element (I-9, 1-10)

IMPLEMENTATION

The following are programs to be carried out by the City of Bakersfield and County of Kern to implement the goals and policies of the Noise Element. This listing is not to limit the scope of implementation of this plan. State law requires that planning agencies recommend various methods of implementation of the general plan as part of their on-going duties.

1. Maintain noise contour maps which enable planning agencies, developers and the public to identify noise impacted areas on the land use map.

2. Review discretionary development plans, programs and proposals, including those initiated by both the public and private sectors, to ascertain and ensure their conformance to the policy framework outlined in this element.

3. Require development of proposed residential or other noise sensitive land uses in noise-impacted area to comply with the noise standards of 65 dB CNEL or less in outdoor activity areas and 45 dB CNEL or less within interior living spaces and the performance standards within Table VII-2.

4. Require proposed commercial and industrial uses or operations to be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB CNEL and interior noise levels in excess of 45 dB CNEL and so that

impacts on noise sensitive uses shall not exceed the performance standards in Table VII-2.

At time of any discretionary approval, such as a request for zone change or subdivision, the developer may be required to submit an acoustical report indicating the means by which the developer proposes to comply with the noise standards. The acoustical report shall:

a) Be the responsibility of the applicant.

b) Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.

c) Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

d) Include estimated noise levels in terms of CNEL and the standards of Table VII-2 (if applicable) for existing and projected future (10-20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element.

e) Include recommendations for appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.

f) Include estimates of noise exposure after the prescribed mitigation measures have been implemented. If compliance with the adopted standards and policies of the Noise Element will not be achieved, a rationale for acceptance of the project must be provided.

5. Develop implementation procedures to ensure that requirements imposed pursuant to the findings of an acoustical analysis are conducted as part of the project permitting process.

6. Enforce the State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code concerning the construction of new multiple-occupancy dwellings such as hotels, apartments, and condominiums.

7. Investigate development and adoption of a community noise control ordinance to address noise complaints, and to provide local industry with performance standards for future development and equipment modifications. The noise exposure information developed during the community noise survey should be used as a guide in preparation of the ordinance. The ordinance should be consistent with the "Model Community Noise Control Ordinance" prepared by the California Office of

Noise Control in 1977 with modifications made to reflect local concerns and conditions. Periodically review and update the City of Bakersfield's noise ordinance under Chapter 9.22 of the Municipal Code.

8. Amend the city and county zoning ordinances as necessary to reflect the policies and programs of the Noise Element.

9. Cooperate and discuss with all appropriate government agencies the planning documents governing noise-impact issues for consistency and coordination.

10. STANDARDS FOR PROJECT NOISE IMPACTS FOR MOBILE SOURCES

A significant increase of existing ambient noise levels affecting existing noise-sensitive land uses (receptors), and requiring the adoption of practical and feasible mitigation measures, is deemed to occur where a project will cause:

- An increase of the existing ambient noise level by 5 dB or more, where the existing ambient level is less than 60 dB CNEL
- An increase of the existing ambient noise level by 3 dB or more, where the existing ambient level is 60 to 65 dB CNEL;
- An increase of the existing ambient noise level by 1.5 dB or more, where the existing ambient level is greater than 65 dB CNEL.

STANDARDS FOR CUMULATIVE NOISE IMPACTS FOR MOBILE SOURCES

A project's contribution to noise increase would normally be considered cumulatively considerable and considered significant when ambient noise levels affect noise sensitive land uses (receptors) and when the following occurs.

- A project increases the ambient (cumulative without project) noise level by 1 dB or more;

and

- The cumulative with project noise levels cause the following:
    - An increase of the existing ambient noise level by 5 dB or more, where the existing ambient level is less than 60 dB CNEL;
    - An increase of the existing ambient noise level by 3 dB or more, where the existing ambient level is 60 to 65 DB CNEL;
    - An increase on the existing ambient noise level by 1.5 dB or more, where the existing ambient level is greater than 65 dB CNEL.

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APPENDIX 3.2:

CITY OF BAKERSFIELD MUNICIPAL CODE

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Chapter 9.22
NOISE

Sections:

I. General Provisions

9.22.010 Purpose.
9.22.020 Definitions.
9.22.030 Noise generally.
9.22.040 Exemptions.
9.22.050 Noise during construction.
9.22.060 Assessment of service fee.
9.22.070 Other remedies.

II. Amplified sound

9.22.080 Purpose.
9.22.090 Registration and permit required.
9.22.100 Registration statement amendment.
9.22.110 Issuance and display of permit.
9.22.120 Regulations for use.
9.22.130 Amplification from aircraft prohibited.
9.22.140 Amplified sound from vehicles.
9.22.150 Revocation.
9.22.160 Appeal.

I. General Provisions

9.22.010 Purpose.

A. The city council declares and finds that excessive, unnecessary and annoying noise levels are detrimental to the public health, welfare and safety and contrary to the public interest as follows:

1. By interfering with the comfortable enjoyment of life, the full use and enjoyment of property, and with the conduct and operation of business and industry;

2. By contributing to hearing impairment and a wide range of adverse physiological and psychological stress conditions; and

3. By adversely affecting the value of real property.

B. It is the intent of this chapter to protect persons from excessive levels of noise and the following regulations are enacted for this purpose. (Ord. 3924 § 3, 1999)

9.22.020 Definitions.

The following words, phrases and terms as used in this chapter shall have the following meanings specified in this section:

"Amplified sound" means sound created by the use of sound-amplifying equipment.

"Central traffic district' means that portion of the city defined as such by Chapter 10.08 or any other ordinance hereafter adopted by the city.

"Construction" means any site preparation, assembly, erection, substantial repair, alteration, demolition or similar action, for or of private or public rights-of-way, structures, utilities or similar property and includes the transportation or delivery of any materials, tools, equipment or personnel to or from the site of any construction project for the loading or unloading or use of such materials, tools, equipment or personnel.

"Emergency work" means work made necessary to restore property to a safe condition following a public calamity, work required to protect persons or property from exposure to danger, or work by private or public utilities when restoring utility services.

"Person" means any individual, partnership, corporation, organization, or association of any nature whatsoever.

"Public place" means any area open to the public within the jurisdiction and control of the city of Bakersfield.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk, alley, easement or the like dedicated to and accepted by the city of Bakersfield.

"Sound equipment" means and includes any loudspeaker, public address system, sound amplifier, radio or phonograph equipped with a loudspeaker or sound amplifier, or any machine or device for the amplification or reproduction of the human voice, music or any other sound, when operated or maintained in such a manner as to cause any such sound to be audible to a person of average hearing faculties or capacity in, on or over any public right-of-way, public building, park or other public place or any private premises or vehicle other than that in or upon which any such machine or device is being operated or maintained. It does not include the operation of any public address system, loudspeaker or other machine or device for the necessary amplification or reproduction of sound in connection with any program, entertainment, contest, public celebration, performance, show, exhibit or similar event, with a volume no louder than necessary for the convenient hearing of those within the building, enclosure or space in which such program, entertainment, contest, public celebration, performance, show, exhibition or similar event is staged or conducted; the operation of any radio receiving set, musical instrument,

phonograph or other machine or device for the producing or reproducing of sound with a volume no louder than necessary for the convenient hearing of the person or persons who are within the room, building, vehicle, chamber, space or location in which such machine or device is operated and are voluntary listeners thereto; or warning device on authorized emergency vehicles or horns or other authorized emergency vehicles or horns or other authorized warning devices on any vehicle used for traffic safety purposes.

"Sound truck" means any vehicle having mounted thereon, or attached thereto, any sound equipment defined in the definition of "sound equipment" of this section. (Ord. 3924 § 3, 1999)

9.22.030 Noise generally.

A. It is unlawful for any person to willfully make or continue, or allow to be made or continued, any loud, unnecessary noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to persons residing within one thousand feet of the noise source.

B. The standards which may be considered in determining whether a violation of the provisions of this section exists may include, but are not limited to the following:

1. The level of the noise;
2. The level and intensity of any background noise;
3. The proximity of the noise to residential sleeping facilities;
4. The nature and zoning of the area within which the noise occurs;
5. The density of habitation of the area within which the noise occurs;
6. The time of the day or night the noise occurs;
7. The duration of the noise;
8. Whether the noise is recurrent, intermittent or constant.

C. Refrigerator trucks shall be permitted to operate in any commercial or manufacturing zone at all hours; provided, however, that such use does not emit noise or vibration detrimentally impacting neighboring residential properties and the occupants thereof between ten p.m. and seven a.m. (Ord. 3924 § 3, 1999)

9.22.040 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

A. The emission of sound for the purpose of alerting persons to the existence of an emergency or the emission of sound in the performance of emergency works for as long a period of time as is necessary to constitute adequate alerting of persons to the existence of the emergency or the emergency work;

B. Warning devices for the protection of the public safety, as for example, police, fire, ambulance, commercial, residential and vehicle alarm devices, and train horns;

C. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions. (Ord. 3924 § 3, 1999)

9.22.050 Noise during construction.

A. Except as provided herein or in subsection B, C or D of this section, it is unlawful for any person, firm or corporation to erect, demolish, alter or repair any building, or to grade or excavate land, streets or highways, other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends; provided, however, that city crews and those of the city's contractors performing street work between nine p.m. and six a.m. are exempt herefrom if the city engineer has directed that work be performed between such hours to alleviate potential traffic congestion.

B. Notwithstanding any other provisions of this chapter, if the city manager determines that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavating and grading of land, streets or highways between the hours of nine p.m. and six a.m., and if he or she further determines that loss or inconvenience would result to any party in interest by virtue of the requirements provided in subsection A of this section, he or she may grant a permit for such work to be done between the hours of nine p.m. and six a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. Such permit may be granted for a period not to exceed three days, and may be extended by the city manager for a period not to exceed three days.

C. The provisions of this section shall not apply to any work of construction performed one thousand feet or more from the nearest residential dwelling.

D. The provisions of this section shall not apply to performance of emergency work as defined in this chapter. (Ord. 3924 § 3, 1999)

9.22.060 Assessment of service fee.

In addition to the penalty provided for in Chapter 1.40 of this code, a property owner shall be assessed a service fee pursuant to Chapter 3.70 if Bakersfield enforcement personnel respond more than one time in a thirty-day period for violation(s) of this chapter. (Ord. 3924 § 3, 1999)

9.22.070 Other remedies.

No provision of this chapter shall be construed to impair any common law or statutory cause of action, or legal remedy therefrom, of any person for injury or damages arising from any violation of this chapter. (Ord. 3924 § 3, 1999)

II. Amplified sound

9.22.080 Purpose.

The city council enacts this article for the sole purpose of securing and promoting the public health, comfort, safety and welfare of its citizenry. While recognizing that the use of sound-amplifying equipment is protected by the constitutional rights of freedom of speech and assembly, the council nevertheless feels obligated to reasonably regulate the use of sound-amplifying equipment in order to protect the constitutional rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary amplified sound. (Ord. 3924 § 3, 1999)

9.22.090 Registration and permit required.

No person, other than personnel of law enforcement or governmental agencies, shall operate, maintain, or cause, allow or permit to be operated or maintained any sound equipment in the city before filing a registration statement in writing with the city finance director or his or her designee and procuring a valid permit. The registration statement shall be made on forms to be furnished by the city, shall be submitted no less than two working days prior to the event, shall be filed in duplicate and shall contain the following information:

A. Name, address and telephone number of:

1. The registrant,
2. The owner of the sound equipment,
3. The person in direct charge of the sound equipment, and
4. All persons who will use or operate the sound equipment;

B. A general description of the sound equipment which is to be used;

C. The location where such sound equipment is to be used; if on a sound truck, the name and address of the registered owner and the license number of same, and a general statement of the area or areas of the city in which such sound truck is to be operated;

D. A general statement of the purpose for which such sound equipment is to be used;

E. The proposed hours of operation of such sound equipment;

F. The dates of proposed operation of such sound equipment;

G. The maximum sound producing power of the sound equipment to be used. State the following:

1. The wattage to be used,

2. The volume in decibels of the sound which will be produced,

3. The approximate maximum distance sound will be transmitted from the sound equipment;

H. The applicant shall pay a fee not to exceed the cost of processing any such application as set forth in Chapter 3.70. (Ord. 3924 § 3, 1999)

9.22.100 Registration statement amendment.

All persons operating or maintaining, or causing, allowing or permitting to be operated or maintained any sound equipment shall amend any registration statement filed pursuant to this section within two working days after any change in the information therein furnished. (Ord. 3924 § 3, 1999)

9.22.110 Issuance and display of permit.

A. If the information on the registration statement demonstrates that the proposed operation will be consistent with the regulations in this chapter, the city finance director or his or her designee shall return to each registrant, one copy of such registration statement duly certified as a correct copy of such permit.

B. Such permit shall be in the possession of any person operating the sound equipment at all times, and such permit shall be displayed promptly to any enforcement personnel upon request. (Ord. 3924 § 3, 1999)

9.22.120 Regulations for use.

The operation or maintenance of sound equipment shall be subject to the following regulations:

A. Only music and human speech are permitted.

B. Operations are permitted only between the hours of nine a.m. and six p.m., of each day; except, that sound equipment operating from a fixed location on private premises included in a commercial or industrial zone by the provisions of Title 17 may be operated between the hours of nine a.m. and ten p.m. of any day. The hours of operation and location for use, including within the central traffic district, may be modified by special permit issued by the city manager as otherwise permitted by provisions of this municipal code.

C. Sound equipment shall not be operated within one hundred yards of:

1. Any hospital;

2. Any school, except after school hours and on days when school is not in session and when such school is not being used for the purpose of a public meeting;

3. Any church, except when the same is not being used for religious services or classes;

4. The City Hall or Kern County courthouses, except after five p.m. on weekdays or on weekends or legal holidays;

5. Any mortuary or cemetery, when services are in progress.

D. No sound truck or sound equipment shall be operated or maintained within the central traffic district where the volume of sound is audible for a distance in excess of fifty feet from the sound truck or the exterior boundaries of the premises upon which such sound equipment is located, except that the city council may issue a permit for the installation and operation of a stationary sound equipment affixed to a building for the reproduction or amplification of music or bell tones to be reproduced at regular stated intervals and for a stated period each time, during the day between nine a.m. and ten p.m., upon compliance with all other provisions of this chapter and amendments thereto; and, provided further, that the volume of sound shall be controlled so that it will not be audible for a distance of more than six hundred feet from the point of location of such sound equipment; and, provided further, that such permit may be revoked at any time by the city council, upon satisfactory evidence that such use of such equipment is a nuisance to the surrounding neighborhood, and disturbs and interferes with the reasonable and comfortable enjoyment of life or property of persons residing or working in the neighborhood of such equipment.

E. Except as otherwise stated in this section or by special permit referred to in subsection B of this section, the volume of sound shall be controlled so that it will not be audible for a distance in excess of one hundred fifty feet from the exterior boundaries of the premises upon which such sound equipment is located, and so that such volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance.

F. When any loudspeaker, public address system, sound amplifier, radio or phonograph equipped with loudspeaker, jukebox or any other machine or device for the amplification or reproduction of the human voice, music or any other sound is so arranged, operated or equipped that it can be heard both inside and outside of the building or premises where the same is maintained, and such machine or device is operated at times other than those in which the operation of sound equipment is permitted under the provisions of this chapter, then such machine or device shall be equipped with a control switch located inside such building or premises, in such a manner that all speakers located outside such building or premises can be turned off at times when the operation of sound equipment is prohibited by this chapter. (Ord. 3924 § 3, 1999)

9.22.130 Amplification from aircraft prohibited.

No person shall operate, or cause, allow or permit to be operated any aircraft for any purpose in or over the city from which any sound equipment is being operated with volume sufficiently loud to be audible to a person of average hearing faculties or capacity in or on any private premises in such city. (Ord. 3924 § 3, 1999)

9.22.140 Amplified sound from vehicles.

Except as otherwise allowed under this chapter, no person shall use or operate or permit to be used or operated a radio, tape player, tape recorder, compact disc player, or any similar device in or attached to a vehicle whether moving, stopped or parked, occupied or unoccupied, which is audible to a person of normal hearing sensitivity more than fifty feet from such vehicle or, as to any vehicle not located on a public street, so audible more than fifty feet from the property line of the property on which such vehicle is located. This section shall not apply to acts proscribed by Vehicle Code Section 27007 after the effective date of such section, to any sound system being operated to request assistance or to warn of a hazardous situation, to any authorized emergency vehicle or vehicles operated by gas, electric, communications or water utilities. (Ord. 3924 § 3, 1999)

9.22.150 Revocation.

Any permit issued pursuant to this chapter may be immediately revoked by the city finance director or his or her designee whenever he or she finds:

A. That false or misleading statement(s) were made on the application; or

B. That the applicant has done any act related to the application involving dishonesty, fraud or deceit with the intent to substantially benefit himself or another, or substantially injure another; or

C. That the permit holder has violated any provision of this chapter or any other applicable law; or

D. That any of the terms or conditions of such permit have been violated. (Ord. 3924 § 3, 1999)

9.22.160 Appeal.

A. 1. The decision of the city finance director on any registration statement filed under this chapter may be appealed to the city manager or his or her designee.

2. The applicant must file the appeal with the office of the city manager within five days of the mailing or delivery of such decision.

3. The city manager or his or her designee shall hold a hearing within three days of the filing of such appeal at the office of the city manager, at which hearing the applicant may present any evidence, testimony and information relevant to the registration statement.

4. The city manager or his or her designee may, within twenty-four hours after the conclusion thereof, issue a decision either affirming the denial of the application or directing the city finance director to issue a permit as applied for or upon such conditions as are reasonable under all the circumstances, in accordance with this chapter. The city manager or his or her designee shall specify the grounds for denial or the imposition of conditions.

B. 1. Should any applicant be dissatisfied with the decision of the city manager not to grant a permit or for the revocation of a permit, then such applicant may, no later than ten days after notice of such hearing is deposited in the United States mail, addressed to the applicant or permittee at the address provided on the application, make written objection to the city council setting forth the grounds for dissatisfaction, whereupon the council shall hear such objections at a regular meeting no later than three weeks following the filing of the objection with the city clerk. The applicant shall be given written notice no less than three days prior to such hearing. The council may, upon such hearing, sustain, suspend or overrule the decision of the city manager, which decision shall be final and conclusive.

2. Pending the hearing before the council, the decision of the city manager shall remain in full force and effect and any reversal thereof by the city council shall not be retroactive but shall take effect as of the date of the council's decision. (Ord. 3924 § 3, 1999)

The Bakersfield Municipal Code is current through Ordinance 5060, passed August 4, 2021.

Disclaimer: The city clerk has the official version of the Bakersfield Municipal Code. Users should contact the city clerk for ordinances passed subsequent to the ordinance cited above.

Note: This site does not support Internet Explorer. To view this site, Code Publishing Company recommends using one of the following browsers: Google Chrome, Firefox, or Safari.

