CANYON RANCH NOISE IMPACT ANALYSIS

City of Loma Linda

May 4, 2022

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

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May 4, 2022

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Project No. 19409

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EXECUTIVE SUMMARY

The approximately 141.4-acre proposed annexation area is generally located south of Barton Road, west of San Timoteo Canyon Road/Nevada Street, and northeast of the Union Pacific Railroad line in the City of Loma Linda sphere of influence (currently unincorporated).

Annexation Area

The annexation includes a General Plan Amendment and Zoning Map Amendment to change four lots from the current designation and zone of General Commercial to Low Density Residential. The two tentative tract maps (TTM) and adjacent lots found within this portion of the sphere of influence will be annexed into the City.

Residential Projects TTM-20403 and TTM-20404

The approximately 66.7-acre proposed residential project site is located within the annexation area, north and south of Bermudez Street between San Timoteo Creek and San Timoteo Canyon Road in the City of Loma Linda, California. The project site is currently undeveloped and zoned for Low Density and Very Low Density Residential. The proposed residential project involves construction of two tentative tract maps consisting of 126 residential lots and 3 lettered lots [Project]. TTM-20403 consists of 37 lots (7,200 square feet minimum), a basin, and open space. TTM-20404 consists of 89 lots (2 units per acre density) and open area.

Vehicular access for the project site will be maintained at Barton Road, New Jersey Street, San Timoteo Road and Nevada Street. Additionally, the proposed project will vacate the Bermudez Street and San Timoteo Canyon Road intersection and construct a new cul-de-sac on the northern side of parcel 0293-091-04 with a 30-foot access driveway for the adjacent parcel on the east.

Construction Impacts

Construction noise sources are regulated within the City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070. Section 9.20.050 prohibits construction related noise between the hours of 10:00 PM and 7:00 AM. In addition, Section 9.20.070 allows construction noise levels to exceed the City's maximum noise levels (see Table 6) provided that construction occurs between the hours of 7:00 AM and 8:00 PM Monday through Friday and provided that all equipment is properly equipped with standard noise muffling apparatus specifically for such equipment (i.e., exhaust mufflers). Heavy construction is not permitted on weekends, or national holidays.

Modeled unmitigated construction noise levels when combined with existing measured noise levels ranged between 41.5 and 67.1 dBA L_{eq} at the nearest receptors to the project site. When modeled construction noise levels are combined with existing ambient noise levels the modeled receptors will be exposed to short-term increases in ambient noise levels of up to 5 dB Leq. However, project construction will not occur outside of the hours outlined as "exempt" in City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070 and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

Impacts would be less than significant, and no mitigation is required. Suggested measures to further minimize construction related noise are presented below.

In addition to adherence to the City of Loma Linda Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices – Noise

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences. The shielding should be without holes and cracks.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070.

Existing average daily vehicle trips on roadways in the project vicinity range between 27,770 and 29,800 on Barton Road; and between 8,800 and 9,800 average daily vehicle trips on San Timoteo Road.[1] Project construction is expected to generate up to 489 vehicle trips per day (355 for worker trips and 134 for vendor trips). Given the project site's proximity to the 10 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

<u>Noise Impacts to Off-Site Receptors Due to Project Generated Trips</u>

The roadway noise level increases from project generated vehicular traffic were modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Two of the modeled roadway segments have increases above 5 dB, New Jersey Street from Barton Road to Bermudez Street and New Jersey Street south of Bermudez Street. The land uses located adjacent to these roadway segments include single-family residential and church uses. As shown in Table 3, single-family residential uses are considered normally acceptable in areas with noise levels of up to 55 dBA CNEL and church uses in areas of up to 70 dBA CNEL. The modeled existing plus project noise level along New Jersey Street from Barton Road to Bermudez Street is 54.6 dBA CNEL and the modeled existing plus project noise level along New Jersey Street south of Bermudez Street is 52.3 dBA CNEL. Therefore, although the roadway noise level increases along these roadway segments are above 5 dB, with project generated vehicle traffic the noise levels would still be below the City's normally acceptable noise standards.

Therefore, a change in noise level would not be audible and would be considered less than significant. No mitigation is required.

[1] The existing average daily traffic volumes were obtained from the Canyon Ranch Traffic Impact Analysis prepared by Ganddini Group (March 22, 2022).

Future Transportation Noise Impacts to the Proposed Project

At buildout conditions, future transportation noise will exceed the City's "normally acceptable" exterior noise standard of 55 dBA but will not exceed the City's "conditionally acceptable" noise standard of 70 dBA CNEL for residential land uses at proposed residential lots.

Solid barriers (i.e., concrete block) ranging between 6 to 8-feet in height, built at the elevation of the adjacent roadway along the property lines of these lots, would reduce exterior noise levels to 65 dBA CNEL or below. With construction of this barrier interior noise levels would not exceed 45 dBA CNEL. Furthermore, 65 dBA CNEL is the approximate noise level of conversation and is typically considered acceptable for outdoor land uses. Therefore, impacts to the proposed project would be less than significant with construction of barriers shown in Figure 9. The base of the recommended barriers are to be the same height of the adjacent roadway; therefore, some adjustment may be required when final grading plans are approved.

Groundborne Vibration Impacts

Groundborne vibration levels associated with project construction have the potential to result in cosmetic architectural damage at residential structures to the north of the project site (along Barton Road) and the residential structures located to the north of TTM 20404 (along Romero Street). Best management practices that will be implemented as part of the project, which include avoidance of the use of vibratory rollers within 20 feet and large bulldozers within 12 feet of residential structures, will prevent architectural damage and potentially significant impacts. Impacts would be less than significant.

Annoyance – Annoyance due to groundborne vibration becomes severe to sensitive receptors at a level of 0.4 in/sec PPV. Due to distance, construction activities associated with the proposed project would have the potential to cause vibration related annoyance at the residential uses located to the north of the project site (along Barton Road). However, implementation of best management practices that limit the use of vibratory equipment near sensitive receptors (as discussed above under architectural damage) would reduce vibrational annoyance to less than significant. Annoyance is expected to be short-term, occurring only during site grading and preparation. No mitigation is required.

Vibration Best Management Practices

1. Vibratory rollers, or other similar vibratory equipment, shall be prohibited within 20 feet and large bulldozers within 12 feet of any existing residential structure.

1. INTRODUCTION

This section describes the purpose of this noise impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts resulting from development of the proposed Canyon Ranch project and to identify mitigation measures that may be necessary to reduce those impacts. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the City of Loma Linda.

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with technical terms related to noise analysis.

PROJECT LOCATION

The approximately 141.4-acre proposed annex area is generally located south of Barton Road, west of San Timoteo Canyon Road/Nevada Street, and northeast of the Union Pacific Railroad line in the City of Loma Linda sphere of influence (currently unincorporated). The annexation area map is provided on Figure 1 and the project location map is provided on Figure 2.

PROJECT DESCRIPTION

Annexation Area

The annexation includes a General Plan Amendment and Zoning Map Amendment to change four lots from the current designation and zone of General Commercial to Low Density Residential. The two tentative tract maps (TTM) and adjacent lots found within this portion of the sphere of influence will be annexed into the City.

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Figure 3 illustrates the project site plan.

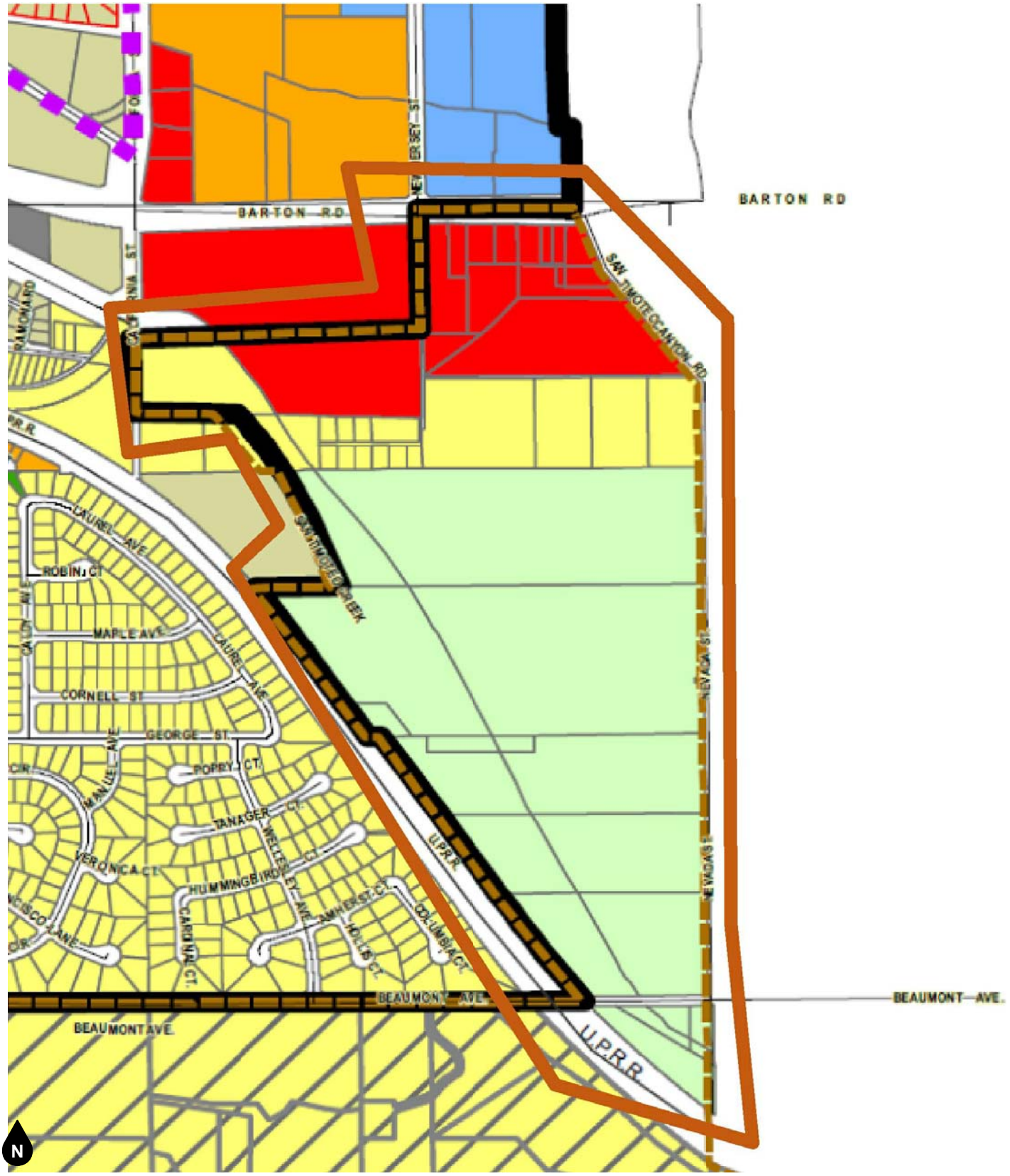


Figure 1
Annexation Area Map

Figure 2
Project Location Map

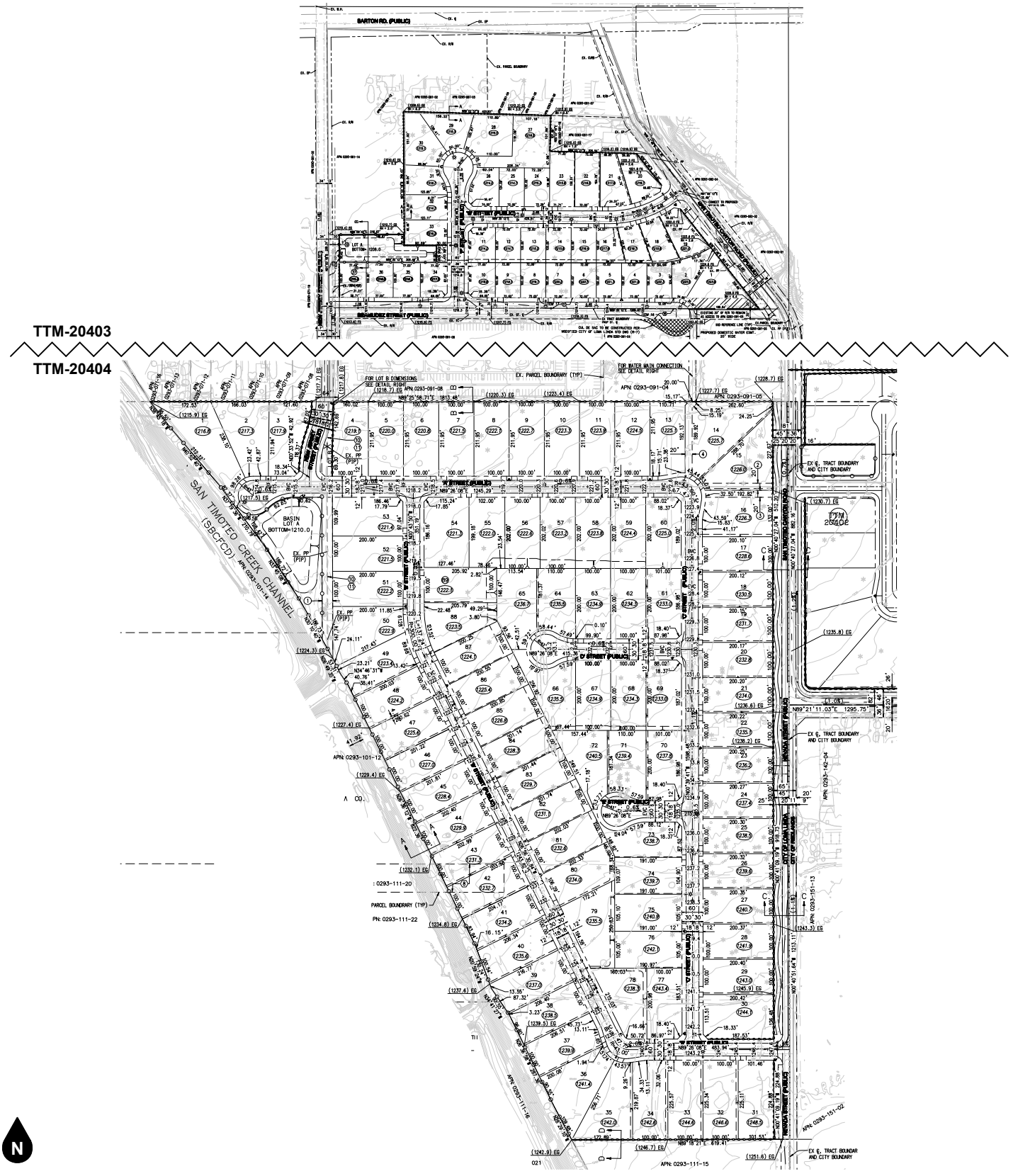


Figure 3
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 4 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3\text{-}hr)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water.

Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 5 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.

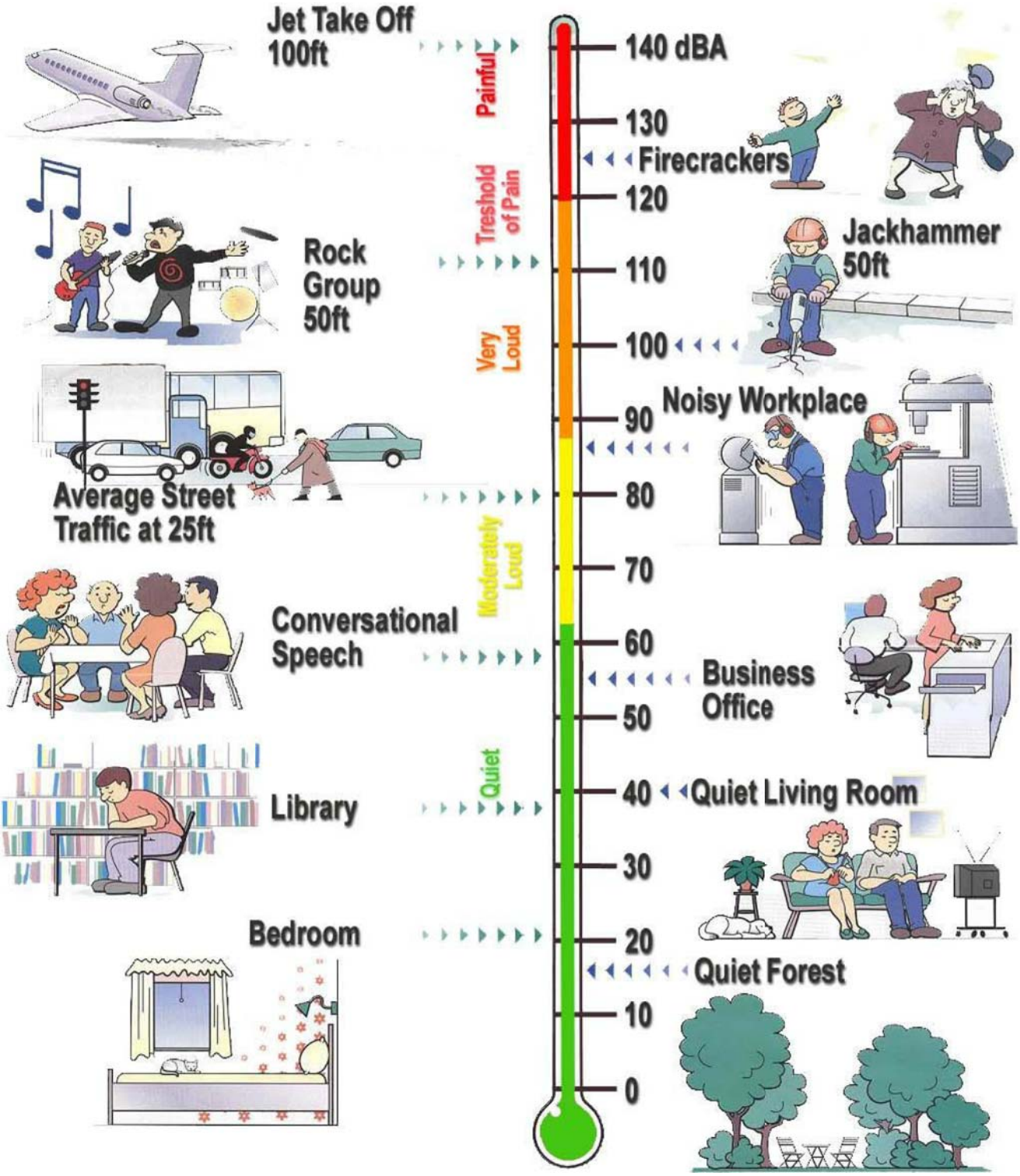
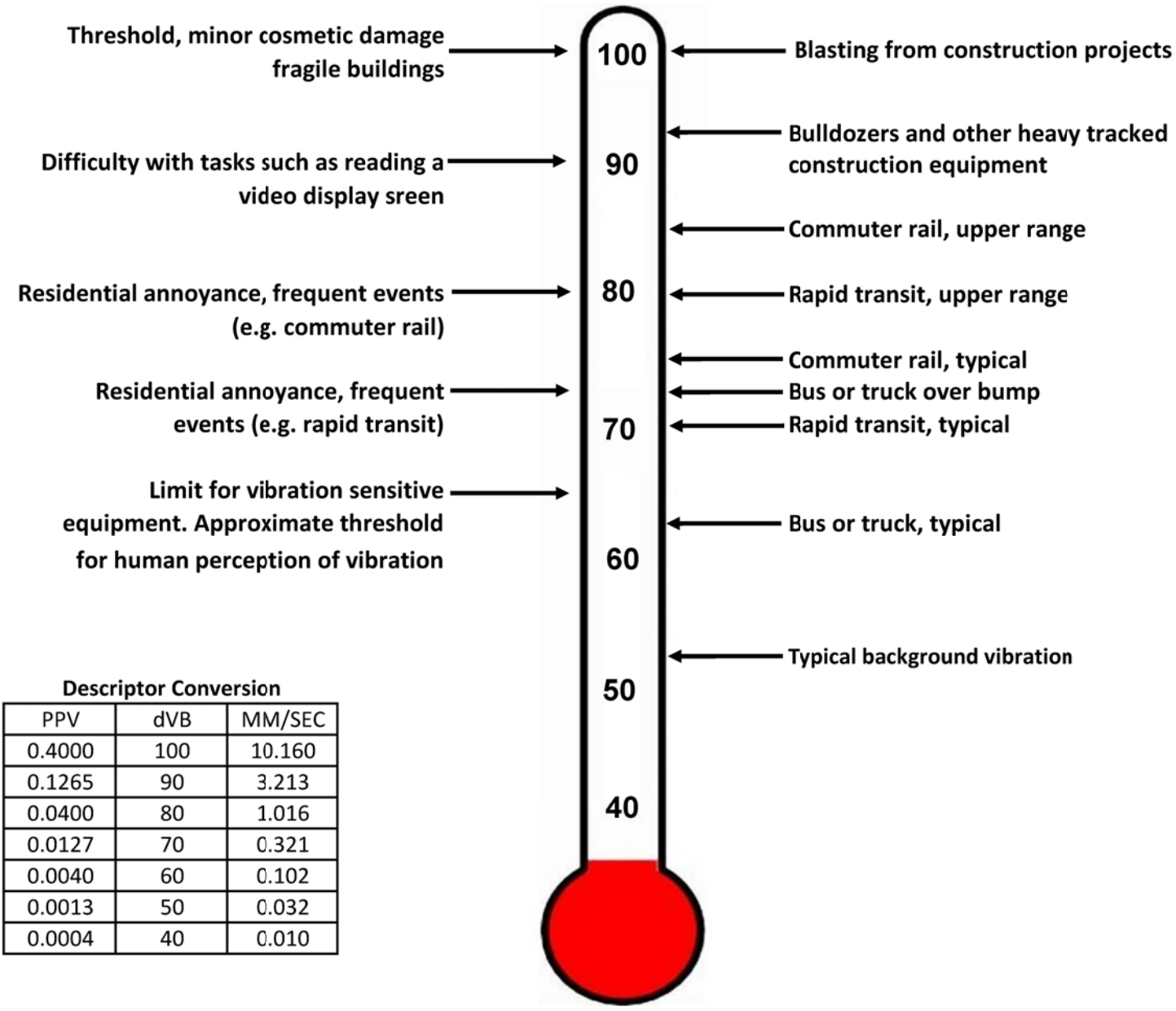


Figure 4
Weighted Sound Levels in Common Environments

Source: Bruel & Kjaer 2001



Descriptor Conversion

PPV	dVB	MM/SEC
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

Source: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 5
Typical Levels of Groundborne Vibration

3. EXISTING NOISE ENVIRONMENT

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is generally bordered by Nevada Street and San Timoteo Canyon Road to the east; vacant land to the south; San Timoteo Creek and New Jersey Street to the west; and single-family residential uses and commercial uses to the north of the project site.

