NOISE AND VIBRATION IMPACT ANALYSIS

GASOLINE SERVICE STATION PROJECT

UNINCORPORATED COMMUNITY OF BLOOMINGTON

SAN BERNARDINO COUNTY, CALIFORNIA

LSA

September 2021

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LSA

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LIST OF ABBREVIATIONS AND ACRONYMS

ADT	average daily traffic
ALUC	Airport Land Use Commission
CalEEMod	California Emissions Estimator Model
CNEL	Community Noise Equivalent Level
County	County of San Bernardino
dB	decibels
dBA	A-weighted decibels
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
FTA Manual	FTA's *Transit Noise and Vibration Impact Assessment Manual* (2018)
in/sec	inches per second
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
LLG	Linscott, Law & Greenspan
L_{max}	maximum instantaneous noise level
L_V	velocity in decibels
PPV	peak particle velocity
project	Gasoline Service Station Project
sf	square foot/feet
RMS	root-mean-square (velocity)
VdB	vibration velocity decibels

NOISE AND VIBRATION IMPACT ANALYSIS

INTRODUCTION

This noise and vibration impact analysis has been prepared to evaluate the potential noise and vibration impacts from, and identify reduction measures associated with, the Gasoline Service Station Project (project) at 18745 Valley Boulevard in Bloomington, San Bernardino County, California. This report is intended to satisfy County of San Bernardino (County) requirements for a project-specific noise and vibration impact analysis by examining the short-term and long-term noise and vibration impacts on sensitive uses adjacent to the project site and evaluating reduction measures required by the proposed project.

PROJECT LOCATION

As shown in Figure 1, the Gasoline Service Station Project site is located at 18745 Valley Boulevard on the southeast corner of Cedar Avenue and Valley Boulevard in Bloomington. The project site is currently vacant. The proposed project includes a gasoline service station and an associated 2,200-square-foot (sf) convenience store.

PROJECT DESCRIPTION

The proposed project would include the construction and operation of a gas station with twelve fueling positions and a convenience store. The convenience store would be 2,220 sf. The total project site area is 0.5 acre (19,365 sf). The project would also include 20 parking spaces. In addition, the project would operate 24 hours per day, 7 days per week. Figure 2 depicts the project's proposed site plan.

CHARACTERISTICS OF SOUND

Sound is increasing in the environment and can affect quality of life. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations (or cycles per second) of a wave, resulting in the tone's range from high to low. Loudness is the strength of a sound, describes a noisy or quiet environment, and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity is the average rate of sound energy transmitted through a unit area perpendicular to the direction in which the sound waves are traveling. This characteristic of sound can be precisely measured with instruments.

In the analysis of a project, the noise environment of the project area is defined in terms of sound intensity and its effect on adjacent sensitive land uses.

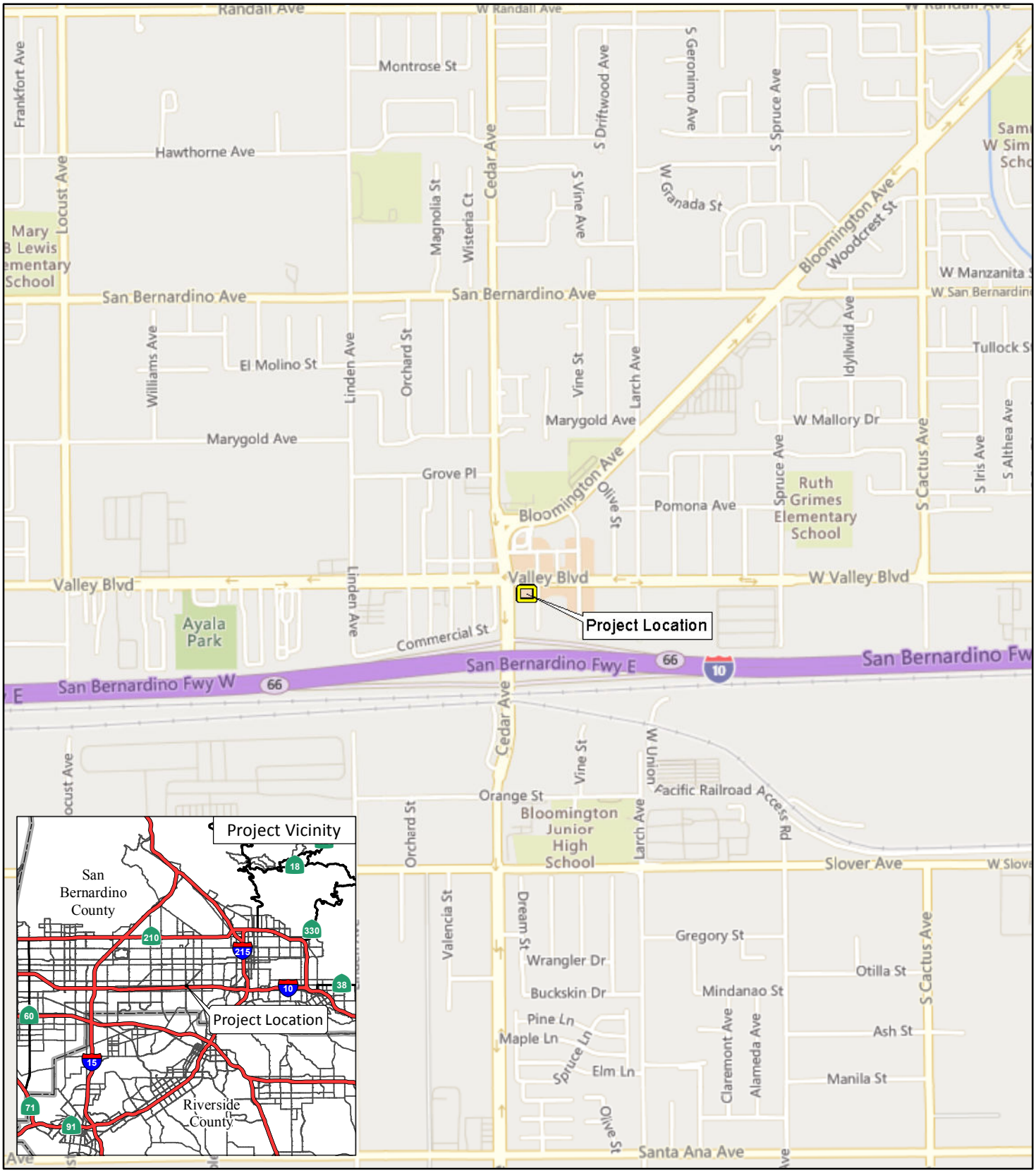

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FIGURE 1

SOURCE: Bing (2020)