City Website: www.bakersfieldcity.us
City Telephone: (661) 326-3000
Code Publishing Company

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 13923 Study Area Photos

L1-E
35, 17' 15.640000"119, 1' 43.410000"

L1-N
35, 17' 15.640000"119, 1' 43.550000"

L1-S
35, 17' 15.630000"119, 1' 43.460000"

L1-W
35, 17' 15.650000"119, 1' 43.440000"

L2-E
35, 17' 35.070000"119, 1' 30.750000"

L2-N
35, 17' 35.360000"119, 1' 30.610000"

JN: 13923 Study Area Photos

L2-S
35, 17' 35.180000"119, 1' 30.690000"

L2-W
35, 17' 34.990000"119, 1' 30.800000"

L3-E
35, 17' 17.430000"119, 1' 14.650000"

L3-N
35, 17' 17.380000"119, 1' 14.790000"

L3-S
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L3-W
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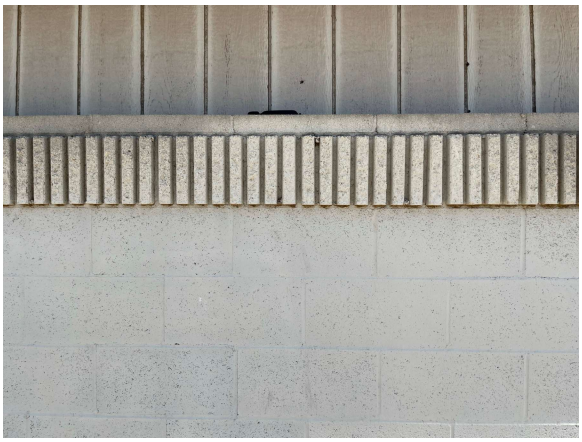
JN: 13923 Study Area Photos



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L4-S
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L4-W
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L5-E
35, 17' 5.370000"119, 1' 14.680000"

L5-N
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JN: 13923 Study Area Photos

L5-S
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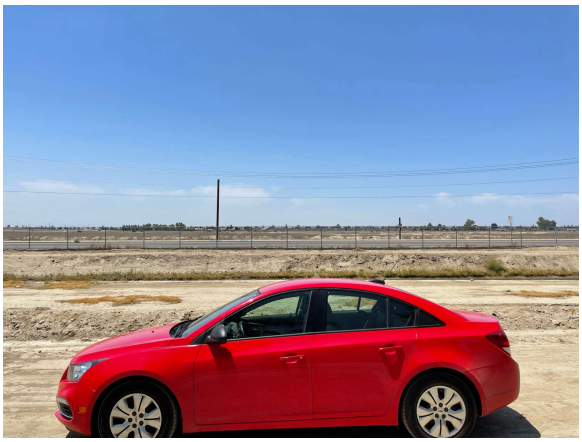

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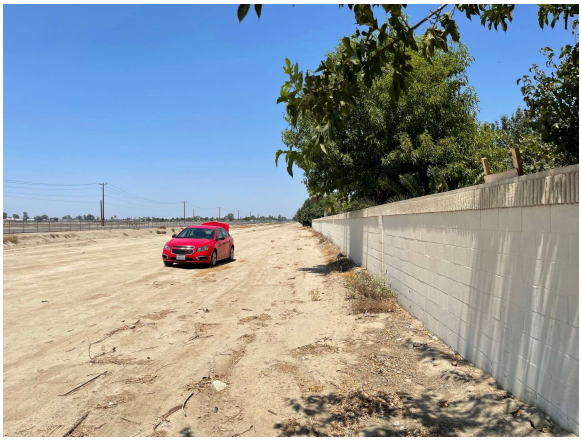

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L6-W
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JN: 13923 Study Area Photos

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L7-N
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L7-S
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L7-W
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JN: 13923 Study Area Photos

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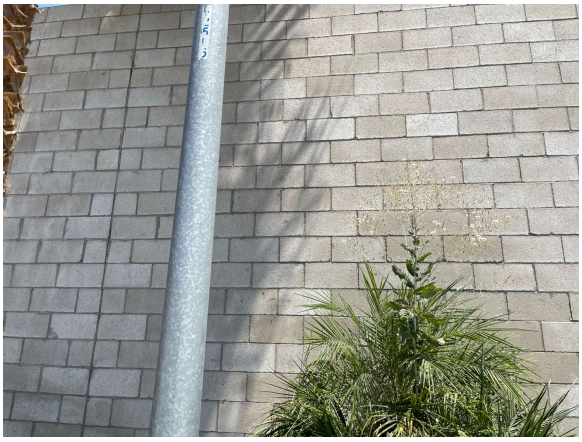

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L9-S
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L9-W
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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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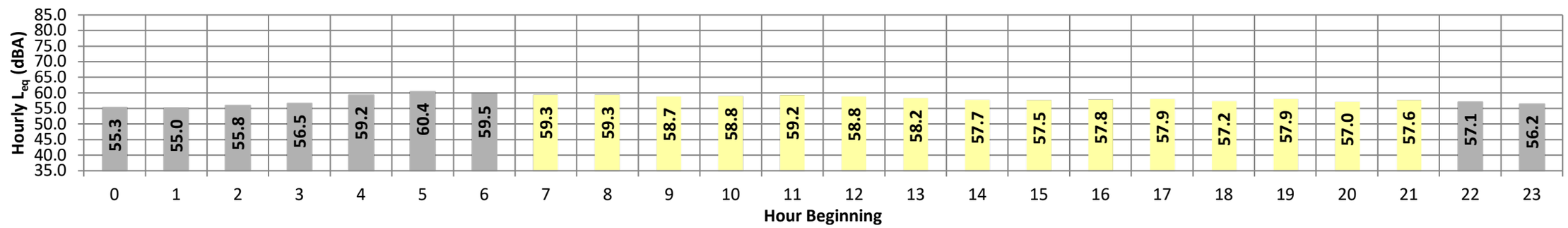
24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L1 - Located west of the Project site near single-family residence at 2402 Basque Hills Drive.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	55.3	60.7	50.6	60.5	60.3	59.6	58.8	56.1	54.2	51.6	51.1	50.7	55.3	10.0	65.3
	1	55.0	60.4	49.3	60.2	59.9	59.1	58.5	56.2	53.9	50.3	49.8	49.4	55.0	10.0	65.0
	2	55.8	61.0	51.0	60.7	60.4	59.6	59.0	56.8	54.8	52.1	51.6	51.1	55.8	10.0	65.8
	3	56.5	61.5	50.7	61.3	61.0	60.2	59.7	57.7	55.6	52.1	51.3	50.8	56.5	10.0	66.5
	4	59.2	63.5	54.8	63.3	63.0	62.2	61.7	60.1	58.7	56.0	55.4	54.9	59.2	10.0	69.2
	5	60.4	64.1	56.9	63.9	63.7	63.0	62.5	61.2	60.0	57.9	57.4	57.0	60.4	10.0	70.4
	6	59.5	64.1	55.4	63.9	63.7	62.9	62.3	60.3	59.0	56.5	55.9	55.5	59.5	10.0	69.5
Day	7	59.3	63.9	55.1	63.6	63.3	62.7	62.2	60.1	58.6	56.1	55.7	55.2	59.3	0.0	59.3
	8	59.3	63.4	55.1	63.2	63.0	62.5	62.0	60.2	58.7	56.2	55.7	55.2	59.3	0.0	59.3
	9	58.7	62.7	54.4	62.5	62.3	61.8	61.3	59.7	58.2	55.5	55.0	54.5	58.7	0.0	58.7
	10	58.8	64.2	54.3	64.0	63.6	62.7	61.8	59.5	57.9	55.4	54.9	54.5	58.8	0.0	58.8
	11	59.2	65.8	55.5	65.4	65.1	64.1	63.6	61.3	59.7	56.7	56.2	55.6	59.2	0.0	59.2
	12	58.8	62.7	55.0	62.5	62.3	61.6	61.2	59.6	58.3	56.0	55.6	55.2	58.8	0.0	58.8
	13	58.2	62.6	54.5	62.4	62.0	61.3	60.7	59.1	57.6	55.4	55.0	54.6	58.2	0.0	58.2
	14	57.7	62.4	54.0	62.1	61.8	60.9	60.3	58.4	57.0	54.9	54.5	54.1	57.7	0.0	57.7
	15	57.5	62.1	53.9	61.8	61.5	60.7	60.1	58.3	56.9	54.9	54.5	54.0	57.5	0.0	57.5
	16	57.8	62.5	53.8	62.2	61.9	61.0	60.4	58.6	57.0	54.8	54.3	53.9	57.8	0.0	57.8
	17	57.9	62.9	54.0	62.6	62.3	61.3	60.6	58.7	57.2	55.0	54.5	54.1	57.9	0.0	57.9
	18	57.2	61.6	53.0	61.3	61.1	60.3	59.9	58.2	56.5	54.1	53.6	53.1	57.2	0.0	57.2
	19	57.9	64.1	53.4	63.8	63.4	62.0	60.9	58.4	56.8	54.4	53.9	53.5	57.9	5.0	62.9
	20	57.0	61.9	52.7	61.6	61.4	60.7	60.1	57.9	56.2	53.6	53.2	52.8	57.0	5.0	62.0
	21	57.6	64.0	53.4	63.7	63.2	61.5	60.3	58.1	56.5	54.3	53.9	53.5	57.6	5.0	62.6
Night	22	57.1	61.7	53.6	61.4	61.0	60.1	59.6	58.0	56.5	54.4	54.0	53.7	57.1	10.0	67.1
	23	56.2	61.0	52.0	60.8	60.6	59.8	59.2	57.2	55.4	53.0	52.5	52.1	56.2	10.0	66.2

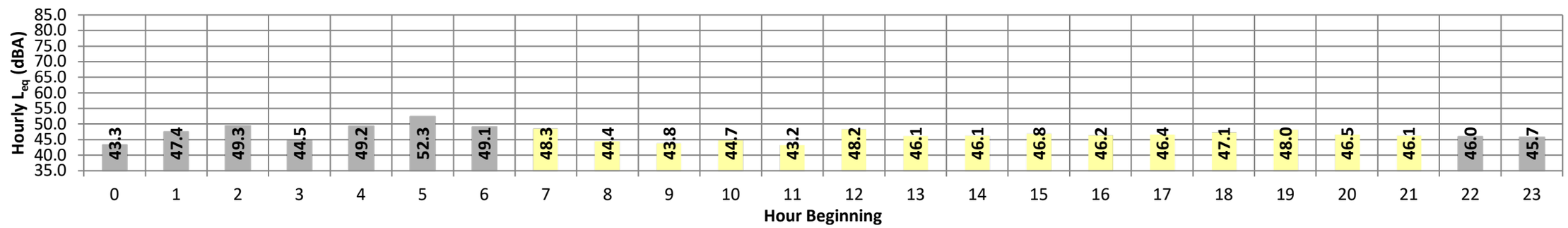
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	57.0	61.6	52.7	61.3	61.1	60.3	59.9	57.9	56.2	53.6	53.2	52.8
	Max	59.3	65.8	55.5	65.4	65.1	64.1	63.6	61.3	59.7	56.7	56.2	55.6
Energy Average		58.3	Average:		62.8	62.5	61.7	61.0	59.1	57.5	55.2	54.7	54.3
Night	Min	55.0	60.4	49.3	60.2	59.9	59.1	58.5	56.1	53.9	50.3	49.8	49.4
	Max	60.4	64.1	56.9	63.9	63.7	63.0	62.5	61.2	60.0	57.9	57.4	57.0
Energy Average		57.7	Average:		61.8	61.5	60.7	60.1	58.2	56.4	53.7	53.2	52.8

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
58.0	58.3	57.7

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L2 - Located north of the Project site near single-family residence at 6801 Gretchen Court.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	43.3	48.0	41.6	47.3	46.6	45.2	44.6	43.5	42.9	42.1	41.9	41.7	43.3	10.0	53.3
	1	47.4	51.3	43.8	51.1	50.8	50.3	49.8	48.2	46.9	44.6	44.2	43.9	47.4	10.0	57.4
	2	49.3	54.1	44.8	53.8	53.5	52.7	52.2	50.3	48.6	45.8	45.4	44.9	49.3	10.0	59.3
	3	44.5	48.6	42.3	48.2	47.9	47.2	46.6	44.8	43.9	42.8	42.6	42.4	44.5	10.0	54.5
	4	49.2	54.1	45.9	53.8	53.4	52.5	51.8	49.9	48.5	46.6	46.3	46.0	49.2	10.0	59.2
	5	52.3	55.1	49.9	54.8	54.7	54.3	54.0	52.9	52.1	50.7	50.3	50.0	52.3	10.0	62.3
	6	49.1	51.8	47.3	51.6	51.3	50.8	50.5	49.6	48.8	47.8	47.6	47.4	49.1	10.0	59.1
Day	7	48.3	57.8	46.1	57.6	57.2	56.3	55.6	52.3	48.2	46.9	46.4	46.2	48.3	0.0	48.3
	8	44.4	54.2	42.1	54.1	53.8	53.2	52.7	47.6	44.6	42.7	42.5	42.3	44.4	0.0	44.4
	9	43.8	50.1	41.4	49.6	49.1	47.9	47.2	45.5	44.2	42.3	41.7	41.5	43.8	0.0	43.8
	10	44.7	62.4	46.6	61.8	61.2	60.2	59.6	56.6	53.3	48.8	47.6	46.8	44.7	0.0	44.7
	11	43.2	47.7	41.3	47.3	46.8	45.7	45.1	43.6	42.7	41.8	41.6	41.4	43.2	0.0	43.2
	12	48.2	54.6	45.1	53.8	53.1	51.6	50.9	48.5	47.3	45.9	45.6	45.2	48.2	0.0	48.2
	13	46.1	59.5	44.3	58.9	58.3	55.8	53.3	47.3	46.0	44.8	44.6	44.4	46.1	0.0	46.1
	14	46.1	52.0	43.4	51.6	51.2	49.7	48.8	46.5	44.8	43.9	43.7	43.5	46.1	0.0	46.1
	15	46.8	53.0	43.3	52.5	51.9	50.7	50.0	47.6	45.2	43.8	43.6	43.4	46.8	0.0	46.8
	16	46.2	52.4	43.5	52.1	51.7	50.1	48.8	46.3	45.0	43.9	43.8	43.6	46.2	0.0	46.2
	17	46.4	51.0	44.4	50.8	50.3	49.2	48.5	46.7	45.8	44.9	44.7	44.5	46.4	0.0	46.4
	18	47.1	51.8	44.4	51.4	50.8	49.7	49.3	47.7	46.5	45.0	44.8	44.5	47.1	0.0	47.1
	19	48.0	53.0	45.2	52.6	52.3	51.4	50.7	48.6	47.1	45.7	45.5	45.3	48.0	5.0	53.0
	20	46.5	50.1	44.5	49.7	49.3	48.5	48.1	47.0	46.1	45.1	44.9	44.7	46.5	5.0	51.5
	21	46.1	50.5	44.3	50.0	49.5	48.5	48.0	46.4	45.6	44.8	44.6	44.4	46.1	5.0	51.1
Night	22	46.0	50.3	43.9	49.9	49.6	48.8	48.3	46.3	45.4	44.4	44.2	44.0	46.0	10.0	56.0
	23	45.7	51.2	42.6	50.7	50.3	49.3	48.4	46.2	44.8	43.2	43.0	42.7	45.7	10.0	55.7

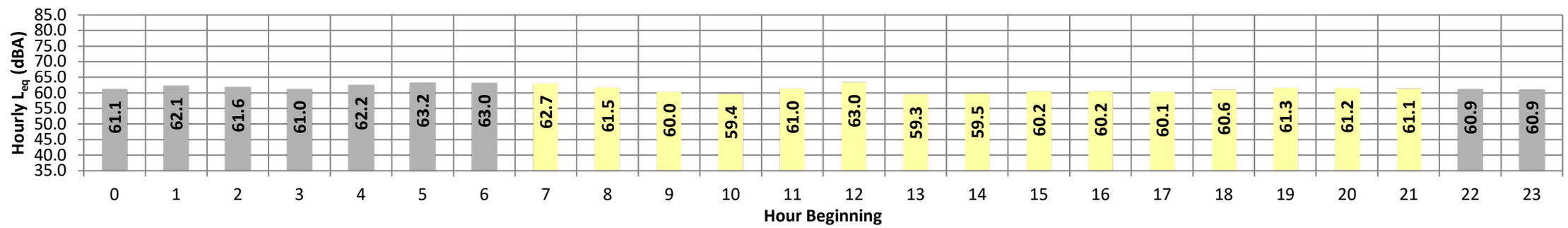
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.2	47.7	41.3	47.3	46.8	45.7	45.1	43.6	42.7	41.8	41.6	41.4
	Max	48.3	62.4	46.6	61.8	61.2	60.2	59.6	56.6	53.3	48.8	47.6	46.8
Energy Average		46.4	Average:		52.9	52.4	51.3	50.4	47.9	46.2	44.7	44.4	44.1
Night	Min	43.3	48.0	41.6	47.3	46.6	45.2	44.6	43.5	42.9	42.1	41.9	41.7
	Max	52.3	55.1	49.9	54.8	54.7	54.3	54.0	52.9	52.1	50.7	50.3	50.0
Energy Average		48.3	Average:		51.3	50.9	50.1	49.6	48.0	46.9	45.3	45.1	44.8

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
47.2	46.4	48.3

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L3 - Located east of the Project site near single-family residence at 1609 Berkshire Road.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	61.1	66.0	60.1	65.5	64.8	63.1	62.2	61.1	60.6	60.3	60.2	60.1	61.1	10.0	71.1
	1	62.1	67.1	60.7	67.0	66.6	65.4	64.2	61.9	61.3	60.9	60.9	60.8	62.1	10.0	72.1
	2	61.6	63.1	60.9	62.9	62.8	62.6	62.4	61.8	61.4	61.1	61.0	60.9	61.6	10.0	71.6
	3	61.0	62.0	60.4	61.9	61.8	61.7	61.5	61.1	60.9	60.6	60.5	60.4	61.0	10.0	71.0
	4	62.2	64.2	61.4	64.1	63.9	63.6	63.3	62.4	62.0	61.6	61.5	61.4	62.2	10.0	72.2
	5	63.2	64.9	62.3	64.8	64.7	64.4	64.1	63.4	62.9	62.5	62.4	62.4	63.2	10.0	73.2
	6	63.0	69.0	61.8	68.4	67.6	65.7	64.5	62.8	62.4	62.0	62.0	61.9	63.0	10.0	73.0
Day	7	62.7	69.1	60.8	69.0	68.5	66.8	65.8	62.3	61.5	61.0	60.9	60.8	62.7	0.0	62.7
	8	61.5	65.5	60.3	65.3	64.9	63.7	63.1	61.5	61.1	60.5	60.4	60.3	61.5	0.0	61.5
	9	60.0	63.7	58.7	63.4	63.2	62.3	61.8	60.1	59.6	59.0	58.9	58.8	60.0	0.0	60.0
	10	59.4	61.7	58.3	61.5	61.3	60.8	60.5	59.7	59.2	58.6	58.5	58.3	59.4	0.0	59.4
	11	61.0	67.7	58.4	67.0	66.4	65.0	63.6	61.1	60.0	58.8	58.7	58.5	61.0	0.0	61.0
	12	63.0	68.1	58.4	67.8	67.3	66.4	65.7	64.0	62.5	59.4	58.9	58.5	63.0	0.0	63.0
	13	59.3	62.6	58.0	62.3	62.1	61.2	60.7	59.5	58.9	58.3	58.2	58.0	59.3	0.0	59.3
	14	59.5	63.1	57.9	62.8	62.4	61.7	61.1	59.8	59.1	58.2	58.1	57.9	59.5	0.0	59.5
	15	60.2	65.5	58.1	65.0	64.5	63.2	62.3	60.4	59.4	58.5	58.4	58.2	60.2	0.0	60.2
	16	60.2	66.1	58.1	65.8	65.3	64.2	63.3	59.9	59.2	58.5	58.3	58.2	60.2	0.0	60.2
	17	60.1	64.2	58.5	63.9	63.6	62.7	61.9	60.2	59.5	58.8	58.7	58.6	60.1	0.0	60.1
	18	60.6	65.4	58.8	65.1	64.8	63.8	63.1	60.7	59.8	59.1	59.0	58.9	60.6	0.0	60.6
	19	61.3	67.3	59.3	66.8	66.2	65.1	64.0	61.1	60.3	59.6	59.5	59.3	61.3	5.0	66.3
	20	61.2	68.0	59.4	67.3	66.5	64.3	62.9	61.1	60.4	59.7	59.6	59.5	61.2	5.0	66.2
	21	61.1	64.9	59.8	64.5	64.2	63.2	62.6	61.3	60.7	60.1	60.0	59.9	61.1	5.0	66.1
Night	22	60.9	64.0	59.8	63.7	63.4	62.7	62.3	61.1	60.6	60.1	60.0	59.9	60.9	10.0	70.9
	23	60.9	63.5	59.9	63.3	63.1	62.6	62.1	61.1	60.6	60.2	60.1	60.0	60.9	10.0	70.9

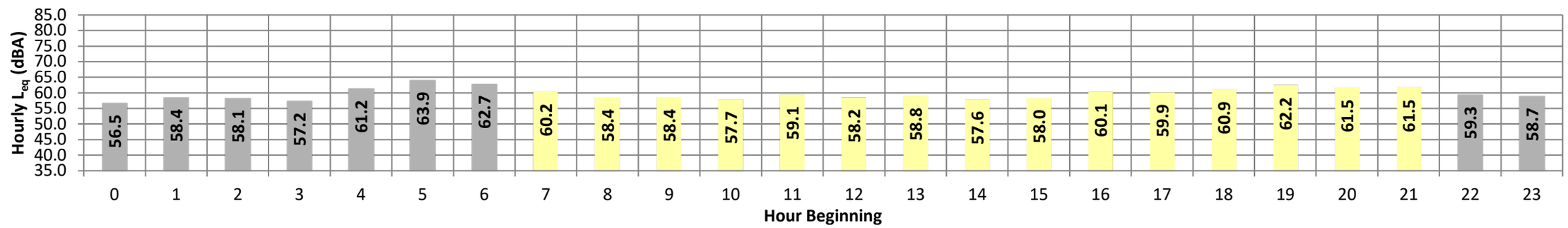
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.3	61.7	57.9	61.5	61.3	60.8	60.5	59.5	58.9	58.2	58.1	57.9
	Max	63.0	69.1	60.8	69.0	68.5	66.8	65.8	64.0	62.5	61.0	60.9	60.8
Energy Average		60.9	Average:		65.2	64.8	63.6	62.8	60.9	60.1	59.2	59.1	58.9
Night	Min	60.9	62.0	59.8	61.9	61.8	61.7	61.5	61.1	60.6	60.1	60.0	59.9
	Max	63.2	69.0	62.3	68.4	67.6	65.7	64.5	63.4	62.9	62.5	62.4	62.4
Energy Average		61.9	Average:		64.6	64.3	63.5	63.0	61.8	61.4	61.0	61.0	60.9