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. Sensitive land uses that may be affected by project noise include the single-family residential uses located adjacent to the north of TTM 20403 and to the north of TTM 20404 and approximately 35 feet to the east (across San Timoteo Road and Nevada Street), 515 feet to the south (across Beaumont Avenue), between 530 and 1,090 feet to the west, and 808 feet to the northwest (along 1st Street) of the project site. In addition, a church use is located adjacent to the north of TTM 20404.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section S1.4 2014 Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, six (6) 15-minute daytime noise measurements were taken between 12:53 PM and 4:36 PM on September 2, 2021. In addition, one (1) long-term 24-hour noise measurement was also taken from September 2, 2021 to September 3, 2021. Field worksheets and noise measurement output data are included in Appendix C.

As shown in Figure 6, the noise meter was placed at the following locations:

- STNNM1: represents the existing noise environment of the single-family residences located to the south of the project site boundary on the southern side of Beaumont Avenue (26907 Beaumont Avenue, Redlands). The noise meter was placed near the single-family residential uses on the southern side of Beaumont Avenue just east of the Nevada Street intersection.
- STNM2: represents the existing noise environment of the single-family residential neighborhood to the west of the project site (26650 Tanager Court, Loma Linda). The noise meter was placed near the single-family residential uses along Tanager Court.
- STNM3: represents the existing noise environment of the single-family residence located to the west of the project site boundary (11440 California Street, Loma Linda). The noise meter was placed near the northeast property line of the single-family residence.
- STNM4: represents the existing noise environment of the single-family residences located along the southern side of Barton Road (26723 Barton Road, Redlands). The noise meter was placed near the single-family residential use located adjacent to the northwestern corner of the project site along the southern side of Barton Road.
- STNM5: represents the existing noise environment of the single-family residences located to the east of the project site boundary on the eastern side of San Timoteo Canyon Road (11411 and 11373 San Timoteo Canyon Road Redlands). The noise meter was placed on the eastern side of San Timoteo Canyon Road, near the single-family residential uses.
- STNM6: represents the existing noise environment of the single-family residence located to the east of the project site boundary at the southeastern corner of the intersection of San Timoteo Canyon Road and Nevada Street (11605 San Timoteo Canyon Road, Redlands). The noise meter was placed near the single-family residential property line, just south of San Timoteo Canyon Road.

- LTNM1: represents the existing noise environment of the western project boundary near the adjacent rail line. However, the noise meter was placed several feet downslope from the rail line so there was not a direct line of sight between the rail line and the noise meter.

Table 1 provides a summary of the short-term ambient noise data. Table 2 provides hourly interval ambient noise data from the long-term noise measurement. Short-term ambient noise levels were measured between 60.1 and 74.2 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 38.3 to 62.7 dBA L_{eq}. The dominant noise source was vehicle traffic associated with Beaumont Avenue, Nevada Street, Barton Road, San Timoteo Canyon Road and train related noise.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
NM1	12:53 PM	63.3	79.1	44.3	72.6	68.8	61.2	58.3
NM2	1:31 PM	66.1	87.6	36.4	78.2	63.1	53.3	45.3
NM3	2:15 PM	60.1	75.0	40.6	72.2	63.7	54.9	47.8
NM4	3:09 PM	71.3	86.8	52.6	77.7	74.9	72.4	69.6
NM5	3:49 PM	71.8	86.2	43.7	80.3	75.9	72.5	68.4
NM6	4:21 PM	74.2	95.6	42.7	83.5	71.7	67.4	63.6

Notes:
(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.
(2) Noise measurements performed on September 2, 2021

Table 2
Long-Term Noise Measurement Summary (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	8:00 PM	56.1	82.4	31.9	64.2	55.8	45.3	40.3
1	8:00 PM	53.3	70.3	38.7	63.6	59.2	45.8	43.1
2	9:00 PM	52.3	69.4	36.6	61.7	59.0	43.9	41.7
3	10:00 PM	51.9	71.5	34.8	65.0	49.1	41.2	39.7
4	11:00 PM	58.0	79.7	33.8	66.3	55.8	40.7	38.4
5	12:00 AM	38.3	52.3	33.2	44.0	40.1	38.2	36.9
6	1:00 AM	57.1	78.2	35.8	66.1	57.1	41.2	40.0
7	2:00 AM	51.3	70.7	37.7	61.3	57.7	42.0	40.6
8	3:00 AM	52.1	70.3	38.0	60.8	58.6	44.2	42.3
9	4:00 AM	53.0	74.3	40.0	63.1	56.0	44.8	43.8
10	5:00 AM	48.7	65.8	42.9	54.8	49.6	48.2	47.2
11	6:00 AM	60.3	80.1	44.1	70.8	59.4	48.6	47.6
12	7:00 AM	59.1	77.8	41.5	69.7	62.0	48.5	47.0
13	8:00 AM	56.7	76.9	35.9	67.0	58.6	43.4	40.7
14	9:00 AM	49.4	69.1	34.6	59.4	54.6	43.4	38.8
15	10:00 AM	43.6	65.1	33.3	51.9	45.3	39.5	36.4
16	11:00 AM	59.2	80.4	33.9	67.0	59.7	39.7	36.8
17	12:00 PM	43.2	66.1	32.9	49.9	42.1	37.8	36.2
18	1:00 PM	58.5	81.5	32.7	64.9	53.7	42.3	38.2
19	2:00 PM	51.1	74.8	32.8	63.4	44.9	39.8	37.2
20	3:00 PM	57.5	81.6	32.9	61.8	51.3	39.5	36.7
21	4:00 PM	62.7	82.1	33.1	73.9	63.3	55.2	38.8
22	5:00 PM	58.8	77.4	31.9	69.2	63.0	41.9	35.7
23	6:00 PM	52.9	82.4	32	59.4	48.9	39.6	35.3
24	7:00 PM	45.6	66.6	33.4	53.0	51.0	46.2	39.3

Notes:

(1) See Figure 5 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from September 2, 2021 to September 3, 2021.

Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 6
Noise Measurement Location Map

4. REGULATORY SETTING

FEDERAL REGULATION

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five (5) dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA Ldn (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

Federal Transportation Guidance Manual

The Federal Transportation Association Guidance Manual for Transit Noise and Vibration Impact Assessment (September 2018) suggests that the ground-borne vibration velocity should not exceed 80 VdB for infrequent events (fewer than 70 per day) and 72 VdB for frequent events (more than 70 per day) to minimize potential vibration impacts. In this case, the 72 VdB is the appropriate threshold for rail related groundborne vibration impacts.

STATE REGULATIONS

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate any special acoustical treatment or noise mitigation. The

"conditionally acceptable" or "normally unacceptable" ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project. The City of Loma Linda has adopted their own version of the State Land Use Compatibility Guidelines for land use planning and to assess potential transportation noise impacts to proposed land uses (see Table 3).

California Department of Transportation (Caltrans)

The California Department of Transportation has published one of the seminal works for the analysis of ground-borne noise and vibration relating to transportation- and construction-induced vibrations and although the project is not subject to these regulations, it serves as useful tools to evaluate vibration impacts. As shown in Table 4, the threshold at which there is a risk to "architectural" damage to historic and some older buildings is a peak particle velocity (PPV) of 0.25 in/sec, at older residential structures a PPV of 0.3 in/sec, and at new residential structures a PPV of 0.5 in/sec. Table 5 shows that a PPV of 0.4 in/sec is the threshold at which groundborne vibration becomes severe in regard to annoyance. Impacts would be significant if construction activities result in groundborne vibration of 0.3 in/sec PPV or higher at a sensitive receptor.

LOCAL REGULATIONS

City of Loma Linda General Plan

The City of Loma Linda has adopted their own version of the State Land Use Compatibility Guidelines for land use planning and to assess potential transportation noise impacts to proposed land uses (see Table 3). According to the City's compatibility guidelines, daytime exterior noise levels of up to 55 dBA CNEL are considered to be "normally acceptable" and up to 70 dBA CNEL are considered to be "conditionally acceptable" for residential land uses.

The City of Loma Linda has also established the following General Plan polices pertaining to noise to support the goal of achieving an acceptable noise environment for existing and future residents of the City of Loma Linda. The City's noise performance standards are shown in Table 6. Appropriate noise level criteria are further defined in the Goals and Policies of the General Plan Noise Element as presented below.

7.8.1 Guiding Policy Strive to achieve an acceptable noise environment for existing and future residents of the City of Loma Linda.

7.8.1.1 Implementing Noise Policies for Land Use and New Development.

(a) Achieve and maintain exterior noise levels appropriate to planned land uses through Loma Linda as indicated below:

- Residential:
  - Single-Family: 65 dBA within rear yards.
  - Multi-Family: 65 dBA within private yard or enclosed balcony spaces.
  - Single/Multi-Family, indoor noise level: 45 dBA with windows closed.

- Schools:
  - Classrooms: 65 dBA exterior noise environment at the classroom location.
  - Play and sports areas: 70 dBA.

- Libraries, Churches, Hospitals, Nursing Homes: 60BA exterior noise environment at the building location.

- Commercial/Industrial:70 dBA exterior noise environment at the building location unless additional interior mitigation is provided.

(b) Maintain a pattern of land uses that separates noise-sensitive land uses (e.g., residential, churches, schools, and hospitals) from major noise sources to the extent possible, and guide noise-tolerant land uses into the noisier portions of the Planning Area.

(c) Require new developments to limit noise impacts on adjacent properties through acoustical site planning, which may include, but is not limited to the following actions:

- Increased setbacks from noise sources from adjacent buildings;
- Screen and control noise sources, such as parking, and loading facilities, outdoor activities and mechanical equipment;
- Use soundproofing materials and double-glazed windows;
- Retain fences, walls, and landscaping that serve as noise buffers;
- Orient delivery, loading docks, and outdoor work areas away from noise-sensitive areas;
- Cluster office, commercial, or multi-family residential structures to reduce noise levels within interior open space areas.

(d) Where new development (including construction and improvement of roadways) is proposed in areas exceeding the noise levels identified in the General Plan, or where the development of proposed uses could result in an increase of more than 3.0 dBA above existing background noise, require a detailed noise attenuation study prepared by a qualified acoustical engineer to determine and incorporate appropriate mitigation into project design and implementation to reduce potential noise levels to acceptable noise levels as identified in the General Plan.

(e) Utilize site design and architectural design features to the extent feasible to mitigate impacts on residential neighborhoods and other noise-sensitive uses. In addition to sound barriers, design techniques to mitigate noise impacts may include, but are not limited to:

- Increased building setbacks to increase the distance between the noise source and sensitive receptors.
- Orienting buildings that are noise-compatible with adjacent to noise generators or in a manner that shields noise-sensitive uses.
- Orienting delivery, loading docks, and outdoor work areas away from noise-sensitive uses.
- Placing noise tolerant activity areas, (e.g., parking) between the noise source and sensitive receptors.

(f) Provide double glazed and double paned windows on the side of the structure facing a major noise source, and place entries away from the noise source to the extent possible.

(g) Continue enforcement of California Noise Insulation Standards (Title 25, Section 1092, California Administrative Code).

(h) Discourage new projects that have potential to create ambient noise levels more than 5 dBA above existing background noise within 250 feet of sensitive receptors, (e.g., schools, hospitals, churches, residential uses, etc.).

(i) Require new noise sources to use best available control technology (BACT) to minimize noise from all sources.

(j) Ensure that construction activities are regulated as to the hours of operation in order to avoid or mitigate noise impacts on adjacent noise-sensitive land uses.

(k) Require proposed development adjacent to occupied noise-sensitive uses to implement a construction-related noise mitigation plan that identifies the location of construction equipment

storage and maintenance areas and documents the methods that will be used to minimize impacts on adjacent noise-sensitive land uses, including, where needed, installation of temporary barriers.

(l) Require that all construction equipment utilize noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

City of Loma Linda Municipal Code

Section 9.20.040 Land Use Compatibility for Community Nosie Environments.

Performance standards presented in Table 6. These standards are established guidelines from the Loma Linda General Plan that provide a decibel range for the city manager, or designee to follow and help determine what type of noises are nuisances and are unacceptable to the community. This determination will be based on a case-by-case basis at the discretion of the city manager. For the proposed project, as shown in Table 6, exterior noise levels of up to 55 dBA CNEL are considered to be normally acceptable and up 70 dBA CNEL are considered to be conditionally acceptable for residential development.

Section 9.20.050 Prohibited Noises

Noises considered to be a nuisance between the hours of 10:00 PM and 7:00 AM shall include but not be limited to the following:

- Outdoor maintenance equipment (i.e., leaf blowers, lawn mowers, gas edgers, parking lot sweepers, etc.).
- Construction related noises;
- Amplified sounds including but not limited to church chimes, loudspeakers, or musical devices;
- Truck deliveries for commercial, or industrial land use types adjacent to residential properties;
- Refuse collection trucks are prohibited between the hours of 10:00 PM and 6:00 AM.
- Special waivers may be granted per Sections 9.20.060 and 9.20.070.

Section 9.20.070 Temporary Permit Procedures

D. Developers that are involved with building construction and subdivision grading may exceed maximum noise levels shown in Table 6 provided that it occurs between the hours of 7:00 AM and 8:00 PM, Monday through Friday, provided that all equipment is properly equipped with standard noise muffling apparatus specifically for such equipment (i.e., exhaust mufflers). Heavy construction is not permitted on weekends, or national holidays.

Table 3
City of Loma Linda General Plan Noise Standards

Land Use Category	Energy Average CNEL			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential	55	70	75	76 or more
Residential (10 PM to 7 AM)	<50	55 or more	—	—
Transient Lodging, Motels, Hotels	65	70	75	76 or more
Schools, Libraries, Churches, Hospitals, Nursing Homes	70	70	80	81 or more
Auditoriums, Concert Halls, Amphitheaters	__	80	__	90 or more
Sports Arenas, Outdoor Spectator Sports	__	80	__	90 or more
Playgrounds, Neighborhood Parks	70	__	75	76 or more
Golf Course, Riding Stables, Water Recreation, Cemeteries	__	__	80	81 or more
Office Buildings, Business Commercial and Professional	70	75	76 or more	__
Industrial, Manufacturing, Utilities, Agriculture	70	80	81 or more	—

Source: Loma Linda General Plan, Chapter 7.0 Noise Element Table 7.C: City of Loma Linda Noise Level Standards, Page 7-5.

Notes:

(1) Specified land use activities that are satisfactory based upon the assumption that any land use or buildings involved are of ordinary performance standards.

(2) Activities or Actions shall be undertaken only after a detailed analysis of the noise reduction (muffling) requirements is made and noise reduction insulation features are included as a preventive measure.

(3) Noise levels exceeding the following ranges shall generally be discouraged. If new activities or actions proceed, a detailed analysis of the noise reduction requirements must be made and necessary noise insulation features included in the design.

(4) Activities shall not be undertaken or permitted.

Table 4
Guideline Vibration Damage Potential Threshold Criteria

Structure Condition	Maximum PPV (in/sec)	
	Transient Sources[1]	Continuous/Frequent Intermittent Sources[1]
Extremely fragile historic buildings, ruins, anceint monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 5
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 6
City of Loma Linda Municipal Ordinance Noise Performance Standards

Land Use Category and Similar Land Uses	Performance Standards	L_{dn} or CNEL, dBA
Residential	Normally Acceptable	55
	Conditionally Acceptable	70
	Normally Unacceptable	75
	Clearly Unacceptable	76
Residential (evening) 10:00 PM to 7:00 AM	Normally Acceptable	<50
	Conditionally Acceptable	55 or more
Schools, Libraries, Churches, Hospitals, and Nursing Homes	Normally Acceptable	70
	Conditionally Acceptable	70
	Normally Unacceptable	80
	Clearly Unacceptable	81 or more
Auditoriums, Concert Halls, Amphitheaters	Conditionally Acceptable	80
	Clearly Unacceptable	90 or more
Sports Arenas, Outdoor Spectator Sports	Conditionally Acceptable	80
	Clearly Unacceptable	90 or more
Playgrounds, Neighborhood Parks	Normally Acceptable	70
	Normally Unacceptable	75
	Clearly Unacceptable	76 or more
Golf Course, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable	
	Normally Unacceptable	80
	Clearly Unacceptable	81 or more
Office Buildings, Business Commercial and Professional	Normally Acceptable	70
	Conditionally Acceptable	75
	Normally Unacceptable	76 or more
Industrial, Manufacturing Utilities, Agriculture	Normally Acceptable	70
	Conditionally Acceptable	80
	Normally Unacceptable	81 or more

Source: City of Loma Linda Municipal Code Section 9.20.040.

Notes:

Normally Acceptable: Specified land uses that are satisfactory based upon the assumption that any buildings involved are of normal performance standards.

Conditionally Acceptable: Activities or actions shall be undertaken only after a detailed analysis of the noise reduction (muffling) requirements is made and noise reduction insulation features are included as a preventative measure.

Normally Unacceptable: Noise levels exceeding the following ranges shall generally be discouraged. If new activities or actions proceed, a detailed analysis of the noise reduction requirements must be made and necessary noise insulation features included in the design.

Clearly Unacceptable: Activities shall not be undertaken or permitted.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

Construction noise associated with the proposed project was calculated at the sensitive receptor locations, utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. The equipment used to calculate the construction noise levels for each phase were based on the assumptions provided in the CalEEMod modeling in the Air Quality Study prepared for the proposed project (Lilburn Corporation 2022). For construction noise purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. Sound emission levels associated with typical construction equipment as well as typical usage factors provided in Table 7 were utilized for modeling purposes. Construction noise worksheets are provided in Appendix D.