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Gasoline Service Station

Project Location and Vicinity

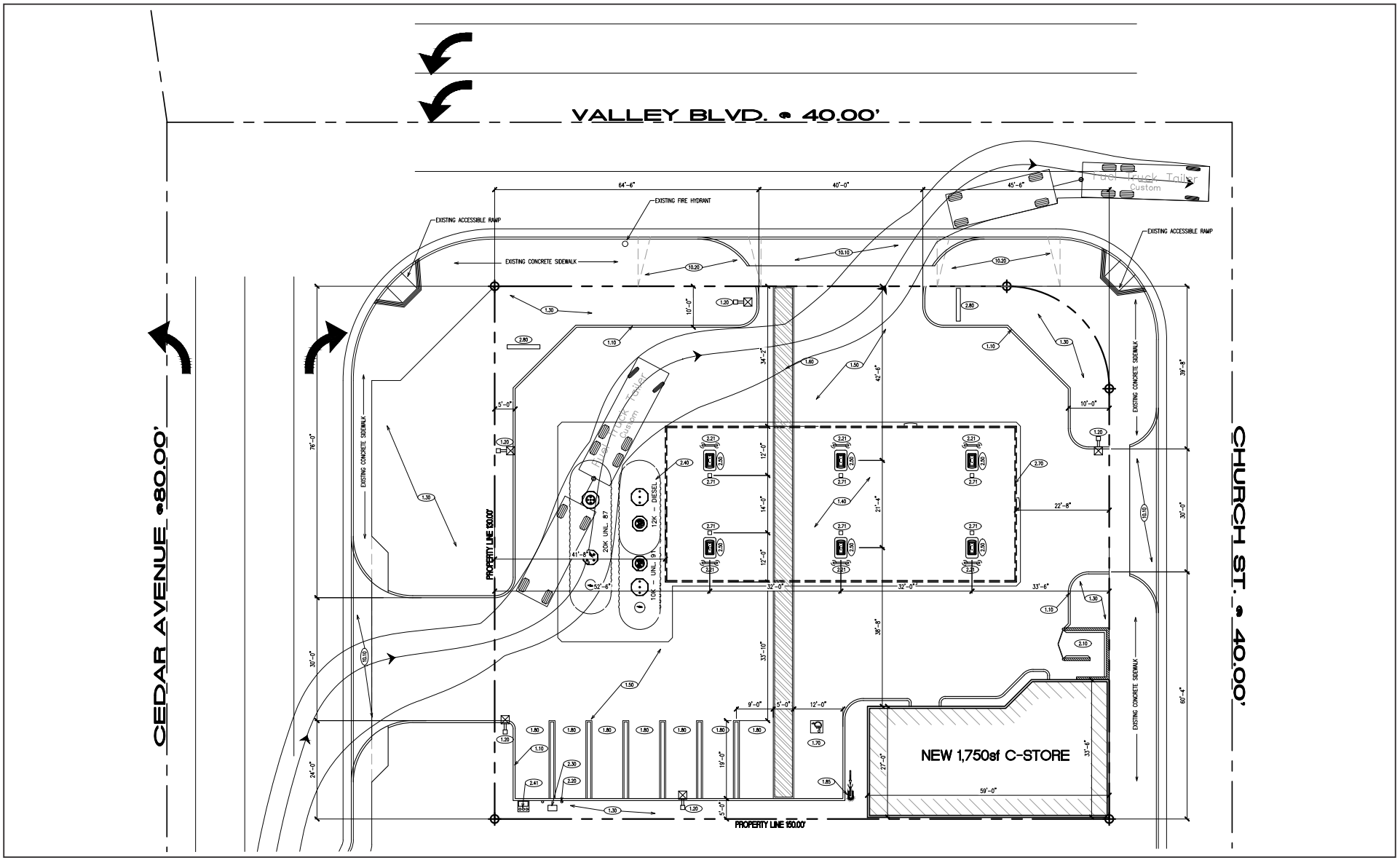

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FIGURE 2

Gasoline Service Station

Site Plan

0 20 40

FEET

SOURCE: CJC Design Inc.

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Measurement of Sound

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Decibels, unlike the linear scale (e.g., inches or pounds), is a scale based on powers of 10.

For example, 10 decibels (dB) is 10 times more intense than 0 dB, 20 dB is 100 times more intense than 0 dB, and 30 dB is 1,000 times more intense than 0 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 0 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 A-weighted decibels (dBA) (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source, such as highway traffic or railroad operations, the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-weighted average noise over a sample period. However, the predominant rating scales for human communities in California are L_{eq} and the Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on dBA. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noises occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the relaxation hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance, when assessing the annoyance factor, include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise. Another noise scale often used together with L_{max} in noise ordinances for enforcement purposes is noise standards in terms of percentile noise levels. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level; half the time the noise level exceeds this level and half the time it is less. The L_{90} noise level represents the noise level

exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first is audible impacts, which refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions and thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. Sound levels from 160 to 165 dBA will potentially result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

Table A lists definitions of acoustical terms, and Table B shows common sound levels and their noise sources.

FUNDAMENTALS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors. The motion may be discernible outdoors, but without the effects associated with the shaking of a building, there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items on shelves or wall hangings, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings radiating sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less, which is an order of magnitude below the damage threshold for normal buildings.

Table A: Definitions of Acoustical Terms

Term	Definition
Decibel, dB	A unit of noise level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very-low-frequency and very-high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_2, L_8, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Sound Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dB to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Average Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter during a designated time interval using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time; usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, time of occurrence, and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Handbook of Acoustical Measurement and Noise Control* (Harris 1991).

Table B: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	—
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	—
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	—
Near-Freeway Auto Traffic	70	Moderately Loud	Reference Level
Average Office	60	Quiet	½ as loud
Suburban Street	55	Quiet	—
Light Traffic; Soft Radio Music in Apartment	50	Quiet	¼ as loud
Large Transformer	45	Quiet	—
Average Residence without Stereo Playing	40	Faint	⅛ as loud
Soft Whisper	30	Faint	—
Rustling Leaves	20	Very Faint	—
Human Breathing	10	Very Faint	Threshold of Hearing
—	0	Very Faint	—

Source: Compiled by LSA Associates, Inc. (2004).

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet (ft) from the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft (Federal Transit Administration's [FTA] *Transit Noise and Vibration Impact Assessment Manual* [FTA Manual] [2018]). When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, both construction of the project and freight train operations could result in ground-borne vibration that may be perceptible and annoying.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise. Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes (e.g., blasting and pile driving) to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2018). Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS velocity is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. The vibration velocity level in decibels is defined as the following:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where L_v is the vibration velocity in decibels (VdB), V is the RMS velocity amplitude, and V_{ref} is the reference velocity amplitude, or 1 x 10^{-6} inches/second (in/sec) used in the United States. Table C illustrates human response to various vibration levels, as described in the FTA Manual (2018).

REGULATORY SETTING

Federal Regulations

Federal Transit Administration

Vibration standards included in the FTA Manual (2018) are used in this analysis for ground-borne vibration impacts on human annoyance. Table D provides the criteria for assessing the potential for interference or annoyance from vibration levels in a building.

The criteria for environmental impacts from ground-borne vibration and noise are based on the maximum levels for a single event. Table D lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual (2018). FTA guidelines show that a vibration level of up to 102 VdB (equivalent to 0.5 in/sec in PPV [FTA 2018]) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For nonengineered-timber and masonry buildings, the construction building vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

Table C: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L_v (VdB)[1]	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for office and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20X).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-octave bands of frequency over the frequency range 8 to 80 Hz.
FTA = United States Federal Transit Administration
Hz = hertz
L_V = velocity in decibels
Max = maximum
VdB = vibration velocity decibels

Table D: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_V (VdB)[1]
Reinforced concrete, steel, or timber (no plaster)	0.50	102
Engineered concrete and masonry (no plaster)	0.30	98
Nonengineered-timber and masonry buildings	0.20	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
µin/sec = microinches per second
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

Local Regulations

County of San Bernardino

County Development Code. Section 83.01.080(c) of the County Development Code establishes the noise standards for stationary noise sources that affect adjacent properties. Table E provides the County's noise standards based on the affected land use and the time period. The noise metric used for stationary sources is defined as noise levels that cannot be exceeded for certain percentages of time, or L_n.

Section 83.01.080(g)(3) of the County Code limits temporary construction, maintenance, repair, or demolition activities to between the hours of 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

Table E: County of San Bernardino Noise Level Standards

Affected Land Use (Receiving Noise)	Time Period	L_{50} (30 min)	L_{25} (15 min)	L_8 (5 min)	L_2 (1 min)	L_{max} (Anytime)
Residential	7:00 a.m. to 10:00 p.m.	55	60	65	70	75
	10:00 p.m. to 7:00 a.m.	45	50	55	60	65
Professional Services	Anytime	55	60	65	70	75
Other Commercial	Anytime	60	65	70	75	80
Industrial	Anytime	70	75	80	85	90

Source: County of San Bernardino, County Code (2020).
Note: If the measured ambient level exceeds any of the first four noise limit categories above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.
dBA = A-weighted decibel
min = minutes
L_2 = The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour.
L_8 = The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour.
L_{25} = The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour.
L_{50} = The noise standard plus up to 5 dBA for a cumulative period of more than 30 minutes in any hour.
L_{max} = The noise standard plus 20 dBA or the maximum measured ambient noise level for any period of time.