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
61.3	60.9	61.9

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L4 - Located east of the Project site near single-family residence at 7417 Cross Glade Street.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	56.5	65.9	52.6	65.3	64.5	63.3	62.4	57.3	54.9	53.3	53.0	52.7	56.5	10.0	66.5
	1	58.4	66.8	53.5	66.4	65.8	64.4	63.5	59.0	56.9	54.3	53.9	53.6	58.4	10.0	68.4
	2	58.1	64.8	54.0	64.3	63.6	62.5	61.6	58.7	56.6	54.8	54.5	54.1	58.1	10.0	68.1
	3	57.2	61.5	53.8	61.3	61.0	60.3	59.9	57.9	56.5	54.6	54.3	54.0	57.2	10.0	67.2
	4	61.2	67.8	57.6	67.6	67.4	66.5	65.7	62.2	60.2	58.3	58.0	57.7	61.2	10.0	71.2
	5	63.9	67.2	61.4	67.1	66.9	66.4	65.9	64.4	63.4	62.0	61.8	61.5	63.9	10.0	73.9
	6	62.7	67.2	60.0	67.0	66.7	66.0	65.4	63.1	61.9	60.6	60.4	60.1	62.7	10.0	72.7
Day	7	60.2	68.0	52.9	67.8	67.4	66.5	65.6	60.3	56.8	53.7	53.3	53.0	60.2	0.0	60.2
	8	58.4	65.2	51.0	65.0	64.6	63.7	62.9	59.2	56.4	52.0	51.5	51.1	58.4	0.0	58.4
	9	58.4	65.6	51.6	65.2	64.8	63.5	62.4	59.0	56.6	52.6	52.1	51.7	58.4	0.0	58.4
	10	57.7	63.9	51.5	63.7	63.5	62.6	61.8	58.5	55.8	52.4	52.0	51.7	57.7	0.0	57.7
	11	59.1	69.5	51.3	68.8	68.2	66.5	64.0	59.0	56.2	52.3	51.8	51.4	59.1	0.0	59.1
	12	58.2	66.5	52.9	66.0	65.4	64.2	63.1	59.2	56.9	53.9	53.4	53.0	58.2	0.0	58.2
	13	58.8	65.6	53.4	65.4	65.0	63.9	62.6	59.3	57.1	54.2	53.9	53.5	58.8	0.0	58.8
	14	57.6	64.4	52.1	64.0	63.6	62.5	61.6	58.2	56.1	53.0	52.5	52.2	57.6	0.0	57.6
	15	58.0	64.7	51.9	64.4	64.0	62.9	62.1	58.9	56.4	52.9	52.3	51.9	58.0	0.0	58.0
	16	60.1	68.7	52.2	68.5	68.1	66.7	65.8	59.6	56.6	53.2	52.7	52.3	60.1	0.0	60.1
	17	59.9	67.7	53.3	67.5	67.0	65.5	64.1	60.2	57.5	54.2	53.8	53.4	59.9	0.0	59.9
	18	60.9	68.6	54.4	68.3	67.8	66.5	65.7	60.8	58.7	55.4	54.9	54.5	60.9	0.0	60.9
	19	62.2	68.7	56.9	68.4	68.0	67.1	66.2	62.7	60.5	58.0	57.5	57.1	62.2	5.0	67.2
	20	61.5	67.0	56.7	66.6	66.3	65.5	64.8	62.4	60.3	57.7	57.3	56.8	61.5	5.0	66.5
	21	61.5	67.1	56.8	66.9	66.6	65.8	65.2	62.3	60.3	57.6	57.3	56.9	61.5	5.0	66.5
Night	22	59.3	65.4	55.1	65.1	64.7	63.8	62.9	59.9	57.8	55.9	55.6	55.2	59.3	10.0	69.3
	23	58.7	64.5	54.6	64.2	63.9	62.8	62.1	59.1	57.5	55.5	55.1	54.7	58.7	10.0	68.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	57.6	63.9	51.0	63.7	63.5	62.5	61.6	58.2	55.8	52.0	51.5	51.1
	Max	62.2	69.5	56.9	68.8	68.2	67.1	66.2	62.7	60.5	58.0	57.5	57.1
Energy Average		59.8	Average:		66.4	66.0	64.9	63.8	60.0	57.5	54.2	53.8	53.4
Night	Min	56.5	61.5	52.6	61.3	61.0	60.3	59.9	57.3	54.9	53.3	53.0	52.7
	Max	63.9	67.8	61.4	67.6	67.4	66.5	65.9	64.4	63.4	62.0	61.8	61.5
Energy Average		60.2	Average:		65.4	65.0	64.0	63.3	60.2	58.4	56.6	56.3	55.9

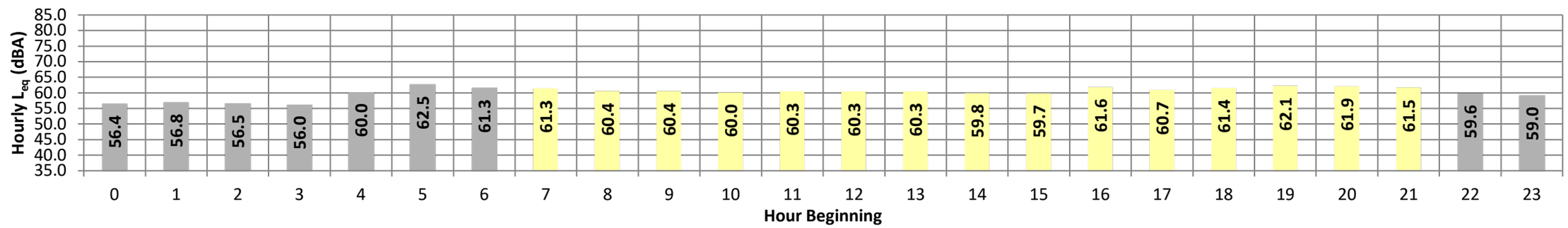
L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
59.9	59.8	60.2

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L5 - Located east of the Project site near single-family residence at 7719 Snowbird Street.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	56.4	69.0	52.4	68.5	67.8	64.8	62.7	56.4	54.4	52.9	52.7	52.5	56.4	10.0	66.4
	1	56.8	64.2	52.9	63.7	63.3	62.3	61.3	57.8	55.7	53.7	53.4	53.0	56.8	10.0	66.8
	2	56.5	61.6	53.0	61.4	61.1	60.5	59.7	57.0	55.4	53.7	53.4	53.1	56.5	10.0	66.5
	3	56.0	62.5	52.3	62.2	61.9	61.1	60.0	56.0	54.3	53.0	52.7	52.4	56.0	10.0	66.0
	4	60.0	67.2	54.5	67.0	66.8	65.9	64.8	60.1	57.3	55.2	54.9	54.6	60.0	10.0	70.0
	5	62.5	66.8	59.5	66.6	66.5	65.9	65.3	63.1	61.8	60.1	59.9	59.6	62.5	10.0	72.5
	6	61.3	68.1	57.4	67.8	67.4	66.0	64.7	61.6	59.8	58.0	57.7	57.5	61.3	10.0	71.3
Day	7	61.3	69.8	52.7	69.6	69.3	67.7	66.3	61.6	58.0	53.4	53.1	52.8	61.3	0.0	61.3
	8	60.4	68.2	51.8	67.8	67.5	65.9	64.7	61.4	57.9	52.7	52.2	51.9	60.4	0.0	60.4
	9	60.4	67.6	52.1	67.1	66.7	65.9	65.0	61.6	57.8	52.9	52.5	52.2	60.4	0.0	60.4
	10	60.0	66.9	52.2	66.5	66.0	65.0	64.1	61.2	58.0	53.3	52.8	52.3	60.0	0.0	60.0
	11	60.3	65.8	53.3	65.5	65.3	64.7	64.1	61.6	59.0	54.6	54.0	53.5	60.3	0.0	60.3
	12	60.3	67.8	52.9	67.2	66.7	65.1	63.9	61.5	58.7	54.1	53.5	53.0	60.3	0.0	60.3
	13	60.3	66.5	53.2	66.2	65.8	64.9	64.1	61.4	58.8	54.5	53.8	53.3	60.3	0.0	60.3
	14	59.8	67.8	52.1	67.0	66.2	64.8	63.7	60.8	58.0	53.2	52.7	52.2	59.8	0.0	59.8
	15	59.7	65.3	51.8	65.1	64.9	64.3	63.6	61.2	58.3	52.9	52.3	51.9	59.7	0.0	59.7
	16	61.6	71.9	52.3	71.3	70.3	68.0	65.9	61.5	58.4	53.3	52.9	52.4	61.6	0.0	61.6
	17	60.7	68.0	52.7	67.5	67.0	65.6	64.6	61.9	59.0	54.0	53.3	52.9	60.7	0.0	60.7
	18	61.4	67.1	54.1	66.9	66.7	65.9	65.1	62.5	60.2	55.7	55.0	54.3	61.4	0.0	61.4
	19	62.1	67.7	56.0	67.4	67.1	66.4	65.6	63.2	60.8	57.1	56.6	56.1	62.1	5.0	67.1
	20	61.9	67.4	55.8	67.1	66.9	66.3	65.6	62.9	60.8	56.7	56.2	55.9	61.9	5.0	66.9
	21	61.5	67.0	56.1	66.8	66.4	65.8	65.2	62.7	60.2	56.8	56.5	56.2	61.5	5.0	66.5
Night	22	59.6	66.1	55.0	65.8	65.5	64.4	63.5	60.4	57.6	55.6	55.4	55.1	59.6	10.0	69.6
	23	59.0	64.7	54.7	64.4	64.2	63.6	62.9	59.6	57.4	55.3	55.1	54.8	59.0	10.0	69.0

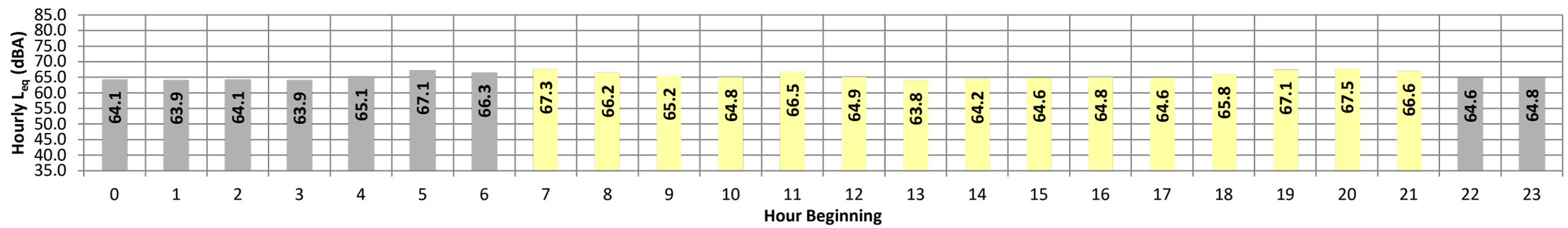
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.7	65.3	51.8	65.1	64.9	64.3	63.6	60.8	57.8	52.7	52.2	51.9
	Max	62.1	71.9	56.1	71.3	70.3	68.0	66.3	63.2	60.8	57.1	56.6	56.2
Energy Average		60.8	Average:		67.3	66.9	65.7	64.8	61.8	58.9	54.4	53.8	53.4
Night	Min	56.0	61.6	52.3	61.4	61.1	60.5	59.7	56.0	54.3	52.9	52.7	52.4
	Max	62.5	69.0	59.5	68.5	67.8	66.0	65.3	63.1	61.8	60.1	59.9	59.6
Energy Average		59.3	Average:		65.3	64.9	63.8	62.8	59.1	57.1	55.3	55.0	54.7

L_{eq} (dBA)		
24-Hour	***Daytime (7am-10pm)***	***Nighttime (10pm-7am)***
60.3	**60.8**	**59.3**

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L6 - Located east of the Project site near single-family residence at 8017 Snowbird Street.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	64.1	67.8	63.0	67.6	67.3	66.0	65.4	64.3	63.8	63.3	63.2	63.0	64.1	10.0	74.1
	1	63.9	66.4	62.9	66.2	66.1	65.7	65.2	64.1	63.6	63.1	63.1	62.9	63.9	10.0	73.9
	2	64.1	67.8	63.0	67.5	67.2	66.2	65.4	64.2	63.8	63.2	63.1	63.0	64.1	10.0	74.1
	3	63.9	66.0	63.0	65.9	65.7	65.4	65.0	64.1	63.7	63.2	63.1	63.0	63.9	10.0	73.9
	4	65.1	69.3	63.6	68.9	68.4	67.5	66.8	65.3	64.6	63.9	63.8	63.7	65.1	10.0	75.1
	5	67.1	70.7	65.7	70.4	70.0	69.0	68.6	67.4	66.7	66.0	65.9	65.7	67.1	10.0	77.1
	6	66.3	71.4	64.6	70.9	70.4	69.1	68.3	66.3	65.5	64.9	64.8	64.6	66.3	10.0	76.3
Day	7	67.3	75.0	63.2	74.4	73.8	71.9	70.8	67.5	66.1	63.6	63.4	63.3	67.3	0.0	67.3
	8	66.2	73.7	63.4	73.2	72.7	71.1	69.4	65.6	64.6	63.7	63.6	63.5	66.2	0.0	66.2
	9	65.2	70.5	63.2	70.0	69.6	68.4	67.3	65.4	64.5	63.5	63.4	63.2	65.2	0.0	65.2
	10	64.8	69.3	62.8	68.8	68.3	67.4	66.9	65.1	64.2	63.1	63.0	62.8	64.8	0.0	64.8
	11	66.5	77.3	62.3	76.7	75.7	72.4	69.3	64.9	63.7	62.7	62.6	62.4	66.5	0.0	66.5
	12	64.9	70.8	62.0	70.1	69.4	68.2	67.4	65.4	64.0	62.5	62.3	62.1	64.9	0.0	64.9
	13	63.8	68.7	61.7	68.3	67.9	66.9	66.0	64.0	63.1	62.1	61.9	61.7	63.8	0.0	63.8
	14	64.2	69.6	62.2	69.1	68.5	67.2	66.4	64.3	63.5	62.6	62.5	62.3	64.2	0.0	64.2
	15	64.6	71.0	62.1	70.4	69.7	68.3	67.3	64.6	63.6	62.5	62.3	62.1	64.6	0.0	64.6
	16	64.8	71.2	62.2	70.6	69.9	68.5	67.5	64.9	63.8	62.7	62.5	62.3	64.8	0.0	64.8
	17	64.6	70.2	62.3	69.5	68.9	67.6	66.8	64.8	64.0	62.8	62.6	62.4	64.6	0.0	64.6
	18	65.8	73.6	62.5	72.7	71.9	70.4	69.1	65.5	64.3	63.0	62.8	62.6	65.8	0.0	65.8
	19	67.1	75.7	63.1	74.7	73.9	72.0	70.6	67.2	65.2	63.6	63.3	63.2	67.1	5.0	72.1
	20	67.5	76.3	63.8	75.4	74.6	72.3	70.8	67.3	65.5	64.2	64.0	63.8	67.5	5.0	72.5
	21	66.6	73.6	63.5	73.0	72.4	70.9	69.8	66.6	65.2	63.9	63.8	63.6	66.6	5.0	71.6
Night	22	64.6	69.1	62.8	68.8	68.3	67.2	66.4	64.9	64.1	63.2	63.0	62.9	64.6	10.0	74.6
	23	64.8	67.6	63.5	67.4	67.2	66.6	66.2	65.0	64.4	63.8	63.7	63.6	64.8	10.0	74.8

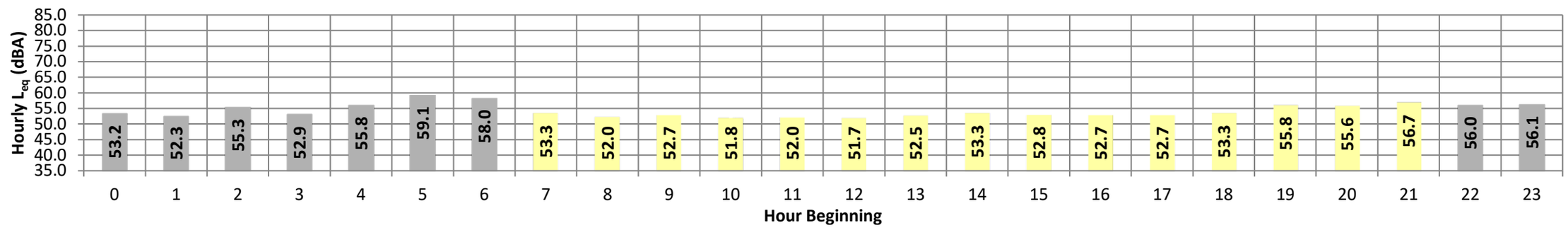
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	63.8	68.7	61.7	68.3	67.9	66.9	66.0	64.0	63.1	62.1	61.9	61.7
	Max	67.5	77.3	63.8	76.7	75.7	72.4	70.8	67.5	66.1	64.2	64.0	63.8
Energy Average		65.8	Average:		71.8	71.1	69.6	68.4	65.6	64.4	63.1	62.9	62.8
Night	Min	63.9	66.0	62.8	65.9	65.7	65.4	65.0	64.1	63.6	63.1	63.0	62.9
	Max	67.1	71.4	65.7	70.9	70.4	69.1	68.6	67.4	66.7	66.0	65.9	65.7
Energy Average		65.0	Average:		68.2	67.9	67.0	66.4	65.1	64.5	63.8	63.7	63.6

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
65.5	65.8	65.0

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L7 - Located south of the Project site near Guru Nanak Mission Sikh Center at 8601 South H Street.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	53.2	56.8	50.0	56.6	56.3	55.7	55.3	54.0	52.7	50.8	50.4	50.1	53.2	10.0	63.2
	1	52.3	55.5	48.7	55.3	55.1	54.7	54.5	53.2	51.9	49.7	49.3	48.8	52.3	10.0	62.3
	2	55.3	58.7	51.6	58.5	58.2	57.7	57.4	56.2	54.9	52.7	52.2	51.8	55.3	10.0	65.3
	3	52.9	55.9	50.2	55.7	55.5	54.9	54.6	53.7	52.6	50.9	50.6	50.3	52.9	10.0	62.9
	4	55.8	59.5	53.7	59.3	58.9	57.8	57.4	56.3	55.5	54.2	54.0	53.7	55.8	10.0	65.8
	5	59.1	61.4	57.0	61.2	61.1	60.6	60.4	59.8	59.0	57.7	57.4	57.1	59.1	10.0	69.1
	6	58.0	60.3	56.3	60.1	59.9	59.6	59.3	58.5	57.9	56.9	56.7	56.4	58.0	10.0	68.0
Day	7	53.3	56.5	50.7	56.2	56.1	55.6	55.2	53.9	53.0	51.4	51.1	50.8	53.3	0.0	53.3
	8	52.0	55.1	49.3	54.8	54.7	54.3	54.0	52.7	51.7	50.0	49.7	49.4	52.0	0.0	52.0
	9	52.7	56.1	49.9	55.8	55.5	55.0	54.6	53.4	52.4	50.7	50.4	50.0	52.7	0.0	52.7
	10	51.8	54.8	49.2	54.6	54.4	54.0	53.6	52.4	51.5	49.9	49.6	49.3	51.8	0.0	51.8
	11	52.0	54.6	49.9	54.3	54.1	53.7	53.4	52.6	51.8	50.5	50.3	50.0	52.0	0.0	52.0
	12	51.7	55.2	49.2	55.0	54.7	54.0	53.5	52.3	51.4	49.9	49.6	49.3	51.7	0.0	51.7
	13	52.5	55.5	50.0	55.3	55.1	54.6	54.3	53.3	52.2	50.6	50.4	50.1	52.5	0.0	52.5
	14	53.3	56.7	50.5	56.5	56.2	55.6	55.3	54.0	52.9	51.3	50.9	50.6	53.3	0.0	53.3
	15	52.8	55.8	50.5	55.6	55.3	54.9	54.6	53.5	52.5	51.1	50.8	50.6	52.8	0.0	52.8
	16	52.7	56.0	50.1	55.8	55.6	55.1	54.7	53.4	52.3	50.8	50.5	50.2	52.7	0.0	52.7
	17	52.7	56.0	50.0	55.7	55.5	55.0	54.6	53.3	52.3	50.7	50.4	50.1	52.7	0.0	52.7
	18	53.3	56.3	51.0	56.0	55.8	55.3	55.0	53.9	53.1	51.6	51.3	51.1	53.3	0.0	53.3
	19	55.8	58.9	52.9	58.7	58.5	58.0	57.7	56.6	55.5	53.7	53.4	53.0	55.8	5.0	60.8
	20	55.6	58.2	53.1	58.0	57.8	57.4	57.1	56.3	55.5	53.9	53.6	53.3	55.6	5.0	60.6
	21	56.7	60.5	53.6	60.2	59.9	59.1	58.7	57.5	56.2	54.4	54.1	53.7	56.7	5.0	61.7
Night	22	56.0	59.3	52.7	59.1	58.8	58.2	57.9	56.8	55.6	53.6	53.2	52.8	56.0	10.0	66.0
	23	56.1	59.9	52.7	59.6	59.3	58.6	58.3	57.0	55.7	53.5	53.2	52.8	56.1	10.0	66.1