FEDERAL HIGHWAY ADMINISTRATION (FHWA) TRAFFIC NOISE PREDICTION MODEL

The roadway noise level increases from project generated vehicular traffic were modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emissions Levels.[1] Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification (i.e., collector, secondary, major or arterial), the roadway active width (i.e., distance between the center of the outermost travel lanes on each side of the roadway), travel speed, truck mix (i.e., percentage of automobiles, medium trucks, and heavy trucks in the traffic volume), roadway grade and site conditions (hard or soft ground surface relating to the absorption of the ground, pavement, or landscaping). Research conducted by Caltrans identifies that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model.[2] Therefore, surfaces adjacent to all modeled roadways were assumed to have a "soft site". Possible reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Existing and Existing Plus Project vehicle mix were obtained from the project's traffic study (Ganddini Group 2022). No vehicle mix data for use in noise studies has been published for these roadways by the City of Loma Linda nor the County of San Bernardino, so vehicle/truck mixes and D/E/N splits for use in acoustical studies published by the Riverside County Department of Industrial Hygiene were utilized for noise modeling[3]. Existing Plus Project vehicle mixes were calculated by adding the proposed project trips to existing conditions. FHWA spreadsheets are included in Appendix E.

[1] California Department of Transportation Environmental Program, Office of Environmental Engineering. Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction. September 1995. TAN 95-03.

[2] California Department of Transportation. Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report. June 1995. FHWA/CA/TL-95/23.

[3] Riverside, County Department of Public Health, Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures, Steven Hinde, REHS, CIH, Senior Industrial Hygienist, November 23, 2009.

SOUNDPLAN NOISE MODEL

The SoundPLAN acoustical modeling software was utilized to model future roadway and rail noise levels at the proposed sensitive receptors (e.g., residences). SoundPLAN is capable of evaluating stationary noise sources (e.g., parking lots, drive-thru menus, car wash equipment, vacuums, etc.) and much more. The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition to the information provided below, noise modeling data is provided in Appendix F.

Vehicle Traffic

Future traffic noise levels were modeled utilizing representative sound levels in the SoundPLAN model. Roadway parameters utilized in the noise model include location, traffic volume, speed and vehicle mix (autos, medium trucks, and heavy trucks). It is important to evaluate potential impacts of the noisiest possible future conditions. These conditions occur when the maximum number of vehicles pass at the greatest speed. This scenario usually corresponds to Level of Service C (LOS C) Conditions, or about 75% of buildout capacity.

Roadways that may generate enough traffic noise under buildout conditions to affect the proposed project include Barton Road, San Timoteo Canyon Road, and Beaumont Avenue. The City of Loma Linda General Plan Transportation and Circulation Element identifies Barton Road as a Major Arterial 4-Lane Divided Roadway, San Timoteo Canyon Road as a Rural Arterial roadway, and Beaumont Avenue as a Major Arterial 2-Lane Undivided Roadway. Per the project's traffic study (Ganddini Group 2022), under the General Plan Buildout (Year 2040) With Project Conditions, in the vicinity of the project site Barton Road is expected to accommodate up to approximately 36,500 vehicles per day, San Timoteo Canyon up to approximately 14,900 vehicles per day, and Beaumont Avenue up to approximately 4,700 vehicles per day. Posted speeds are as follows: Barton Road (45 mph), San Timoteo Canyon Road (45 mph), and Beaumont Avenue (35 mph).

Rail Traffic

The project's western boundary is adjacent to a rail right-of-way utilized by the Union Pacific Railroad. According to the Federal Railway Association, Office of Safety Analysis[4], approximately 36 trains pass the site each day (see Crossing Inventory Form in Appendix F). The CREATE Rail worksheet was used to calculate train noise levels at a distance of 50 feet and then calibrated and represented by a line noise source in the SoundPLAN noise model.

[4] https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/query/query.aspx

Table 7 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90

Table 7 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014 http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

6. IMPACT ANALYSIS

This impact discussion analyzes the potential for noise and/or groundborne vibration impacts to cause the exposure of a person to, or generation of, noise levels in excess of established City of Loma Linda standards related to construction, operation, and transportation noise related impacts to, or from, the proposed project.

IMPACTS RELATED TO CONSTRUCTION NOISE

Construction activities will occur in phases including demolition, site preparation, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than mid-April 2023 and be completed by early September 2028.

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. The existing church use located adjacent to the north of TTM 20404, and the existing single-family residential uses located adjacent to the north of TTM 20403 and to the north of TTM 20404 and approximately 35 feet to the east, 515 feet to the south, between 530 and 1,090 feet to the west, 808 feet to the northwest of the project site property lines may be affected by short-term noise impacts associated with construction noise.

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the proposed construction activity. Construction noise levels were calculated for each phase. Anticipated noise levels during each construction phase are presented in Table 8. Worksheets for each phase are included as Appendix D.

Modeled unmitigated construction noise levels when combined with existing measured noise levels ranged between 41.5 and 67.1 dBA L_{eq} at the nearest receptors to the project site (Table 8). The expected duration of each phase and the loudest sound level at the nearest sensitive receptor (church use located between TTM 20403 and TTM 20404 along Bermudez Street) is presented below:

Phase	Number of Days	Maximum Leq
Site Preparation	40	66.4
Grading	110	67.1
Building Construction	1,110	64.6
Paving	75	60.1
Architectural Coating	75	52.7

Table 8 also includes a comparison of existing noise levels and project construction noise levels. When modeled construction noise levels are combined with existing ambient noise levels the modeled receptors will be exposed to short-term increases in ambient noise levels of up to 5 dB Leq. However, project construction will not occur outside of the hours outlined as "exempt" in City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

As discussed earlier, construction noise sources are regulated within the City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070. Section 9.20.050 prohibits construction related noise between the hours of 10:00 PM and 7:00 AM. In addition, Section 9.20.070 allows construction noise levels to exceed the City's maximum noise levels (see Table 6) provided that construction occurs between the hours of 7:00 AM and

8:00 PM Monday through Friday and provided that all equipment is properly equipped with standard noise muffling apparatus specifically for such equipment (i.e., exhaust mufflers). Heavy construction is not permitted on weekends, or national holidays.

Impacts would be less than significant, and no mitigation is required. Suggested measures to further minimize construction related noise are presented below.

In addition to adherence to the City of Loma Linda Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices – Noise

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences. The shielding should be without holes and cracks.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070.

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.[5] The estimated existing average daily trips along Barton Road range between 27,770 and 29,800 average daily vehicle trips and along San Timoteo Canyon Road between 8,800 and 9,800 average daily vehicle trips.[6] As shown in the CalEEMod output files provided in the Air Quality Study prepared for the proposed project (Lilburn Corporation 2022) the greatest number of construction-related vehicle trips per day would be during building construction at up to 489 vehicle trips per day (355 for worker trips and 134 for vendor trips). Given the project site's proximity to the 10 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

NOISE IMPACTS TO OFF-SITE RECEPTORS DUE TO PROJECT GENERATED TRIPS

[5] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[6] The existing average daily traffic volumes were obtained from the Canyon Ranch Traffic Impact Analysis prepared by Ganddini Group (March 22, 2022).

During operation, the proposed project is expected to generate approximately 1,188 average daily trips with 88 trips during the AM peak-hour and 119 trips during the PM peak-hour. A project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated at the right of way from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference in with and without project conditions. Roadway input parameters including average daily traffic volumes (ADTs), speeds, and vehicle distribution data is shown in Table 9. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions and is demonstrated in Table 9.

Existing Year (With Project): This scenario refers to existing year plus project traffic noise conditions and is demonstrated in Table 9.

As shown in Table 10, modeled Existing traffic noise levels range between 46-78 dBA CNEL at the right-of-way of each modeled roadway segment; and the modeled Existing Plus Project traffic noise levels range between 51-78 dBA CNEL at the right-of-way of each modeled roadway segment.

Increases in ambient noise along affected roadways due to project generated vehicle traffic is considered substantial if they result in an increase of at least 5 dBA CNEL and: (1) the existing noise levels already exceed the applicable land use compatibility standard for the affected sensitive receptors set forth in the Noise Element of the City's General Plan; or (2) the project increases noise levels by at least 5 dBA CNEL and raises the ambient noise level from below the applicable standard to above the applicable standard.

As shown in Table 10, two of the modeled roadway segments have increases above 5 dB, New Jersey Street from Barton Road to Bermudez Street and New Jersey Street south of Bermudez Street. The land uses located adjacent to these roadway segments include single-family residential and church uses. As shown in Table 3, single-family residential uses are considered normally acceptable in areas with noise levels of up to 55 dBA CNEL and church uses in areas of up to 70 dBA CNEL. The modeled existing plus project noise level along New Jersey Street from Barton Road to Bermudez Street is 54.6 dBA CNEL and the modeled existing plus project noise level along New Jersey Street south of Bermudez Street is 52.3 dBA CNEL. Therefore, although the roadway noise level increases along these roadway segments are above 5 dB, with project generated vehicle traffic the noise levels would still be below the City's normally acceptable noise standards.

Therefore, a change in noise level would not be audible and would be considered less than significant. No mitigation is required.

TRAFFIC NOISE IMPACTS TO THE PROPOSED PROJECT

The City of Loma Linda General Plan identifies exterior daytime noise levels up to 55 dBA CNEL as normally acceptable and up to 70 dBA as conditionally acceptable for residential uses (see Tables 3 and 6).

Roadways that may generate enough traffic noise under buildout conditions to affect the proposed project include Barton Road, San Timoteo Canyon Road, and Beaumont Avenue. The City of Loma Linda General Plan Transportation and Circulation Element identifies Barton Road as a Major Arterial 4-Lane Divided Roadway, San Timoteo Canyon Road as a Rural Arterial roadway, and Beaumont Avenue as a Major Arterial 2-Lane Undivided Roadway. Per the project's traffic study (Ganddini Group 2022), under the General Plan Buildout (Year 2040) With Project Conditions, in the vicinity of the project site Barton Road is expected to accommodate up to approximately 36,500 vehicles per day, San Timoteo Canyon up to approximately 14,900 vehicles per day, and Beaumont Avenue up to approximately 4,700 vehicles per day. The rail line bordering

the site to the west handles approximately 36 freight trains per 24-hour according to the Federal Railway Association, Office of Safety Analysis[7] (see Crossing Inventory Form in Appendix F). The rail line was constructed on a berm; therefore, was modeled slightly higher in elevation (2-8 feet), accordingly.

At buildout conditions, future transportation noise will exceed the City's "normally acceptable" exterior noise standard of 55 dBA CNEL but will not exceed the City's "conditionally acceptable" noise standard of 70 dBA CNEL for residential land uses at proposed residential lots (See Figures 7 and 8).

Future transportation noise sources will result in exterior noise levels between 65 and 71 dBA CNEL at the first row of lots along San Timoteo Canyon Road and Barton Road. Current measured noise levels along these roadways range between 53-74 dBA Leq. Several wall height scenarios were modeled to determine if transportation noise could be reduced to 55 dBA CNEL or lower. It was determined that it would not be feasible to reduce future on-site noise levels to 55 dBA CNEL or lower using perimeter walls. As shown in Figure 9, solid barriers (i.e., concrete block) ranging between 6 to 8-feet in height, built at the elevation of the adjacent roadway along the property lines of these lots, would reduce exterior noise levels to 65 dBA CNEL or below. Furthermore, 65 dBA CNEL is the approximate noise level of conversation and is typically considered acceptable for outdoor land uses. Therefore, Impacts to the proposed project would be less than significant with construction of solid barriers as shown in Figure 9. The base of the recommended barriers is to be the same height of the adjacent roadway; therefore, some adjustment may be required when final grading plans are approved.

GROUNDBORNE VIBRATION IMPACTS

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 11, a vibratory roller could generate up to 0.21 PPV at a distance of 25 feet; and operation of a large bulldozer (0.089 PPV) at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 0.0026 PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment.

Architectural Damage

Vibration generated by construction activity generally has the potential to damage structures. This damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile. (California Department of Transportation, 2020)

Table 4 identifies a PPV level of 0.3 in/sec as the threshold at which there is a risk to "architectural" damage to older residential structures. Estimated groundborne vibration levels at the nearest sensitive receptors are presented in Table 12. In summary, if a vibratory roller is used within 20 feet of an existing structure or if a large bulldozer is used within 12 feet of an existing structure there will be some potential for this equipment to result in architectural damage and significant impacts.

Therefore, as shown in Table 12, potential impacts related to architectural damage could occur at the residential structures located to the north of the project site (along Barton Road) and the residential structures located to the north of TTM 20404 (along Romero Street). Best management practices implemented as part of the project, including avoidance of the use of vibratory rollers within 20 feet and large bulldozers within 12 feet of residential structures, will prevent architectural damage and potentially significant impacts. Impacts would be less than significant. Vibration worksheets are provided in Appendix G.

[7] https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/query/query.aspx

Annoyance to Persons

The primary effect of perceptible vibration is often a concern. However, secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Any effect (primary perceptible vibration, secondary effects, or a combination of the two) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping, or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels are well below minimum thresholds for damage potential. (California Department of Transportation, 2020)

As shown in Table 5, vibration becomes severe to people in buildings at a PPV of 0.4 in/sec. As shown in Table 12, construction activities associated with the proposed project would have the potential to cause vibration related annoyance at the residential uses located to the north of the project site (along Barton Road). However, implementation of best management practices that limit the use of vibratory equipment near sensitive receptors (as discussed above under architectural damage) would reduce vibrational annoyance to less than significant. Annoyance is expected to be short-term, occurring only during site grading and preparation. No mitigation is required.

Vibration Best Management Practices

1. Vibratory rollers, or other similar vibratory equipment, shall be prohibited within 20 feet and large bulldozers within 12 feet of any existing residential structure.

Table 8 (1 of 2)
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Existing Ambient Noise Level Location[2]	Existing Ambient Noise Levels (dBA Leq)[2]	Construction Noise Levels (dBA Leq)	Existing Plus Construction Noise Levels (dBA Leq)	Increase in Ambient Noise Levels (dBA Leq)
Site Preparation	Residential to south (26828 Beaumont Avenue)	NM1	63.3	55.2	63.9	0.6
	Residential to east (11600 San Timoteo Canyon Road)	NM6	74.2	63.6	74.6	0.4
	Church to north of TTM 20404 (26737 Bermudez Street)	NM5	71.8	66.4	72.9	1.1
	Residential to north of TTM 20404 (along Romero Road)	NM3	60.1	63.1	64.9	4.8
	Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	NM5	71.8	64.7	72.6	0.8
	Residential to east (11395 San Timoteo Canyon Road)	NM5	71.8	59.9	72.1	0.3
	Residential to north (11412 San Timoteo Canyon Road)	NM5	71.8	58.3	72.0	0.2
	Residential to north (26737 Barton Road)	NM4	71.3	57.6	71.5	0.2
	Residential to northwest (11440 1st Street)	NM3	60.1	55.4	61.4	1.3
	Residential to west (26698 Tanager Court)	NM2	66.1	59.5	67.0	0.9
Grading	Residential to south (26828 Beaumont Avenue)	NM1	63.3	55.8	64.0	0.7
	Residential to east (11600 San Timoteo Canyon Road)	NM6	74.2	64.3	74.6	0.4
	Church to north of TTM 20404 (26737 Bermudez Street)	NM5	71.8	67.1	73.1	1.3
	Residential to north of TTM 20404 (along Romero Road)	NM3	60.1	63.8	65.3	5.2
	Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	NM5	71.8	65.4	72.7	0.9
	Residential to east (11395 San Timoteo Canyon Road)	NM5	71.8	60.6	72.1	0.3
	Residential to north (11412 San Timoteo Canyon Road)	NM5	71.8	59.0	72.0	0.2
	Residential to north (26737 Barton Road)	NM4	71.3	58.3	71.5	0.2
	Residential to northwest (11440 1st Street)	NM3	60.1	56.1	61.6	1.5
	Residential to west (26698 Tanager Court)	NM2	66.1	60.1	67.1	1.0
Building Construction	Residential to south (26828 Beaumont Avenue)	NM1	63.3	53.4	63.7	0.4
	Residential to east (11600 San Timoteo Canyon Road)	NM6	74.2	61.9	74.4	0.2
	Church to north of TTM 20404 (26737 Bermudez Street)	NM5	71.8	64.6	72.6	0.8
	Residential to north of TTM 20404 (along Romero Road)	NM3	60.1	61.4	63.8	3.7
	Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	NM5	71.8	62.9	72.3	0.5
	Residential to east (11395 San Timoteo Canyon Road)	NM5	71.8	58.1	72.0	0.2
	Residential to north (11412 San Timoteo Canyon Road)	NM5	71.8	56.6	71.9	0.1
	Residential to north (26737 Barton Road)	NM4	71.3	55.8	71.4	0.1
	Residential to northwest (11440 1st Street)	NM3	60.1	53.7	61.0	0.9
	Residential to west (26698 Tanager Court)	NM2	66.1	57.7	66.7	0.6
Paving	Residential to south (26828 Beaumont Avenue)	NM1	63.3	48.9	63.5	0.2
	Residential to east (11600 San Timoteo Canyon Road)	NM6	74.2	57.4	74.3	0.1
	Church to north of TTM 20404 (26737 Bermudez Street)	NM5	71.8	60.1	72.1	0.3
	Residential to north of TTM 20404 (along Romero Road)	NM3	60.1	56.9	61.8	1.7
	Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	NM5	71.8	58.4	72.0	0.2
	Residential to east (11395 San Timoteo Canyon Road)	NM5	71.8	53.6	71.9	0.1
	Residential to north (11412 San Timoteo Canyon Road)	NM5	71.8	52.1	71.8	0.0
	Residential to north (26737 Barton Road)	NM4	71.3	51.3	71.3	0.0
	Residential to northwest (11440 1st Street)	NM3	60.1	49.2	60.4	0.3
	Residential to west (26698 Tanager Court)	NM2	66.1	53.2	66.3	0.2

Table 8 (2 of 2)
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Existing Ambient Noise Level Location[2]	Existing Ambient Noise Levels (dBA Leq)[2]	Construction Noise Levels (dBA Leq)	Existing Plus Construction Noise Levels (dBA Leq)	Increase in Ambient Noise Levels (dBA Leq)
Architectural Coating	Residential to south (26828 Beaumont Avenue)	NM1	63.3	41.5	63.3	0.0
	Residential to east (11600 San Timoteo Canyon Road)	NM6	74.2	49.9	74.2	0.0
	Church to north of TTM 20404 (26737 Bermudez Street)	NM5	71.8	52.7	71.9	0.1
	Residential to north of TTM 20404 (along Romero Road)	NM3	60.1	49.4	60.5	0.4
	Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	NM5	71.8	51.0	71.8	0.0
	Residential to east (11395 San Timoteo Canyon Road)	NM5	71.8	46.2	71.8	0.0
	Residential to north (11412 San Timoteo Canyon Road)	NM5	71.8	44.6	71.8	0.0
	Residential to north (26737 Barton Road)	NM4	71.3	43.9	71.3	0.0
	Residential to northwest (11440 1st Street)	NM3	60.1	41.7	60.2	0.1
	Residential to west (26698 Tanager Court)	NM2	66.1	45.8	66.1	0.0

Notes:

(1) Construction noise worksheets are provided in Appendix D.

(2) Per measured existing ambient noise levels (see Table 1). Nearest noise measurement to each receptor location was utilized.

