APPENDIX D

Noise Study

NOISE

TECHNICAL STUDY

FOR THE

LUCIA PARK PROJECT

625 N. Maryland Avenue and 620 N. Brand Boulevard
Glendale, California 91203

PREPARED FOR:

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EXECUTIVE SUMMARY

Cimmarusti Holdings is proposing to demolish an existing parking structure, two-story office building, and surface parking lots to construct a 24-story (265.5 feet) 294-unit apartment building containing 247 1-bedroom and 47 2-bedroom apartments. A parking garage containing 502 parking spaces, including 373 parking spaces for the proposed apartments and 129 replacement parking spaces for the existing Chase Bank building that would remain on site is also proposed as part of the Project.

In accordance with requirements under the California Environmental Quality Act (CEQA), this Noise Study estimates future noise and vibration levels at surrounding land uses resulting from construction and operation of the Project. The report includes the categories and types of noise and vibration sources resulting from the Project, the calculation procedures used in the analysis, and any assumptions or limitations.

This report summarizes the potential for the Project to generate a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; generate excessive groundborne vibration or groundborne noise levels; or expose people residing or working in the project area to excessive noise levels. The findings of the analyses are as follows:

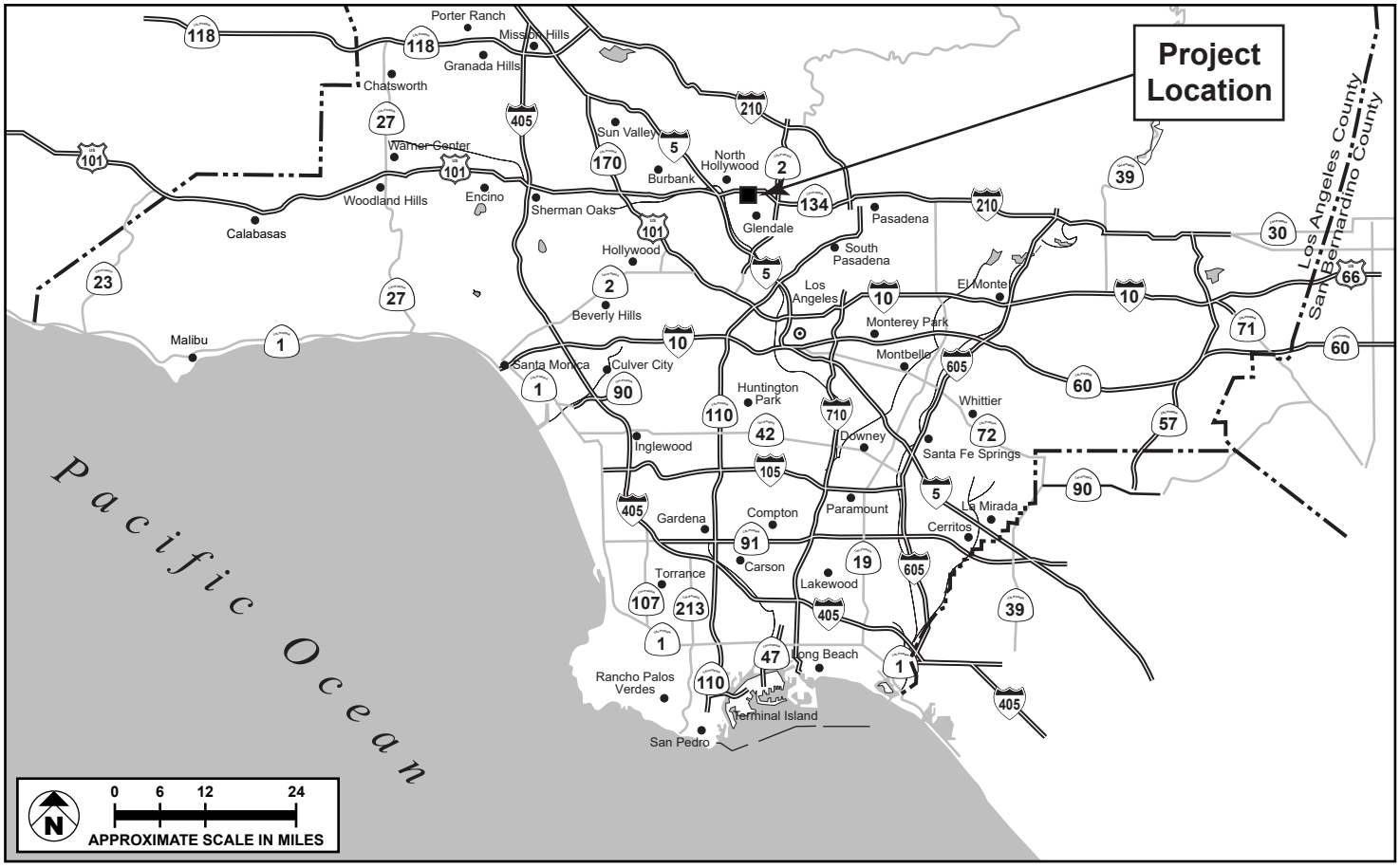
- Construction activities would not result in short-term and temporary noise impacts to nearby noise-sensitive receptors due to on-site construction equipment and activities. Compliance with the City's Noise Ordinance and standards established in the local general plan would ensure implementation of noise-attenuation techniques and placement of the construction-staging area and earthmoving equipment away from noise-sensitive sites to reduce construction noise levels below the significance threshold.
- Construction of the Project would generate sporadic, temporary vibration effects adjacent to the Project area but would not be expected to exceed the significance thresholds.
- Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed recommended measures for each individual project and compliance with locally adopted and enforced noise ordinances. Given that construction activities would be required to comply with the City's allowable hours and would be temporary, construction-related noise would not be significant.
- Noise associated with cumulative operational sources would not be significant.
- Due to the rapid attenuation characteristics of ground-borne vibration and the distance of the cumulative projects to the Project site, no potential exists for cumulative construction- or operational-related impacts with respect to ground-borne vibration.