Section 83.01.090 of the County Code requires that no ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths (0.2) in/sec measured at or beyond the lot line. In addition, vibration generated from temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m. is exempt, except Sundays and Federal holidays.

EXISTING SETTING

Overview of the Existing Noise Environment

Transportation facilities and commercial operations are the primary existing noise sources in the project area. Traffic noise in the project area includes Cedar Avenue, Valley Boulevard, and other local roadways. Operational activities from commercial uses to the north, east, west, and northwest contribute to the noise environment in the project area.

Sensitive Land Uses in the Project Vicinity

The project site is surrounded primarily by residential and commercial development. The areas adjacent to the project site include the following uses:

- **North:** Commercial development, including a storage warehouse and a car repair shop
- **South:** Residential development
- **East:** Commercial development, including several retail stores
- **West:** Commercial development

Ambient Noise Measurements

Short-Term Noise Measurements

Short-term (20-minute) noise level measurements were conducted on July 27, 2021, using a Larson Davis Models 831 Type 1 sound level meter. Table F shows the results of the short-term noise level measurements along with a description of the measurement location and noise sources that occurred during the measurement. As shown in Table F, the measured average noise levels range from 64.0 to 69.7 dBA L_{eq} and the maximum instantaneous noise levels range from 77.1 to 85.0 dBA L_{max} in the project vicinity. Figure 3 shows the short-term monitoring locations.

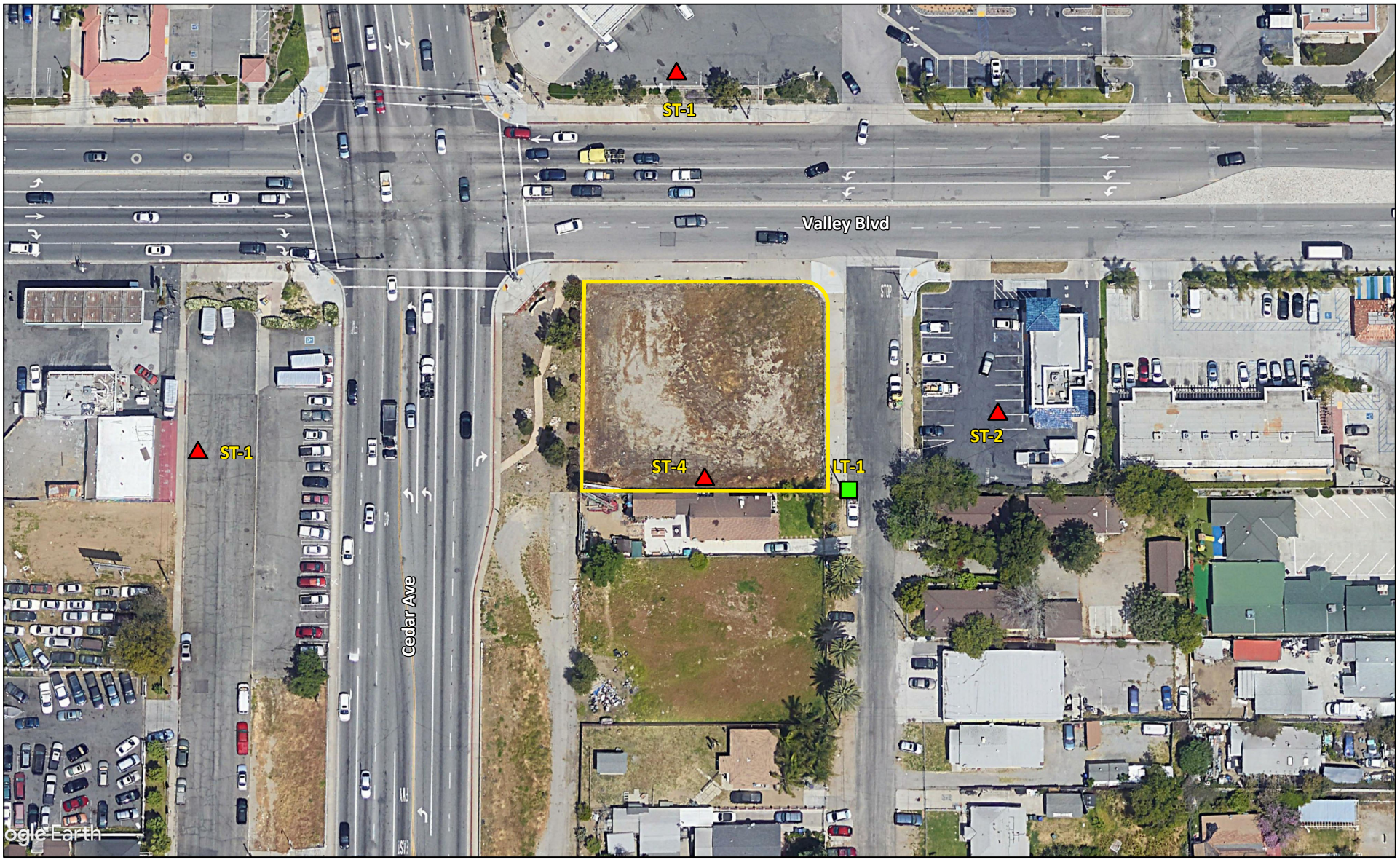
Table F: Short-Term Ambient Noise Level Measurements

Monitor No.	Location	Start Time	Noise Level (dBA)			Noise Source(s)
			L_{eq}	L_{max}	L_{min}	
ST-1	10126 Cedar Place, on sidewalk, approximately 160 ft south of centerline of Valley Boulevard and 150 ft west of centerline of Cedar Avenue.	2:30 p.m.	66.6	81.5	60.6	Traffic on Cedar Avenue and Valley Boulevard.
ST-2	Baker's Drive Thru, 18775 Valley Boulevard, approximately 125 ft south of the centerline of Valley Boulevard and 20 ft west of the building.	12:17 p.m.	65.0	78.5	57.3	Traffic on Valley Boulevard and Cedar Avenue, and drive-through activity (cars driving into parking lot and idling).
ST-3	18762 Valley Boulevard, at the south edge of pavement, approximately 130 ft south of the centerline of Valley Boulevard and 75 ft east of the centerline of Church Street.	2:00 p.m.	69.7	85.0	61.5	Traffic on Valley Boulevard and Cedar Avenue, and gas station activity (cars passing by slowly, cars idling, and car doors slamming).
ST-4	South side of the project site, approximately 10 ft north of the property wall and 175 ft east of the centerline of Cedar Avenue.	12:50 p.m.	64.0	77.1	55.5	Traffic on Cedar Avenue and Valley Boulevard.

Source: Compiled by LSA Associates, Inc. (2021).
Note: Noise level measurements were conducted on July 27, 2021.
dBA = A-weighted decibels
ft = foot/feet
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum instantaneous noise level

Long-Term Noise Measurements

One long-term (24-hour) noise level measurement was conducted from July 27 to July 28, 2021, using a Larson Davis Spark 706RC Dosimeter. Table G shows the hourly L_{eq}, L_{max}, and L_{min} results from the long-term noise level measurement. Table H shows the daytime L_{eq} level range from 63.7 to 68.5 dBA and the nighttime L_{eq} range from 58.5 to 67.9 dBA at LT-1. In addition, calculated CNEL at LT-1 is 69.8 dBA. Figure 3 shows the long-term monitoring location.