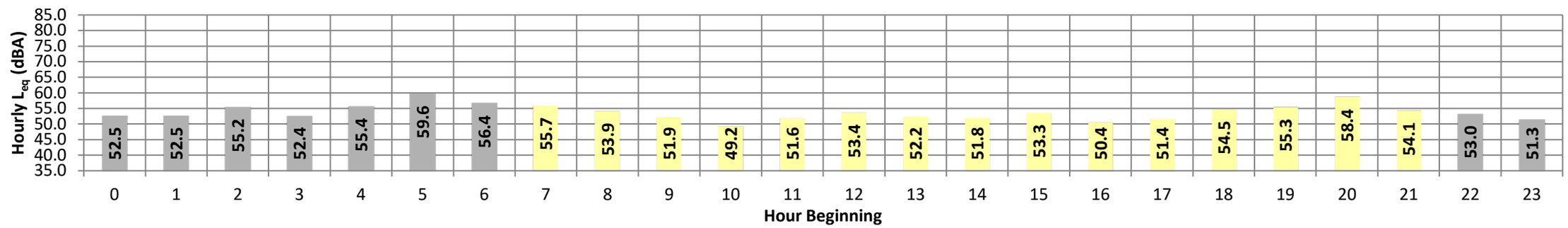
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	51.7	54.6	49.2	54.3	54.1	53.7	53.4	52.3	51.4	49.9	49.6	49.3
	Max	56.7	60.5	53.6	60.2	59.9	59.1	58.7	57.5	56.2	54.4	54.1	53.7
Energy Average		53.6	Average:		56.2	55.9	55.4	55.1	53.9	52.9	51.4	51.1	50.8
Night	Min	52.3	55.5	48.7	55.3	55.1	54.7	54.5	53.2	51.9	49.7	49.3	48.8
	Max	59.1	61.4	57.0	61.2	61.1	60.6	60.4	59.8	59.0	57.7	57.4	57.1
Energy Average		56.0	Average:		58.4	58.1	57.6	57.2	56.2	55.1	53.3	53.0	52.7

L_{eq} (dBA)		
24-Hour	*Daytime (7am-10pm)*	*Nighttime (10pm-7am)*
54.6	**53.6**	**56.0**

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L8 - Located southwest of the Project site near single-family residence at 2208 McGwire Court.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	52.5	57.2	48.7	56.8	56.4	55.5	54.9	53.3	51.9	49.6	49.2	48.8	52.5	10.0	62.5
	1	52.5	56.6	48.4	56.3	56.0	55.4	55.0	53.4	51.9	49.6	49.1	48.6	52.5	10.0	62.5
	2	55.2	60.6	50.0	60.3	59.9	59.0	58.3	56.1	54.2	51.4	50.8	50.2	55.2	10.0	65.2
	3	52.4	56.1	48.7	55.8	55.6	55.1	54.7	53.3	51.9	49.6	49.2	48.8	52.4	10.0	62.4
	4	55.4	59.2	52.6	59.0	58.7	57.9	57.4	56.0	55.0	53.4	53.0	52.7	55.4	10.0	65.4
	5	59.6	63.8	57.6	63.5	63.1	61.9	61.2	59.9	59.1	58.0	57.9	57.6	59.6	10.0	69.6
	6	56.4	60.8	52.9	60.5	60.2	59.5	59.0	57.1	55.9	53.8	53.4	53.0	56.4	10.0	66.4
Day	7	55.7	70.3	54.6	69.8	69.3	68.5	67.7	64.1	60.0	56.4	55.7	54.8	55.7	0.0	55.7
	8	53.9	75.8	57.2	75.1	73.9	71.8	71.1	68.9	66.3	60.5	59.2	57.5	53.9	0.0	53.9
	9	51.9	61.0	47.2	60.3	59.4	56.5	54.8	51.6	50.2	48.2	47.8	47.4	51.9	0.0	51.9
	10	49.2	53.2	46.3	52.9	52.6	51.7	51.1	49.8	48.8	47.1	46.7	46.4	49.2	0.0	49.2
	11	51.6	62.2	57.7	61.7	61.4	61.0	60.6	59.8	59.1	58.1	58.0	57.8	51.6	0.0	51.6
	12	53.4	65.2	50.2	64.5	63.5	60.2	58.5	55.7	53.1	51.1	50.7	50.4	53.4	0.0	53.4
	13	52.2	59.9	47.4	58.7	57.8	56.2	55.4	53.0	50.7	48.2	47.8	47.5	52.2	0.0	52.2
	14	51.8	58.4	48.4	57.7	56.9	55.6	54.6	52.2	50.9	49.0	48.8	48.5	51.8	0.0	51.8
	15	53.3	61.7	48.0	61.2	60.4	58.9	57.3	53.5	50.9	48.7	48.4	48.1	53.3	0.0	53.3
	16	50.4	56.5	46.9	56.1	55.7	54.2	52.9	50.7	49.5	47.7	47.4	47.0	50.4	0.0	50.4
	17	51.4	58.1	47.8	57.5	56.9	55.6	54.5	51.6	50.2	48.4	48.2	47.9	51.4	0.0	51.4
	18	54.5	61.5	48.4	60.8	60.0	58.7	57.9	55.3	53.2	49.9	49.2	48.6	54.5	0.0	54.5
	19	55.3	62.4	52.4	61.7	61.0	58.9	57.3	55.4	54.3	53.1	52.8	52.6	55.3	5.0	60.3
	20	58.4	62.5	56.6	62.0	61.5	60.7	60.1	58.9	58.0	57.0	56.8	56.6	58.4	5.0	63.4
	21	54.1	62.0	50.0	61.2	60.7	58.8	57.2	54.0	52.7	50.9	50.5	50.1	54.1	5.0	59.1
Night	22	53.0	58.4	49.9	58.1	57.7	56.6	55.6	53.3	52.3	50.7	50.4	50.0	53.0	10.0	63.0
	23	51.3	55.8	47.9	55.6	55.3	54.1	53.6	52.2	50.7	48.7	48.4	48.0	51.3	10.0	61.3

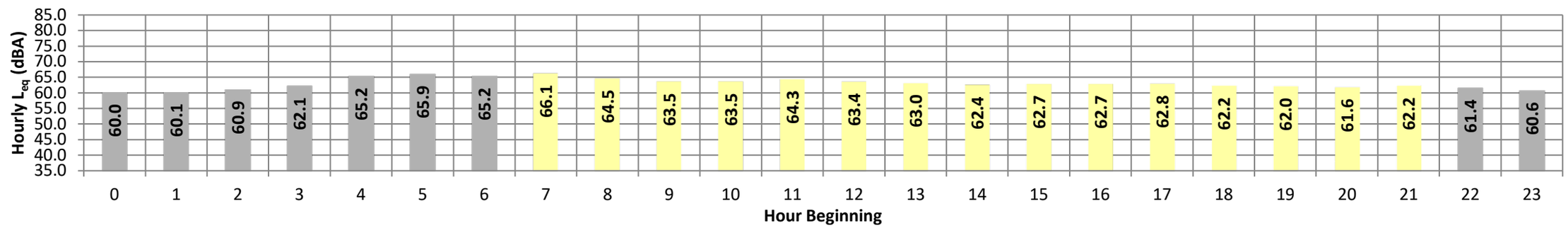
Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.2	53.2	46.3	52.9	52.6	51.7	51.1	49.8	48.8	47.1	46.7	46.4
	Max	58.4	75.8	57.7	75.1	73.9	71.8	71.1	68.9	66.3	60.5	59.2	57.8
Energy Average		53.8	Average:		61.4	60.7	59.1	58.1	55.6	53.9	51.6	51.2	50.7
Night	Min	51.3	55.8	47.9	55.6	55.3	54.1	53.6	52.2	50.7	48.7	48.4	48.0
	Max	59.6	63.8	57.6	63.5	63.1	61.9	61.2	59.9	59.1	58.0	57.9	57.6
Energy Average		55.1	Average:		58.4	58.1	57.2	56.6	55.0	53.7	51.6	51.3	50.9

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
54.3	53.8	55.1

24-Hour Noise Level Measurement Summary

Date: Wednesday, July 28, 2021
Project: Bakersfield High-Cube Fullfillment Warehouse
Location: L9 - Located west of the Project site near single-family residence at 2303 March Avenue.
Meter: Piccolo II
JN: 13923
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	60.0	65.2	54.1	65.0	64.7	64.0	63.3	61.1	58.9	55.6	55.0	54.2	60.0	10.0	70.0
	1	60.1	65.9	52.6	65.7	65.4	64.6	63.7	61.3	58.8	54.3	53.5	52.7	60.1	10.0	70.1
	2	60.9	66.4	54.4	66.2	65.9	65.1	64.2	62.0	59.9	56.0	55.2	54.5	60.9	10.0	70.9
	3	62.1	67.0	56.0	66.6	66.4	65.8	65.2	63.3	61.3	57.7	56.9	56.2	62.1	10.0	72.1
	4	65.2	68.7	61.1	68.5	68.3	67.9	67.4	66.1	64.8	62.6	61.9	61.3	65.2	10.0	75.2
	5	65.9	68.9	62.7	68.7	68.6	68.1	67.8	66.6	65.6	63.7	63.2	62.8	65.9	10.0	75.9
	6	65.2	68.8	61.3	68.6	68.3	67.8	67.4	66.1	64.9	62.6	62.0	61.4	65.2	10.0	75.2
Day	7	66.1	80.0	65.7	79.8	79.4	78.3	77.3	73.2	70.3	66.8	66.3	65.8	66.1	0.0	66.1
	8	64.5	68.2	60.5	68.0	67.8	67.4	66.9	65.4	64.1	61.7	61.2	60.6	64.5	0.0	64.5
	9	63.5	67.7	58.5	67.5	67.3	66.6	66.1	64.6	63.0	60.0	59.3	58.7	63.5	0.0	63.5
	10	63.5	68.5	58.8	68.2	67.9	67.3	66.6	64.2	62.7	60.2	59.5	58.9	63.5	0.0	63.5
	11	64.3	68.5	60.3	68.2	68.0	67.4	66.9	65.1	63.6	61.3	60.8	60.4	64.3	0.0	64.3
	12	63.4	67.1	59.4	66.9	66.7	66.2	65.7	64.3	63.0	60.7	60.1	59.5	63.4	0.0	63.4
	13	63.0	66.9	58.2	66.7	66.5	65.9	65.4	64.0	62.5	60.0	59.1	58.4	63.0	0.0	63.0
	14	62.4	66.7	58.0	66.4	66.2	65.5	64.9	63.3	62.0	59.4	58.7	58.1	62.4	0.0	62.4
	15	62.7	66.3	58.5	66.1	66.0	65.5	65.0	63.6	62.3	59.8	59.2	58.6	62.7	0.0	62.7
	16	62.7	66.8	58.5	66.6	66.4	65.7	65.1	63.6	62.2	59.8	59.2	58.7	62.7	0.0	62.7
	17	62.8	67.1	58.3	66.9	66.6	65.9	65.4	63.6	62.2	59.8	59.1	58.5	62.8	0.0	62.8
	18	62.2	66.7	57.4	66.4	66.1	65.4	64.8	63.1	61.6	59.1	58.3	57.6	62.2	0.0	62.2
	19	62.0	67.2	56.1	66.9	66.5	65.6	64.9	62.9	61.2	58.0	57.0	56.3	62.0	5.0	67.0
	20	61.6	66.0	56.8	65.8	65.6	65.1	64.4	62.5	61.0	58.1	57.5	57.0	61.6	5.0	66.6
	21	62.2	69.9	57.1	69.2	68.4	66.2	64.9	62.7	61.0	58.3	57.7	57.2	62.2	5.0	67.2
Night	22	61.4	66.0	57.0	65.8	65.5	64.7	64.1	62.3	60.7	58.1	57.5	57.1	61.4	10.0	71.4
	23	60.6	65.7	55.0	65.5	65.3	64.6	63.8	61.6	59.5	56.3	55.7	55.1	60.6	10.0	70.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	61.6	66.0	56.1	65.8	65.6	65.1	64.4	62.5	61.0	58.0	57.0	56.3
	Max	66.1	80.0	65.7	79.8	79.4	78.3	77.3	73.2	70.3	66.8	66.3	65.8
Energy Average		63.3	Average:		68.0	67.7	66.9	66.3	64.4	62.9	60.2	59.5	59.0
Night	Min	60.0	65.2	52.6	65.0	64.7	64.0	63.3	61.1	58.8	54.3	53.5	52.7
	Max	65.9	68.9	62.7	68.7	68.6	68.1	67.8	66.6	65.6	63.7	63.2	62.8
Energy Average		63.0	Average:		66.7	66.5	65.8	65.2	63.4	61.6	58.5	57.9	57.3

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
63.2	63.3	63.0

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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

Scenario: E
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,902 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,890 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.56	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.06	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.54	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	71.6	70.2	61.1	62.4	70.7	70.9
Vehicle Noise:	73.6	72.0	66.3	64.2	72.6	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	178	383	825
CNEL:	86	185	399	859

Monday, November 8, 2021

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

Scenario: E+P
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,985 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,098 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.62%
Medium Trucks:	84.8%	4.9%	10.3%	2.27%
Heavy Trucks:	86.5%	2.7%	10.8%	5.11%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.05	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.06	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.54	0.09	-1.20	-5.38	0.000	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	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	71.6	70.2	61.1	62.4	70.7	70.9
Vehicle Noise:	73.7	72.1	66.6	64.3	72.8	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	181	391	842
CNEL:	88	189	408	878

Monday, November 8, 2021

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

Scenario: 2024
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,127 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,913 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.61	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.01	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.49	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	71.7	70.2	61.2	62.4	70.8	70.9
Vehicle Noise:	73.6	72.1	66.4	64.3	72.7	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	179	386	831
CNEL:	87	187	402	866

Monday, November 8, 2021

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,210 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,121 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.62%
Medium Trucks:	84.8%	4.9%	10.3%	2.27%
Heavy Trucks:	86.5%	2.7%	10.8%	5.11%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.09	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.01	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.49	0.09	-1.20	-5.38	0.000	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	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	71.7	70.2	61.2	62.4	70.8	70.9
Vehicle Noise:	73.8	72.2	66.7	64.4	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	183	394	848
CNEL:	89	191	411	885

Monday, November 8, 2021

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

Scenario: 2029
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,022 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,902 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.58	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.51	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	63.3	61.8	55.4	53.9	62.4	62.6
Heavy Trucks:	71.6	70.2	61.2	62.4	70.8	70.9
Vehicle Noise:	73.6	72.0	66.4	64.2	72.7	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	178	384	828
CNEL:	86	186	400	863

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,105 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,110 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.62%
Medium Trucks:	84.8%	4.9%	10.3%	2.27%
Heavy Trucks:	86.5%	2.7%	10.8%	5.11%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.07	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.51	0.09	-1.20	-5.38	0.000	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	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	63.3	61.8	55.4	53.9	62.4	62.6
Heavy Trucks:	71.6	70.2	61.2	62.4	70.8	70.9
Vehicle Noise:	73.7	72.2	66.7	64.4	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	182	392	845
CNEL:	88	190	409	882

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

Scenario: 2042
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,383 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,938 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.67	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.95	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.43	0.09	-1.20	-5.38	0.000	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	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	71.7	70.3	61.3	62.5	70.9	71.0
Vehicle Noise:	73.7	72.1	66.4	64.3	72.7	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	181	389	839
CNEL:	87	188	405	874

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: n/o Harris Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,466 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,147 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.61%
Medium Trucks:	84.8%	4.9%	10.3%	2.28%
Heavy Trucks:	86.5%	2.7%	10.8%	5.12%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.15	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.95	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.43	0.09	-1.20	-5.38	0.000	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	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	71.7	70.3	61.3	62.5	70.9	71.0
Vehicle Noise:	73.8	72.2	66.7	64.4	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	184	397	856
CNEL:	89	192	414	893

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

Scenario: E
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,867 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,487 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.49	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-16.10	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.58	0.09	-1.20	-5.38	0.000	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	64.9	63.2	57.1	65.7	66.3
Medium Trucks:	62.2	60.7	54.4	52.8	61.3	61.5
Heavy Trucks:	70.6	69.1	60.1	61.4	69.7	69.8
Vehicle Noise:	72.5	71.0	65.3	63.2	71.6	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	326	703
CNEL:	73	158	340	732

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

Scenario: E+P
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,388 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,739 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.00%
Medium Trucks:	84.8%	4.9%	10.3%	2.15%
Heavy Trucks:	86.5%	2.7%	10.8%	4.85%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.25	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-16.10	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.58	0.09	-1.20	-5.38	0.000	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	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	62.2	60.7	54.4	52.8	61.3	61.5
Heavy Trucks:	70.6	69.1	60.1	61.4	69.7	69.8
Vehicle Noise:	72.7	71.2	65.7	63.4	71.8	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	156	337	725
CNEL:	76	163	351	757

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

Scenario: 2024
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,234 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,623 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.10	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.72	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.20	0.09	-1.20	-5.38	0.000	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	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	62.6	61.1	54.7	53.2	61.7	61.9
Heavy Trucks:	70.9	69.5	60.5	61.7	70.1	70.2
Vehicle Noise:	72.9	71.4	65.7	63.5	72.0	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	346	745
CNEL:	78	167	360	776

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,755 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,876 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.91%
Medium Trucks:	84.8%	4.9%	10.3%	2.18%
Heavy Trucks:	86.5%	2.7%	10.8%	4.91%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.57	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.72	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.20	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	62.6	61.1	54.7	53.2	61.7	61.9
Heavy Trucks:	70.9	69.5	60.5	61.7	70.1	70.2
Vehicle Noise:	73.1	71.5	66.1	63.7	72.2	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	356	767
CNEL:	80	172	372	801

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

Scenario: 2029
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,877 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,688 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.06	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.55	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.03	0.09	-1.20	-5.38	0.000	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	71.1	69.7	60.7	61.9	70.3	70.4
Vehicle Noise:	73.1	71.5	65.8	63.7	72.1	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	165	355	765
CNEL:	80	172	370	797

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,398 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,940 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.88%
Medium Trucks:	84.8%	4.9%	10.3%	2.19%
Heavy Trucks:	86.5%	2.7%	10.8%	4.93%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.72	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.55	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-12.03	0.09	-1.20	-5.38	0.000	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	66.1	64.4	58.3	66.9	67.6
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	71.1	69.7	60.7	61.9	70.3	70.4
Vehicle Noise:	73.3	71.7	66.2	63.9	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	169	365	786
CNEL:	82	177	381	821

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

Scenario: 2042
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,157 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,916 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.61	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.00	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.48	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	71.7	70.2	61.2	62.5	70.8	70.9
Vehicle Noise:	73.6	72.1	66.4	64.3	72.7	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	179	386	832
CNEL:	87	187	402	867

Monday, November 8, 2021

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: n/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,678 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,168 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.76%
Medium Trucks:	84.8%	4.9%	10.3%	2.23%
Heavy Trucks:	86.5%	2.7%	10.8%	5.01%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.20	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-15.00	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-11.48	0.09	-1.20	-5.38	0.000	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	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	71.7	70.2	61.2	62.5	70.8	70.9
Vehicle Noise:	73.8	72.2	66.7	64.4	72.9	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	184	396	853
CNEL:	89	192	413	890

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

Scenario: E
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,958 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	896 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.14	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.24	0.09	-1.20	-5.38	0.000	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	64.0	62.3	56.2	64.8	65.4
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	69.0	67.6	58.6	59.8	68.2	68.3
Vehicle Noise:	71.2	69.6	64.2	61.8	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	124	266	574
CNEL:	60	129	278	599

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

Scenario: E+P
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,220 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,422 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.84%
Medium Trucks:	84.8%	4.9%	10.3%	1.59%
Heavy Trucks:	86.5%	2.7%	10.8%	3.57%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.00	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.24	0.09	-1.20	-5.38	0.000	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	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	69.0	67.6	58.6	59.8	68.2	68.3
Vehicle Noise:	72.0	70.3	65.7	62.5	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	298	641
CNEL:	67	145	313	675

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

Scenario: 2024
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,556 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,056 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.43	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.05	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.52	0.09	-1.20	-5.38	0.000	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	64.7	63.0	56.9	65.5	66.1
Medium Trucks:	61.8	60.3	54.0	52.4	60.9	61.1
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	71.9	70.4	64.9	62.5	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	640
CNEL:	67	144	310	668

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,818 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,582 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.54%
Medium Trucks:	84.8%	4.9%	10.3%	1.68%
Heavy Trucks:	86.5%	2.7%	10.8%	3.78%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.004

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.55	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.05	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.52	0.09	-1.20	-5.38	0.000	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	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	61.8	60.3	54.0	52.4	60.9	61.1
Heavy Trucks:	69.7	68.3	59.3	60.5	68.9	69.0
Vehicle Noise:	72.6	71.0	66.2	63.1	71.6	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	152	327	704
CNEL:	74	159	344	740

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

Scenario: 2029
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,850 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,085 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.31	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.93	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.41	0.09	-1.20	-5.38	0.000	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	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	62.0	60.5	54.1	52.5	61.0	61.2
Heavy Trucks:	69.9	68.4	59.4	60.7	69.0	69.1
Vehicle Noise:	72.0	70.5	65.0	62.7	71.1	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	302	652
CNEL:	68	147	316	680