Table 9
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1]		Posted Travel Speeds (MPH)	Site Conditions
		Existing	Existing Plus Project		
California Street	North of Barton Road	15,000	15,360	45	Soft
New Jersey Street	North of Barton Road	3,000	3,060	25	Soft
	Barton Road to Bermudez Street	200	670	25	Soft
	South of Bermudez Street	100	400	25	Soft
San Timoteo Canyon Road	Barton Road to Bermudez Street	9,700	10,000	45	Soft
	Bermudez Street to San Timoteo Canyon Road	9,800	10,040	45	Soft
Nevada Street	South of San Timoteo Canyon Road	1,000	1,180	45	Soft
	North of Beaumont Avenue	600	960	45	Soft
Barton Road	West of California Street	27,700	27,760	55	Soft
	California Street to New Jersey Street	29,800	30,220	45	Soft
	New Jersey Street to San Timoteo Canyon Road	29,100	29,460	45	Soft
	East of San Timoteo Canyon Road	27,900	28,200	45	Soft
Bermudez Street	New Jersey Street to San Timoteo Canyon Road	100	270	25	Soft
San Timoteo Canyon Road	East of San Timoteo Canyon Road/Nevada Street	8800	8,860	45	Soft
Beaumont Avenue	West of Nevada Street	3100	3100	35	Soft
	East of Nevada Street	2800	2920	35	Soft

Vehicle Distribution (Light Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.56	13.96	10.49
Medium Trucks	48.91	2.17	48.91
Heavy Trucks	47.30	5.41	47.30

Vehicle Distribution (Heavy Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.54	14.02	10.43
Medium Trucks	48.00	2.00	50.00
Heavy Trucks	48.00	2.00	50.00

Notes:

(1) Existing and project average daily traffic volumes obtained from the Canyon Ranch Traffic Impact Analysis, Ganddini Group Inc. (January 2022).

(2) Existing vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 10
Change in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Modeled Noise Levels (dBA CNEL)[1]				
			Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level	Exceeds Standards[3]	Increase of 5 dB or More?
California Street	North of Barton Road	55	74.25	74.36	0.11	Yes	No
New Jersey Street	North of Barton Road	30	61.09	61.18	0.09	Yes	No
	Barton Road to Bermudez Street	30	49.33	54.58	5.25	No	Yes
	South of Bermudez Street	30	46.32	52.34	6.02	No	Yes
San Timoteo Canyon Road	Barton Road to Bermudez Street	36	74.20	74.33	0.13	Yes	No
	Bermudez Street to San Timoteo Canyon Road	36	74.25	74.35	0.10	Yes	No
Nevada Street	South of San Timoteo Canyon Road	32	61.16	61.88	0.72	Yes	No
	North of Beaumont Avenue	32	58.94	60.98	2.04	Yes	No
Barton Road	West of California Street	55	78.27	78.28	0.01	Yes	No
	California Street to New Jersey Street	55	77.24	77.30	0.06	Yes	No
	New Jersey Street to San Timoteo Canyon Road	55	77.13	77.19	0.06	Yes	No
	East of San Timoteo Canyon Road	55	76.95	77.00	0.05	Yes	No
Bermudez Street	New Jersey Street to San Timoteo Canyon Road	30	46.32	50.63	4.31	No	No
San Timoteo Canyon Road	East of San Timoteo Canyon Road/Nevada Street	36	73.78	73.81	0.03	Yes	No
Beaumont Avenue	West of Nevada Street	32	63.74	64.07	0.33	Yes	No
	East of Nevada Street	32	63.30	63.48	0.18	Yes	No

Notes:

(1) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

(2) Right of way per the City of Redlands and City of Loma Linda General Plan Circulation Elements.

(3) Per the City of Loma Linda normally acceptable standard for single-family detached residential dwelling units (see Table 3).

Table 11
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.
*RMS velocity in decibels, VdB re 1 micro-in/sec

Table 12
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level (PPV in/sec)	Threshold Exceeded?[1]	Vibration Level with Best Management Practices[2]	Threshold Exceeded With Best Management Practices?[1,2]
Residential to north (26737 Barton Road)	3	Vibratory Roller	5.052	Yes	0.293	No
	3	Large Bulldozer	2.141	Yes	0.268	No
Church to north of TTM 20404 (26737 Bermudez Street)	87	Vibratory Roller	0.032	No	-	-
	87	Large Bulldozer	0.014	No	-	-
Residential to north of TTM 20404 (Romero Road)	18	Vibratory Roller	0.344	Yes	0.293	No
	18	Large Bulldozer	0.146	No	-	-
Residential to east (11533 San Timoteo Canyon Road)	95	Vibratory Roller	0.028	No	-	-
	95	Large Bulldozer	0.012	No	-	-
Residential to north of TTM 20404 (11488 San Timoteo Canyon Road)	140	Vibratory Roller	0.016	No	-	-
	140	Large Bulldozer	0.007	No	-	-
Residential to north (11412 San Timoteo Canyon Road)	30	Vibratory Roller	0.160	No	-	-
	30	Large Bulldozer	0.068	No	-	-
Residential to east (11395 San Timoteo Canyon Road)[3]	62	Vibratory Roller	0.054	No	-	-
	62	Large Bulldozer	0.023	No	-	-
Commercial to north (26795 Barton Road)	44	Vibratory Roller	0.090	No	-	-
	44	Large Bulldozer	0.038	No	-	-

Notes:

(1) Caltrans identifies the threshold at which there is a risk to "architectural" damage to older residential structures as a PPV of 0.3 in/sec (see Table 4).

(2) Best management practices for architectural damage include limiting the use of vibratory rollers, or other similar vibratory equipment, within 20 feet of residential uses to the north (along Barton Road) and to the north of TTM 20404 (along Romero Road) and large bulldozers within 12 feet of residential structures to the north (along Barton Road) of the project site.

(3) There are a few other residential dwelling units located along the eastern side of San Timoteo Canyon Road between Barton Road and Bermudez Street; however, of these dwelling units, the single-family residential dwelling unit located at 11395 San Timoteo Canyon Road is the home with the closest structures to the eastern project site boundary. Therefore, this dwelling unit, with strucutres located as close as 62 feet from the project site's eastern boundary, was utilized for modeling purposes.

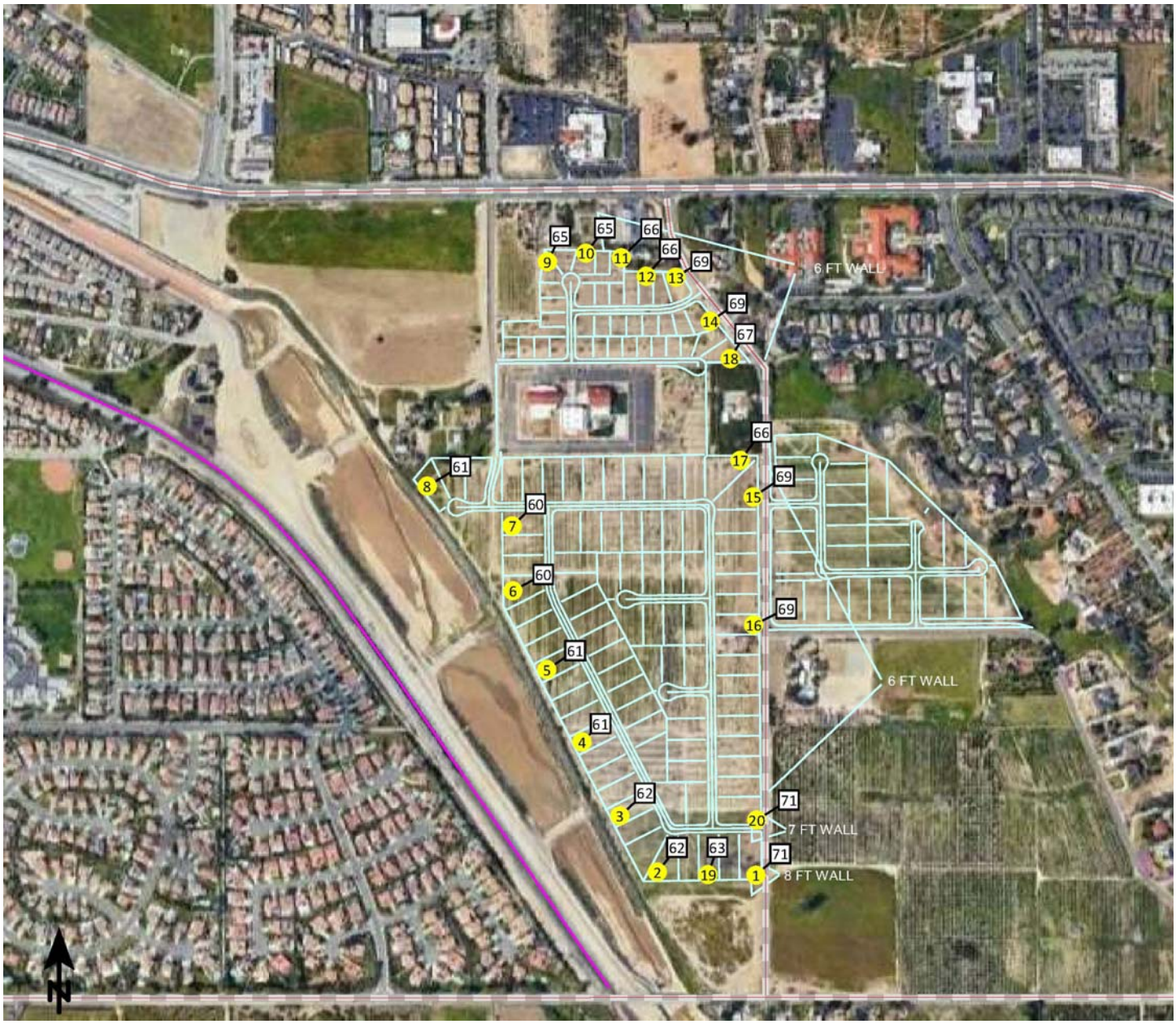


Figure 7
Future Traffic Noise Levels (dBA CNEL)

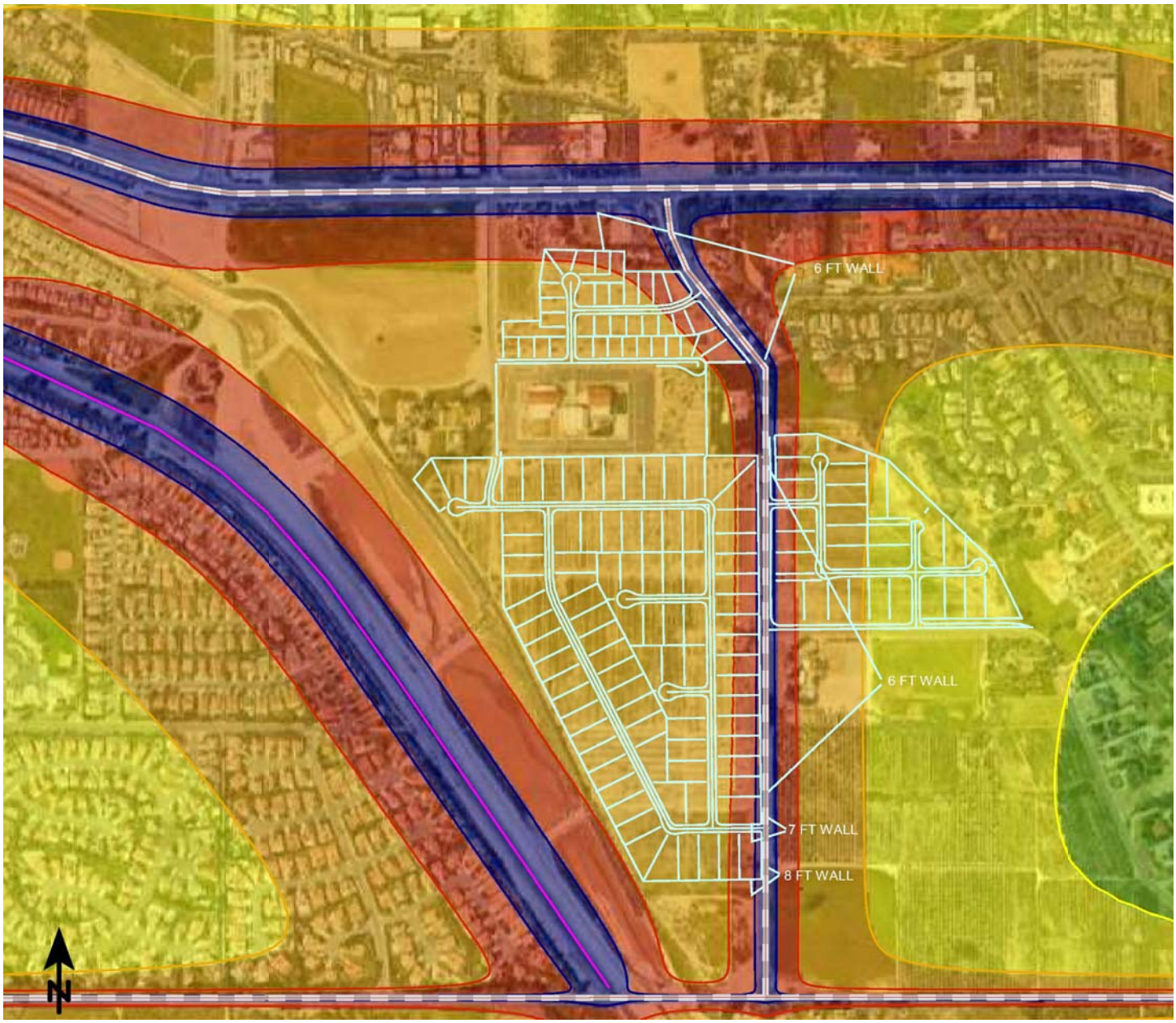


Figure 8
Future Traffic Noise Contours (dBA CNEL)

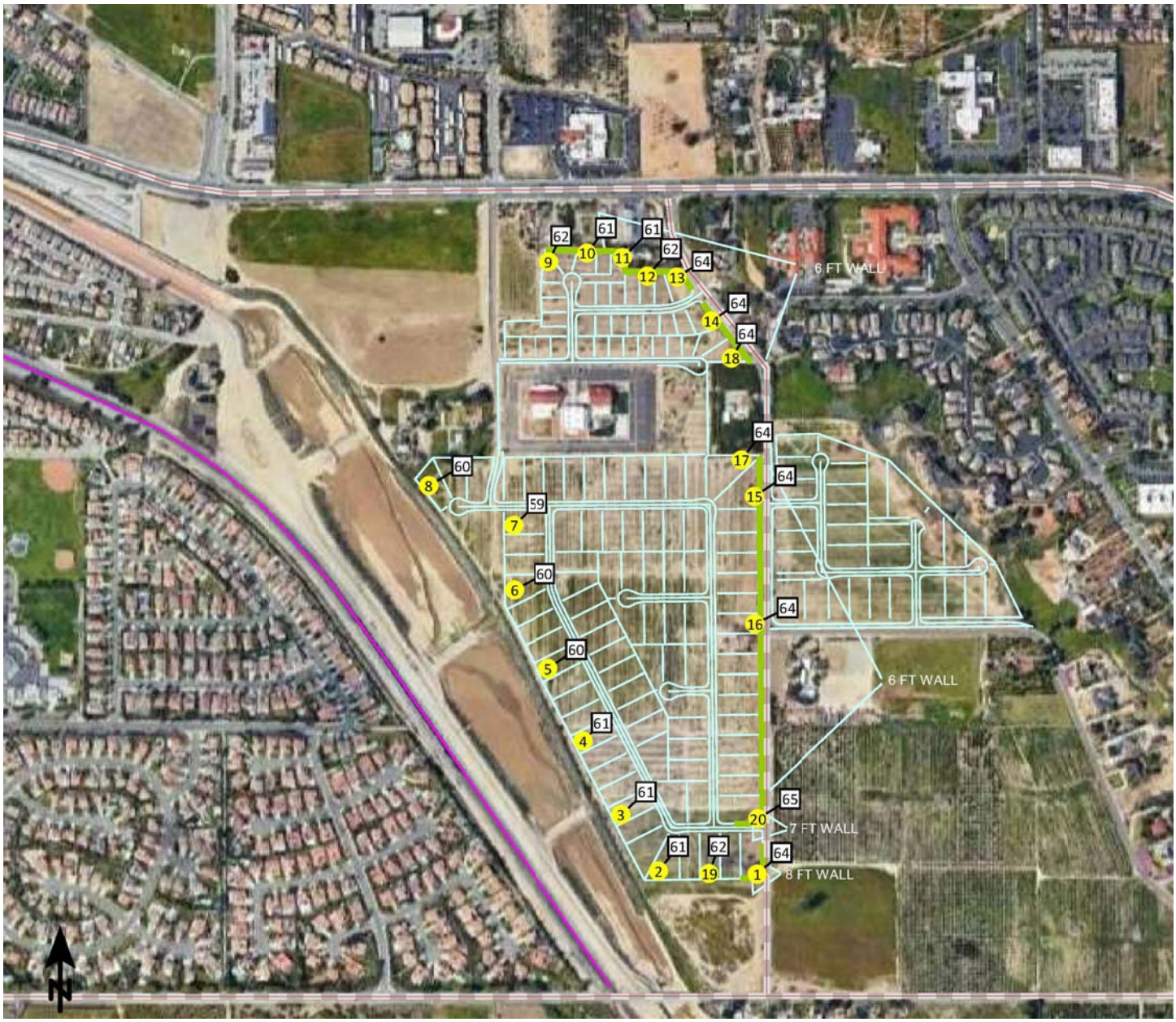


Figure 9
Future Traffic Noise Levels (dBA CNEL) Mitigated to 65 CNEL

7. IMPACTS - CEQA THRESHOLDS

CALIFORNIA ENVIRONMENTAL QUALITY ACT THRESHOLDS

The California Environmental Quality Act Guidelines (Appendix G) establishes thresholds for noise impact analysis. This noise study includes analysis of noise and vibration impacts necessary to assess the project in light of the following Appendix G Checklist Thresholds.

Would the project result in:

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

Substantial increases in ambient noise levels are usually associated with project construction noise (temporary) and project operational noise (permanent).

Project Construction Noise: Construction noise sources are regulated within the City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070. Section 9.20.050 prohibits construction related noise between the hours of 10:00 PM and 7:00 AM. In addition, Section 9.20.070 allows construction noise levels to exceed the City's maximum noise levels (see Table 6) provided that construction occurs between the hours of 7:00 AM and 8:00 PM Monday through Friday, provided that all equipment is properly equipped with standard noise muffling apparatus specifically for such equipment (i.e., exhaust mufflers). Heavy construction is not permitted on weekends, or national holidays

Project Operational Noise (permanent): On-site operational noise is usually only evaluated for commercial and industrial projects. Quantitative analysis of on-site operational noise is typically not conducted for residential projects as they usually do not include stationary noise sources that could result in substantial increases in ambient noise levels resulting in violation of established standards. Therefore, the evaluation of project operational noise in this study is limited to the potential impacts associated with project generated vehicle traffic (off-site noise). Depending upon how many units are proposed and the existing noise environment, project generated vehicle trips could result in substantial increases in noise levels.

Although individuals' reactions to changes in noise vary, empirical studies have shown people begin to notice changes in environmental noise levels of around 5 dBA. Thus, average changes in noise levels less than 5 dBA cannot be considered as producing adverse impacts because changes of that magnitude are imperceptible by the vast majority of persons (USEPA 1974). Therefore, for purposes of this analysis, increases in ambient noise along affected roadways due to project generated vehicle traffic is considered substantial if they result in an increase of at least 5 dBA CNEL and: (1) the existing noise levels already exceed the applicable land use compatibility standard for the affected sensitive receptors set forth in the Noise Element of the City's General Plan; or (2) the project increases noise levels by at least 5 dBA CNEL and raises the ambient noise level from below the applicable standard to above the applicable standard.

b) Generate excessive groundborne vibration or groundborne noise levels?

As shown in Table 4, the threshold at which there is a risk to "architectural" damage to historic and some older buildings is a peak particle velocity (PPV) of 0.25 in/sec, at older residential structures a PPV of 0.3 in/sec, and at new residential structures a PPV of 0.5 in/sec. Table 5 shows that a PPV of 0.4 in/sec is the threshold at which groundborne vibration becomes severe in regard to annoyance. Impacts would be significant if construction activities result in groundborne vibration of 0.3 in/sec PPV or higher at a sensitive receptor.

CALIFORNIA ENVIRONMENTAL QUALITY ACT IMPACT ANALYSIS

Will the project result in the:

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

Less Than Significant Impact:

On-Site Construction Noise

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Construction activities will occur in phases including site preparation, grading, building construction, paving, and architectural coating. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. Construction activities are anticipated to begin no sooner than mid-April 2023 and be completed by early September 2028.