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LEGEND

- Project Site Boundary
- ST-1 - Short-Term Noise Monitoring Location
- LT-1 - Long-Term Noise Monitoring Location

0 50 100

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SOURCE: Google Earth, 2021

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FIGURE 3

Gasoline Service Station

Noise Monitoring Locations

Table G: Long-Term (24-Hour) Noise Level Measurement Results at LT-1

	Hour	Date	Noise Level (dBA)		
			L_{eq}	L_{max}	L_{min}
1	12:00 PM	7/27/21	66.2	87.0	56.0
2	1:00 PM	7/27/21	65.3	83.3	58.2
3	2:00 PM	7/27/21	66.2	88.0	57.9
4	3:00 PM	7/27/21	66.2	78.9	58.5
5	4:00 PM	7/27/21	67.6	85.2	60.9
6	5:00 PM	7/27/21	68.5	90.3	60.3
7	6:00 PM	7/27/21	67.0	87.8	59.9
8	7:00 PM	7/27/21	65.3	81.1	57.7
9	8:00 PM	7/27/21	63.7	81.0	54.4
10	9:00 PM	7/27/21	64.1	81.3	54.3
11	10:00 PM	7/27/21	62.1	79.9	52.7
12	11:00 PM	7/27/21	60.6	77.9	50.2
13	12:00 AM	7/28/21	59.5	78.6	51.2
14	1:00 AM	7/28/21	58.5	79.9	50.6
15	2:00 AM	7/28/21	59.1	79.4	49.2
16	3:00 AM	7/28/21	58.6	71.8	47.3
17	4:00 AM	7/28/21	61.2	77.0	50.9
18	5:00 AM	7/28/21	62.9	83.4	54.2
19	6:00 AM	7/28/21	67.9	84.6	55.5
20	7:00 AM	7/28/21	67.9	95.5	55.7
21	8:00 AM	7/28/21	64.9	89.0	55.4
22	9:00 AM	7/28/21	64.5	79.7	55.1
23	10:00 AM	7/28/21	65.2	84.6	56.0
24	11:00 AM	7/28/21	65.0	85.7	56.3

Source: Compiled by LSA Associates, Inc. (2021).
dBA L_{eq} = equivalent continuous sound level measured in A-weighted decibels
L_{max} = maximum instantaneous noise level
L_{min} = minimum instantaneous noise level

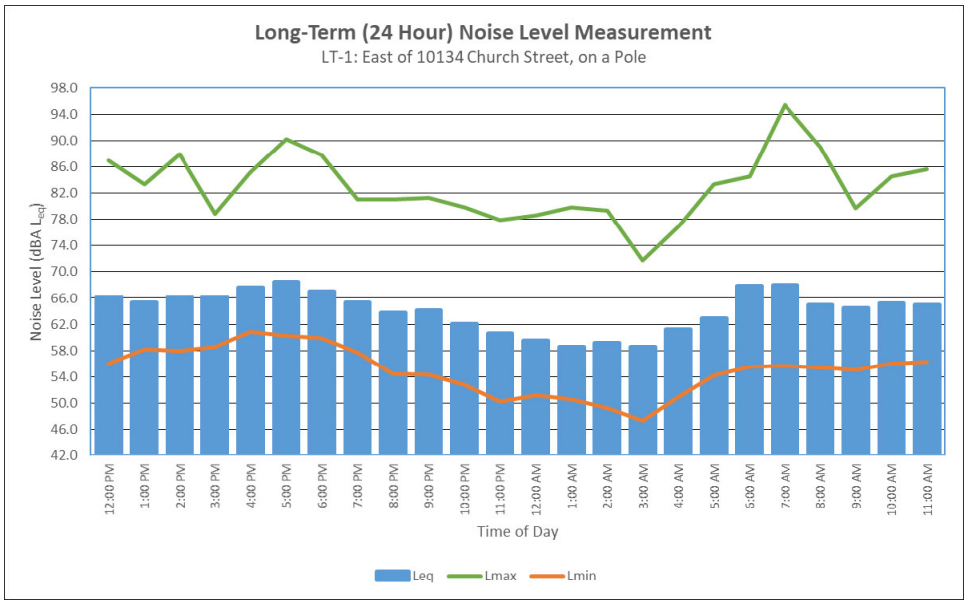


Table H: Long-Term Ambient Noise Monitoring Results

Monitoring No.	Location	Noise Level (dBA)					Noise Source
		L_{eq}		L_{max}		CNEL	
		Daytime	Nighttime	Daytime	Nighttime		
LT-1	East of 10134 Church Street, on utility pole, approximately 16 ft west of the centerline of Church Street.	63.7-68.5	58.5-67.9	78.9-95.5	71.8-84.6	69.8	Traffic on Valley Boulevard and Cedar Avenue, and light traffic on Church Street.

Source: Compiled by LSA Associates, Inc. (2021).
Note: The long-term (24 hour) noise level measurement was conducted from July 27, 2021, through July 28, 2021.

CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level

Existing Aircraft Noise

The nearest airports to the project site are the Flabob Airport, San Bernardino International Airport, and Ontario International Airport, which are located 5.5 miles south, 8.2 miles northeast, and 10.7 miles west of the project site, respectively. Based on the Riverside County Airport Land Use Commission's (ALUC) Riverside County Airport Land Use Compatibility Plan (ALUC 2004), the project site is outside the 55 dBA CNEL noise contour of Flabob Airport. Based on the LA/Ontario International Airport Land Use Compatibility Plan (City of Ontario 2011) and draft Environmental Impact Report for the San Bernardino Countywide Plan (County of San Bernardino 2019), the project site is outside the 60 dBA CNEL noise contours of San Bernardino International Airport and Ontario International Airport, respectively. There are no private airstrips located within the vicinity of the project site.

Existing Traffic Noise

The United States Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resulting noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The existing (2021) average daily traffic (ADT) volumes were derived from the project's Traffic Impact Analysis Report (LLG 2021). The standard vehicle mix for Southern California roadways was used for roadways in the project vicinity. Table I lists the existing traffic noise levels on roadways in the project vicinity. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels and the model printouts are provided in Appendix A.

As shown in Table I, traffic noise along Cedar Avenue is high, with the 70, 65, and 60 dBA CNEL noise contours extending up to 66, 139, and 297 ft, respectively, from the roadway centerline. Also, traffic noise along Valley Boulevard is moderate, with the 70 dBA CNEL noise contour confined to the roadway right-of-way and the 65 and 60 dBA CNEL noise contour extending up to 93 and 196 ft, respectively, from the roadway centerline.

Table I: Existing (2021)Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
Cedar Avenue north of Bloomington Avenue	19,270	< 50	98	205	67.0
Cedar Avenue between Bloomington Avenue and Valley Boulevard	25,500	58	116	247	68.2
Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps	33,790	66	139	297	69.8
Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps	28,630	60	124	266	69.1
Cedar Avenue Sound of I-10 Eastbound Ramps	23,200	< 50	111	232	67.4
Bloomington Avenue east of Cedar Avenue	8,580	< 50	71	146	64.7
Valley Boulevard east of Cedar Avenue	12,250	< 50	74	152	65.0
Valley Boulevard west of Cedar Avenue	18,000	< 50	93	196	66.7
Valley Boulevard east of Larch Avenue	10,920	< 50	69	141	64.5
Valley Boulevard west of Larch Avenue	11,430	< 50	71	146	64.7

Source: Compiled by LSA Associates, Inc. (2021).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
I-10 = Interstate 10

IMPACTS

Short-Term Construction Noise Impacts

Two types of short-term noise impacts could occur during construction on the project site. First, construction crew commutes and the transport of construction equipment and materials to the site for the proposed project would incrementally increase noise levels on roads leading to the site. The pieces of heavy equipment for construction activities will be moved on site, will remain for the duration of each construction phase, and will not add to the daily traffic volume in the project vicinity. Although there would be a relatively high single-event noise exposure potential causing intermittent noise nuisance (passing trucks at 50 ft would generate up to a maximum of 84 dBA), the effect on longer-term (hourly or daily) ambient noise levels would be small because the hourly/daily construction-related vehicle trips are small when compared to existing hourly/daily traffic volume on Cedar Avenue and Valley Boulevard. The paving phase would generate the most trips out of all of the construction phases, at 18 trips per hour and 36 trips per day based on the California Emissions Estimator Model (CalEEMod, Version 2020.4.0). Roadways that would be used to access the project site would include Cedar Avenue and Valley Boulevard. Based on Table I, Cedar Avenue and Valley Boulevard have estimated existing hourly/daily traffic volumes of 1,927/19,270 and 1,092/10,920, respectively, near the project site. Based on the information above, construction-related traffic would increase noise levels by up to 0.1 dBA. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, no short-term, construction-related noise impacts associated with worker commute and equipment transport to the project site would occur, and no noise reduction measures are required.