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,112 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,611 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.49%
Medium Trucks:	84.8%	4.9%	10.3%	1.70%
Heavy Trucks:	86.5%	2.7%	10.8%	3.82%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.47	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.93	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.41	0.09	-1.20	-5.38	0.000	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	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	62.0	60.5	54.1	52.5	61.0	61.2
Heavy Trucks:	69.9	68.4	59.4	60.7	69.0	69.1
Vehicle Noise:	72.7	71.1	66.3	63.3	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	154	332	716
CNEL:	75	162	349	752

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

Scenario: 2042
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,875 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,188 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.92	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.54	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.01	0.09	-1.20	-5.38	0.000	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	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	70.3	68.8	59.8	61.0	69.4	69.5
Vehicle Noise:	72.4	70.9	65.4	63.1	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	321	692
CNEL:	72	156	335	722

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: s/o Panama Ln.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,137 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,714 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.33%
Medium Trucks:	84.8%	4.9%	10.3%	1.75%
Heavy Trucks:	86.5%	2.7%	10.8%	3.93%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.21	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.54	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.01	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.2	59.1	67.8	68.4
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	70.3	68.8	59.8	61.0	69.4	69.5
Vehicle Noise:	73.0	71.4	66.6	63.6	72.1	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	163	350	754
CNEL:	79	171	368	792

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

Scenario: E
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,020 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	902 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.11	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.73	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.21	0.09	-1.20	-5.38	0.000	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	64.1	62.3	56.2	64.9	65.5
Medium Trucks:	61.2	59.7	53.3	51.7	60.2	60.4
Heavy Trucks:	69.1	67.6	58.6	59.8	68.2	68.3
Vehicle Noise:	71.2	69.7	64.2	61.9	70.3	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	267	576
CNEL:	60	130	279	601

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

Scenario: E+P
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,173 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,417 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.60%
Heavy Trucks:	86.5%	2.7%	10.8%	3.61%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.01	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.73	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.21	0.09	-1.20	-5.38	0.000	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	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	61.2	59.7	53.3	51.7	60.2	60.4
Heavy Trucks:	69.1	67.6	58.6	59.8	68.2	68.3
Vehicle Noise:	72.0	70.4	65.7	62.5	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	298	643
CNEL:	68	146	314	676

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

Scenario: 2024
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,043 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,104 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.24	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.85	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.33	0.09	-1.20	-5.38	0.000	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	64.9	63.2	57.1	65.7	66.3
Medium Trucks:	62.0	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	72.1	70.5	65.1	62.7	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	659
CNEL:	69	148	319	688

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,196 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,620 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.72%
Heavy Trucks:	86.5%	2.7%	10.8%	3.87%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.45	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.85	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.33	0.09	-1.20	-5.38	0.000	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	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	62.0	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	72.7	71.1	66.3	63.3	71.8	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	155	335	722
CNEL:	76	163	352	758

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

Scenario: 2029
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,301 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,130 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.13	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.75	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.23	0.09	-1.20	-5.38	0.000	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	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	70.0	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	72.2	70.6	65.2	62.8	71.3	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	311	670
CNEL:	70	151	324	699

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,454 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,645 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.38%
Medium Trucks:	84.8%	4.9%	10.3%	1.73%
Heavy Trucks:	86.5%	2.7%	10.8%	3.89%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.38	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.75	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.23	0.09	-1.20	-5.38	0.000	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	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	70.0	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	72.8	71.2	66.4	63.4	71.9	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	340	732
CNEL:	77	166	357	768

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

Scenario: 2042
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,191 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,219 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.81	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.42	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.90	0.09	-1.20	-5.38	0.000	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	65.4	63.6	57.5	66.2	66.8
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.7
Heavy Trucks:	70.4	68.9	59.9	61.2	69.5	69.6
Vehicle Noise:	72.5	71.0	65.5	63.2	71.6	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	152	327	704
CNEL:	74	158	341	735

Monday, November 8, 2021

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: n/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,344 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,734 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.24%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	3.99%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.16	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.42	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.90	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.7
Heavy Trucks:	70.4	68.9	59.9	61.2	69.5	69.6
Vehicle Noise:	73.1	71.5	66.6	63.7	72.1	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	165	355	765
CNEL:	80	173	373	803

Monday, November 8, 2021

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

Scenario: E
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,251 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	625 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.71	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.32	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.80	0.09	-1.20	-5.38	0.000	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	62.5	60.7	54.6	63.3	63.9
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.8
Heavy Trucks:	67.5	66.0	57.0	58.3	66.6	66.7
Vehicle Noise:	69.6	68.1	62.6	60.3	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	451
CNEL:	47	101	219	471

Monday, November 8, 2021

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

Scenario: E+P
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,470 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	647 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.09%
Medium Trucks:	84.8%	4.9%	10.3%	2.43%
Heavy Trucks:	86.5%	2.7%	10.8%	5.48%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.54	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.32	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.80	0.09	-1.20	-5.38	0.000	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	62.6	60.9	54.8	63.4	64.0
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.8
Heavy Trucks:	67.5	66.0	57.0	58.3	66.6	66.7
Vehicle Noise:	69.7	68.1	62.7	60.3	68.8	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	98	211	455
CNEL:	47	102	220	475

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

Scenario: 2024
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,666 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	867 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.29	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.90	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.38	0.09	-1.20	-5.38	0.000	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	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	61.0	59.5	53.1	51.6	60.0	60.3
Heavy Trucks:	68.9	67.5	58.4	59.7	68.0	68.2
Vehicle Noise:	71.1	69.5	64.0	61.7	70.1	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	561
CNEL:	59	126	272	586

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,885 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	889 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.01%
Medium Trucks:	84.8%	4.9%	10.3%	2.46%
Heavy Trucks:	86.5%	2.7%	10.8%	5.53%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.17	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.90	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.38	0.09	-1.20	-5.38	0.000	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	64.0	62.2	56.2	64.8	65.4
Medium Trucks:	61.0	59.5	53.1	51.6	60.0	60.3
Heavy Trucks:	68.9	67.5	58.4	59.7	68.0	68.2
Vehicle Noise:	71.1	69.5	64.1	61.7	70.2	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	262	564
CNEL:	59	127	273	589

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

Scenario: 2029
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,348 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	935 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.96	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.57	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.05	0.09	-1.20	-5.38	0.000	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	64.2	62.4	56.4	65.0	65.6
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	69.2	67.8	58.8	60.0	68.4	68.5
Vehicle Noise:	71.4	69.8	64.4	62.0	70.5	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	62	133	286	616

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,567 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	957 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.00%
Medium Trucks:	84.8%	4.9%	10.3%	2.46%
Heavy Trucks:	86.5%	2.7%	10.8%	5.54%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.85	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.57	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.05	0.09	-1.20	-5.38	0.000	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	64.3	62.6	56.5	65.1	65.7
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	69.2	67.8	58.8	60.0	68.4	68.5
Vehicle Noise:	71.4	69.9	64.4	62.0	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	275	593
CNEL:	62	133	287	619

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

Scenario: 2042
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,067 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,207 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.85	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.47	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.94	0.09	-1.20	-5.38	0.000	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	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	62.4	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	70.3	68.9	59.9	61.1	69.5	69.6
Vehicle Noise:	72.5	70.9	65.5	63.1	71.6	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	325	700
CNEL:	73	157	339	730

Monday, November 8, 2021

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: s/o Hosking Av.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,286 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,229 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.96%
Medium Trucks:	84.8%	4.9%	10.3%	2.47%
Heavy Trucks:	86.5%	2.7%	10.8%	5.57%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.77	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.47	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.94	0.09	-1.20	-5.38	0.000	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	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	62.4	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	70.3	68.9	59.9	61.1	69.5	69.6
Vehicle Noise:	72.5	71.0	65.5	63.2	71.6	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	326	702
CNEL:	73	158	340	733

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

Scenario: E
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,263 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	626 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.70	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.31	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.79	0.09	-1.20	-5.38	0.000	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	62.5	60.7	54.7	63.3	63.9
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	67.5	66.1	57.0	58.3	66.6	66.7
Vehicle Noise:	69.7	68.1	62.6	60.3	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	452
CNEL:	47	102	219	472

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

Scenario: E+P
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,482 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	648 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.09%
Medium Trucks:	84.8%	4.9%	10.3%	2.43%
Heavy Trucks:	86.5%	2.7%	10.8%	5.48%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.54	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.31	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.79	0.09	-1.20	-5.38	0.000	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	62.6	60.9	54.8	63.4	64.0
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	67.5	66.1	57.0	58.3	66.6	66.7
Vehicle Noise:	69.7	68.1	62.7	60.3	68.8	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	98	211	455
CNEL:	48	102	221	475

Monday, November 8, 2021

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

Scenario: 2024
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,639 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	664 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.45	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.06	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.54	0.09	-1.20	-5.38	0.000	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	62.7	61.0	54.9	63.5	64.1
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	69.9	68.3	62.9	60.5	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	470
CNEL:	49	106	228	490

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

Scenario: 2024+P
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,858 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	686 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.07%
Medium Trucks:	84.8%	4.9%	10.3%	2.44%
Heavy Trucks:	86.5%	2.7%	10.8%	5.49%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.29	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.06	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.54	0.09	-1.20	-5.38	0.000	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	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	70.0	68.4	63.0	60.6	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	49	106	229	494

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

Scenario: 2029
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,686 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	669 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.41	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.51	0.09	-1.20	-5.38	0.000	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	62.8	61.0	54.9	63.6	64.2
Medium Trucks:	59.9	58.4	52.0	50.4	58.9	59.1
Heavy Trucks:	67.8	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	69.9	68.4	62.9	60.6	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	219	472
CNEL:	49	106	229	493

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

Scenario: 2029+P
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,905 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	691 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.07%
Medium Trucks:	84.8%	4.9%	10.3%	2.44%
Heavy Trucks:	86.5%	2.7%	10.8%	5.49%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.26	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-20.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.51	0.09	-1.20	-5.38	0.000	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	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	59.9	58.4	52.0	50.4	58.9	59.1
Heavy Trucks:	67.8	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	70.0	68.4	63.0	60.6	69.0	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	102	221	475
CNEL:	50	107	230	496

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

Scenario: 2042
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,841 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	684 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.31	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-19.93	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.41	0.09	-1.20	-5.38	0.000	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	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	60.0	58.5	52.1	50.5	59.0	59.2
Heavy Trucks:	67.9	66.4	57.4	58.6	67.0	67.1
Vehicle Noise:	70.0	68.5	63.0	60.7	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	479
CNEL:	50	108	232	500

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

Scenario: 2042+P
Road Name: S. H St.
Road Segment: n/o Panama Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,060 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	706 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.07%
Medium Trucks:	84.8%	4.9%	10.3%	2.44%
Heavy Trucks:	86.5%	2.7%	10.8%	5.49%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.17	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-19.93	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-16.41	0.09	-1.20	-5.38	0.000	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	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	60.0	58.5	52.1	50.5	59.0	59.2
Heavy Trucks:	67.9	66.4	57.4	58.6	67.0	67.1
Vehicle Noise:	70.1	68.5	63.1	60.7	69.1	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	224	482
CNEL:	50	109	234	504

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

Scenario: E
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,139 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,414 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.67	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.95	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.43	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.1	62.0	70.6	71.2
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	74.8	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	77.0	75.5	70.0	67.6	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	301	650	1,399
CNEL:	146	315	678	1,461

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,126 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,513 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.04%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.51%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.80	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.95	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.43	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.2	62.2	70.8	71.4
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	74.8	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	77.1	75.5	70.1	67.7	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	141	303	653	1,408
CNEL:	147	317	682	1,470

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,668 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,567 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.86	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.24	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	67.1	65.6	59.3	57.7	66.2	66.4
Heavy Trucks:	75.0	73.6	64.6	65.8	74.2	74.3
Vehicle Noise:	77.2	75.6	70.2	67.8	76.3	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	144	310	669	1,441
CNEL:	150	324	698	1,504

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,655 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,665 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.99	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.24	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.3	71.0	71.6
Medium Trucks:	67.1	65.6	59.3	57.7	66.2	66.4
Heavy Trucks:	75.0	73.6	64.6	65.8	74.2	74.3
Vehicle Noise:	77.2	75.7	70.3	67.9	76.3	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	145	312	673	1,449
CNEL:	151	326	702	1,513

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,159 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,716 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.03	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.58	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.06	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.1	70.2	68.4	62.4	71.0	71.6
Medium Trucks:	67.3	65.8	59.4	57.9	66.4	66.6
Heavy Trucks:	75.2	73.8	64.7	66.0	74.4	74.5
Vehicle Noise:	77.4	75.8	70.4	68.0	76.5	76.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	148	319	687	1,481
CNEL:	155	333	717	1,546

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,146 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,815 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.02%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.16	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.58	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.06	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.6	62.5	71.1	71.7
Medium Trucks:	67.3	65.8	59.4	57.9	66.4	66.6
Heavy Trucks:	75.2	73.8	64.7	66.0	74.4	74.5
Vehicle Noise:	77.4	75.9	70.4	68.0	76.5	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	149	321	691	1,489
CNEL:	155	335	722	1,555

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,453 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,245 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.61	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.00	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.48	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.7	70.8	69.0	63.0	71.6	72.2
Medium Trucks:	67.9	66.4	60.0	58.5	66.9	67.2
Heavy Trucks:	75.8	74.4	65.3	66.6	74.9	75.1
Vehicle Noise:	78.0	76.4	70.9	68.6	77.0	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	162	349	751	1,618
CNEL:	169	364	784	1,689

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,440 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,344 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.00%
Medium Trucks:	84.8%	4.9%	10.3%	2.46%
Heavy Trucks:	86.5%	2.7%	10.8%	5.54%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.72	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.00	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.48	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.8	70.9	69.1	63.1	71.7	72.3
Medium Trucks:	67.9	66.4	60.0	58.5	66.9	67.2
Heavy Trucks:	75.8	74.4	65.3	66.6	74.9	75.1
Vehicle Noise:	78.0	76.4	71.0	68.6	77.1	77.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	163	350	755	1,626
CNEL:	170	366	788	1,698

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

Scenario: E
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,594 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,159 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.33	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.29	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.76	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.7	70.3	70.9
Medium Trucks:	66.6	65.1	58.7	57.2	65.7	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.6	73.8
Vehicle Noise:	76.7	75.1	69.6	67.3	75.7	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	286	617	1,329
CNEL:	139	299	644	1,387

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,471 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,247 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.46	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.29	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.76	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	66.6	65.1	58.7	57.2	65.7	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.6	73.8
Vehicle Noise:	76.7	75.2	69.7	67.3	75.8	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	134	288	620	1,337
CNEL:	140	301	648	1,396

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,939 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,294 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.51	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.10	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.58	0.09	-1.20	-5.38	0.000	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	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	74.7	73.3	64.2	65.5	73.8	74.0
Vehicle Noise:	76.9	75.3	69.8	67.5	75.9	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	137	294	634	1,366
CNEL:	143	307	662	1,426

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,816 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,382 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.02%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.64	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.10	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.58	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	62.0	70.6	71.2
Medium Trucks:	66.8	65.3	58.9	57.4	65.8	66.1
Heavy Trucks:	74.7	73.3	64.2	65.5	73.8	74.0
Vehicle Noise:	76.9	75.3	69.9	67.5	76.0	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	137	296	638	1,374
CNEL:	143	309	666	1,435

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,047 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,405 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.65	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.96	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.44	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.1	62.0	70.6	71.2
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	74.8	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	77.0	75.4	70.0	67.6	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	301	648	1,397
CNEL:	146	314	677	1,458

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,924 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,492 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.02%
Medium Trucks:	84.8%	4.9%	10.3%	2.46%
Heavy Trucks:	86.5%	2.7%	10.8%	5.53%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.77	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.96	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.44	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.4
Medium Trucks:	66.9	65.4	59.1	57.5	66.0	66.2
Heavy Trucks:	74.8	73.4	64.4	65.6	74.0	74.1
Vehicle Noise:	77.0	75.5	70.0	67.7	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	303	652	1,404
CNEL:	147	316	681	1,466

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,914 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,791 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.12	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.49	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.97	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.5	71.1	71.7
Medium Trucks:	67.4	65.9	59.5	58.0	66.4	66.7
Heavy Trucks:	75.3	73.9	64.8	66.1	74.4	74.6
Vehicle Noise:	77.5	75.9	70.4	68.1	76.5	76.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	150	323	697	1,501
CNEL:	157	337	727	1,566

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,791 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,879 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.00%
Medium Trucks:	84.8%	4.9%	10.3%	2.46%
Heavy Trucks:	86.5%	2.7%	10.8%	5.54%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.23	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.49	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.97	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.6	71.2	71.8
Medium Trucks:	67.4	65.9	59.5	58.0	66.4	66.7
Heavy Trucks:	75.3	73.9	64.8	66.1	74.4	74.6
Vehicle Noise:	77.5	75.9	70.5	68.1	76.6	76.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	151	325	700	1,508
CNEL:	157	339	731	1,574

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

Scenario: E
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,269 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,027 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.38	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.23	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.71	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.7	71.4	72.0
Medium Trucks:	67.7	66.2	59.8	58.2	66.7	66.9
Heavy Trucks:	75.6	74.1	65.1	66.3	74.7	74.8
Vehicle Noise:	77.7	76.2	70.7	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	156	337	725	1,562
CNEL:	163	351	757	1,631

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,365 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,137 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.51	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.23	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.71	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	67.7	66.2	59.8	58.2	66.7	66.9
Heavy Trucks:	75.6	74.1	65.1	66.3	74.7	74.8
Vehicle Noise:	77.8	76.2	70.8	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	157	338	729	1,571
CNEL:	164	353	761	1,640

Monday, November 8, 2021

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,574 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,057 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.42	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.20	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.68	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.8	71.4	72.0
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	67.0
Heavy Trucks:	75.6	74.2	65.1	66.4	74.7	74.9
Vehicle Noise:	77.8	76.2	70.7	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	157	338	729	1,570
CNEL:	164	353	761	1,639

Monday, November 8, 2021

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,670 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,167 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.54	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.20	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.68	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	67.0
Heavy Trucks:	75.6	74.2	65.1	66.4	74.7	74.9
Vehicle Noise:	77.8	76.2	70.8	68.4	76.9	77.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	158	340	733	1,579
CNEL:	165	355	765	1,649

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,521 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,052 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.41	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.20	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.68	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.8	71.4	72.0
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	67.0
Heavy Trucks:	75.6	74.2	65.1	66.4	74.7	74.9
Vehicle Noise:	77.8	76.2	70.7	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	157	338	728	1,569
CNEL:	164	353	760	1,637

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,617 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,162 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.54	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.20	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.68	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	67.0
Heavy Trucks:	75.6	74.2	65.1	66.4	74.7	74.9
Vehicle Noise:	77.8	76.2	70.8	68.4	76.9	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	158	340	732	1,578
CNEL:	165	355	765	1,647

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,350 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,035 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.39	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.22	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.70	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.8	62.7	71.4	72.0
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	66.9
Heavy Trucks:	75.6	74.1	65.1	66.4	74.7	74.8
Vehicle Noise:	77.7	76.2	70.7	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	156	337	726	1,564
CNEL:	163	352	758	1,633

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,446 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	4,145 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.52	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-12.22	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-8.70	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	68.9	62.9	71.5	72.1
Medium Trucks:	67.7	66.2	59.8	58.3	66.7	66.9
Heavy Trucks:	75.6	74.1	65.1	66.4	74.7	74.8
Vehicle Noise:	77.8	76.2	70.8	68.4	76.8	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	157	339	730	1,573
CNEL:	164	354	762	1,643

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

Scenario: E
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,064 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,006 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.11	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.50	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.98	0.09	-1.20	-5.38	0.000	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	69.3	67.5	61.5	70.1	70.7
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	74.3	72.9	63.8	65.1	73.4	73.6
Vehicle Noise:	76.5	74.9	69.4	67.1	75.5	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	129	277	597	1,286
CNEL:	134	289	623	1,342

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,585 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,259 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.44%
Medium Trucks:	84.8%	4.9%	10.3%	2.32%
Heavy Trucks:	86.5%	2.7%	10.8%	5.23%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.49	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.50	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.98	0.09	-1.20	-5.38	0.000	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	69.7	67.9	61.8	70.5	71.1
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	74.3	72.9	63.8	65.1	73.4	73.6
Vehicle Noise:	76.6	75.0	69.7	67.2	75.6	75.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	282	607	1,308
CNEL:	137	294	634	1,367

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,536 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,154 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.32	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.29	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.77	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.7	70.3	70.9
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.6	73.8
Vehicle Noise:	76.7	75.1	69.6	67.3	75.7	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	286	616	1,327
CNEL:	139	298	643	1,385

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,057 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,406 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.42%
Medium Trucks:	84.8%	4.9%	10.3%	2.33%
Heavy Trucks:	86.5%	2.7%	10.8%	5.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.68	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.29	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.77	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.1	62.0	70.7	71.3
Medium Trucks:	66.6	65.1	58.7	57.2	65.6	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.6	73.8
Vehicle Noise:	76.8	75.2	69.9	67.4	75.8	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	291	626	1,349
CNEL:	141	304	654	1,410