Construction noise associated with each phase of project construction associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site.

Modeled unmitigated construction noise levels when combined with existing measured noise levels ranged between 41.5 and 67.1 dBA L_{eq} at the nearest receptors to the project site. When modeled construction noise levels are combined with existing ambient noise levels the modeled receptors will be exposed to short-term increases in ambient noise levels of up to 5 dB Leq. However, project construction will not occur outside of the hours outlined as "exempt" in City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070 (as follows) and therefore, will not result in or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance.

As discussed earlier, construction noise sources are regulated within the City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070. Section 9.20.050 prohibits construction related noise between the hours of 10:00 PM and 7:00 AM. In addition, Section 9.20.070 allows construction noise levels to exceed the City's maximum noise levels (see Table 6) provided that construction occurs between the hours of 7:00 AM and 8:00 PM Monday through Friday and provided that all equipment is properly equipped with standard noise muffling apparatus specifically for such equipment (i.e., exhaust mufflers). Heavy construction is not permitted on weekends, or national holidays.

Impacts would be less than significant, and no mitigation is required. Suggested measures to further minimize construction related noise are presented below.

In addition to adherence to the City of Loma Linda Municipal Code which limits the construction hours of operation, the following best management practices are recommended to further reduce construction noise, emanating from the proposed project:

Suggested Best Management Practices – Noise

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors.

5. Direct away and shield jackhammers, pneumatic equipment, and all other portable stationary noise sources from existing residences. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and the residences. The shielding should be without holes and cracks.

6. Amplified music and/or voice will not be allowed on the project site.

7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per City of Loma Linda Municipal Code Sections 9.20.050 and 9.20.070.

Off-Site Construction Noise

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.[8] The estimated existing average daily trips along Barton Road range between 27,770 and 29,800 average daily vehicle trips and along San Timoteo Canyon Road between 8,800 and 9,800 average daily vehicle trips.[9] As shown in the CalEEMod output files provided in the Air Quality Study prepared for the proposed project (Lilburn Corporation 2022) the greatest number of construction-related vehicle trips per day would be during building construction at up to 489 vehicle trips per day (355 for worker trips and 134 for vendor trips). Given the project site's proximity to the 10 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

b) Generation of excessive groundborne vibration of groundborne noise levels?

Less Than Significant Impact:

There are several types of construction equipment that can cause vibration levels high enough to cause architectural damage and/or annoyance to persons in the vicinity. For example, as shown in Table 11, a vibratory roller could generate up to 0.21 PPV at a distance of 25 feet; and operation of a large bulldozer (0.089 PPV) at a distance of 25 feet (two of the most vibratory pieces of construction equipment).

The Caltrans Transportation and Construction Vibration Guidance Manual (2020) provides a comprehensive discussion regarding groundborne vibration and the appropriate thresholds to use to assess the potential for damage. As shown in Table 4, the threshold at which there is a risk of "architectural" damage to historic structures is a peak particle velocity (PPV) of 0.25 in/sec, and a PPV of 0.3 in/sec at older residential structures. There is a risk of architectural damage at newer residential structures and modern commercial/industrial

[8] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[9] The existing average daily traffic volumes were obtained from the Canyon Ranch Traffic Impact Analysis prepared by Ganddini Group (March 22, 2022).

buildings at a PPV of 0.5 in/sec. In addition, the Caltrans Noise and Vibration Manual identifies a PPV of 0.4 in./sec. as the level that is "severe" (Table 5).

Existing structures in the immediate vicinity of the project site include structures associated with residential uses located approximately 3 feet to the north (along Barton Road), 18 feet to the north of TTM 20404 (along Romero Street), 95 feet to the east (along San Timoteo Canyon Road), 140 feet to the north of TTM 20404 (along San Timoteo Canyon Road), 30 feet to the north (along San Timoteo Canyon Road), 62 feet to the east (along San Timoteo Canyon Road), church structures located approximately 87 feet to the north of TTM 20404 (along Bermudez Street) and commercial structures located approximately 44 feet to the north (along Barton Road). Assuming that the nearby residential structures are "older", groundborne vibration has the potential to result in damage if it exceeds 0.3 PPV in./sec.

Estimated groundborne vibration levels at the nearest sensitive receptors are presented in Table 12. In summary, if a vibratory roller is used within 20 feet of an existing structure or if a large bulldozer is used within 12 feet of an existing structure there will be some potential for this equipment to result in architectural damage and significant impacts. As shown in Table 12, potential impacts related to architectural damage could occur at the residential structures located to the north of the project site (along Barton Road) and the residential structures located to the north of TTM 20404 (along Romero Street). Best management practices implemented as part of the project, including avoidance of the use of vibratory rollers within 20 feet and large bulldozers within 12 feet of residential structures, will prevent architectural damage and potentially significant impacts. Impacts would be less than significant.

As shown in Table 5, vibration becomes severe to people in buildings at a PPV of 0.4 in/sec. As shown in Table 12, construction activities associated with the proposed project would have the potential to cause vibration related annoyance at the residential uses located to the north of the project site (along Barton Road). However, implementation of best management practices that limit the use of vibratory equipment near sensitive receptors (as discussed above under architectural damage) would reduce vibrational annoyance to less than significant. Annoyance is expected to be short-term, occurring only during site grading and preparation. No mitigation is required.

Operation of the proposed project will involve the movement of passenger vehicles and trucks. Driving surfaces associated with the project will be paved and will generally be smooth. Loaded trucks generally have a PPV of 0.076 in/sec at a distance of 25 feet (Caltrans 2020). Groundborne vibration levels associated with passenger vehicles is much lower. The movement of vehicles on the project site would not result in the generation of excessive groundborne vibration or groundborne noise. Impacts would be less than significant. No mitigation is required.

Vibration Best Management Practices

1. Vibratory rollers, or other similar vibratory equipment, shall be prohibited within 20 feet and large bulldozers within 12 feet of any existing residential structure.

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

Less than Significant Impact:

The closest airport to the project site is the San Bernardino International Airport located approximately 3.35 miles to the northwest of the project site. The San Bernardino International Airport noise contours provided in the Technical Memorandum prepared for the San Bernardino International Airport – Eastgate Air Cargo Facility – Aircraft Noise Contour Development (July 2019) show that the proposed project is well outside the

60 dBA CNEL noise contour for the airport.[10] Therefore, the proposed project would not expose people residing or working in the area to excessive noise levels. There is no impact, and no mitigation is required.

[10] http://www.sbiaa.org/wp-content/uploads/2019/07/7_Appendix-F_Noise-Technical-Memo.pdf

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APPENDICES

APPENDIX A

LIST OF ACRONYMS

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
Lp	Sound Pressure Level
LOS C	Level of Service C
Lw	Sound Power Level
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

DEFINITIONS OF ACOUSTICAL TERMS

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The 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, respectively.
L_{max}, L_{min}	Lmax is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. Lmin is the minimum level.
Offensive/ Offending/Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEET

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM1 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 26907 Beaumomt Avenue, Redlands, California 92373

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Beaumont Ave & Nevada St to north, residential to south, residnetial, san timoteo creek, and train tracks to southwest/west, & construction to northwest.

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 12:53 PM **End Time:** 1:08 PM **Run Time:**

Leq: 63.3 dB **Primary Noise Source:** Traffic noise from the 51 vehicles passing microphone traveling along Beaumont Ave. Traffic noise from vehicles traveling along Nevada St & other roads.

Lmax 79.1 dB

L2 72.6 dB **Secondary Noise Sources:** Construction site NW of NM1 (engine noise), freight trains passing W of NM1. Leaf rustle (5 mph breeze), bird song, residential ambiance.

L8 68.8 dB

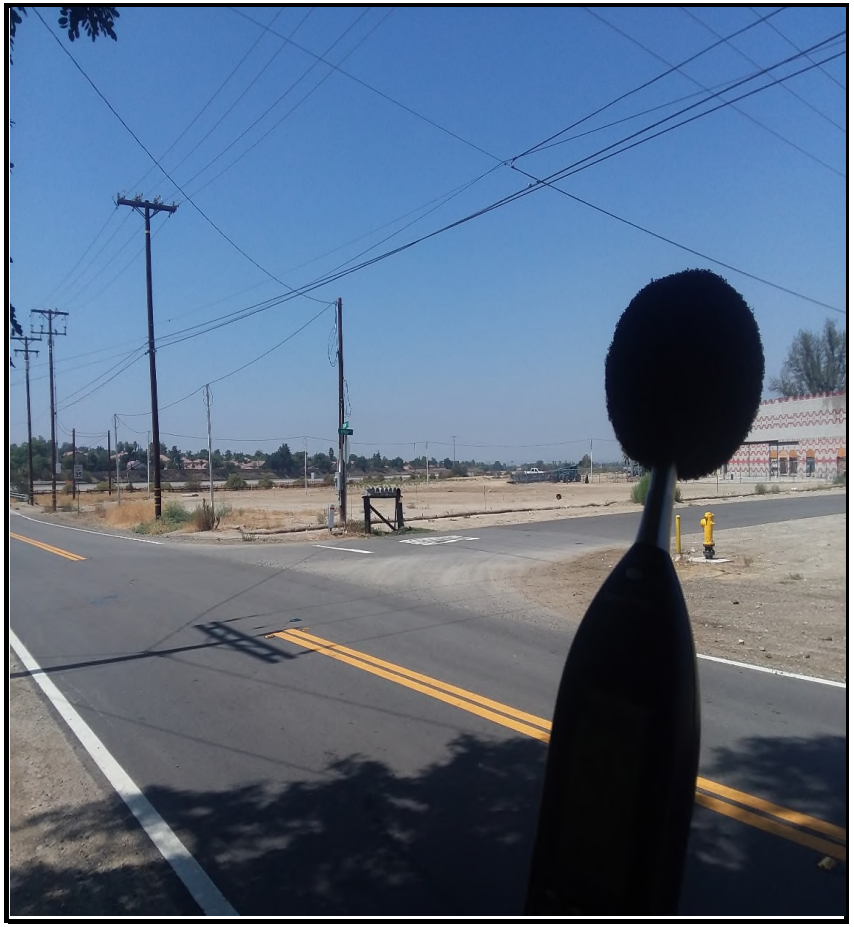
L25 61.2 dB

L50 58.3 dB

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:



NM1 looking NW towards Nevada St & Beaumont Ave intersection, train tracks beyond intersection. Construction site on right (to N/NW).

NM1 looking SW from Beaumont Ave, looking past microphone towards residence 26907 Beaumont Ave, Redlands.

Summary	
File Name on Meter	LxT_Data.138.s
File Name on PC	LxT_0001152-20210902 125317-LxT_D
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM1 34° 2'14.62"N 117°13'2.02"W
Job Description	15 minute noise measurememnt (1 x 15 minutes)
Note	Ganddini 19409, Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 12:53:17
Stop	2021-09-02 13:08:17
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 12:49:54
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	144.0 dB

Results			
L_{Aeq}	63.3		
LAE	92.8		
EA	213.825	µPa²h	
EA8	6.842	mPa²h	
EA40	34.212	mPa²h	
$LZ_{peak\ (max)}$	2021-09-02 13:03:18	105.2	dB
LAS_{max}	2021-09-02 12:58:52	79.1	dB
LAS_{min}	2021-09-02 13:07:29	44.3	dB
LC_{eq}	74.1	dB	
LA_{eq}	63.3	dB	
LC_{eq} - LA_{eq}	10.8	dB	
LAI_{eq}	65.7	dB	
LA_{eq}	63.3	dB	
LAI_{eq} - LA_{eq}	2.4	dB	
Overload Count	0		

Statistics		
LA2.00	72.6	dB
LA8.00	68.0	dB
LA25.00	61.2	dB
LA50.00	58.3	dB
LA66.60	56.1	dB
LA90.00	47.9	dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM2 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 26650 Tanager Ct, Loma Linda, California 92354

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Single-family residential neighborhood surrounding on cudesac of Tanager Ct with train tracks to east/northeast of neighborhood.

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 1:31 PM **End Time:** 1:46 PM **Run Time:**

Leq: 66.1 dB

Lmax 87.6 dB

L2 78.2 dB

L8 63.1 dB

L25 53.3 dB

L50 45.3 dB

Primary Noise Source: Train tracks to ENE of NM2 with active freight trains, smooth rail, no train horn zone, engine noise & wheels on tracks. Trash truck emptying trash receptacles.

Secondary Noise Sources: Leaf rustle (~5 mph breeze), bird song, some residential ambiance. Wind chime hanging on front porch of 26633 Tanager Ct. Overhead aircraft.

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

NM2 looking ENE across front yard of residence 26650 Tanager Ct, Loma Linda.

NM2 looking WSW down Tanager Ct towards Wellesley Ave intersection.

Summary	
File Name on Meter	LxT_Data.139.s
File Name on PC	LxT_0001152-20210902 133138-LxT_Data
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM2 34° 2'25.72"N 117°13'23.38"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19409 Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 13:31:38
Stop	2021-09-02 13:46:38
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 13:30:52
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	143.9 dB

Results				
LA_{eq}	66.1			
LAE	95.6			
EA	405.160	µPa²h		
EA8	12.965	mPa²h		
EA40	64.826	mPa²h		
$LZ_{peak\ (max)}$	2021-09-02 13:46:10	112.4	dB	
LAS_{max}	2021-09-02 13:46:10	87.6	dB	
LAS_{min}	2021-09-02 13:38:09	36.4	dB	
LC_{eq}	74.1	dB	Statistics	
LA_{eq}	66.1	dB	**LA2.00**	78.2 dB
LC_{eq} - LA_{eq}	8.0	dB	**LA8.00**	63.1 dB
LAI_{eq}	73.5	dB	**LA25.00**	53.3 dB
LA_{eq}	66.1	dB	**LA50.00**	45.3 dB
LAI_{eq} - LA_{eq}	7.5	dB	**LA66.60**	41.4 dB
Overload Count	0		**LA90.00**	38.4 dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM3 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 11440 California Street, Loma Linda, California 92354

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Single-family residenital to south/southwest, sant timoteo creek wash toeast and north, 1st street to west with residential further west. Train tracks to south past residential.

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 2:15 PM **End Time:** 2:38 PM **Run Time:**

Leq: 60.1 dB

Lmax 75 dB

L2 72.2 dB

L8 63.7 dB

L25 54.9 dB

L50 47.8 dB

Primary Noise Source: Train tracks to SSW of NM3 with active freight trains, smooth rail, no train horn zone, engine noise & wheels on tracks. Traffic ambiace from surrounding roads,

Secondary Noise Sources: Leaf rustle (~5 mph breeze), bird song, some residential ambiance. Overhead aircraft.

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

NM3 looking WNW from dirt berm bordering wash, looking down 1stStreet, residence 11440 California Street on the left.

NM3 looking SSW from berm, looking past microphone & over residence 11440 California Street, looking towards train tracks & moving freight train.

Summary	
File Name on Meter	LxT_Data.140.s
File Name on PC	LxT_0001152-20210902 141554-LxT_I
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM3 34° 2'46.04"N 117°13'34.37"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19409 Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 14:15:54
Stop	2021-09-02 14:30:54
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 14:15:33
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	144.0 dB

Results			
LA_{eq}	60.1		
LAE	89.6		
EA	101.549	µPa²h	
EA8	3.250	mPa²h	
EA40	16.248	mPa²h	
$LZ_{peak\ (max)}$	2021-09-02 14:17:39	100.3	dB
LAS_{max}	2021-09-02 14:17:41	75.0	dB
LAS_{min}	2021-09-02 14:24:00	40.6	dB
LC_{eq}	74.3	dB	
LA_{eq}	60.1	dB	
LC_{eq} - LA_{eq}	14.2	dB	
LAI_{eq}	61.0	dB	
LA_{eq}	60.1	dB	
LAI_{eq} - LA_{eq}	0.9	dB	
Overload Count	0		

Statistics		
LA2.00	72.2	dB
LA8.00	63.7	dB
LA25.00	54.9	dB
LA50.00	47.8	dB
LA66.60	45.7	dB
LA90.00	42.9	dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM4 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 26723 Barton Road, Redlands, California 92373

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Single-family residential to sout, Barton Road to north with hospital buidling further north, & New Jersey St to west.

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 3:09 PM **End Time:** 3:24 PM **Run Time:**

Leq: 71.3 dB **Primary Noise Source:** Traffic noise from the 520 vehicles passing microphone, traveling along Barton Road during 15 minute measurement.

Lmax 86.8 dB

L2 77.7 dB **Secondary Noise Sources:** Leaf rustle (~5 mph breeze), bird song, some residential ambiance.

L8 74.9 dB Overhead aircraft.

L25 72.4 dB

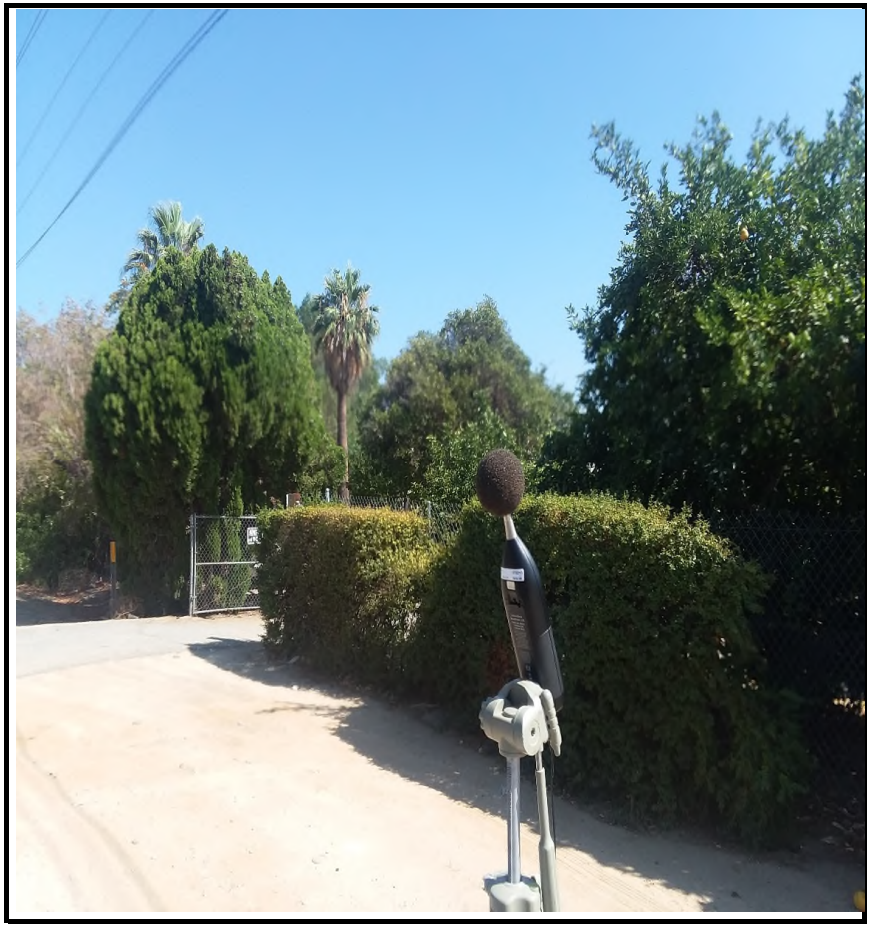
L50 69.6 dB

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

NM4 looking WNW towards intersection Barton Road & New Jersey Street.



NM4 looking ESE towards front entry & driveway to residence 26723 Barton Road, Redlands.