The second type of short-term noise impact is related to noise generated during site preparation, grading, building construction, paving, and architectural coating on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases change the character of the noise generated on a project site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table J lists the maximum noise levels (L_{max}) recommended for noise impact assessments for typical construction equipment included in the *FHWA Highway Construction Noise Handbook* (FHWA 2006), based on a distance of 50 ft between the equipment and a noise receptor.

Table J: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor[1]	Maximum Noise Level (L_{max}) at 50 ft[2]
Backhoe	40	80
Compactor (ground)	20	80
Compressor	40	80
Crane	16	85
Dozer	40	85
Dump Truck	40	84
Excavator	40	85
Flatbed Truck	40	84
Forklift	20	85
Front-End Loader	40	80
Grader	40	85
Impact Pile Driver	20	95
Jackhammer	20	85
Pickup Truck	40	55
Pneumatic Tools	50	85
Pump	50	77
Rock Drill	20	85
Roller	20	85
Scraper	40	85
Tractor	40	84
Welder	40	73

Source: *FHWA Highway Construction Noise Handbook,* Table 9.1 (FHWA 2006).
Note: The noise levels reported in this table are rounded to the nearest whole number.
[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.
[2] Maximum noise levels were developed based on Spec 721.560 from the CA/T program to be consistent with the City of Boston, Massachusetts, Noise Code for the "Big Dig" project.
CA/T = Central Artery/Tunnel
FHWA = Federal Highway Administration
ft = foot/feet
L_{max} = maximum instantaneous noise level

Typical noise levels range up to 86 dBA L_{max} at 50 ft during the noisiest construction phases. The site preparation and grading phase tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front-end loaders. Earthmoving and compacting equipment include compactors, scrapers, and graders.

Project construction is expected to require the use of bulldozers, front-end loaders, and water trucks/pickup trucks. Noise associated with the use of each type of construction equipment for the site preparation and grading phase is estimated to be between 55 dBA L_{max} and 85 dBA L_{max} at a distance of 50 ft from the active construction area. As shown in Table J, the maximum noise level generated by each bulldozer is assumed to be approximately 85 dBA L_{max} at 50 ft. Each front-end loader would generate approximately 80 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks/pickup trucks is approximately 55 dBA L_{max} at 50 ft from these vehicles. Each doubling of the sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, the worst-case combined noise level during this phase of construction would be 86 dBA L_{max} at a distance of 50 ft from the active construction area. Based on a usage factor of 40 percent, the worst-case combined noise level during this phase of construction would be 82 dBA L_{eq} at a distance of 50 ft from the active construction area.

The closest residential property line is located approximately within 50 ft of the project construction boundary and may be subject to short-term construction noise generated by construction activities in the project area that reach 86 dBA L_{max} (82 dBA L_{eq}) or higher. Ambient noise levels during daytime hours at the closest residence range between 61.5 to 66.3 dBA L_{eq} based on ST-4 and LT-1. Also, the measured maximum noise level at ST-4 is 77.1 dBA, as shown in Table F. Although the noise generated by project construction activities would be higher than the ambient noise levels and would result in a temporary increase in the ambient noise levels, construction noise would stop once project construction is completed. The proposed project would be required to comply with the construction hours allowed under the County Development Code and standard conditions for construction listed below. Therefore, no noise impacts from construction activities would occur, and no noise reduction measures are required.

- The construction contractor shall limit construction activities to between the hours of 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays in which construction is prohibited.
- During all project site preparation and grading, the construction contractor shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and most noise-sensitive receptors nearest the project site during all project construction.
- The construction contractor shall place all stationary construction equipment so that the emitted noise is directed away from the sensitive receptors nearest the project site.

Short-Term Construction Vibration Impacts

This construction vibration impact analysis discusses the level of human annoyance using vibration levels in VdB and assesses the potential for building damage using vibration levels in PPV (in/sec). Vibration levels calculated in RMS velocity are best for characterizing human response to building vibration, whereas vibration levels in PPV are best for characterizing damage potential. As previously shown in Table D, the FTA guidelines indicate that a vibration level up to 0.5 PPV (in/sec) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and

would not result in any construction vibration damage (FTA 2018). For a nonengineered-timber and masonry building, the construction vibration damage criterion is 0.2 PPV (in/sec). For a fragile building, the construction vibration damage criterion is 0.12 PPV (in/sec).

Table K shows the reference vibration levels at a distance of 25 ft for each type of standard construction equipment from the FTA Manual (2018). Outdoor site preparation for the proposed project is expected to require the use of a large bulldozer and loaded trucks, which would generate ground-borne vibration of up to 87 VdB (0.089 PPV [in/sec]) and 86 VdB (0.076 PPV [in/sec] when measured at 25 ft, respectively.

Table K: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 Ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks[2]	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
[2] Equipment shown in bold is expected to be used on site.

µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

The greatest vibration levels are anticipated to occur during the site preparation phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts normally occur within the buildings.

The formula for vibration transmission is provided below:

$$L_vdB\ (D) = L_vdB\ (25\ ft) - 30\ Log\ (D/25)$$
$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Table L lists the projected vibration levels from various construction equipment expected to be used on the project site to the closest buildings in the project vicinity. As shown in Table L, the closest structure (residential) south of the project construction boundary, approximately 5 ft away, would experience vibration levels of up to 108 VdB (0.995 PPV [in/sec]) when construction occurs at the project boundary. This vibration level would have the potential to result in building damage because the building was observed to be constructed of nonengineered-timber and masonry and the

Table L: Summary of Construction Vibration Levels

Land Use	Direction	Equipment/Activity	Reference Vibration Level (VdB) at 25 ft	Reference Vibration Level (PPV [in/sec]) at 25 ft	Distance (ft)	Maximum Vibration Level (VdB)	Maximum Vibration Level (PPV [in/sec])
Commercial	North	Large bulldozers	87	0.089	215	59	0.004
		Loaded trucks	86	0.076	215	58	0.003
Commercial	Northeast	Large bulldozers	87	0.089	200	60	0.004
		Loaded trucks	86	0.076	200	59	0.003
Commercial	East	Large bulldozers	87	0.089	125	66	0.008
		Loaded trucks	86	0.076	125	65	0.007
Residential	Southeast	Large bulldozers	87	0.089	60	76	0.024
		Loaded trucks	86	0.076	60	75	0.020
Residential	South	Large bulldozers	87	0.089	5	108	0.995
		Loaded trucks	86	0.076	5	107	0.850
Commercial	West	Large bulldozers	87	0.089	255	57	0.003
		Loaded trucks	86	0.076	255	56	0.002
Commercial	Northwest	Large bulldozers	87	0.089	290	55	0.002
		Loaded trucks	86	0.076	290	54	0.002

Source: Compiled by LSA Associates, Inc. (2021).
Note: The FTA-recommended building damage threshold is 94 VdB (0.2 PPV [in/sec]) for building structures constructed of nonengineered timber and masonry.
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
PPV = peak particle velocity
VdB = vibration velocity decibels

vibration level would exceed the FTA vibration damage and the County's threshold threshold of 0.2 PPV (in/sec). In addition, this vibration level would result in community annoyance because vibration levels would exceed the FTA community annoyance threshold of 78 VdB for residential uses during daytime hours. The implementation of vibration reduction measures to restrict heavy construction equipment (e.g., large bulldozers) or require the use of light construction equipment (e.g., small bulldozers and trucks) within 10 ft of the southern project construction boundary (15 ft from the residential structure) would reduce construction vibration levels to 94 VdB (0.191 PPV [in/sec]).