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,952 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,195 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.38	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.24	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.71	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.8	61.7	70.4	71.0
Medium Trucks:	66.7	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	74.6	73.1	64.1	65.3	73.7	73.8
Vehicle Noise:	76.7	75.2	69.7	67.4	75.8	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	134	288	621	1,339
CNEL:	140	301	649	1,398

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,473 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,447 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.41%
Medium Trucks:	84.8%	4.9%	10.3%	2.34%
Heavy Trucks:	86.5%	2.7%	10.8%	5.25%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.74	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.24	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.71	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.1	62.1	70.7	71.3
Medium Trucks:	66.7	65.1	58.8	57.2	65.7	65.9
Heavy Trucks:	74.6	73.1	64.1	65.3	73.7	73.8
Vehicle Noise:	76.8	75.3	69.9	67.5	75.9	76.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	136	293	632	1,361
CNEL:	142	306	660	1,422

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,344 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,334 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.56	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.05	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.53	0.09	-1.20	-5.38	0.000	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	69.7	68.0	61.9	70.5	71.1
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	74.7	73.3	64.3	65.5	73.9	74.0
Vehicle Noise:	76.9	75.3	69.9	67.5	76.0	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	297	639	1,378
CNEL:	144	310	667	1,438

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: w/o Colony St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,865 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,587 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.39%
Medium Trucks:	84.8%	4.9%	10.3%	2.34%
Heavy Trucks:	86.5%	2.7%	10.8%	5.27%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.91	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.05	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.53	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.3	62.3	70.9	71.5
Medium Trucks:	66.8	65.3	59.0	57.4	65.9	66.1
Heavy Trucks:	74.7	73.3	64.3	65.5	73.9	74.0
Vehicle Noise:	77.0	75.4	70.1	67.6	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	301	649	1,399
CNEL:	146	315	679	1,462

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

Scenario: E
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,962 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,996 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.10	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.52	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.99	0.09	-1.20	-5.38	0.000	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	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	74.3	72.8	63.8	65.1	73.4	73.5
Vehicle Noise:	76.5	74.9	69.4	67.1	75.5	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	276	595	1,283
CNEL:	134	288	621	1,339

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,045 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,204 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.34%
Medium Trucks:	84.8%	4.9%	10.3%	2.36%
Heavy Trucks:	86.5%	2.7%	10.8%	5.30%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.42	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.52	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.99	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	74.3	72.8	63.8	65.1	73.4	73.5
Vehicle Noise:	76.5	75.0	69.6	67.2	75.6	75.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	280	604	1,301
CNEL:	136	293	631	1,360

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,071 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,107 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.26	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.36	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.84	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.3	69.4	67.7	61.6	70.2	70.8
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	74.4	73.0	64.0	65.2	73.6	73.7
Vehicle Noise:	76.6	75.0	69.6	67.2	75.7	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	283	610	1,314
CNEL:	137	296	637	1,372

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,154 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,315 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.33%
Medium Trucks:	84.8%	4.9%	10.3%	2.36%
Heavy Trucks:	86.5%	2.7%	10.8%	5.31%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.56	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.36	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.84	0.09	-1.20	-5.38	0.000	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	69.7	68.0	61.9	70.5	71.1
Medium Trucks:	66.5	65.0	58.7	57.1	65.6	65.8
Heavy Trucks:	74.4	73.0	64.0	65.2	73.6	73.7
Vehicle Noise:	76.7	75.1	69.8	67.3	75.8	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	287	618	1,332
CNEL:	139	300	646	1,392

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,634 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,163 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.34	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.28	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.76	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.7	70.3	70.9
Medium Trucks:	66.6	65.1	58.7	57.2	65.7	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.7	73.8
Vehicle Noise:	76.7	75.1	69.7	67.3	75.8	76.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	287	617	1,330
CNEL:	139	299	644	1,388

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,717 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,372 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.32%
Medium Trucks:	84.8%	4.9%	10.3%	2.36%
Heavy Trucks:	86.5%	2.7%	10.8%	5.32%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.64	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.28	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.76	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	62.0	70.6	71.2
Medium Trucks:	66.6	65.1	58.7	57.2	65.7	65.9
Heavy Trucks:	74.5	73.1	64.0	65.3	73.7	73.8
Vehicle Noise:	76.8	75.2	69.8	67.4	75.8	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	290	626	1,348
CNEL:	141	303	654	1,409

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,535 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,354 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.59	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.50	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	61.9	70.6	71.2
Medium Trucks:	66.9	65.4	59.0	57.4	65.9	66.1
Heavy Trucks:	74.8	73.3	64.3	65.6	73.9	74.0
Vehicle Noise:	76.9	75.4	69.9	67.6	76.0	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	298	642	1,383
CNEL:	144	311	670	1,443

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,618 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,562 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.29%
Medium Trucks:	84.8%	4.9%	10.3%	2.37%
Heavy Trucks:	86.5%	2.7%	10.8%	5.34%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.87	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.03	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.50	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.3	62.2	70.8	71.5
Medium Trucks:	66.9	65.4	59.0	57.4	65.9	66.1
Heavy Trucks:	74.8	73.3	64.3	65.6	73.9	74.0
Vehicle Noise:	77.0	75.5	70.1	67.6	76.1	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	140	302	650	1,401
CNEL:	146	315	679	1,463

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

Scenario: E
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,669 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,167 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.15	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.47	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.94	0.09	-1.20	-5.38	0.000	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	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	72.2	70.8	61.7	63.0	71.3	71.5
Vehicle Noise:	74.2	72.6	66.9	64.8	73.2	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	90	195	419	903
CNEL:	94	203	437	941

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

Scenario: E+P
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,327 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,233 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.05%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.29	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.47	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.94	0.09	-1.20	-5.38	0.000	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	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	72.2	70.8	61.7	63.0	71.3	71.5
Vehicle Noise:	74.2	72.6	67.0	64.8	73.3	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	196	422	909
CNEL:	95	204	439	947

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

Scenario: 2024
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,393 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,239 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.29	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.32	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.80	0.09	-1.20	-5.38	0.000	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	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	64.0	62.5	56.1	54.6	63.1	63.3
Heavy Trucks:	72.3	70.9	61.9	63.1	71.5	71.6
Vehicle Noise:	74.3	72.7	67.1	64.9	73.4	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	199	429	923
CNEL:	96	207	446	962

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

Scenario: 2024+P
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,051 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,305 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.04%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.51%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.43	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.32	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.80	0.09	-1.20	-5.38	0.000	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	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	64.0	62.5	56.1	54.6	63.1	63.3
Heavy Trucks:	72.3	70.9	61.9	63.1	71.5	71.6
Vehicle Noise:	74.3	72.8	67.1	65.0	73.4	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	200	431	928
CNEL:	97	208	449	968

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

Scenario: 2029
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,740 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,274 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.36	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.26	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.73	0.09	-1.20	-5.38	0.000	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	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	72.4	71.0	61.9	63.2	71.6	71.7
Vehicle Noise:	74.4	72.8	67.1	65.0	73.4	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	433	933
CNEL:	97	209	451	972

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

Scenario: 2029+P
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,398 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,340 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.04%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.51%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.49	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.26	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.73	0.09	-1.20	-5.38	0.000	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	66.9	65.2	59.1	67.7	68.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	72.4	71.0	61.9	63.2	71.6	71.7
Vehicle Noise:	74.4	72.8	67.2	65.0	73.5	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	94	202	435	938
CNEL:	98	211	454	977

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

Scenario: 2042
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,908 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,391 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.58	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.04	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.52	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	64.3	62.8	56.4	54.9	63.3	63.6
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	74.6	73.0	67.3	65.2	73.7	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	208	448	965
CNEL:	100	216	466	1,005

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

Scenario: 2042+P
Road Name: Panama Ln.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,566 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,457 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.71	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	79.45	-14.04	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-10.52	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.4	59.3	67.9	68.5
Medium Trucks:	64.3	62.8	56.4	54.9	63.3	63.6
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	74.6	73.1	67.4	65.3	73.7	74.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	97	209	450	970
CNEL:	101	218	469	1,010

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

Scenario: E
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,012 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	701 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.75	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.37	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.84	2.71	-1.20	-5.61	0.000	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	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	61.6	60.1	53.7	52.2	60.6	60.9
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	71.9	70.3	64.6	62.5	70.9	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	92	199	428
CNEL:	45	96	207	446

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

Scenario: E+P
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,231 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	723 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.06%
Medium Trucks:	84.8%	4.9%	10.3%	2.44%
Heavy Trucks:	86.5%	2.7%	10.8%	5.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.60	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.37	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.84	2.71	-1.20	-5.61	0.000	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	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	61.6	60.1	53.7	52.2	60.6	60.9
Heavy Trucks:	69.9	68.5	59.5	60.7	69.1	69.2
Vehicle Noise:	71.9	70.4	64.7	62.6	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	200	430
CNEL:	45	97	208	449

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

Scenario: 2024
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,346 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	735 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.55	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.16	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.64	2.71	-1.20	-5.61	0.000	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	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	72.1	70.5	64.8	62.7	71.2	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	205	441
CNEL:	46	99	213	460

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

Scenario: 2024+P
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,565 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	757 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.05%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.41	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.16	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.64	2.71	-1.20	-5.61	0.000	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	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	70.1	68.7	59.7	60.9	69.3	69.4
Vehicle Noise:	72.1	70.6	64.9	62.8	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	96	206	444
CNEL:	46	100	215	463

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

Scenario: 2029
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,490 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	749 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.46	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.08	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.56	2.71	-1.20	-5.61	0.000	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	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	70.2	68.8	59.7	61.0	69.4	69.5
Vehicle Noise:	72.2	70.6	64.9	62.8	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	96	208	447
CNEL:	47	100	216	466

Monday, November 8, 2021

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

Scenario: 2029+P
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,709 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	771 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.04%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.51%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.33	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.08	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.56	2.71	-1.20	-5.61	0.000	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	64.7	62.9	56.9	65.5	66.1
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	70.2	68.8	59.7	61.0	69.4	69.5
Vehicle Noise:	72.2	70.6	65.0	62.8	71.3	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	450
CNEL:	47	101	217	469

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

Scenario: 2042
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,979 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	798 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.19	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.80	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.28	2.71	-1.20	-5.61	0.000	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	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	62.2	60.7	54.3	52.7	61.2	61.4
Heavy Trucks:	70.5	69.1	60.0	61.3	69.6	69.8
Vehicle Noise:	72.4	70.9	65.2	63.1	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	217	466
CNEL:	49	105	226	486

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

Scenario: 2042+P
Road Name: Berkshire Rd.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,198 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	820 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.03%
Medium Trucks:	84.8%	4.9%	10.3%	2.45%
Heavy Trucks:	86.5%	2.7%	10.8%	5.52%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.06	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.80	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.28	2.71	-1.20	-5.61	0.000	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	65.0	63.2	57.1	65.8	66.4
Medium Trucks:	62.2	60.7	54.3	52.7	61.2	61.4
Heavy Trucks:	70.5	69.1	60.0	61.3	69.6	69.8
Vehicle Noise:	72.5	70.9	65.3	63.1	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	469
CNEL:	49	105	227	489

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

Scenario: E
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,113 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	711 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.69	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.30	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.78	2.71	-1.20	-5.61	0.000	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	64.3	62.6	56.5	65.1	65.7
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	71.9	70.4	64.7	62.6	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	201	432
CNEL:	45	97	209	450

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

Scenario: E+P
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,223 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	722 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.94%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	5.58%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.62	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.30	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.78	2.71	-1.20	-5.61	0.000	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	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	72.0	70.4	64.7	62.6	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	201	433
CNEL:	45	97	210	451

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

Scenario: 2024
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,088 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	809 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.13	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.75	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.22	2.71	-1.20	-5.61	0.000	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	64.9	63.1	57.1	65.7	66.3
Medium Trucks:	62.2	60.7	54.3	52.8	61.3	61.5
Heavy Trucks:	70.5	69.1	60.1	61.3	69.7	69.8
Vehicle Noise:	72.5	70.9	65.2	63.1	71.6	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	471
CNEL:	49	106	228	490

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

Scenario: 2024+P
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,198 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	820 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.92%
Medium Trucks:	84.8%	4.9%	10.3%	2.49%
Heavy Trucks:	86.5%	2.7%	10.8%	5.59%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.07	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.75	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.22	2.71	-1.20	-5.61	0.000	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	65.0	63.2	57.1	65.8	66.4
Medium Trucks:	62.2	60.7	54.3	52.8	61.3	61.5
Heavy Trucks:	70.5	69.1	60.1	61.3	69.7	69.8
Vehicle Noise:	72.5	71.0	65.3	63.2	71.6	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	219	472
CNEL:	49	106	228	492

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

Scenario: 2029
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,706 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	871 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.81	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.43	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-14.90	2.71	-1.20	-5.61	0.000	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	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	62.5	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	70.9	69.4	60.4	61.7	70.0	70.1
Vehicle Noise:	72.8	71.3	65.6	63.5	71.9	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	107	229	494
CNEL:	51	111	239	515

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

Scenario: 2029+P
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,816 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	882 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.91%
Medium Trucks:	84.8%	4.9%	10.3%	2.49%
Heavy Trucks:	86.5%	2.7%	10.8%	5.60%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.75	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.43	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-14.90	2.71	-1.20	-5.61	0.000	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	65.3	63.5	57.5	66.1	66.7
Medium Trucks:	62.5	61.0	54.7	53.1	61.6	61.8
Heavy Trucks:	70.9	69.4	60.4	61.7	70.0	70.1
Vehicle Noise:	72.8	71.3	65.6	63.5	71.9	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	230	496
CNEL:	52	111	240	516

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

Scenario: 2042
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,078 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,108 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.76	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-17.38	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-13.86	2.71	-1.20	-5.61	0.000	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	66.3	64.5	58.4	67.1	67.7
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	71.9	70.5	61.4	62.7	71.1	71.2
Vehicle Noise:	73.9	72.3	66.6	64.5	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	269	581
CNEL:	60	130	281	605

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

Scenario: 2042+P
Road Name: Berkshire Rd.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,188 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,119 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.89%
Medium Trucks:	84.8%	4.9%	10.3%	2.49%
Heavy Trucks:	86.5%	2.7%	10.8%	5.61%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.72	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-17.38	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-13.86	2.71	-1.20	-5.61	0.000	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	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	71.9	70.5	61.4	62.7	71.1	71.2
Vehicle Noise:	73.9	72.3	66.6	64.5	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	270	582
CNEL:	61	131	281	606

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

Scenario: E
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,144 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	714 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.67	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.28	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.76	2.71	-1.20	-5.61	0.000	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	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	72.0	70.4	64.7	62.6	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	201	433
CNEL:	45	97	210	451

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

Scenario: E+P
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,254 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	725 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.93%
Medium Trucks:	84.8%	4.9%	10.3%	2.48%
Heavy Trucks:	86.5%	2.7%	10.8%	5.58%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.60	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-19.28	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.76	2.71	-1.20	-5.61	0.000	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	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	72.0	70.4	64.7	62.6	71.0	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	94	202	435
CNEL:	45	98	210	453

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

Scenario: 2024
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,887 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	789 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.24	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.85	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.33	2.71	-1.20	-5.61	0.000	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	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	62.1	60.6	54.2	52.7	61.2	61.4
Heavy Trucks:	70.4	69.0	60.0	61.2	69.6	69.7
Vehicle Noise:	72.4	70.8	65.1	63.0	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	215	463
CNEL:	48	104	224	482

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

Scenario: 2024+P
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,997 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	800 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.92%
Medium Trucks:	84.8%	4.9%	10.3%	2.49%
Heavy Trucks:	86.5%	2.7%	10.8%	5.59%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.17	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.85	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-15.33	2.71	-1.20	-5.61	0.000	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	64.8	63.1	57.0	65.6	66.3
Medium Trucks:	62.1	60.6	54.2	52.7	61.2	61.4
Heavy Trucks:	70.4	69.0	60.0	61.2	69.6	69.7
Vehicle Noise:	72.4	70.8	65.2	63.0	71.5	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	215	464
CNEL:	48	104	224	483

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

Scenario: 2029
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,665 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	867 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.83	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.45	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-14.92	2.71	-1.20	-5.61	0.000	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	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	62.5	61.0	54.6	53.1	61.6	61.8
Heavy Trucks:	70.8	69.4	60.4	61.6	70.0	70.1
Vehicle Noise:	72.8	71.2	65.5	63.4	71.9	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	493
CNEL:	51	111	238	513

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

Scenario: 2029+P
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,775 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	877 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.91%
Medium Trucks:	84.8%	4.9%	10.3%	2.49%
Heavy Trucks:	86.5%	2.7%	10.8%	5.60%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.77	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-18.45	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-14.92	2.71	-1.20	-5.61	0.000	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	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	62.5	61.0	54.6	53.1	61.6	61.8
Heavy Trucks:	70.8	69.4	60.4	61.6	70.0	70.1
Vehicle Noise:	72.8	71.3	65.6	63.4	71.9	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	494
CNEL:	51	111	239	515

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

Scenario: 2042
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,771 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,177 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.50	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-17.12	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-13.59	2.71	-1.20	-5.61	0.000	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	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	63.8	62.3	56.0	54.4	62.9	63.1
Heavy Trucks:	72.2	70.7	61.7	63.0	71.3	71.4
Vehicle Noise:	74.1	72.6	66.9	64.8	73.2	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	281	605
CNEL:	63	136	292	630

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

Scenario: 2042+P
Road Name: Berkshire Rd.
Road Segment: e/o Monitor St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,881 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,188 vehicles
Vehicle Speed:	45 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:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.89%
Medium Trucks:	84.8%	4.9%	10.3%	2.50%
Heavy Trucks:	86.5%	2.7%	10.8%	5.62%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.711
Medium Trucks:	32.439
Heavy Trucks:	32.466

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.46	2.66	-1.20	-4.56	0.000	0.000
Medium Trucks:	79.45	-17.12	2.72	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-13.59	2.71	-1.20	-5.61	0.000	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	66.6	64.8	58.7	67.4	68.0
Medium Trucks:	63.8	62.3	56.0	54.4	62.9	63.1
Heavy Trucks:	72.2	70.7	61.7	63.0	71.3	71.4
Vehicle Noise:	74.1	72.6	66.9	64.8	73.2	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	130	281	606
CNEL:	63	136	293	631

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

Scenario: E
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,458 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	946 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.91	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.52	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.00	0.09	-1.20	-5.38	0.000	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	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.6
Heavy Trucks:	69.3	67.8	58.8	60.1	68.4	68.5
Vehicle Noise:	71.4	69.9	64.4	62.1	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	276	595
CNEL:	62	134	288	621

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

Scenario: E+P
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,774 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,077 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.21%
Heavy Trucks:	86.5%	2.7%	10.8%	4.98%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.30	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-18.52	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-15.00	0.09	-1.20	-5.38	0.000	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	64.9	63.1	57.1	65.7	66.3
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.6
Heavy Trucks:	69.3	67.8	58.8	60.1	68.4	68.5
Vehicle Noise:	71.6	70.1	64.8	62.2	70.7	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	284	612
CNEL:	64	138	297	640

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

Scenario: 2024
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,185 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,119 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.18	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.80	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.27	0.09	-1.20	-5.38	0.000	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	65.0	63.2	57.2	65.8	66.4
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	72.2	70.6	65.1	62.8	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	143	309	665
CNEL:	69	150	322	694

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

Scenario: 2024+P
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,501 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,250 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.67%
Medium Trucks:	84.8%	4.9%	10.3%	2.25%
Heavy Trucks:	86.5%	2.7%	10.8%	5.07%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.66	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.80	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.27	0.09	-1.20	-5.38	0.000	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	70.0	68.6	59.5	60.8	69.1	69.3
Vehicle Noise:	72.3	70.8	65.5	62.9	71.4	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	147	316	681
CNEL:	71	153	331	712

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

Scenario: 2029
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,521 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,252 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.69	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.31	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.78	0.09	-1.20	-5.38	0.000	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	62.6	61.1	54.7	53.2	61.6	61.9
Heavy Trucks:	70.5	69.1	60.0	61.3	69.6	69.8
Vehicle Noise:	72.7	71.1	65.6	63.3	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	154	333	717
CNEL:	75	161	347	748

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

Scenario: 2029+P
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,837 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,384 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.59%
Medium Trucks:	84.8%	4.9%	10.3%	2.28%
Heavy Trucks:	86.5%	2.7%	10.8%	5.13%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.22	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.31	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.78	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	66.0	64.2	58.1	66.8	67.4
Medium Trucks:	62.6	61.1	54.7	53.2	61.6	61.9
Heavy Trucks:	70.5	69.1	60.0	61.3	69.6	69.8
Vehicle Noise:	72.8	71.2	65.9	63.4	71.9	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	340	733
CNEL:	77	165	355	766

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

Scenario: 2042
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,135 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,814 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.08	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.70	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.17	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	72.1	70.7	61.6	62.9	71.2	71.4
Vehicle Noise:	74.3	72.7	67.2	64.9	73.3	73.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	198	426	918
CNEL:	96	206	445	958