Summary	
File Name on Meter	LxT_Data.141.s
File Name on PC	LxT_0001152-20210902 150900-LxT_Data.1
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM4 34° 2'53.09"N 117°13'16.06"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19409 Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 15:09:00
Stop	2021-09-02 15:24:00
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 15:08:50
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	143.9 dB

Results			
LA_{eq}	71.3		
LAE	100.8		
EA	1.345	mPa^2h	
EA8	43.026	mPa^2h	
EA40	215.131	mPa^2h	
$LZ_{peak\ (max)}$	2021-09-02 15:17:31	108.8	dB
LAS_{max}	2021-09-02 15:17:27	86.8	dB
LAS_{min}	2021-09-02 15:19:39	52.6	dB
LC_{eq}	78.7	dB	
LA_{eq}	71.3	dB	
LC_{eq} - LA_{eq}	7.5	dB	
LAI_{eq}	73.8	dB	
LA_{eq}	71.3	dB	
LAI_{eq} - LA_{eq}	2.5	dB	
Overload Count	0		

Statistics		
LA2.00	77.7	dB
LA8.00	74.9	dB
LA25.00	72.4	dB
LA50.00	69.6	dB
LA66.60	65.8	dB
LA90.00	58.3	dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM5 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 11373 San Timoteo Canyon Road, Redlands, California 92373

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: San Timoteo Canyon Road to west with vacant land further west and single-family residential to east (elevated from roadway).

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 3:49 PM **End Time:** 4:04 PM **Run Time:**

Leq:	71.8	dB	**Primary Noise Source:** Traffic noise from the 238 vehicles passing microphone, traveling along San Timoteo Canyon Road during 15 minute measurement
Lmax	86.2	dB	
L2	80.3	dB	**Secondary Noise Sources:** Leaf rustle (~5 mph breeze), bird song, some residential ambiance.
L8	75.9	dB	Overhead aircraft.
L25	72.5	dB	
L50	68.4	dB	

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

NM5 looking N towards residence 11373 San Timoteo Canyon Road, Redlands. San Timoteo Canyon road on the left.

NM5 looking S down San Timoteo Canyon Road, residence 11411 San Timoteo Canyon Road on the left. Open, empty land on other side of road behind chainlink fence.

Summary	
File Name on Meter	LxT_Data.142.s
File Name on PC	LxT_0001152-20210902 154950-LxT_Da
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM5 34° 2'48.05"N 117°13'4.92"W
Job Description	15 minute noise measurement (1 x 15 minutes)
Note	Ganddini 19409 Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 15:49:50
Stop	2021-09-02 16:04:50
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 15:49:35
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	144.0 dB

Results			
L_{Aeq}	71.8		
LAE	101.4		
EA	1.522	mPa^2h	
EA8	48.710	mPa^2h	
EA40	243.549	mPa^2h	
$LZ_{peak\ (max)}$	2021-09-02 16:00:17	109.6	dB
LAS_{max}	2021-09-02 15:55:20	86.2	dB
LAS_{min}	2021-09-02 16:01:53	43.7	dB
LC_{eq}	77.8	dB	
LA_{eq}	71.8	dB	
LC_{eq} - LA_{eq}	5.9	dB	
LAI_{eq}	75.0	dB	
LA_{eq}	71.8	dB	
LAI_{eq} - LA_{eq}	3.2	dB	
Overload Count	0		

Statistics		
LA2.00	80.3	dB
LA8.00	75.9	dB
LA25.00	72.5	dB
LA50.00	68.4	dB
LA66.60	63.3	dB
LA90.00	51.2	dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2, 2021

Project #: 19409

Noise Measurement #: NM6 Run Time: 15 minutes (1 x 15 minutes) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 11605 San Timoteo Canyon Road, Redlands, California 92373

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Nevada Street to west w/ vacant land further west, San Timoteo Canyon Road to north w/ vacant land further north, & a single-family residential use to south.

Weather: Clear skies, hazy sunshine. **Settings:** SLOW FAST

Temperature: 78 deg F **Wind:** 5 mph **Humidity:** 48% **Terrain:** Flat

Start Time: 4:21 PM **End Time:** 4:36 PM **Run Time:**

Leq: 74.2 dB **Primary Noise Source:** Traffic noise from the 194 vehicles passing microphone, traveling along San Timoteo Canyon Road during 15 minute measurement.

Lmax 95.6 dB

L2 83.5 dB **Secondary Noise Sources:** Leaf rustle (~5 mph breeze), bird song, some residential ambiance.

L8 71.7 dB Overhead aircraft. Distant rumble of trains on tracks (SW of measurement).

L25 67.4 dB

L50 63.6 dB

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

NM6 looking SE towards driveway, parking area and front yard of residence 11605 San Timoteo Canyon Road, Redlands.

NM6 looking W towards Nevada Street & San Timoteo Canyon Road intersection.

Summary	
File Name on Meter	LxT_Data.143.s
File Name on PC	LxT_0001152-20210902 162332-LxT_Dat
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM6 34° 2'32.23"N 117°13'1.55"W
Job Description	15 minute noiser measurement (1 x 15 minutes)
Note	Ganddini 19409 Canyon ranch, Loma Linda

Measurement	
Start	2021-09-02 16:23:32
Stop	2021-09-02 16:38:32
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 16:23:14
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	143.9 dB

Results			
LA_{eq}	74.2		
LAE	103.8		
EA	2.645	mPa^2h	
EA8	84.649	mPa^2h	
EA40	423.246	mPa^2h	
$LZ_{peak\ (max)}$	2021-09-02 16:33:24	113.7	dB
LAS_{max}	2021-09-02 16:33:30	95.6	dB
LAS_{min}	2021-09-02 16:32:02	42.7	dB
LC_{eq}	81.3	dB	
LA_{eq}	74.2	dB	
LC_{eq} - LA_{eq}	7.0	dB	
LAI_{eq}	78.8	dB	
LA_{eq}	74.2	dB	
LAI_{eq} - LA_{eq}	4.6	dB	
Overload Count	0		

Statistics		
LA2.00	83.5	dB
LA8.00	71.7	dB
LA25.00	67.4	dB
LA50.00	63.6	dB
LA66.60	61.0	dB
LA90.00	55.4	dB

Noise Measurement
Field Data

Project Name: Canyon Ranch Project, City of Loma Linda. **Date:** September 2-3 2021

Project #: 19409

Noise Measurement #: LTNM1 Run Time: 24 hours (24 x 1 hours) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 26679 Hummingbird Ct, Loma Linda, California 92354

Site Description (Type of Existing Land Use and any other notable features): Project Site: Mostly empty land, generally bounded by Nevada Street and San Timoteo Canyon Road to the east, vacant land to the south, San Timoteo Creek and rail lines to the west, and Barton Road to the north. Noise Measurement Site: Walking path & train tracks to west with sant timoteo creek and vacant land to the east.

Weather: Clear skies, sunny by day Sunset/rise 7:11PM/ 6:22 AM **Settings:** SLOW FAST

Temperature: 69-84deg F **Wind:** 0-7 mph **Humidity:** 42-60% **Terrain:** Flat

Start Time: 8:00 PM **End Time:** 8:00 PM **Run Time:**

Leq: 56.1 dB

Lmax 82.4 dB

L2 64.2 dB

L8 55.8 dB

L25 45.3 dB

L50 40.3 dB

Primary Noise Source: Train tracks to W & SW of LTNM1, active freight trains, smooth rail, no train horn zone, diesel engine noise & wheels on tracks.

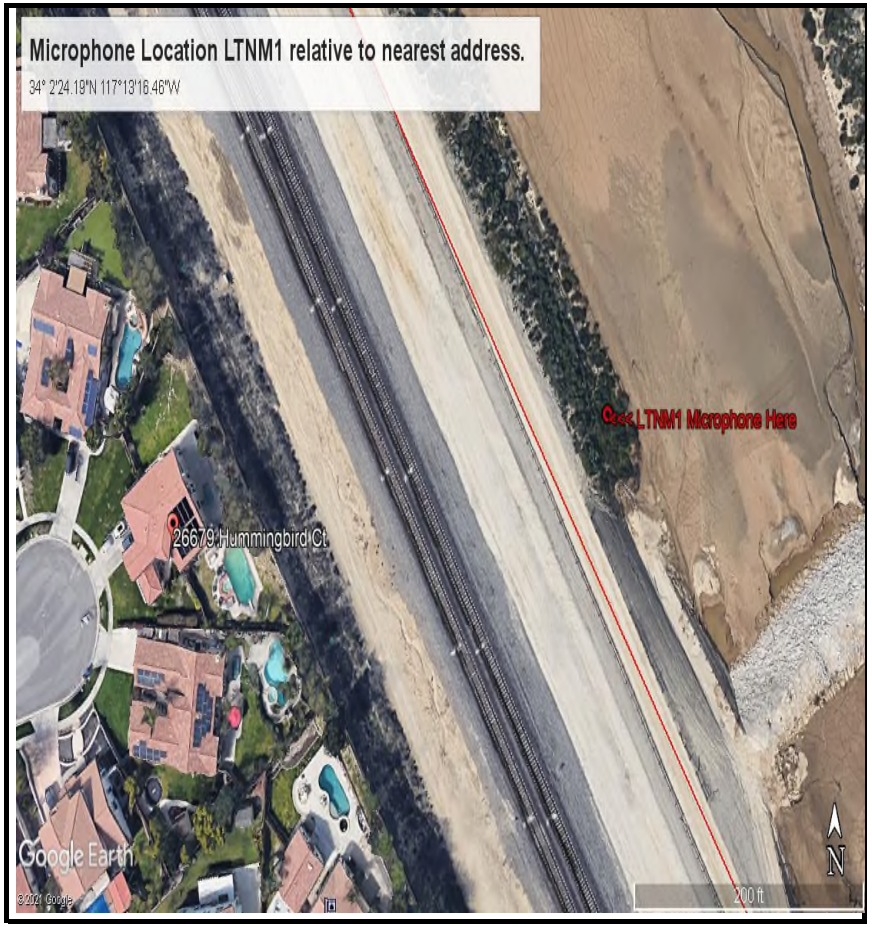
Secondary Noise Sources: Leaf rustle due to breeze, bird song by day, crickets & coyotes at night. Some residential ambiance, joggers, cyclists, pedestrians. Overhead aircraft.

NOISE METER:	SoundTrack LXT Class 2	**CALIBRATOR:**	Larson Davis CAL200
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 200
SERIAL NUMBER:	1152	**SERIAL NUMBER:**	15741
FACTORY CALIBRATION DATE:	3/31/2021	**FACTORY CALIBRATION DATE:**	7/23/2020
FIELD CALIBRATION DATE:	9/2/2021		

Noise Measurement
Field Data

PHOTOS:

LTNM1 looking at microphone in bush with box of recording equipment below. Looking WNW up burm, cycling/jogging/ walking path runs at top of burm, alongside railroad tracks. Residential area on other side of railroad tracks.



LTNM1 looking down showing location of microphone relative to nearest residence.

Summary	
File Name on Meter	LxT_Data.144.s
File Name on PC	LxT_0001152-20210902 200000-LxT_D
Serial Number	0001152
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 34° 2'24.19"N 117°13'16.46"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini 19409 Canyon Ranch, Loma Linda

Measurement	
Start	2021-09-02 20:00:00
Stop	2021-09-03 20:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2021-09-02 18:29:56
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	144.2 dB

Results						
LAeq	56.1					
LAE	105.5					
EA	3.921	mPa²h				
EA8	1.307	mPa²h				
EA40	6.534	mPa²h				
LApeak (max)	2021-09-03 18:33:54	99.3	dB			
LASmax	2021-09-03 18:33:55	82.4	dB			
LASmin	2021-09-03 17:57:59	31.9	dB			
LCeq	71.8	dB	Statistics			
LAeq	56.1	dB	**LA2.00**	64.2	dB	
LCeq - LAeq	15.7	dB	**LA8.00**	55.8	dB	
LAleq	57.3	dB	**LA25.00**	45.3	dB	
LAeq	56.1	dB	**LA50.00**	40.3	dB	
LAleq - LAeq	1.2	dB	**LA90.00**	35.1	dB	
Overload Count	0		**LA99.00**	33.3	dB	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2021-09-02	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.3	38.7	20:49:55	70.3	20:22:02	63.6	59.2	45.8	43.1	41.2	40.6
2	2021-09-02	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.3	36.6	21:50:31	69.4	21:21:36	61.7	59.0	43.9	41.7	38.7	37.5
3	2021-09-02	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.9	34.8	22:58:51	71.5	22:23:46	65.0	49.1	41.2	39.7	37.7	35.6
4	2021-09-02	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.0	33.8	23:21:42	79.7	23:10:59	66.3	55.8	40.7	38.4	36.3	34.8
5	2021-09-03	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	38.3	33.2	00:02:07	52.3	00:22:25	44.0	40.1	38.2	36.9	34.7	33.9
6	2021-09-03	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.1	35.8	01:00:54	78.2	01:20:19	66.1	57.1	41.2	40.0	38.0	36.6
7	2021-09-03	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.3	37.7	02:12:17	70.7	02:35:01	61.3	57.7	42.0	40.6	39.3	38.2
8	2021-09-03	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.1	38.0	03:06:09	70.3	03:43:35	60.8	58.6	44.2	42.3	40.1	39.0
9	2021-09-03	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.0	40.0	04:32:43	74.3	04:05:41	63.1	56.0	44.8	43.8	42.0	41.0
10	2021-09-03	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.7	42.9	05:00:20	65.8	05:04:18	54.8	49.6	48.2	47.2	45.7	44.4
11	2021-09-03	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.3	44.1	06:30:38	80.1	06:51:38	70.8	59.4	48.6	47.6	46.2	44.9
12	2021-09-03	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.1	41.5	07:59:08	77.8	07:07:56	69.7	62.0	48.5	47.0	43.5	42.3
13	2021-09-03	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.7	35.9	08:58:10	76.9	08:02:07	67.0	58.6	43.4	40.7	38.0	36.7
14	2021-09-03	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	49.4	34.6	09:49:35	69.1	09:51:32	59.4	54.6	43.4	38.8	36.1	35.3
15	2021-09-03	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.6	33.3	10:55:18	65.1	10:59:19	51.9	45.3	39.5	36.4	34.8	34.0
16	2021-09-03	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.2	33.9	11:56:51	80.4	11:18:42	67.0	59.7	39.7	36.8	34.9	34.3
17	2021-09-03	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.2	32.9	12:55:58	66.1	12:47:03	49.9	42.1	37.8	36.2	34.5	33.6
18	2021-09-03	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.5	32.7	13:39:35	81.5	13:21:21	64.9	53.7	42.3	38.2	34.5	33.0
19	2021-09-03	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.1	32.8	14:50:13	74.8	14:35:44	63.4	44.9	39.8	37.2	34.6	33.4
20	2021-09-03	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.5	32.9	15:54:41	81.6	15:14:47	61.8	51.3	39.5	36.7	34.4	33.6
21	2021-09-03	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.7	33.1	16:35:13	82.1	16:43:11	73.9	63.3	55.2	38.8	34.5	33.8
22	2021-09-03	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.8	31.9	17:57:59	77.4	17:00:50	69.2	63.0	41.9	35.7	33.3	32.4
23	2021-09-03	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.9	32.0	18:35:57	82.4	18:33:55	59.4	48.9	39.6	35.3	33.4	32.6
24	2021-09-03	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	45.6	33.4	19:00:16	66.6	19:29:19	53.0	51.0	46.2	39.3	35.5	34.0

APPENDIX D

CONSTRUCTION NOISE MODELING

(1) Receptor - Residential to South of project along Beaumont Avenue (26828 Beaumont Ave, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	2123	40	1.20	-32.6	0.8	49.4	50.2
Tractors/Loaders/Backhoes	4	84	2123	40	1.60	-32.6	2.0	51.4	53.5
							Log Sum	53.6	55.2
Grading									
Excavator	2	81	2123	40	0.8	-32.6	-1.0	48.4	47.5
Grader	1	85	2123	40	0.40	-32.6	-4.0	52.4	48.5
Rubber Tired Dozers	1	82	2123	40	0.40	-32.6	-4.0	49.4	45.5
Scrapers	2	84	2123	40	0.80	-32.6	-1.0	51.4	50.5
Tractors/Loaders/Backhoes	2	84	2123	40	0.80	-32.6	-1.0	51.4	50.5
							Log Sum	57.9	55.8
Building Construction									
Cranes	1	81	2123	16	0.16	-32.6	-8.0	48.4	40.5
Forklifts [2]	3	48	2123	40	1.20	-32.6	0.8	15.4	16.2
Generator Sets	1	81	2123	50	0.50	-32.6	-3.0	48.4	45.4
Welders	1	74	2123	40	0.40	-32.6	-4.0	41.4	37.5
Tractors/Loaders/Backhoes	3	84	2123	40	1.20	-32.6	0.8	51.4	52.2
							Log Sum	54.7	53.4
Paving									
Pavers	2	77	2123	50	1.00	-32.6	0.0	44.4	44.4
Paving Equipment	2	77	2123	50	1.00	-32.6	0.0	44.4	44.4
Rollers	2	80	2123	20	0.40	-32.6	-4.0	47.4	43.5
							Log Sum	50.5	48.9
Architectural Coating									
Air Compressors	1	78	2123	40	0.40	-32.6	-4.0	45.4	41.5
							Log Sum	45.4	41.5

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(2) Receptor - Residential to East of TTM 20404 along San Timoteo Canyon Road (11600 San Timoteo Canyon Road, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	802	40	1.20	-24.1	0.8	57.9	58.7
Tractors/Loaders/Backhoes	4	84	802	40	1.60	-24.1	2.0	59.9	61.9
							Log Sum	62.0	63.6
Grading									
Excavator	2	81	802	40	0.8	-24.1	-1.0	56.9	55.9
Grader	1	85	802	40	0.40	-24.1	-4.0	60.9	56.9
Rubber Tired Dozers	1	82	802	40	0.40	-24.1	-4.0	57.9	53.9
Scrapers	2	84	802	40	0.80	-24.1	-1.0	59.9	58.9
Tractors/Loaders/Backhoes	2	84	802	40	0.80	-24.1	-1.0	59.9	58.9
							Log Sum	66.3	64.3
Building Construction									
Cranes	1	81	802	16	0.16	-24.1	-8.0	56.9	48.9
Forklifts [2]	3	48	802	40	1.20	-24.1	0.8	23.9	24.7
Generator Sets	1	81	802	50	0.50	-24.1	-3.0	56.9	53.9
Welders	1	74	802	40	0.40	-24.1	-4.0	49.9	45.9
Tractors/Loaders/Backhoes	3	84	802	40	1.20	-24.1	0.8	59.9	60.7
							Log Sum	63.1	61.9
Paving									
Pavers	2	77	802	50	1.00	-24.1	0.0	52.9	52.9
Paving Equipment	2	77	802	50	1.00	-24.1	0.0	52.9	52.9
Rollers	2	80	802	20	0.40	-24.1	-4.0	55.9	51.9
							Log Sum	58.9	57.4
Architectural Coating									
Air Compressors	1	78	802	40	0.40	-24.1	-4.0	53.9	49.9
							Log Sum	53.9	49.9

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(3) Receptor - Church to north of TTM 20404 along Bermudez Street (26737 Bermudez Street, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	584	40	1.20	-21.3	0.8	60.7	61.4
Tractors/Loaders/Backhoes	4	84	584	40	1.60	-21.3	2.0	62.7	64.7
							Log Sum	64.8	66.4
Grading									
Excavator	2	81	584	40	0.8	-21.3	-1.0	59.7	58.7
Grader	1	85	584	40	0.40	-21.3	-4.0	63.7	59.7
Rubber Tired Dozers	1	82	584	40	0.40	-21.3	-4.0	60.7	56.7
Scrapers	2	84	584	40	0.80	-21.3	-1.0	62.7	61.7
Tractors/Loaders/Backhoes	2	84	584	40	0.80	-21.3	-1.0	62.7	61.7
							Log Sum	69.1	67.1
Building Construction									
Cranes	1	81	584	16	0.16	-21.3	-8.0	59.7	51.7
Forklifts [2]	3	48	584	40	1.20	-21.3	0.8	26.7	27.4
Generator Sets	1	81	584	50	0.50	-21.3	-3.0	59.7	56.6
Welders	1	74	584	40	0.40	-21.3	-4.0	52.7	48.7
Tractors/Loaders/Backhoes	3	84	584	40	1.20	-21.3	0.8	62.7	63.4
							Log Sum	65.9	64.6
Paving									
Pavers	2	77	584	50	1.00	-21.3	0.0	55.7	55.7
Paving Equipment	2	77	584	50	1.00	-21.3	0.0	55.7	55.7
Rollers	2	80	584	20	0.40	-21.3	-4.0	58.7	54.7
							Log Sum	61.7	60.1
Architectural Coating									
Air Compressors	1	78	584	40	0.40	-21.3	-4.0	56.7	52.7
							Log Sum	56.7	52.7