All other building structures surrounding the project site would experience vibration levels of 76 VdB (0.024 PPV [in/sec]) or lower. This vibration level would be barely perceptible and would not have the potential to result in building damage because these buildings were observed to be constructed of nonengineered-timber and masonry, and vibration levels would not exceed the FTA vibration damage threshold and the County's threshold of 0.2 PPV (in/sec). In addition, this vibration level would not result in community annoyance because vibration levels would not exceed the FTA community annoyance threshold of 78 VdB and 84 VdB for residential uses during daytime hours and land uses are not as sensitive to vibration (commercial), respectively. Therefore, no construction vibration impacts would occur with implementation of the vibration reduction measures described above.

Long-Term Aircraft Noise Impacts

Based on the Riverside County Airport Land Use Compatibility Plan (ALUC 2004), the project site is outside the 55 dBA CNEL noise contours of Flabob Airport and Riverside Municipal Airport. There are no private airstrips located within the vicinity of the project site. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels.

Long-Term Traffic Noise Impacts

The FHWA Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions along street segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resulting noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The Existing (2021) and 2023 without and with project ADT volumes were derived from the project's Traffic Impact Analysis Report (LLG 2021). The standard vehicle mix for Southern California roadways was used for traffic on these roadway segments under the without project scenario. Under the with project scenario, the vehicle mix was adjusted based on the project's vehicle mix. Tables M and N list the traffic noise levels for the Existing (2021) and 2023 without and with project scenarios, respectively. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels and the model printouts are provided in Appendix A.

Tables M and N show that the project-related traffic would increase noise by up to 0.3 dBA. This noise level increase is below 3 dBA and would not be perceptible to the human ear in an outdoor environment. Therefore, no off-site traffic noise impacts would occur, and no noise reduction measures are required.

Long-Term Stationary Source Noise Impacts

Operation of the proposed project would include fueling activities, parking lot activities, and HVAC systems that would result in stationary noise impacts as described below.

Fueling Activities

Fueling activities would potentially include engine start-up noise, car door slams, back-up alarms, and tire squeals, which would generate noise levels of approximately 70 dBA L_{max} at 50 ft. It is assumed that fueling activities would generate the maximum noise level for a cumulative period of 15 minutes in any hour, which would be 64.0 dBA L_{eq} at 50 ft.

The closest residential property lines to the center of the fueling stations are approximately 140 ft southeast and 75 ft south of the project site. The closest commercial property lines to the center of the fueling stations are approximately 160 ft north, 115 ft east, 330 ft west, and 310 ft northwest of the project site. The existing 4 ft high property wall along the south side of the project would provide a minimum noise reduction of 2 dBA.

Parking Activities

The proposed project would include eight parking spaces for automobiles on the south side of the project adjacent to the proposed convenience store. Noise generated from parking lot activities would include noise generated by vehicles traveling at slow speeds, engine start-up noise, car door slams, car horns, car alarms, and tire squeals. Representative parking activities would generate approximately 60 to 70 dBA L_{max} at 50 ft. It is assumed that parking activities for automobiles would generate the maximum noise level for a cumulative period of 2 minutes in any hour, which would be 55.0 dBA L_{eq} at 50 ft.

Table M: Existing (2021) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Cedar Avenue north of Bloomington Avenue	19,270	< 50	98	205	67.0	19,440	< 50	98	206	67.0	0.0
Cedar Avenue between Bloomington Avenue and Valley Boulevard	25,500	58	116	247	68.2	25,845	59	117	249	68.2	0.0
Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps	33,790	66	139	297	69.8	34,085	67	139	298	69.9	0.1
Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps	28,630	60	124	266	69.1	28,850	60	125	267	69.1	0.0
Cedar Avenue Sound of I-10 Eastbound Ramps	23,200	< 50	111	232	67.4	23,310	< 50	111	233	67.4	0.0
Bloomington Avenue east of Cedar Avenue	8,580	< 50	71	146	64.7	8,660	< 50	72	147	64.8	0.1
Valley Boulevard east of Cedar Avenue	12,250	< 50	74	152	65.0	13,270	< 50	78	161	65.3	0.3
Valley Boulevard west of Cedar Avenue	18,000	< 50	93	196	66.7	18,040	< 50	94	196	66.7	0.0
Valley Boulevard east of Larch Avenue	10,920	< 50	69	141	64.5	11,000	< 50	69	142	64.5	0.0
Valley Boulevard west of Larch Avenue	11,430	< 50	71	146	64.7	12,220	< 50	74	152	65.0	0.3

Source: Compiled by LSA Associates, Inc. (2021).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
I-10 = Interstate 10

Table N: 2023 Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Cedar Avenue north of Bloomington Avenue	21,220	< 50	104	218	67.4	21,370	< 50	104	219	67.4	0.0
Cedar Avenue between Bloomington Avenue and Valley Boulevard	28,185	61	124	263	68.6	28,490	62	125	265	68.7	0.1
Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps	37,690	71	149	319	70.3	37,985	71	150	321	70.3	0.0
Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps	33,530	66	138	295	69.8	33,750	66	139	296	69.8	0.0
Cedar Avenue Sound of I-10 Eastbound Ramps	29,070	65	128	269	68.4	29,180	65	128	270	68.4	0.0
Bloomington Avenue east of Cedar Avenue	9,450	< 50	75	156	65.1	9,530	< 50	76	157	65.2	0.1
Valley Boulevard east of Cedar Avenue	13,830	< 50	79	165	65.5	14,850	< 50	83	173	65.8	0.3
Valley Boulevard west of Cedar Avenue	20,020	< 50	100	210	67.1	20,060	< 50	100	211	67.1	0.0
Valley Boulevard east of Larch Avenue	12,460	< 50	75	154	65.1	12,540	< 50	75	155	65.1	0.0
Valley Boulevard west of Larch Avenue	12,990	< 50	77	158	65.2	13,780	< 50	79	165	65.5	0.3

Source: Compiled by LSA Associates, Inc. (2021).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
I-10 = Interstate 10

The closest residential property lines to the center of the parking spaces are approximately 160 ft southeast and 15 ft south of the project site. The closest commercial property lines to the center of the 8 parking spaces are approximately 225 ft north, 155 ft east, 290 ft west, and 320 ft northwest of the project site. The proposed convenience store would provide a minimum noise reduction of 5 dBA for the residence southeast of the project site, and the existing 4 ft high property wall along the south side of the project would provide a minimum noise reduction of 2 dBA.

Heating, Ventilation, and Air Conditioning (HVAC) Noise

The proposed project would include a rooftop HVAC unit for the convenience store. The HVAC equipment could operate 24 hours per day. The HVAC unit would generate a noise level of 44.4 dBA L_{eq} at 50 ft. The roofline and parapet would provide a minimum noise reduction of 8 dBA.

The closest residential property lines to the rooftop HVAC unit are approximately 60 ft southeast and 10 ft south of the project site. The closest commercial property lines to the rooftop HVAC are approximately 215 ft north, 60 ft east, 345 ft west, and 350 ft northwest of the project site.

Stationary Noise Impacts Summary

Table O shows the individual stationary noise source from fueling activities, automobile parking activities, and rooftop HVAC equipment at the closest residential and commercial property lines surrounding the project site as well as the distance attenuation, noise reduction from shielding, and the combined stationary noise levels.

As shown in Table O, maximum noise levels reach up to 62.8 dBA L_{max} and the combined stationary noise levels would reach up to 57.1 dBA L_{eq} at the commercial property line adjacent to the project site. These noise levels would not exceed the County's 60 dBA L_{50} (30 minute) and the maximum 80 dBA anytime noise standard for commercial uses.