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

Scenario: 2042+P
Road Name: Hosking Av.
Road Segment: w/o Akers Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,451 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,945 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.36%
Medium Trucks:	84.8%	4.9%	10.3%	2.35%
Heavy Trucks:	86.5%	2.7%	10.8%	5.29%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.25	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.70	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.17	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	72.1	70.7	61.6	62.9	71.2	71.4
Vehicle Noise:	74.4	72.8	67.5	65.0	73.4	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	432	932
CNEL:	97	210	452	973

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

Scenario: E
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,286 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,129 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.14	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.23	0.09	-1.20	-5.38	0.000	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	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	70.0	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	72.2	70.6	65.2	62.8	71.3	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	311	669
CNEL:	70	150	324	698

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

Scenario: E+P
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,930 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,293 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.85%
Medium Trucks:	84.8%	4.9%	10.3%	2.20%
Heavy Trucks:	86.5%	2.7%	10.8%	4.95%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.50	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-17.76	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-14.23	0.09	-1.20	-5.38	0.000	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	65.7	63.9	57.8	66.5	67.1
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	70.0	68.6	59.6	60.8	69.2	69.3
Vehicle Noise:	72.4	70.8	65.6	63.0	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	148	320	689
CNEL:	72	155	335	721

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

Scenario: 2024
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,810 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,381 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.26	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.88	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.36	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	63.0	61.5	55.1	53.6	62.1	62.3
Heavy Trucks:	70.9	69.5	60.4	61.7	70.1	70.2
Vehicle Noise:	73.1	71.5	66.1	63.7	72.2	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	355	765
CNEL:	80	172	371	799

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

Scenario: 2024+P
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,454 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,545 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.68%
Medium Trucks:	84.8%	4.9%	10.3%	2.25%
Heavy Trucks:	86.5%	2.7%	10.8%	5.07%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.73	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.88	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.36	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.7	58.6	67.2	67.8
Medium Trucks:	63.0	61.5	55.1	53.6	62.1	62.3
Heavy Trucks:	70.9	69.5	60.4	61.7	70.1	70.2
Vehicle Noise:	73.3	71.7	66.4	63.9	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	169	364	784
CNEL:	82	177	381	820

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

Scenario: 2029
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,405 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,541 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.79	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.40	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.88	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	71.4	70.0	60.9	62.2	70.5	70.7
Vehicle Noise:	73.6	72.0	66.5	64.2	72.6	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	177	382	823
CNEL:	86	185	399	859

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

Scenario: 2029+P
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,049 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,705 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.60%
Medium Trucks:	84.8%	4.9%	10.3%	2.28%
Heavy Trucks:	86.5%	2.7%	10.8%	5.12%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.31	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.40	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.88	0.09	-1.20	-5.38	0.000	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	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	71.4	70.0	60.9	62.2	70.5	70.7
Vehicle Noise:	73.7	72.1	66.8	64.3	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	181	391	841
CNEL:	88	190	408	880

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

Scenario: 2042
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,103 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,210 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.78	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.32	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	65.1	63.5	57.2	55.6	64.1	64.3
Heavy Trucks:	72.9	71.5	62.5	63.7	72.1	72.2
Vehicle Noise:	75.1	73.6	68.1	65.8	74.2	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	105	226	486	1,047
CNEL:	109	236	507	1,093

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

Scenario: 2042+P
Road Name: Hosking Av.
Road Segment: w/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,747 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,375 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.38%
Medium Trucks:	84.8%	4.9%	10.3%	2.35%
Heavy Trucks:	86.5%	2.7%	10.8%	5.28%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.12	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.84	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.32	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	65.1	63.5	57.2	55.6	64.1	64.3
Heavy Trucks:	72.9	71.5	62.5	63.7	72.1	72.2
Vehicle Noise:	75.2	73.7	68.3	65.9	74.3	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	106	229	494	1,063
CNEL:	111	239	516	1,111

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

Scenario: E
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,627 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,563 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.73	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.34	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.82	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.7	58.6	67.2	67.8
Medium Trucks:	63.5	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	71.4	70.0	61.0	62.2	70.6	70.7
Vehicle Noise:	73.6	72.1	66.6	64.2	72.7	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	179	386	831
CNEL:	87	187	403	868

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

Scenario: E+P
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,820 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,782 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.82%
Medium Trucks:	84.8%	4.9%	10.3%	2.21%
Heavy Trucks:	86.5%	2.7%	10.8%	4.97%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.11	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.34	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.82	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.2	67.9	68.5
Medium Trucks:	63.5	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	71.4	70.0	61.0	62.2	70.6	70.7
Vehicle Noise:	73.8	72.2	67.0	64.4	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	86	184	397	855
CNEL:	89	193	415	895

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

Scenario: 2024
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,332 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,833 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.03	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.65	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.13	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.4	59.3	67.9	68.5
Medium Trucks:	64.2	62.7	56.4	54.8	63.3	63.5
Heavy Trucks:	72.1	70.7	61.7	62.9	71.3	71.4
Vehicle Noise:	74.3	72.8	67.3	64.9	73.4	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	199	429	924
CNEL:	96	208	448	965

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

Scenario: 2024+P
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,525 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,052 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.69%
Medium Trucks:	84.8%	4.9%	10.3%	2.25%
Heavy Trucks:	86.5%	2.7%	10.8%	5.06%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.50	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.65	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.13	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.8	68.5	69.1
Medium Trucks:	64.2	62.7	56.4	54.8	63.3	63.5
Heavy Trucks:	72.1	70.7	61.7	62.9	71.3	71.4
Vehicle Noise:	74.5	72.9	67.6	65.1	73.5	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	440	947
CNEL:	99	213	460	991

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

Scenario: 2029
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,540 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,054 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.46	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.16	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.63	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.9	59.8	68.4	69.0
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	74.8	73.2	67.8	65.4	73.9	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	463	997
CNEL:	104	224	483	1,041

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

Scenario: 2029+P
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,733 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,273 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.60%
Medium Trucks:	84.8%	4.9%	10.3%	2.28%
Heavy Trucks:	86.5%	2.7%	10.8%	5.12%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.94	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.16	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.63	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	75.0	73.4	68.1	65.6	74.0	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	102	220	473	1,019
CNEL:	107	230	495	1,066

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

Scenario: 2042
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,815 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,982 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.08	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.54	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-10.02	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.1	69.2	67.5	61.4	70.0	70.7
Medium Trucks:	66.4	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	74.2	72.8	63.8	65.0	73.4	73.5
Vehicle Noise:	76.4	74.9	69.4	67.1	75.5	75.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	275	593	1,279
CNEL:	133	288	619	1,334

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

Scenario: 2042+P
Road Name: Hosking Av.
Road Segment: e/o Wible Rd.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,008 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,201 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.37%
Medium Trucks:	84.8%	4.9%	10.3%	2.35%
Heavy Trucks:	86.5%	2.7%	10.8%	5.28%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.41	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.54	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-10.02	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	66.4	64.8	58.5	56.9	65.4	65.6
Heavy Trucks:	74.2	72.8	63.8	65.0	73.4	73.5
Vehicle Noise:	76.5	75.0	69.6	67.1	75.6	75.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	280	602	1,298
CNEL:	136	292	630	1,356

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

Scenario: E
Road Name: Hosking Av.
Road Segment: w/o S. H St.

Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,096 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,610 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.60	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.21	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.69	0.09	-1.20	-5.38	0.000	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	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	71.6	70.2	61.1	62.4	70.7	70.8
Vehicle Noise:	73.8	72.2	66.7	64.4	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	85	183	393	848
CNEL:	88	191	411	885

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

Scenario: E+P
Road Name: Hosking Av.
Road Segment: w/o S. H St.

Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,727 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,873 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.96%
Medium Trucks:	84.8%	4.9%	10.3%	2.17%
Heavy Trucks:	86.5%	2.7%	10.8%	4.87%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.11	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.21	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.69	0.09	-1.20	-5.38	0.000	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	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	71.6	70.2	61.1	62.4	70.7	70.8
Vehicle Noise:	74.0	72.4	67.2	64.6	73.0	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	189	407	876
CNEL:	92	198	426	917

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

Scenario: 2024
Road Name: Hosking Av.
Road Segment: w/o S. H St.

Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,609 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,061 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.47	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.14	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.62	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.9	59.8	68.4	69.1
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	74.8	73.3	67.8	65.5	73.9	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	100	215	464	1,000
CNEL:	104	225	484	1,043

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

Scenario: 2024+P
Road Name: Hosking Av.
Road Segment: w/o S. H St.

Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,240 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,324 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.74%
Medium Trucks:	84.8%	4.9%	10.3%	2.23%
Heavy Trucks:	86.5%	2.7%	10.8%	5.03%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.04	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.14	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.62	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	64.7	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	72.6	71.2	62.2	63.4	71.8	71.9
Vehicle Noise:	75.0	73.4	68.2	65.6	74.1	74.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	221	476	1,026
CNEL:	107	231	498	1,073

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

Scenario: 2029
Road Name: Hosking Av.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,883 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,288 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.93	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.69	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.16	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	65.2	63.7	57.3	55.8	64.3	64.5
Heavy Trucks:	73.1	71.7	62.6	63.9	72.2	72.4
Vehicle Noise:	75.3	73.7	68.2	65.9	74.3	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	107	231	497	1,072
CNEL:	112	241	519	1,119

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

Scenario: 2029+P
Road Name: Hosking Av.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,514 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,551 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.66%
Medium Trucks:	84.8%	4.9%	10.3%	2.26%
Heavy Trucks:	86.5%	2.7%	10.8%	5.08%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.44	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-14.69	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.16	0.09	-1.20	-5.38	0.000	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	68.6	66.8	60.8	69.4	70.0
Medium Trucks:	65.2	63.7	57.3	55.8	64.3	64.5
Heavy Trucks:	73.1	71.7	62.6	63.9	72.2	72.4
Vehicle Noise:	75.4	73.9	68.6	66.1	74.5	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	236	509	1,097
CNEL:	115	247	532	1,147

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

Scenario: 2042
Road Name: Hosking Av.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,436 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,244 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.44	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.17	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.65	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	66.7	65.2	58.8	57.3	65.8	66.0
Heavy Trucks:	74.6	73.2	64.2	65.4	73.8	73.9
Vehicle Noise:	76.8	75.2	69.8	67.4	75.9	76.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	135	291	628	1,352
CNEL:	141	304	655	1,412

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

Scenario: 2042+P
Road Name: Hosking Av.
Road Segment: w/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,067 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	3,507 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.43%
Medium Trucks:	84.8%	4.9%	10.3%	2.33%
Heavy Trucks:	86.5%	2.7%	10.8%	5.24%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	2.81	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.17	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-9.65	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.2	62.2	70.8	71.4
Medium Trucks:	66.7	65.2	58.8	57.3	65.8	66.0
Heavy Trucks:	74.6	73.2	64.2	65.4	73.8	73.9
Vehicle Noise:	76.9	75.3	70.0	67.5	76.0	76.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	296	638	1,375
CNEL:	144	310	667	1,437

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

Scenario: E
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,586 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,459 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.03	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.64	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.12	0.09	-1.20	-5.38	0.000	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	66.1	64.4	58.3	66.9	67.6
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	71.1	69.7	60.7	61.9	70.3	70.4
Vehicle Noise:	73.3	71.8	66.3	64.0	72.4	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	368	794
CNEL:	83	179	385	829

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

Scenario: E+P
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,463 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,546 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.28%
Medium Trucks:	84.8%	4.9%	10.3%	2.38%
Heavy Trucks:	86.5%	2.7%	10.8%	5.35%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.75	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-16.64	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-13.12	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.7	58.6	67.2	67.8
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	71.1	69.7	60.7	61.9	70.3	70.4
Vehicle Noise:	73.4	71.8	66.5	64.0	72.5	72.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	373	804
CNEL:	84	181	390	840

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

Scenario: 2024
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,958 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,696 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.37	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.99	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.47	0.09	-1.20	-5.38	0.000	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	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	71.8	70.4	61.3	62.6	70.9	71.1
Vehicle Noise:	74.0	72.4	66.9	64.6	73.0	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	189	407	878
CNEL:	92	197	425	916

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

Scenario: 2024+P
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,835 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,784 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.21%
Medium Trucks:	84.8%	4.9%	10.3%	2.40%
Heavy Trucks:	86.5%	2.7%	10.8%	5.39%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.13	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.99	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-12.47	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.3	59.2	67.8	68.4
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	71.8	70.4	61.3	62.6	70.9	71.1
Vehicle Noise:	74.1	72.5	67.1	64.7	73.1	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	191	412	887
CNEL:	93	200	430	927

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

Scenario: 2029
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,018 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,902 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.13	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.49	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.97	0.09	-1.20	-5.38	0.000	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	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	64.4	62.9	56.5	55.0	63.4	63.7
Heavy Trucks:	72.3	70.9	61.8	63.1	71.4	71.6
Vehicle Noise:	74.5	72.9	67.4	65.1	73.5	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	95	204	440	947
CNEL:	99	213	459	989

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

Scenario: 2029+P
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,895 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	1,990 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.17%
Medium Trucks:	84.8%	4.9%	10.3%	2.41%
Heavy Trucks:	86.5%	2.7%	10.8%	5.42%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.34	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-15.49	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-11.97	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	64.4	62.9	56.5	55.0	63.4	63.7
Heavy Trucks:	72.3	70.9	61.8	63.1	71.4	71.6
Vehicle Noise:	74.5	73.0	67.6	65.2	73.6	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	206	444	956
CNEL:	100	215	464	999

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

Scenario: 2042
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,676 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,768 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	91.81%
Medium Trucks:	84.8%	4.9%	10.3%	2.52%
Heavy Trucks:	86.5%	2.7%	10.8%	5.67%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.75	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.86	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-10.34	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.8	68.9	67.2	61.1	69.7	70.3
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	73.9	72.5	63.5	64.7	73.1	73.2
Vehicle Noise:	76.1	74.5	69.1	66.7	75.2	75.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	122	262	565	1,217
CNEL:	127	274	589	1,270

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

Scenario: 2042+P
Road Name: Hosking Av.
Road Segment: e/o S. H St.
Project Name: Majestic Gateway
Job Number: 13923

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,553 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,855 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	55.0 feet
Centerline Dist. to Observer:	55.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	92.06%
Medium Trucks:	84.8%	4.9%	10.3%	2.44%
Heavy Trucks:	86.5%	2.7%	10.8%	5.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	48.724
Medium Trucks:	48.542
Heavy Trucks:	48.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.90	0.07	-1.20	-4.67	0.000	0.000
Medium Trucks:	81.00	-13.86	0.09	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-10.34	0.09	-1.20	-5.38	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.3	61.3	69.9	70.5
Medium Trucks:	66.0	64.5	58.2	56.6	65.1	65.3
Heavy Trucks:	73.9	72.5	63.5	64.7	73.1	73.2
Vehicle Noise:	76.2	74.6	69.2	66.8	75.2	75.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	122	264	568	1,225
CNEL:	128	276	594	1,279

APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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13923 - Majestic Gateway