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(4) Receptor - Residential to north of TTM 20404 along Romero Road

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	848	40	1.20	-24.6	0.8	57.4	58.2
Tractors/Loaders/Backhoes	4	84	848	40	1.60	-24.6	2.0	59.4	61.5
							Log Sum	61.5	63.1
Grading									
Excavator	2	81	848	40	0.8	-24.6	-1.0	56.4	55.4
Grader	1	85	848	40	0.40	-24.6	-4.0	60.4	56.4
Rubber Tired Dozers	1	82	848	40	0.40	-24.6	-4.0	57.4	53.4
Scrapers	2	84	848	40	0.80	-24.6	-1.0	59.4	58.4
Tractors/Loaders/Backhoes	2	84	848	40	0.80	-24.6	-1.0	59.4	58.4
							Log Sum	65.8	63.8
Building Construction									
Cranes	1	81	848	16	0.16	-24.6	-8.0	56.4	48.5
Forklifts [2]	3	48	848	40	1.20	-24.6	0.8	23.4	24.2
Generator Sets	1	81	848	50	0.50	-24.6	-3.0	56.4	53.4
Welders	1	74	848	40	0.40	-24.6	-4.0	49.4	45.4
Tractors/Loaders/Backhoes	3	84	848	40	1.20	-24.6	0.8	59.4	60.2
							Log Sum	62.6	61.4
Paving									
Pavers	2	77	848	50	1.00	-24.6	0.0	52.4	52.4
Paving Equipment	2	77	848	50	1.00	-24.6	0.0	52.4	52.4
Rollers	2	80	848	20	0.40	-24.6	-4.0	55.4	51.4
							Log Sum	58.4	56.9
Architectural Coating									
Air Compressors	1	78	848	40	0.40	-24.6	-4.0	53.4	49.4
							Log Sum	53.4	49.4

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(5) Receptor - Residential to north of TTM 20404 along San Timoteo Canyon (11488 San Timoteo Canyon Road, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	710	40	1.20	-23.0	0.8	59.0	59.7
Tractors/Loaders/Backhoes	4	84	710	40	1.60	-23.0	2.0	61.0	63.0
							Log Sum	63.1	64.7
Grading									
Excavator	2	81	710	40	0.8	-23.0	-1.0	58.0	57.0
Grader	1	85	710	40	0.40	-23.0	-4.0	62.0	58.0
Rubber Tired Dozers	1	82	710	40	0.40	-23.0	-4.0	59.0	55.0
Scrapers	2	84	710	40	0.80	-23.0	-1.0	61.0	60.0
Tractors/Loaders/Backhoes	2	84	710	40	0.80	-23.0	-1.0	61.0	60.0
							Log Sum	67.4	65.4
Building Construction									
Cranes	1	81	710	16	0.16	-23.0	-8.0	58.0	50.0
Forklifts [2]	3	48	710	40	1.20	-23.0	0.8	25.0	25.7
Generator Sets	1	81	710	50	0.50	-23.0	-3.0	58.0	54.9
Welders	1	74	710	40	0.40	-23.0	-4.0	51.0	47.0
Tractors/Loaders/Backhoes	3	84	710	40	1.20	-23.0	0.8	61.0	61.7
							Log Sum	64.2	62.9
Paving									
Pavers	2	77	710	50	1.00	-23.0	0.0	54.0	54.0
Paving Equipment	2	77	710	50	1.00	-23.0	0.0	54.0	54.0
Rollers	2	80	710	20	0.40	-23.0	-4.0	57.0	53.0
							Log Sum	60.0	58.4
Architectural Coating									
Air Compressors	1	78	710	40	0.40	-23.0	-4.0	55.0	51.0
							Log Sum	55.0	51.0

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(6) Receptor - Residential to East of nTTM 20403 along San Timoteo Canyon Road (11395 San Timote Canyon Road, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	1230	40	1.20	-27.8	0.8	54.2	55.0
Tractors/Loaders/Backhoes	4	84	1230	40	1.60	-27.8	2.0	56.2	58.2
							Log Sum	58.3	59.9
Grading									
Excavator	2	81	1230	40	0.8	-27.8	-1.0	53.2	52.2
Grader	1	85	1230	40	0.40	-27.8	-4.0	57.2	53.2
Rubber Tired Dozers	1	82	1230	40	0.40	-27.8	-4.0	54.2	50.2
Scrapers	2	84	1230	40	0.80	-27.8	-1.0	56.2	55.2
Tractors/Loaders/Backhoes	2	84	1230	40	0.80	-27.8	-1.0	56.2	55.2
							Log Sum	62.6	60.6
Building Construction									
Cranes	1	81	1230	16	0.16	-27.8	-8.0	53.2	45.2
Forklifts [2]	3	48	1230	40	1.20	-27.8	0.8	20.2	21.0
Generator Sets	1	81	1230	50	0.50	-27.8	-3.0	53.2	50.2
Welders	1	74	1230	40	0.40	-27.8	-4.0	46.2	42.2
Tractors/Loaders/Backhoes	3	84	1230	40	1.20	-27.8	0.8	56.2	57.0
							Log Sum	59.4	58.1
Paving									
Pavers	2	77	1230	50	1.00	-27.8	0.0	49.2	49.2
Paving Equipment	2	77	1230	50	1.00	-27.8	0.0	49.2	49.2
Rollers	2	80	1230	20	0.40	-27.8	-4.0	52.2	48.2
							Log Sum	55.2	53.6
Architectural Coating									
Air Compressors	1	78	1230	40	0.40	-27.8	-4.0	50.2	46.2
							Log Sum	50.2	46.2

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(7) Receptor - Residential to north of project along San Timoteo Canyon Road (11412 San Timoteo Canyon Road, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	1473	40	1.20	-29.4	0.8	52.6	53.4
Tractors/Loaders/Backhoes	4	84	1473	40	1.60	-29.4	2.0	54.6	56.7
							Log Sum	56.7	58.3
Grading									
Excavator	2	81	1473	40	0.8	-29.4	-1.0	51.6	50.6
Grader	1	85	1473	40	0.40	-29.4	-4.0	55.6	51.6
Rubber Tired Dozers	1	82	1473	40	0.40	-29.4	-4.0	52.6	48.6
Scrapers	2	84	1473	40	0.80	-29.4	-1.0	54.6	53.6
Tractors/Loaders/Backhoes	2	84	1473	40	0.80	-29.4	-1.0	54.6	53.6
							Log Sum	61.0	59.0
Building Construction									
Cranes	1	81	1473	16	0.16	-29.4	-8.0	51.6	43.7
Forklifts [2]	3	48	1473	40	1.20	-29.4	0.8	18.6	19.4
Generator Sets	1	81	1473	50	0.50	-29.4	-3.0	51.6	48.6
Welders	1	74	1473	40	0.40	-29.4	-4.0	44.6	40.6
Tractors/Loaders/Backhoes	3	84	1473	40	1.20	-29.4	0.8	54.6	55.4
							Log Sum	57.8	56.6
Paving									
Pavers	2	77	1473	50	1.00	-29.4	0.0	47.6	47.6
Paving Equipment	2	77	1473	50	1.00	-29.4	0.0	47.6	47.6
Rollers	2	80	1473	20	0.40	-29.4	-4.0	50.6	46.6
							Log Sum	53.6	52.1
Architectural Coating									
Air Compressors	1	78	1473	40	0.40	-29.4	-4.0	48.6	44.6
							Log Sum	48.6	44.6

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(8) Receptor - Residential to north of project along Barton Road (26737 Barton Road, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	1605	40	1.20	-30.1	0.8	51.9	52.7
Tractors/Loaders/Backhoes	4	84	1605	40	1.60	-30.1	2.0	53.9	55.9
							Log Sum	56.0	57.6
Grading									
Excavator	2	81	1605	40	0.8	-30.1	-1.0	50.9	49.9
Grader	1	85	1605	40	0.40	-30.1	-4.0	54.9	50.9
Rubber Tired Dozers	1	82	1605	40	0.40	-30.1	-4.0	51.9	47.9
Scrapers	2	84	1605	40	0.80	-30.1	-1.0	53.9	52.9
Tractors/Loaders/Backhoes	2	84	1605	40	0.80	-30.1	-1.0	53.9	52.9
							Log Sum	60.3	58.3
Building Construction									
Cranes	1	81	1605	16	0.16	-30.1	-8.0	50.9	42.9
Forklifts [2]	3	48	1605	40	1.20	-30.1	0.8	17.9	18.7
Generator Sets	1	81	1605	50	0.50	-30.1	-3.0	50.9	47.9
Welders	1	74	1605	40	0.40	-30.1	-4.0	43.9	39.9
Tractors/Loaders/Backhoes	3	84	1605	40	1.20	-30.1	0.8	53.9	54.7
							Log Sum	57.1	55.8
Paving									
Pavers	2	77	1605	50	1.00	-30.1	0.0	46.9	46.9
Paving Equipment	2	77	1605	50	1.00	-30.1	0.0	46.9	46.9
Rollers	2	80	1605	20	0.40	-30.1	-4.0	49.9	45.9
							Log Sum	52.9	51.3
Architectural Coating									
Air Compressors	1	78	1605	40	0.40	-30.1	-4.0	47.9	43.9
							Log Sum	47.9	43.9

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(9) Receptor - Residential to northwest of project along 1st Street (11440 1st Street, Loma Linda)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	2058	40	1.20	-32.3	0.8	49.7	50.5
Tractors/Loaders/Backhoes	4	84	2058	40	1.60	-32.3	2.0	51.7	53.8
							Log Sum	53.8	55.4
Grading									
Excavator	2	81	2058	40	0.8	-32.3	-1.0	48.7	47.7
Grader	1	85	2058	40	0.40	-32.3	-4.0	52.7	48.7
Rubber Tired Dozers	1	82	2058	40	0.40	-32.3	-4.0	49.7	45.7
Scrapers	2	84	2058	40	0.80	-32.3	-1.0	51.7	50.7
Tractors/Loaders/Backhoes	2	84	2058	40	0.80	-32.3	-1.0	51.7	50.7
							Log Sum	58.1	56.1
Building Construction									
Cranes	1	81	2058	16	0.16	-32.3	-8.0	48.7	40.8
Forklifts [2]	3	48	2058	40	1.20	-32.3	0.8	15.7	16.5
Generator Sets	1	81	2058	50	0.50	-32.3	-3.0	48.7	45.7
Welders	1	74	2058	40	0.40	-32.3	-4.0	41.7	37.7
Tractors/Loaders/Backhoes	3	84	2058	40	1.20	-32.3	0.8	51.7	52.5
							Log Sum	54.9	53.7
Paving									
Pavers	2	77	2058	50	1.00	-32.3	0.0	44.7	44.7
Paving Equipment	2	77	2058	50	1.00	-32.3	0.0	44.7	44.7
Rollers	2	80	2058	20	0.40	-32.3	-4.0	47.7	43.7
							Log Sum	50.7	49.2
Architectural Coating									
Air Compressors	1	78	2058	40	0.40	-32.3	-4.0	45.7	41.7
							Log Sum	45.7	41.7

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

(10) Receptor - Residential to West of project along Tanager Court (26698 Tanager Court, Redlands)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	1295	40	1.20	-28.3	0.8	53.7	54.5
Tractors/Loaders/Backhoes	4	84	1295	40	1.60	-28.3	2.0	55.7	57.8
							Log Sum	57.9	59.5
Grading									
Excavator	2	81	1295	40	0.8	-28.3	-1.0	52.7	51.8
Grader	1	85	1295	40	0.40	-28.3	-4.0	56.7	52.8
Rubber Tired Dozers	1	82	1295	40	0.40	-28.3	-4.0	53.7	49.8
Scrapers	2	84	1295	40	0.80	-28.3	-1.0	55.7	54.8
Tractors/Loaders/Backhoes	2	84	1295	40	0.80	-28.3	-1.0	55.7	54.8
							Log Sum	62.2	60.1
Building Construction									
Cranes	1	81	1295	16	0.16	-28.3	-8.0	52.7	44.8
Forklifts [2]	3	48	1295	40	1.20	-28.3	0.8	19.7	20.5
Generator Sets	1	81	1295	50	0.50	-28.3	-3.0	52.7	49.7
Welders	1	74	1295	40	0.40	-28.3	-4.0	45.7	41.8
Tractors/Loaders/Backhoes	3	84	1295	40	1.20	-28.3	0.8	55.7	56.5
							Log Sum	59.0	57.7
Paving									
Pavers	2	77	1295	50	1.00	-28.3	0.0	48.7	48.7
Paving Equipment	2	77	1295	50	1.00	-28.3	0.0	48.7	48.7
Rollers	2	80	1295	20	0.40	-28.3	-4.0	51.7	47.8
							Log Sum	54.7	53.2
Architectural Coating									
Air Compressors	1	78	1295	40	0.40	-28.3	-4.0	49.7	45.8
							Log Sum	49.7	45.8

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) (https://www.nrc.gov/docs/ML1805/ML18059A141.pdf)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

APPENDIX E

TRAFFIC NOISE FHWA WORKSHEETS

Existing Traffic Noise

1	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	15000
California Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	45
North of Barton Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	868.71	18.00	30.00	644.92	3.00	5.00	159.93	25.00	41.67
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	22.55	5.71	7.93	21.26	-2.07	0.15	15.20	7.14	9.36
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.41	57.85	64.59	65.12	50.07	56.81	59.06	59.28	66.02
	DAY LEQ	68.96		EVENING LEQ	65.83		NIGHT LEQ	67.52	

F		CNEL	74.25	Day hour	89.00
		DAY LEQ	68.96	Absorptive?	no
				Use hour?	no
				GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

1	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	15360
California Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	45
North of Barton Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	889.56	18.43	30.72	660.40	3.07	5.12	163.76	25.60	42.67
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	22.65	5.82	8.04	21.36	-1.96	0.25	15.30	7.24	9.46
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.51	57.96	64.69	65.22	50.17	56.91	59.16	59.38	66.12
	DAY LEQ	69.06		EVENING LEQ	65.94		NIGHT LEQ	67.62	

CNEL	74.36	Day hour	89.00
DAY LEQ	69.06	Absorptive?	no
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

2	:Id
New Jersey Street	:Road
North of Barton Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3000
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	183.99	2.25	0.88	135.97	0.40	0.40	34.06	3.00	1.17
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.36	-0.76	-4.86	17.05	-8.27	-8.26	11.04	0.49	-3.62
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.95	47.47	49.52	53.64	39.96	46.13	47.63	48.72	50.77
	DAY LEQ	56.61		EVENING LEQ	54.50		NIGHT LEQ	54.01	

CNEL	61.09
DAY LEQ	56.61

Day hour	90.00
Absorptive?	no
Use hour?	no
GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

2	:Id
New Jersey Street	:Road
North of Barton Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3060
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	187.67	2.29	0.89	138.69	0.41	0.41	34.74	3.06	1.19
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.45	-0.68	-4.78	17.14	-8.19	-8.17	11.12	0.57	-3.53
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.04	47.56	49.61	53.72	40.05	46.21	47.71	48.81	50.86
	DAY LEQ	56.70		EVENING LEQ	54.59		NIGHT LEQ	54.10	

CNEL	61.18
DAY LEQ	56.70

Day hour	90.00
Absorptive?	no
Use hour?	no
GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

3	:Id
New Jersey Street	:Road
Barton Road to Bermudez Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	200
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	12.27	0.15	0.06	9.06	0.03	0.03	2.27	0.20	0.08
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	6.60	-12.52	-16.63	5.29	-20.03	-20.02	-0.72	-11.28	-15.38
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.19	35.71	37.76	41.88	28.20	34.37	35.86	36.96	39.01
	DAY LEQ	44.85		EVENING LEQ	42.74		NIGHT LEQ	42.25	

CNEL	49.33
DAY LEQ	44.85

Day hour	91.00
Absorptive?	no
Use hour?	no
GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

3	:Id	Vehicle Distribution (Light Truck Mix)				ADT	670
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
New Jersey Street	:Road	Automobiles	75.56	13.96	10.49	97.40	Speed 25
Barton Road to Bermudez Street	:Segment	Medium Trucks	48.91	2.17	48.91	1.84	Distance 30
		Heavy Trucks	47.30	5.41	47.30	0.74	Left Angle -90
							Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	41.09	0.50	0.20	30.37	0.09	0.09	7.61	0.67	0.26
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	11.85	-7.27	-11.38	10.54	-14.78	-14.77	4.53	-6.02	-10.13
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.44	40.96	43.01	47.13	33.45	39.62	41.11	42.21	44.26
	DAY LEQ	50.10		EVENING LEQ	47.99		NIGHT LEQ	47.50	

CNEL	54.58	Day hour	91.00
DAY LEQ	50.10	Absorptive?	no
		Use hour?	no
		GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

4	:Id
New Jersey Street	:Road
South of Bermudez Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	100
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	6.13	0.07	0.03	4.53	0.01	0.01	1.14	0.10	0.04
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	3.59	-15.53	-19.64	2.28	-23.04	-23.03	-3.73	-14.29	-18.39
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.18	32.70	34.75	38.87	25.19	31.36	32.85	33.95	36.00
	DAY LEQ	41.84		EVENING LEQ	39.73		NIGHT LEQ	39.24	

CNEL	46.32
DAY LEQ	41.84

Day hour	92.00
Absorptive?	no
Use hour?	no
GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

4	:Id	Vehicle Distribution (Light Truck Mix)				ADT	400
New Jersey Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
South of Bermudez Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	30
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	24.53	0.30	0.12	18.13	0.05	0.05	4.54	0.40	0.16
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	9.61	-9.51	-13.62	8.30	-17.02	-17.01	2.29	-8.26	-12.37
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.20	38.72	40.77	44.89	31.21	37.38	38.87	39.97	42.02
	DAY LEQ	47.86		EVENING LEQ	45.75		NIGHT LEQ	45.26	

CNEL	52.34	Day hour	92.00
DAY LEQ	47.86	Absorptive?	no
		Use hour?	no
		GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

5	:Id
San Timoteo Canyon Road	:Road
Barton Road to Bermudez Street	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	9700
Speed	45
Distance	36
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	561.77	11.64	19.40	417.05	1.94	3.23	103.42	16.17	26.94
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.66	3.82	6.04	19.36	-3.96	-1.74	13.31	5.25	7.47
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.36	57.80	64.54	65.07	50.02	56.76	59.01	59.23	65.97
	DAY LEQ	68.90		EVENING LEQ	65.78		NIGHT LEQ	67.47	

CNEL	74.20
DAY LEQ	68.90

Day hour	93.00
Absorptive?	no
Use hour?	no
GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

5	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	10000
San Timoteo Canyon Road	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	45
Barton Road to Bermudez Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	36
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	579.14	12.00	20.00	429.95	2.00	3.33	106.62	16.67	27.78
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.79	3.95	6.17	19.50	-3.83	-1.61	13.44	5.38	7.60
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.49	57.93	64.67	65.20	50.15	56.89	59.14	59.36	66.10
	DAY LEQ	69.04		EVENING LEQ	65.91		NIGHT LEQ	67.60	

CNEL	74.33	Day hour	93.00
DAY LEQ	69.04	Absorptive?	no
		Use hour?	no
		GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

6	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	9800
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
San Timoteo Canyon Road	:Road					Speed	45
Bermudez Street to San Timoteo Canyon Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 36
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	567.56	11.76	19.60	421.35	1.96	3.27	104.49	16.33	27.22
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.70	3.87	6.08	19.41	-3.92	-1.70	13.35	5.29	7.51
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.40	57.84	64.58	65.11	50.06	56.80	59.05	59.27	66.01
	DAY LEQ	68.95		EVENING LEQ	65.82		NIGHT LEQ	67.51	

CNEL	74.25	Day hour	94.00
DAY LEQ	68.95	Absorptive?	no
		Use hour?	no
		GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