For residences to the southeast, the maximum noise level would reach up to 61.1 dBA L_{max}. This maximum noise level would not exceed the County's daytime and nighttime anytime maximum noise standard of 75 dBA and 70 dBA, respectively. Also, the combined stationary noise level would be 55.3 dBA L_{eq}. The noise level would exceed the County's daytime and nighttime L_{50} (30-minute) noise standards of 55 dBA and 45 dBA, respectively. However, the daytime and nighttime ambient noise levels based on LT-1 are 63.7 dBA L_{eq} and 58.5 dBA L_{eq}, respectively, and are higher than noise levels generated from project operations. Therefore, no noise impacts from project operations would occur.

For residences to the south, the maximum noise level would reach up to 78.5 dBA $L_{max,}$ and the combined stationary noise level would be 64.9 dBA L_{eq}. This maximum noise level would exceed the County's daytime and nighttime anytime maximum noise standards of 75 dBA and 70 dBA, respectively.

Table O: Stationary Noise Levels

Land Use	Direction	Noise Source	Reference Noise Level at 50 ft (dBA)		Distance from Source to Receptor (ft)	Distance Attenuation (dBA)	Shielding (dBA)	Noise Level (dBA)		Combined Noise Level (dBA L_{eq})
			L_{max}	L_{eq}				L_{max}	L_{eq}	
Commercial	North	Fueling Activities	70	64.0	160	10.1	0.0	59.9	53.9	54.2
		Auto Parking Activities	70	55.0	225	13.1	0.0	56.9	41.9	
		HVAC	--[1]	44.4	215	12.7	8.0[2]	--[1]	23.7	
Commercial	East	Fueling Activities	70	64.0	115	7.2	0.0	62.8	56.8	57.1
		Auto Parking Activities	70	55.0	155	9.8	0.0	60.2	45.2	
		HVAC	--[1]	44.4	60	1.6	8.0[2]	--[1]	34.8	
Residential	Southeast	Fueling Activities	70	64.0	140	8.9	0.0	61.1	55.1	55.3
		Auto Parking Activities	70	55.0	160	10.1	5.0[3]	54.9	39.9	
		HVAC	--[1]	44.4	60	1.6	8.0[2]	--[1]	34.8	
Residential	South	Fueling Activities	70	64.0	75	3.5	2.0[4]	64.5	58.5	64.9
		Auto Parking Activities	70	55.0	15	-10.5[5]	2.0[4]	78.5	63.5	
		HVAC	--[1]	44.4	10	-14.0[5]	8.0[2]	--[1]	50.4	
Commercial	West	Fueling Activities	70	64.0	330	16.4	0.0	53.6	47.6	47.6
		Auto Parking Activities	70	55.0	290	15.3	0.0	54.7	39.7	
		HVAC	--[1]	44.4	345	16.8	8.0[2]	--[1]	19.6	
Commercial	Northwest	Fueling Activities	70	64.0	310	15.8	0.0	54.2	48.2	48.7
		Auto Parking Activities	70	55.0	320	16.1	0.0	53.9	38.9	
		HVAC	--[1]	44.4	350	16.9	8.0[2]	--[1]	19.5	

Source: Compiled by LSA Associates, Inc. (2021).

[1] No reference maximum noise level because noise generated from the HVAC equipment would be constant.

[2] The roofline and parapet would provide a minimum noise reduction of 8 dBA.

[3] The proposed convenience building would provide a minimum noise reduction of 5 dBA.

[4] The existing 4 ft high wall south of the project would provide a minimum noise reduction of 2 dBA.

[5] A negative number denotes a noise level increase.

dBA = A-weighted decibels
ft = foot/feet
HVAC = heating, ventilation, and air conditioning
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level

Also, the combined stationary noise level would exceed the County's daytime and nighttime L_{50} (30-minute) noise standard of 55 dBA and 45 dBA, respectively. The combined stationary noise level would also exceed the daytime and nighttime ambient noise levels based on ST-4 and LT-1, which are 61.5 dBA L_{eq} and 56.3 dBA L_{eq}, respectively. Implementation of a 8 ft high wall along the southern boundary of the project site would provide a minimum noise reduction of 10 dBA from fueling activities and 13 dBA from automobile parking activities, which would reduce noise levels to a maximum noise level of 67.5 dBA and a combine stationary noise level of 56.0. dBA L_{eq}, as shown in Table P. Figure 4 shows the location of the 8 ft high wall. As a result, the maximum noise level would not exceed the County's daytime and nighttime anytime maximum noise standards of 75 dBA and 70 dBA, respectively. Also, the combined stationary noise level would not exceed the daytime and nighttime ambient noise levels of 61.3 dBA L_{eq} and 56.3 dBA L_{eq}, respectively. Therefore, no noise impacts from project operations would occur with the implementation of a 8 ft high wall along the southern project boundary.

Long-Term Ground-Borne Noise and Vibration from Vehicular Traffic

Once operational, the proposed project would not generate vibration. In addition, vibration levels generated from project-related traffic on the adjacent roadways (i.e., Cedar Avenue and Valley Boulevard) would be unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Therefore, no vibration impacts from project-related traffic on the adjacent roadways would occur, and no vibration reduction measures are required.

STANDARD CONDITIONS

The following measures would further minimize construction noise:

- The construction contractor shall limit construction activities to between the hours of 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays in which construction is prohibited.

- During all project site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.

- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and most noise-sensitive receptors nearest the project site during all project construction.

- The construction contractor shall place all stationary construction equipment so that the emitted noise is directed away from the sensitive receptors nearest the project site.

Table P: Stationary Noise Levels With Noise Reduction Measures

Land Use	Direction	Noise Source	Reference Noise Level at 50 ft (dBA)		Distance from Source to Receptor (ft)	Distance Attenuation (dBA)	Shielding (dBA)	Noise Level (dBA)		Combined Noise Level (dBA L_{eq})
			L_{max}	L_{eq}				L_{max}	L_{eq}	
Residential	South	Fueling Activities	70	64.0	75	3.5	10.0[1]	56.5	50.5	56.0
		Auto Parking Activities	70	55.0	15	-10.5[2]	13.0[3]	67.5	52.5	
		HVAC	--[4]	44.4	10	-14.0[2]	8.0[5]	--[4]	50.4	

Source: Compiled by LSA Associates, Inc. (2021).

[1] Implementation of a 8 ft high wall along the southern project boundary as a noise reduction measure would provide a minimum noise reduction of 10 dBA from fueling activities.