CadnaA Noise Prediction Model: 13923_02.cna
Date: 08.11.21
Analyst: B. Lawson

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	36.9	36.8	43.4	55.0	50.0	0.0				5.00	a	5731996.16	2787441.42	5.00
RECEIVERS		R2	43.6	43.6	50.2	55.0	50.0	0.0				5.00	a	5733153.76	2789045.50	5.00
RECEIVERS		R3	46.1	46.1	52.7	55.0	50.0	0.0				5.00	a	5734435.07	2787561.81	5.00
RECEIVERS		R4	48.1	48.1	54.8	55.0	50.0	0.0				5.00	a	5734412.20	2787014.76	5.00
RECEIVERS		R5	47.7	47.6	54.3	55.0	50.0	0.0				5.00	a	5734396.83	2786179.70	5.00
RECEIVERS		R6	41.8	41.5	48.2	55.0	50.0	0.0				5.00	a	5734366.01	2785277.27	5.00
RECEIVERS		R7	39.1	39.0	45.6	55.0	50.0	0.0				5.00	a	5733507.83	2783590.60	5.00
RECEIVERS		R8	40.6	40.5	47.2	55.0	50.0	0.0				5.00	a	5732356.49	2784672.85	5.00
RECEIVERS		R9	41.8	41.7	48.4	55.0	50.0	0.0				5.00	a	5732124.93	2786390.59	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733065.06	2785802.98	42.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733059.71	2785572.99	42.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733382.41	2785234.24	29.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733373.50	2785583.69	29.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733375.28	2785774.45	29.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733585.66	2785781.59	29.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733751.47	2785774.45	29.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5734013.55	2785769.10	29.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5734052.78	2786107.85	29.00
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733016.92	2786041.89	54.00
POINTSOURCE		AC11	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733591.01	2786047.23	54.00
POINTSOURCE		AC12	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733628.45	2787448.58	54.00
POINTSOURCE		AC13	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5733038.32	2787450.36	54.00
POINTSOURCE		AC14	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5732651.43	2786847.75	29.00
POINTSOURCE		AC15	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5732441.05	2786990.38	29.00
POINTSOURCE		AC16	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5732644.30	2787521.68	29.00
POINTSOURCE		AC17	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	5732387.57	2787534.16	29.00
POINTSOURCE		DT01	84.0	84.0	84.0	Lw	84					0.0	3.00	a	5732686.41	2787510.14	3.00
POINTSOURCE		DT02	84.0	84.0	84.0	Lw	84					0.0	3.00	a	5732481.59	2787517.48	3.00
POINTSOURCE		DT03	84.0	84.0	84.0	Lw	84					0.0	3.00	a	5733906.53	2785731.35	3.00
POINTSOURCE		DT04	84.0	84.0	84.0	Lw	84					0.0	3.00	a	5734095.93	2786034.54	3.00
POINTSOURCE		PARK00	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732810.33	2785454.27	5.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732350.91	2787428.65	5.00
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732870.99	2785391.31	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732347.24	2787361.11	5.00
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732763.35	2785836.61	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732346.51	2787298.71	5.00
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732725.35	2785776.49	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732343.57	2787237.78	5.00
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732822.90	2785774.79	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732441.21	2787107.84	5.00
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732782.63	2785716.94	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732507.28	2787153.35	5.00
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732794.54	2785652.28	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732571.89	2787104.90	5.00
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732805.32	2785597.26	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732573.35	2787242.92	5.00
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732824.03	2785551.32	5.00
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732576.29	2787364.05	5.00
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732883.59	2785593.29	5.00
POINTSOURCE		PARK10	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732510.95	2787303.12	5.00
POINTSOURCE		PARK10	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732885.85	2785692.55	5.00
POINTSOURCE		PARK11	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732508.75	2787429.39	5.00
POINTSOURCE		PARK11	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732884.72	2785783.29	5.00
POINTSOURCE		PARK12	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732450.75	2787358.91	5.00
POINTSOURCE		PARK12	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732892.09	2785466.82	5.00
POINTSOURCE		PARK13	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732445.62	2787247.32	5.00
POINTSOURCE		PARK13	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732933.50	2785448.67	5.00
POINTSOURCE		PARK14	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732687.14	2787411.03	5.00
POINTSOURCE		PARK14	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732995.32	2785448.10	5.00
POINTSOURCE		PARK15	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732687.88	2787349.37	5.00
POINTSOURCE		PARK15	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733057.14	2785444.70	5.00
POINTSOURCE		PARK16	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732686.41	2787286.23	5.00
POINTSOURCE		PARK16	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733053.17	2785373.24	5.00
POINTSOURCE		PARK17	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732681.27	2787228.23	5.00
POINTSOURCE		PARK17	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733097.97	2785451.50	5.00
POINTSOURCE		PARK18	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732681.27	2787169.50	5.00
POINTSOURCE		PARK18	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733104.21	2785361.32	5.00
POINTSOURCE		PARK19	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732938.21	2787447.00	5.00
POINTSOURCE		PARK19	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733184.18	2785454.91	5.00
POINTSOURCE		PARK20	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732631.82	2786740.77	5.00
POINTSOURCE		PARK20	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733181.35	2785355.09	5.00
POINTSOURCE		PARK21	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733851.17	2787453.02	5.00
POINTSOURCE		PARK21	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732958.45	2785340.91	5.00
POINTSOURCE		PARK22	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734003.16	2787437.71	5.00
POINTSOURCE		PARK22	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733046.93	2785307.44	5.00
POINTSOURCE		PARK23	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733937.37	2787395.74	5.00
POINTSOURCE		PARK23	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733195.53	2785245.62	5.00
POINTSOURCE		PARK24	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734002.03	2787369.08	5.00
POINTSOURCE		PARK24	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733230.69	2785405.56	5.00
POINTSOURCE		PARK25	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733936.81	2787297.62	5.00
POINTSOURCE		PARK25	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733290.81	2785443.56	5.00
POINTSOURCE		PARK26	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734068.96	2787396.87	5.00
POINTSOURCE		PARK26	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733289.11	2785369.83	5.00
POINTSOURCE		PARK27	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734063.28	2787293.65	5.00
POINTSOURCE		PARK27	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733350.93	2785403.29	5.00
POINTSOURCE		PARK28	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734114.90	2787437.14	5.00
POINTSOURCE		PARK28	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733400.84	2785444.70	5.00
POINTSOURCE		PARK29	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734114.33	2787323.14	5.00
POINTSOURCE		PARK29	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733397.44	2785357.35	5.00
POINTSOURCE		PARK30	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733935.67	2787197.80	5.00
POINTSOURCE		PARK31	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733998.06	2787122.93	5.00
POINTSOURCE		PARK32	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734056.48	2787071.89	5.00
POINTSOURCE		PARK33	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734112.06	2786995.32	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARK34	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734062.15	2787194.96	5.00
POINTSOURCE		PARK35	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733881.22	2787119.53	5.00
POINTSOURCE		PARK36	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733933.40	2787080.39	5.00
POINTSOURCE		PARK37	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733878.39	2786990.22	5.00
POINTSOURCE		PARK38	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733927.73	2786951.65	5.00
POINTSOURCE		PARK39	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733930.57	2786806.45	5.00
POINTSOURCE		PARK40	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733995.79	2787000.42	5.00
POINTSOURCE		PARK41	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734059.31	2786948.81	5.00
POINTSOURCE		PARK42	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733994.09	2786872.25	5.00
POINTSOURCE		PARK43	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734109.22	2786868.84	5.00
POINTSOURCE		PARK44	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733880.09	2786866.01	5.00
POINTSOURCE		PARK45	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734055.91	2786807.02	5.00
POINTSOURCE		PARK46	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734104.12	2786750.87	5.00
POINTSOURCE		PARK47	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733989.55	2786743.50	5.00
POINTSOURCE		PARK48	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733878.39	2786618.16	5.00
POINTSOURCE		PARK49	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733986.15	2786611.92	5.00
POINTSOURCE		PARK50	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734101.28	2786564.28	5.00
POINTSOURCE		PARK51	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733988.42	2786542.16	5.00
POINTSOURCE		PARK52	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733920.36	2786512.10	5.00
POINTSOURCE		PARK53	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733873.85	2786492.81	5.00
POINTSOURCE		PARK54	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734051.37	2786511.53	5.00
POINTSOURCE		PARK55	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733987.85	2786420.78	5.00
POINTSOURCE		PARK56	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734049.67	2786385.05	5.00
POINTSOURCE		PARK57	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733918.66	2786334.58	5.00
POINTSOURCE		PARK58	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733982.18	2786288.64	5.00
POINTSOURCE		PARK59	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734097.31	2786309.62	5.00
POINTSOURCE		PARK60	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733869.31	2786375.41	5.00
POINTSOURCE		PARK61	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734092.78	2786440.64	5.00
POINTSOURCE		PARK62	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733954.96	2786136.64	5.00
POINTSOURCE		PARK63	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733953.82	2786078.22	5.00
POINTSOURCE		PARK64	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733955.52	2786014.70	5.00
POINTSOURCE		PARK65	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733895.40	2786108.28	5.00
POINTSOURCE		PARK66	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733893.14	2785988.61	5.00
POINTSOURCE		PARK67	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733892.57	2785900.70	5.00
POINTSOURCE		PARK68	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733982.18	2785915.44	5.00
POINTSOURCE		PARK69	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734034.93	2785913.74	5.00
POINTSOURCE		PARK70	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733923.19	2785825.83	5.00
POINTSOURCE		PARK71	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5734014.51	2785824.13	5.00
POINTSOURCE		PARK72	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733740.57	2785834.34	5.00
POINTSOURCE		PARK73	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733684.99	2785872.34	5.00
POINTSOURCE		PARK74	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733596.51	2785838.31	5.00
POINTSOURCE		PARK75	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733517.67	2785870.07	5.00
POINTSOURCE		PARK76	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733402.54	2785841.14	5.00
POINTSOURCE		PARK77	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733735.46	2785701.62	5.00
POINTSOURCE		PARK78	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733543.20	2785705.59	5.00
POINTSOURCE		PARK79	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733320.30	2785838.88	5.00
POINTSOURCE		PARK80	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733235.79	2785838.31	5.00
POINTSOURCE		PARK81	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733276.06	2785877.44	5.00
POINTSOURCE		PARK82	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733371.35	2785875.17	5.00
POINTSOURCE		PARK83	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733358.30	2785706.16	5.00
POINTSOURCE		PARK84	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733356.60	2785652.28	5.00
POINTSOURCE		PARK85	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733243.73	2785708.43	5.00
POINTSOURCE		PARK86	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733241.47	2785655.68	5.00
POINTSOURCE		PARK87	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733225.58	2785518.43	5.00
POINTSOURCE		PARK88	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733302.72	2785518.43	5.00
POINTSOURCE		PARK89	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733374.75	2785518.43	5.00
POINTSOURCE		PARK90	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733201.20	2785879.14	5.00
POINTSOURCE		PARK91	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5733062.24	2785878.01	5.00
POINTSOURCE		PARK92	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732956.18	2785879.71	5.00
POINTSOURCE		PARK93	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732813.26	2785884.25	5.00
POINTSOURCE		PARK94	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732719.11	2785887.65	5.00
POINTSOURCE		PARK95	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732607.94	2785885.38	5.00
POINTSOURCE		PARK96	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732635.74	2785803.14	5.00
POINTSOURCE		PARK97	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732668.06	2785710.70	5.00
POINTSOURCE		PARK98	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732699.26	2785624.49	5.00
POINTSOURCE		PARK99	87.8	87.8	87.8	Lw	87.8					0.0	5.00	a	5732749.17	2785533.18	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5733344.92	2785463.39	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5733108.53	2785884.78	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5733323.63	2785881.85	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5733717.12	2785876.71	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5733560.02	2785877.44	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5734073.17	2785872.30	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5734073.91	2785951.59	5.00
POINTSOURCE		TRASH08	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732956.57	2785996.37	5.00
POINTSOURCE		TRASH09	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732944.09	2785997.10	5.00
POINTSOURCE		TRASH10	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732940.05	2787383.82	5.00
POINTSOURCE		TRASH11	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732940.73	2787397.33	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH12	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732709.08	2787459.46	5.00
POINTSOURCE		TRASH13	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732669.24	2786772.63	5.00
POINTSOURCE		TRASH14	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	a	5732311.30	2787502.68	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		TRUCK01	91.6	91.6	91.6	62.3	62.3	62.3	Lw	91.6									8
LINESOURCE		TRUCK02	91.6	91.6	91.6	78.4	78.4	78.4	Lw	91.6									8
LINESOURCE		TRUCK03	91.6	91.6	91.6	75.9	75.9	75.9	Lw	91.6									8
LINESOURCE		TRUCK04	91.6	91.6	91.6	73.6	73.6	73.6	Lw	91.6									8
LINESOURCE		TRUCK05	91.6	91.6	91.6	66.6	66.6	66.6	Lw	91.6									8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			5732776.19	2787609.33	8.00	0.00
					5732738.79	2785972.35	8.00	0.00
					5733715.81	2785954.52	8.00	0.00
					5733747.90	2786004.44	8.00	0.00
					5733749.92	2786094.90	8.00	0.00
LINESOURCE	8.00	a			5732863.59	2785970.08	8.00	0.00
					5732866.58	2786037.96	8.00	0.00
LINESOURCE	8.00	a			5732772.03	2787427.16	8.00	0.00
					5732893.90	2787421.83	8.00	0.00
LINESOURCE	8.00	a			5733767.54	2787359.61	8.00	0.00
					5733776.83	2787567.74	8.00	0.00
LINESOURCE	8.00	a			5733774.13	2787507.28	8.00	0.00
					5732881.42	2787528.81	8.00	0.00
					5732893.90	2787421.83	8.00	0.00
					5732890.20	2787374.89	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	111.5	111.5	111.5	67.8	67.8	67.8	Lw	111.5					8
AREASOURCE		DOCK02	111.5	111.5	111.5	67.9	67.9	67.9	Lw	111.5					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			5732993.77	2787373.82	8.00	0.00
					5732965.81	2786009.33	8.00	0.00
					5732828.98	2786048.81	8.00	0.00
					5732778.55	2786052.76	8.00	0.00
					5732801.29	2787375.81	8.00	0.00
AREASOURCE	8.00	a			5733658.63	2787359.11	8.00	0.00
					5733850.43	2787359.99	8.00	0.00
					5733831.65	2786093.30	8.00	0.00
					5733634.05	2786097.16	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
			left	right		horz.	vert.	Begin		End		x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						12.00	a			5731998.98	2787471.04	12.00	0.00
												5732065.60	2787116.05	12.00	0.00
												5732149.17	2786354.77	12.00	0.00
BARRIEREXISTING		0						6.00	a			5734344.93	2785039.98	6.00	0.00
												5734411.31	2787566.43	6.00	0.00
BARRIEREXISTING		0						6.00	a			5731824.83	2784925.73	6.00	0.00
												5731924.29	2784918.32	6.00	0.00
												5731991.96	2784908.55	6.00	0.00
												5732043.76	2784899.04	6.00	0.00
												5732105.51	2784880.71	6.00	0.00
												5732152.79	2784859.73	6.00	0.00
												5732199.98	2784832.98	6.00	0.00
												5732242.81	2784804.85	6.00	0.00
												5732289.88	2784770.89	6.00	0.00
												5732336.71	2784722.49	6.00	0.00
												5732369.22	2784681.26	6.00	0.00
												5732416.83	2784608.24	6.00	0.00

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
			left	right		horz.	vert.	Begin		End		x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
												5732501.76	2784399.90	6.00	0.00
												5732584.19	2784134.93	6.00	0.00
												5732647.39	2783857.66	6.00	0.00
BARRIERTEMP		0						8.00	a			5733851.52	2787361.56	8.00	0.00
												5733826.74	2786094.10	8.00	0.00
												5733859.78	2786095.28	8.00	0.00
												5733853.88	2785921.80	8.00	0.00
BARRIERTEMP		0						8.00	a			5733853.88	2785921.80	8.00	0.00
												5732652.50	2785941.86	8.00	0.00
BARRIERTEMP		0						8.00	a			5732800.02	2787378.09	8.00	0.00
												5732790.58	2786960.32	8.00	0.00
BARRIERTEMP		0						8.00	a			5732789.40	2786896.59	8.00	0.00
												5732774.06	2786049.25	8.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		MAJOR_1	x	0		24.00	a	5732403.35	2787024.88	24.00	0.00
								5732687.73	2787017.86	24.00	0.00
								5732682.08	2786817.55	24.00	0.00
								5732397.75	2786826.94	24.00	0.00
BUILDING		SHOPS_1	x	0		24.00	a	5732353.25	2787563.25	24.00	0.00
								5732472.64	2787558.93	24.00	0.00
								5732471.63	2787497.65	24.00	0.00
								5732352.29	2787504.32	24.00	0.00
BUILDING		PAD_1	x	0		24.00	a	5732615.56	2787552.65	24.00	0.00
								5732676.06	2787551.66	24.00	0.00
								5732673.57	2787495.90	24.00	0.00
								5732614.63	2787496.09	24.00	0.00
BUILDING		BUILDING_1	x	0		49.00	a	5732996.33	2787498.62	49.00	0.00
								5733661.14	2787487.71	49.00	0.00
								5733631.96	2785990.05	49.00	0.00
								5732965.58	2785997.94	49.00	0.00
BUILDING		BUILDING_D1	x	0		24.00	a	5734027.27	2786137.96	24.00	0.00
								5734083.82	2786137.03	24.00	0.00
								5734080.48	2786027.02	24.00	0.00
								5734020.90	2786029.53	24.00	0.00
BUILDING		BUILDING_C	x	0		37.00	a	5732915.64	2785837.02	37.00	0.00
								5733103.39	2785833.94	37.00	0.00
								5733101.50	2785766.45	37.00	0.00
								5733052.60	2785765.70	37.00	0.00
								5733051.94	2785725.36	37.00	0.00
								5733072.10	2785724.25	37.00	0.00
								5733070.84	2785647.45	37.00	0.00
								5733049.88	2785647.01	37.00	0.00
								5733049.23	2785607.45	37.00	0.00
								5733099.60	2785603.52	37.00	0.00
								5733097.75	2785537.58	37.00	0.00
								5732910.78	2785541.43	37.00	0.00
BUILDING		BUILDING_R3	x	0		24.00	a	5733195.41	2785813.80	24.00	0.00
								5733417.28	2785809.38	24.00	0.00
								5733416.97	2785743.42	24.00	0.00
								5733234.67	2785747.19	24.00	0.00
								5733235.58	2785755.71	24.00	0.00
								5733195.26	2785757.93	24.00	0.00
BUILDING		BUILDING_R2	x	0		24.00	a	5733482.47	2785809.86	24.00	0.00
								5733619.78	2785806.83	24.00	0.00
								5733619.60	2785748.63	24.00	0.00
								5733585.48	2785749.97	24.00	0.00
								5733583.78	2785740.69	24.00	0.00
								5733501.54	2785742.04	24.00	0.00
								5733481.70	2785762.54	24.00	0.00
BUILDING		BUILDING_R1	x	0		24.00	a	5733653.92	2785806.27	24.00	0.00
								5733782.71	2785804.16	24.00	0.00
								5733781.93	2785756.83	24.00	0.00
								5733761.44	2785737.77	24.00	0.00
								5733686.95	2785738.22	24.00	0.00
								5733688.68	2785749.05	24.00	0.00
								5733652.23	2785750.43	24.00	0.00
BUILDING		BUILDING_D2	x	0		24.00	a	5733917.62	2785797.29	24.00	0.00
								5734049.53	2785795.90	24.00	0.00
								5734048.64	2785741.59	24.00	0.00
								5733916.75	2785743.75	24.00	0.00
BUILDING		BUILDING_R4	x	0		24.00	a	5733189.74	2785610.57	24.00	0.00
								5733230.87	2785610.67	24.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								5733231.04	2785620.76	24.00	0.00
								5733414.91	2785617.74	24.00	0.00
								5733412.22	2785548.72	24.00	0.00
								5733190.36	2785553.91	24.00	0.00
BUILDING		BUILDING_R5R6	x	0		24.00	a	5733240.85	2785272.93	24.00	0.00
								5733416.96	2785270.04	24.00	0.00
								5733417.03	2785180.02	24.00	0.00
								5733334.82	2785182.92	24.00	0.00
								5733335.24	2785208.52	24.00	0.00
								5733238.28	2785210.89	24.00	0.00

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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13923 - Majestic Gateway

CadnaA Noise Prediction Model: 13923_06_Construction.cna
Date: 03.05.22
Analyst: B. Lawson

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	60.3	60.3	67.0	55.0	50.0	0.0				5.00	a	5731996.16	2787441.42	5.00
RECEIVERS		R2	65.4	65.4	72.0	55.0	50.0	0.0				5.00	a	5733153.76	2789045.50	5.00
RECEIVERS		R3	67.2	67.2	73.8	55.0	50.0	0.0				5.00	a	5734435.07	2787561.81	5.00
RECEIVERS		R4	68.7	68.7	75.3	55.0	50.0	0.0				5.00	a	5734412.20	2787014.76	5.00
RECEIVERS		R5	68.9	68.9	75.6	55.0	50.0	0.0				5.00	a	5734396.83	2786179.70	5.00
RECEIVERS		R6	67.9	67.9	74.6	55.0	50.0	0.0				5.00	a	5734366.01	2785277.27	5.00
RECEIVERS		R7	64.3	64.3	71.0	55.0	50.0	0.0				5.00	a	5733507.83	2783590.60	5.00
RECEIVERS		R8	62.9	62.9	69.5	55.0	50.0	0.0				5.00	a	5732356.49	2784672.85	5.00
RECEIVERS		R9	64.0	64.0	70.7	55.0	50.0	0.0				5.00	a	5732124.93	2786390.59	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
CONSTRUCTION		0	135.0	135.0	135.0	79.0	79.0	79.0	Lw"	79					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CONSTRUCTION	8.00	a			5732377.97	2787651.04	8.00	0.00
					5734236.91	2787600.28	8.00	0.00
					5734186.21	2785632.38	8.00	0.00

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
				5734173.25	2785005.09	8.00	0.00
				5733725.44	2785018.62	8.00	0.00
				5733442.23	2785135.48	8.00	0.00
				5733043.01	2785245.05	8.00	0.00
				5732788.47	2785427.66	8.00	0.00
				5732664.60	2785613.65	8.00	0.00
				5732344.15	2786711.59	8.00	0.00
				5732266.53	2787137.80	8.00	0.00
				5732251.79	2787136.20	8.00	0.00
				5732175.22	2787514.56	8.00	0.00
				5732377.49	2787621.62	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						12.00	a		5731998.98	2787471.04	12.00	0.00
											5732065.60	2787116.05	12.00	0.00
											5732149.17	2786354.77	12.00	0.00
BARRIEREXISTING		0						6.00	a		5734344.93	2785039.98	6.00	0.00
											5734411.31	2787566.43	6.00	0.00
BARRIEREXISTING		0						6.00	a		5731824.83	2784925.73	6.00	0.00
											5731924.29	2784918.32	6.00	0.00
											5731991.96	2784908.55	6.00	0.00
											5732043.76	2784899.04	6.00	0.00
											5732105.51	2784880.71	6.00	0.00
											5732152.79	2784859.73	6.00	0.00
											5732199.98	2784832.98	6.00	0.00
											5732242.81	2784804.85	6.00	0.00
											5732289.88	2784770.89	6.00	0.00
											5732336.71	2784722.49	6.00	0.00
											5732369.22	2784681.26	6.00	0.00
											5732416.83	2784608.24	6.00	0.00
											5732501.76	2784399.90	6.00	0.00
											5732584.19	2784134.93	6.00	0.00
											5732647.39	2783857.66	6.00	0.00

APPENDIX 10.2:

CADNAA NIGHTTIME CONCRETE POUR NOISE MODEL INPUTS

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13923 - Majestic Gateway

CadnaA Noise Prediction Model: 13923_06_ConcretePour.cna
Date: 03.05.22
Analyst: B. Lawson

Calculation Configuration

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

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	49.0	49.0	55.7	55.0	50.0	0.0				5.00	a	5731996.16	2787441.42	5.00
RECEIVERS		R2	54.1	54.1	60.7	55.0	50.0	0.0				5.00	a	5733153.76	2789045.50	5.00
RECEIVERS		R3	55.9	55.9	62.5	55.0	50.0	0.0				5.00	a	5734435.07	2787561.81	5.00
RECEIVERS		R4	57.4	57.4	64.0	55.0	50.0	0.0				5.00	a	5734412.20	2787014.76	5.00
RECEIVERS		R5	57.6	57.6	64.3	55.0	50.0	0.0				5.00	a	5734396.83	2786179.70	5.00
RECEIVERS		R6	56.6	56.6	63.3	55.0	50.0	0.0				5.00	a	5734366.01	2785277.27	5.00
RECEIVERS		R7	53.0	53.0	59.7	55.0	50.0	0.0				5.00	a	5733507.83	2783590.60	5.00
RECEIVERS		R8	51.6	51.6	58.2	55.0	50.0	0.0				5.00	a	5732356.49	2784672.85	5.00
RECEIVERS		R9	52.7	52.7	59.4	55.0	50.0	0.0				5.00	a	5732124.93	2786390.59	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
CONCRETE_POUR		0	123.7	123.7	123.7	67.7	67.7	67.7	Lw''	67.7					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CONCRETE_POUR	8.00	a			5732377.97	2787651.04	8.00	0.00
					5734236.91	2787600.28	8.00	0.00
					5734186.21	2785632.38	8.00	0.00

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
				5734173.25	2785005.09	8.00	0.00
				5733725.44	2785018.62	8.00	0.00
				5733442.23	2785135.48	8.00	0.00
				5733043.01	2785245.05	8.00	0.00
				5732788.47	2785427.66	8.00	0.00
				5732664.60	2785613.65	8.00	0.00
				5732344.15	2786711.59	8.00	0.00
				5732266.53	2787137.80	8.00	0.00
				5732251.79	2787136.20	8.00	0.00
				5732175.22	2787514.56	8.00	0.00
				5732377.49	2787621.62	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
			left	right		horz.	vert.	Begin		End		x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						12.00	a			5731998.98	2787471.04	12.00	0.00
												5732065.60	2787116.05	12.00	0.00
												5732149.17	2786354.77	12.00	0.00
BARRIEREXISTING		0						6.00	a			5734344.93	2785039.98	6.00	0.00
												5734411.31	2787566.43	6.00	0.00
BARRIEREXISTING		0						6.00	a			5731824.83	2784925.73	6.00	0.00
												5731924.29	2784918.32	6.00	0.00
												5731991.96	2784908.55	6.00	0.00
												5732043.76	2784899.04	6.00	0.00
												5732105.51	2784880.71	6.00	0.00
												5732152.79	2784859.73	6.00	0.00
												5732199.98	2784832.98	6.00	0.00
												5732242.81	2784804.85	6.00	0.00
												5732289.88	2784770.89	6.00	0.00
												5732336.71	2784722.49	6.00	0.00
												5732369.22	2784681.26	6.00	0.00
												5732416.83	2784608.24	6.00	0.00
												5732501.76	2784399.90	6.00	0.00
												5732584.19	2784134.93	6.00	0.00
												5732647.39	2783857.66	6.00	0.00