6	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	10040
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
San Timoteo Canyon Road	:Road					Speed	45
Bermudez Street to San Timoteo Canyon Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 36
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	581.46	12.05	20.08	431.67	2.01	3.35	107.04	16.73	27.89
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.81	3.97	6.19	19.51	-3.81	-1.59	13.46	5.40	7.62
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.51	57.95	64.69	65.21	50.17	56.91	59.16	59.38	66.11
	DAY LEQ	69.05		EVENING LEQ	65.93		NIGHT LEQ	67.62	

CNEL	74.35	Day hour	94.00
DAY LEQ	69.05	Absorptive?	no
		Use hour?	no
		GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

7	:Id
Nevada Street	:Road
South of San Timoteo Canyon Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1000
Speed	45
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	61.33	0.75	0.29	45.32	0.13	0.13	11.35	1.00	0.39
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	11.04	-8.09	-12.19	9.73	-15.60	-15.58	3.71	-6.84	-10.94
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	57.25	46.40	46.82	55.94	38.89	43.42	49.93	47.65	48.07
	DAY LEQ	57.94		EVENING LEQ	56.26		NIGHT LEQ	53.44	

CNEL	61.16
DAY LEQ	57.94

Day hour	95.00
Absorptive?	no
Use hour?	no
GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

7	:Id
Nevada Street	:Road
South of San Timoteo Canyon Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1180
Speed	45
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	72.37	0.88	0.34	53.48	0.16	0.16	13.40	1.18	0.46
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	11.76	-7.37	-11.47	10.44	-14.88	-14.87	4.43	-6.12	-10.22
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	57.97	47.12	47.54	56.66	39.61	44.14	50.64	48.37	48.79
	DAY LEQ	58.66		EVENING LEQ	56.97		NIGHT LEQ	54.16	

CNEL	61.88
DAY LEQ	58.66

Day hour	95.00
Absorptive?	no
Use hour?	no
GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

8	:Id	
Nevada Street	:Road	
North of Beaumont Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	600
Speed	45
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	36.80	0.45	0.18	27.19	0.08	0.08	6.81	0.60	0.23
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	8.82	-10.31	-14.41	7.51	-17.81	-17.80	1.49	-9.06	-13.16
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.03	44.18	44.60	53.72	36.68	41.21	47.71	45.43	45.85
	DAY LEQ	55.73		EVENING LEQ	54.04		NIGHT LEQ	51.22	

CNEL	**58.94**
DAY LEQ	55.73

Day hour	96.00
Absorptive?	no
Use hour?	no
GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

8	:Id	
Nevada Street	:Road	
North of Beaumont Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	960
Speed	45
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	58.88	0.72	0.28	43.51	0.13	0.13	10.90	0.96	0.37
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	10.86	-8.26	-12.37	9.55	-15.77	-15.76	3.54	-7.02	-11.12
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	57.07	46.23	46.64	55.76	38.72	43.25	49.75	47.47	47.89
	DAY LEQ	57.77		EVENING LEQ	56.08		NIGHT LEQ	53.26	

CNEL	60.98
DAY LEQ	57.77

Day hour	96.00
Absorptive?	no
Use hour?	no
GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

9	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	27700		
Barton Road	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	55	
West of California Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55	
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90	
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90	

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1604.22	33.24	55.40	1190.95	5.54	9.23	295.33	46.17	76.94
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81
ADJUSTMENTS									
Flow	24.34	7.51	9.73	23.05	-0.27	1.94	16.99	8.93	11.15
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	71.59	61.88	68.06	70.29	54.09	60.28	64.24	63.30	69.48
	DAY LEQ	73.49		EVENING LEQ	70.80		NIGHT LEQ	71.36	

CNEL	78.27	Day hour	97.00
DAY LEQ	73.49	Absorptive?	no
		Use hour?	no
		GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

9	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	27760
Barton Road	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	55
West of California Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	55
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1607.69	33.31	55.52	1193.53	5.55	9.25	295.97	46.27	77.11
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81
ADJUSTMENTS									
Flow	24.35	7.52	9.74	23.06	-0.26	1.95	17.00	8.94	11.16
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	71.59	61.89	68.07	70.30	54.10	60.28	64.25	63.31	69.49
	DAY LEQ	73.50		EVENING LEQ	70.81		NIGHT LEQ	71.37	

F		CNEL	78.28	Day hour	97.00
		DAY LEQ	73.50	Absorptive?	no
				Use hour?	no
				GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

10	:Id
Barton Road	:Road
California Street to New Jersey Street	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	29800
Speed	45
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1725.84	35.76	59.60	1281.24	5.96	9.93	317.72	49.67	82.78
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.53	8.70	10.91	24.24	0.91	3.13	18.18	10.12	12.34
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.39	60.83	67.57	68.10	53.05	59.79	62.04	62.26	69.00
	DAY LEQ	71.94		EVENING LEQ	68.81		NIGHT LEQ	70.50	

CNEL	77.24
DAY LEQ	71.94

Day hour	98.00
Absorptive?	no
Use hour?	no
GRADE dB	9.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

10	:Id
Barton Road	:Road
California Street to New Jersey Street	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	30220
Speed	45
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1750.16	36.26	60.44	1299.30	6.04	10.07	322.20	50.37	83.94
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.59	8.76	10.98	24.30	0.98	3.19	18.24	10.18	12.40
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.45	60.90	67.63	68.16	53.11	59.85	62.10	62.32	69.06
	DAY LEQ	72.00		EVENING LEQ	68.87		NIGHT LEQ	70.56	

CNEL	77.30
DAY LEQ	72.00

Day hour	98.00
Absorptive?	no
Use hour?	no
GRADE dB	9.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

11	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	29100
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Barton Road	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed 45
New Jersey Street to San Timoteo Canyon Road	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance 55
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle -90
							Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1685.30	34.92	58.20	1251.14	5.82	9.70	310.26	48.50	80.83
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.43	8.59	10.81	24.14	0.81	3.03	18.08	10.02	12.24
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.29	60.73	67.47	68.00	52.95	59.69	61.94	62.16	68.90
	DAY LEQ	71.83		EVENING LEQ	68.71		NIGHT LEQ	70.40	

CNEL	77.13	Day hour	99.00
DAY LEQ	71.83	Absorptive?	no
		Use hour?	no
		GRADE dB	10.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

11	:Id	
Barton Road	:Road	
New Jersey Street to San Timoteo Canyon Road	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	29460
Speed	45
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1706.15	35.35	58.92	1266.62	5.89	9.82	314.10	49.10	81.83
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.48	8.65	10.86	24.19	0.86	3.08	18.13	10.07	12.29
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.34	60.78	67.52	68.05	53.00	59.74	61.99	62.21	68.95
	DAY LEQ	71.89		EVENING LEQ	68.76		NIGHT LEQ	70.45	

CNEL	77.19
DAY LEQ	71.89

Day hour	99.00
Absorptive?	no
Use hour?	no
GRADE dB	10.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

12	:Id
Barton Road	:Road
East of San Timoteo Canyon Road	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	27900
Speed	45
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1615.80	33.48	55.80	1199.55	5.58	9.30	297.46	46.50	77.50
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.25	8.41	10.63	23.95	0.63	2.85	17.90	9.84	12.06
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.11	60.55	67.29	67.81	52.77	59.50	61.76	61.97	68.71
	DAY LEQ	71.65		EVENING LEQ	68.53		NIGHT LEQ	70.22	

CNEL	76.95
DAY LEQ	71.65

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

12	:Id
Barton Road	:Road
East of San Timoteo Canyon Road	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	28200
Speed	45
Distance	55
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1633.17	33.84	56.40	1212.45	5.64	9.40	300.66	47.00	78.33
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	25.29	8.46	10.67	24.00	0.67	2.89	17.94	9.88	12.10
Distance	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.15	60.59	67.33	67.86	52.81	59.55	61.80	62.02	68.76
	DAY LEQ	71.70		EVENING LEQ	68.57		NIGHT LEQ	70.26	

CNEL	77.00
DAY LEQ	71.70

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

13	:Id
Bermudez Street	:Road
New Jersey Street to San Timoteo Canyon Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	100
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	6.13	0.07	0.03	4.53	0.01	0.01	1.14	0.10	0.04
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	3.59	-15.53	-19.64	2.28	-23.04	-23.03	-3.73	-14.29	-18.39
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.18	32.70	34.75	38.87	25.19	31.36	32.85	33.95	36.00
	DAY LEQ	41.84		EVENING LEQ	39.73		NIGHT LEQ	39.24	

CNEL	46.32
DAY LEQ	41.84

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

13	:Id
Bermudez Street	:Road
New Jersey Street to San Timoteo Canyon Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	270
Speed	25
Distance	30
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	16.56	0.20	0.08	12.24	0.04	0.04	3.07	0.27	0.11
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.91	-11.22	-15.32	6.59	-18.73	-18.72	0.58	-9.97	-14.07
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.49	37.01	39.07	43.18	29.51	35.67	37.17	38.26	40.32
	DAY LEQ	46.15		EVENING LEQ	44.04		NIGHT LEQ	43.55	

CNEL	50.63
DAY LEQ	46.15

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

14	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	8800
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
San Timoteo Canyon Road	:Road					Speed	45
East of San Timoteo Canyon Road/Nevada Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 36
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	509.64	10.56	17.60	378.35	1.76	2.93	93.82	14.67	24.44
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.23	3.40	5.62	18.94	-4.38	-2.16	12.89	4.83	7.04
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.94	57.38	64.12	64.64	49.60	56.33	58.59	58.80	65.54
	DAY LEQ	68.48		EVENING LEQ	65.36		NIGHT LEQ	67.05	

CNEL	73.78	Day hour	0.00
DAY LEQ	68.48	Absorptive?	no
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

14	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	8860
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
San Timoteo Canyon Road	:Road					Speed	45
East of San Timoteo Canyon Road/Nevada Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 36
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	513.12	10.63	17.72	380.93	1.77	2.95	94.46	14.77	24.61
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	20.26	3.43	5.65	18.97	-4.35	-2.13	12.91	4.85	7.07
Distance	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	65.97	57.41	64.14	64.67	49.63	56.36	58.62	58.83	65.57
	DAY LEQ	68.51		EVENING LEQ	65.39		NIGHT LEQ	67.07	

CNEL	73.81	Day hour	0.00
DAY LEQ	68.51	Absorptive?	no
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

15	:Id
Beaumont Avenue	:Road
West of Nevada Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3100
Speed	35
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	190.12	2.32	0.90	140.50	0.41	0.41	35.19	3.10	1.21
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	17.04	-2.08	-6.18	15.73	-9.59	-9.58	9.72	-0.83	-4.93
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	59.02	49.61	50.73	57.71	42.10	47.33	51.70	50.86	51.98
	DAY LEQ	60.04		EVENING LEQ	58.20		NIGHT LEQ	56.31	

CNEL	63.74
DAY LEQ	60.04

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

15	:Id
Beaumont Avenue	:Road
West of Nevada Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3340
Speed	35
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	204.84	2.50	0.97	151.38	0.44	0.45	37.92	3.34	1.30
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	17.37	-1.76	-5.86	16.05	-9.27	-9.26	10.04	-0.51	-4.61
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	59.35	49.94	51.05	58.03	42.43	47.66	52.02	51.19	52.30
	DAY LEQ	60.36		EVENING LEQ	58.52		NIGHT LEQ	56.63	

CNEL	64.07
DAY LEQ	60.36

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Traffic Noise

16	:Id
Beaumont Avenue	:Road
East of Nevada Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2800
Speed	35
Distance	32
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	171.72	2.10	0.82	126.91	0.37	0.37	31.79	2.80	1.09
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	16.60	-2.52	-6.63	15.29	-10.03	-10.02	9.28	-1.28	-5.38
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.58	49.17	50.29	57.27	41.66	46.89	51.25	50.42	51.54
	DAY LEQ	59.59		EVENING LEQ	57.76		NIGHT LEQ	55.87	

CNEL	63.30
DAY LEQ	59.59

Day hour	0.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

Existing Plus Project Traffic Noise

16	:Id	Vehicle Distribution (Light Truck Mix)				ADT	2920
Beaumont Avenue	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
East of Nevada Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	32
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	179.08	2.19	0.85	132.34	0.39	0.39	33.15	2.92	1.14
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	16.78	-2.34	-6.44	15.47	-9.85	-9.84	9.46	-1.09	-5.19
Distance	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.76	49.35	50.47	57.45	41.85	47.07	51.44	50.60	51.72
	DAY LEQ	59.78		EVENING LEQ	57.94		NIGHT LEQ	56.05	

CNEL	63.48	Day hour	0.00
DAY LEQ	59.78	Absorptive?	no
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside light truck mix.

APPENDIX F

SOUNDPLAN WORKSHEETS

Receiver list

No.	Receiver name	Building side	Floor	Limit Lden dB(A)	Level w/o NP Lden dB(A)	Level w NP Lden dB(A)	Difference Lden dB	Conflict Lden dB
1	1	-	1.Fl	-	70.6	64.4	-6.2	-
2	2	-	1.Fl	-	61.7	61.3	-0.4	-
3	3	-	1.Fl	-	61.6	61.1	-0.4	-
4	4	-	1.Fl	-	61.1	60.7	-0.4	-
5	5	-	1.Fl	-	60.7	60.3	-0.4	-
6	6	-	1.Fl	-	60.2	59.9	-0.4	-
7	7	-	1.Fl	-	59.6	59.2	-0.5	-
8	8	-	1.Fl	-	60.6	60.3	-0.3	-
9	9	-	1.Fl	-	64.7	62.5	-2.2	-
10	10	-	1.Fl	-	65.5	60.5	-5.0	-
11	11	-	1.Fl	-	65.8	61.2	-4.6	-
12	12	-	1.Fl	-	65.8	62.0	-3.8	-
13	13	-	1.Fl	-	69.4	63.7	-5.7	-
14	14	-	1.Fl	-	69.2	63.8	-5.4	-
15	15	-	1.Fl	-	69.4	64.0	-5.4	-
16	16	-	1.Fl	-	69.5	64.2	-5.2	-
17	17	-	1.Fl	-	66.2	64.1	-2.1	-
18	18	-	1.Fl	-	67.3	63.9	-3.4	-
19	19	-	1.Fl	-	62.7	61.8	-0.9	-
20	20	-	1.Fl	-	70.9	65.0	-5.9	-

Noise emissions of road traffic

Statio km	ADT Veh/24	Vehicles type	Traffic values Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
0+00	27376	Total	-	1673	1192	414	-	none	-	-	Average (of DGAC a	-0.1
		Automobiles	-	1586	1177	292	64					
		Medium trucks	-	33	6	46	64					
		Heavy trucks	-	55	9	76	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
2+24	-							-	-	-	-	-
0+00	27376	Total	-	1673	1192	414	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	1586	1177	292	64					
		Medium trucks	-	33	6	46	64					
		Heavy trucks	-	55	9	76	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
San Timoteo Canyon Road							Traffic direction: In entry direction					
1+04	11174	Total	-	683	486	169	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	647	481	119	64					
		Medium trucks	-	13	2	19	64					
		Heavy trucks	-	22	4	31	64					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
2+27	-							-	-	-	-	-
Beaumont Avenue							Traffic direction: In entry direction					
1+04	3526	Total	-	216	154	53	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	204	152	38	48					
		Medium trucks	-	4	1	6	48					
		Heavy trucks	-	7	1	10	48					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
2+97	-							-	-	-	-	-

Noise emissions of industry sources

Source name	Reference	Level			Corrections		
		Day	Evening	Night	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB	dB	dB
Union Pacific	Lw/	85.0	85.0	85.0	-	-	-

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
07 / 15 / 2021	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	747174M

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
Union Pacific Railroad Company [UP]	CALIFORNIA	SAN BERNARDINO

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near LOMA LINDA	WHITTIER AVENUE (Street/Road Name) | * (Block Number)	ls

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☒ No	8. Do Other Railroads Operate Over Your Track at Crossing? ☒ Yes ☐ No
If Yes, Specify RR	If Yes, Specify RR ATK

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None LOS ANGELES	☐ None YUMA SUB	☒ None	(prefix) | 0544.500 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
		☒ N/A	☐ N/A UP

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☒ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☒ Less Than One Per Day ☐ Number Per Day_____

23. Type of Land Use
☐ Open Space ☐ Farm ☒ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☐ No ☒ 24 Hr ☐ Partial ☐ Chicago Excused Date Established 12/16/2010 12:00:

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 34.04635	(WGS84 std: -nnn.nnnnnnn) -117.230489	☒ Actual ☐ Estimated

30.A. Railroad Use *	31.A. State Use * CPUC 001B-544.50
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use * NOE 12/15/2010
32.A. Narrative (Railroad Use) * MEDIANS: SOUTH -121 FT NORTH -106 FT	32.B. Narrative (State Use) * MEDIANS: SOUTH -121 FT NORTH -106 FT

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-848-8715	402-544-3721	415-703-3722

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
17	17	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2019	3.A. Maximum Timetable Speed (mph) 55 3.B. Typical Speed Range Over Crossing (mph) From 20 to 40

4. Type and Count of Tracks
Main 2 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☒ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
07/15/2021		747174M

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0	0	☒ W10-1 2 ☐ W10-3 ☐ W10-11 ☐ W10-2 ☒ W10-4 1 ☐ W10-12

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count)* ☒ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☒ All Approaches ☒ Median ☐ One Approach ☐ None	☐ Yes ☒ No	☒ Yes ☐ No

2.J. Other MUTCD Signs ☒ Yes ☐ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type R8-8 Count 4 Specify Type W10-9P Count 7 Specify Type ____ Count ____	☐ Yes ☐ No	0

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 2	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian 0	☒ 2 Quad ☐ Full *(Barrier)* Resistance ☐ 3 Quad ☐ 4 Quad ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☒ LED ☒ Back Lights Included ☐ Side Lights Included	4

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
____/____ ☒ Not Required	☐ Yes Installed on *(MM/YYYY)* ____/____ ☒ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☒ None	Count 0 Specify type ____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☒ No	☒ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☒ No Storage Distance * ____ Stop Line Distance * ____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☒ Two-way Traffic ☐ Divided Traffic Number of Lanes 2	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* ____/____ Width * ____ Length * 40

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* ____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 125	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☒ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☒ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	25 MPH ☐ Posted ☒ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 2016 AADT 2028	05 %	☒ Yes ☐ No Average Number per Day ____	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by ____ Organization ____ Phone ____ Date ____

APPENDIX G

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS

Project:	19409 Canyon Ranch	Date:	4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to North - 26737 Barton Road		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	3.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	2.141	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to North - 26737 Barton Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	3.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	5.052	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Church to north of TTM 20404 - 26737 Bermudez Street		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	87.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.014	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Church to north of TTM 20404 - 26737 Bermudez Street		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	87.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.032	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to north of TTM 20404 - Romero Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	18.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.146	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to north of TTM 20404 - Romero Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	18.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.344	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to East - 11533 San Timoteo Canyon Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	95.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.012	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19409 Canyon Ranch	Date:	4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to East - 11533 San Timoteo Canyon Road		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	95.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.028	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19409 Canyon Ranch	Date:	4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to north of TTM 20404 - 11488 San Timoteo Canyon Road		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	140.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.007	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19409 Canyon Ranch	Date:	4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to north of TTM 20404 - 11488 San Timoteo Canyon Road		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type =	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	140.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.016	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to North - 11412 San Timoteo Canyon Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	30.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.068	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to North - 11412 San Timoteo Canyon Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	30.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.160	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Residential to East - 11395 San Timoteo Canyon Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	62.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.023	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to East - 11395 San Timoteo Canyon Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	62.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.054	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19409 Canyon Ranch	Date:	4/19/22
Source:	Large Dozer		
Scenario:	Unmitigated		
Location:	Commerial to North - 26795 Barton Road		
Address:			

PPV = PPVref(25/D)^n (in/sec)

INPUT

Equipment Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	44.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

RESULTS

PPV =	0.038	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commerial to North - 26795 Barton Road		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	44.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.090	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Vibratory Roller		
Scenario:	Mitigated		
Location:	Threshold Distance		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	20.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.293	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19409 Canyon Ranch		Date: 4/19/22
Source:	Large Dozer		
Scenario:	Mitigated		
Location:	Threshold Distance		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	12.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.268	IN/SEC	OUTPUT IN BLUE

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