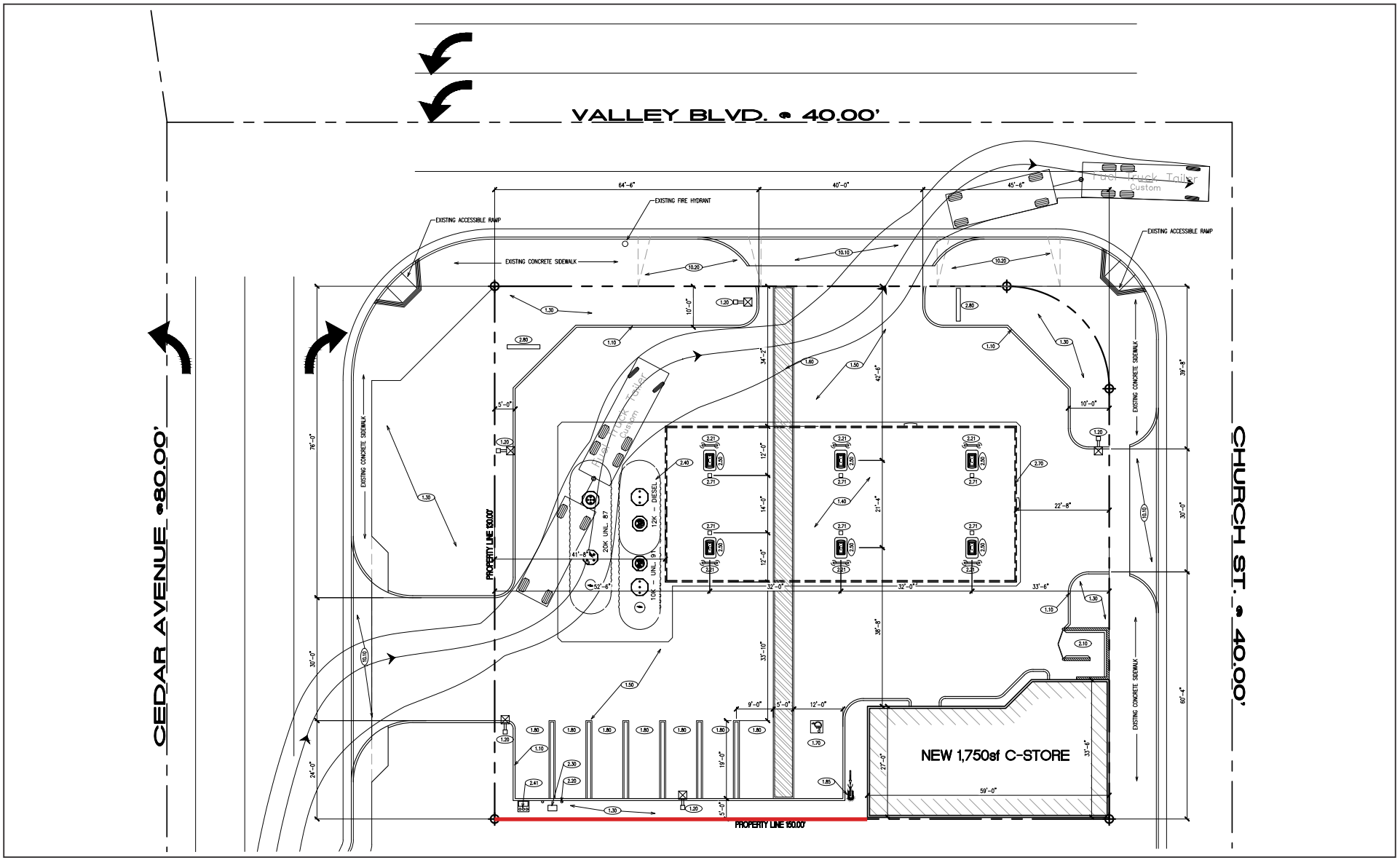
[2] A negative number denotes a noise level increase.

[3] Implementation of a 8 ft high wall along the southern project boundary as a noise reduction measure would provide a minimum noise reduction of 13 dBA from automobile parking activities.

[4] No reference maximum noise level because noise generated from the HVAC equipment would be constant.

[5] The roofline and parapet would provide a minimum noise reduction of 8 dBA.

dBA = A-weighted decibels
HVAC = heating, ventilation, and air conditioning
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level



LSA

LEGEND

8ft High Wall

N

0 20 40

FEET

SOURCE: CJC Design Inc.

I:\CJD2102\G\Wall_Location.ai (8/17/2021)

FIGURE 4

Gasoline Service Station

Wall Location

REDUCTION MEASURES

Short-Term Construction Noise Impacts

No noise reduction measures are required.

Short-Term Construction Vibration Impacts

The following measure would be required to reduce short-term construction-related vibration impacts resulting from the proposed project:

- The construction contractor shall restrict heavy construction (e.g., large bulldozers) or require the use of light construction equipment (e.g., small bulldozers and trucks) within 10 ft of the southern project construction boundary (15 ft from the residential structure).

Long-Term Aircraft Noise Impacts

No noise reduction measures are required.

Long-Term Traffic Noise Impacts

No noise reduction measures are required.

Long-Term Stationary Noise Impacts

The following measure would be required to reduce long-term stationary noise impacts from project operations:

- A minimum 8 ft high wall shall be constructed along the southern project boundary.

Long-Term Vibration Impacts

No vibration reduction measures are required.

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APPENDIX A

FHWA HIGHWAY TRAFFIC NOISE MODEL PRINTOUTS

TABLE Existing (2021) without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue north of Bloomington Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19270 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.96

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	97.5	205.0	439.2

TABLE Existing (2021) without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Bloomington Avenue and Valley Boulevard
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 25500 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.18

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
58.1	116.4	246.5	529.1

TABLE Existing (2021) without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33790 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
66.3	138.7	296.7	638.2

TABLE Existing (2021) without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28630 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.11

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.9	124.4	265.8	571.5

TABLE Existing (2021) without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue Sound of I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 23200 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.38

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	111.0	232.2	497.0

TABLE Existing (2021) without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Bloomington Avenue east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8580 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.72

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.2	146.3	311.8

TABLE Existing (2021) without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12250 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.99

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	73.9	152.4	325.1

TABLE Existing (2021) without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18000 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	93.5	196.0	419.8

TABLE Existing (2021) without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10920 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.49

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	69.0	141.5	301.3

TABLE Existing (2021) without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11430 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.69

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	70.9	145.7	310.5

TABLE Existing (2021) with Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue north of Bloomington Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19440 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.00

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	98.1	206.2	441.8

TABLE Existing (2021) with Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Bloomington Avenue and Valley Boulevard
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 25845 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.23

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
58.5	117.4	248.7	533.8

TABLE Existing (2021) with Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 34085 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.86

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
66.7	139.5	298.4	641.9

TABLE Existing (2021) with Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28850 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.14

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.2	125.1	267.2	574.5

TABLE Existing (2021) with Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue Sound of I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 23310 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.41

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	111.4	233.0	498.5

TABLE Existing (2021) with Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Bloomington Avenue east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8660 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.76

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.6	147.2	313.7

TABLE Existing (2021) with Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13270 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.34

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	77.5	160.6	342.9

TABLE Existing (2021) with Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18040 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.67

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	93.6	196.3	420.4

TABLE Existing (2021) with Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11000 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.52

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	69.3	142.2	302.8

TABLE Existing (2021) with Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - Existing (2021) with Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12220 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.98

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	73.8	152.2	324.6

TABLE 2023 without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue north of Bloomington Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21220 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.38

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	103.6	218.4	468.3

TABLE 2023 without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Bloomington Avenue and Valley Boulevard
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28185 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.61

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
61.4	124.1	263.4	565.5

TABLE 2023 without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 37690 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.30

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
71.0	149.0	319.1	686.4

TABLE 2023 without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33530 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.79

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
66.0	138.0	295.2	635.0

TABLE 2023 without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue Sound of I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29070 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
65.0	127.8	269.3	577.2

TABLE 2023 without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Bloomington Avenue east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9450 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.14

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	75.4	155.8	332.4

TABLE 2023 without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13830 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.52

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	79.5	165.0	352.4

TABLE 2023 without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20020 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	99.9	210.2	450.5

TABLE 2023 without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12460 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.06

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	74.6	154.1	328.8

TABLE 2023 without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12990 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.25

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.5	158.4	338.0

TABLE 2023 with Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue north of Bloomington Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21370 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.41

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	104.1	219.5	470.5

TABLE 2023 with Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Bloomington Avenue and Valley Boulevard
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28490 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
61.8	125.0	265.3	569.6

TABLE 2023 with Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between Valley Boulevard and I-10 Westbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 37985 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.33

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
71.3	149.7	320.7	690.0

TABLE 2023 with Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue between I-10 Westbound Ramps and I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33750 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.82

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
66.3	138.6	296.5	637.7

TABLE 2023 with Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Cedar Avenue Sound of I-10 Eastbound Ramps
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29180 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.38

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
65.1	128.1	270.0	578.7

TABLE 2023 with Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Bloomington Avenue east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9530 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.17

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	75.8	156.6	334.2

TABLE 2023 with Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14850 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	83.0	172.8	369.4

TABLE 2023 with Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Cedar Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20060 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.13

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	100.0	210.5	451.1

TABLE 2023 with Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard east of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12540 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.09

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	74.9	154.8	330.2

TABLE 2023 with Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 07/22/2021
ROADWAY SEGMENT: Valley Boulevard west of Larch Avenue
NOTES: 18745 Valley Boulevard Gas Station - 2023 with Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13780 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.50

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	79.3	164.6	351.5