PROJECT DESCRIPTION

The Project site is located directly south of State Route (SR-) 134 (Ventura) Freeway, east of Interstate (I-) 5 and west of SR-2 as shown in **Figure 1: Regional and Local Vicinity**. The Project site is located at 625 N. Maryland Avenue and 620 N. Brand Boulevard and bounded by the SR-134 Eastbound On-Ramp to the north, an existing commercial building, and an associated surface parking lot to the south, N. Brand Boulevard to the west, and N. Maryland Avenue to the east as shown in **Figure 2: Site Map, Existing Conditions**. The Project site includes two parcels, Assessor Parcel Numbers (APNs) 5643018032 and 5643018031.

The Project site is currently occupied by a two-story office building providing 5,297 square feet of floor area, an existing six-story commercial Chase Bank building (Chase Building) providing approximately 45,125 square feet of office floor area, an associated parking structure, and surface parking lots. Cimmarusti Holdings is proposing to demolish the existing parking structure, two-story office building, and surface parking lots and construct a 24-story (265.5 feet) 294-unit apartment building containing 247 1-bedroom and 47 2-bedroom apartments. A parking garage containing 502 parking spaces, including 373 parking spaces for the proposed apartments and 129 replacement parking spaces for the existing Chase Building that would remain is also proposed as part of the Project.

The Project would include landscaping and a publicly accessible open space plaza on the first level, a number of community spaces throughout the building, including outdoor and private terraces and a pool on the fourth-floor and a dog park on the fifth floor. Terraces are also proposed on the sixth, seventeenth, nineteenth, and twenty-first floors, including roof terraces on the twenty-third and twenty-fourth floors. The existing six-story commercial Chase Building would remain on site but the Project would demolish the existing parking structure. The Project when complete would include 129 replacement parking spaces for the existing commercial Chase Building in the two above-ground levels of parking in addition to the four-level subterranean parking garage containing 373 parking spaces for the proposed apartments. The total 502 automobile parking spaces and 115 bicycle parking spaces (96 long term and 19 short term) would be proposed.



SOURCE: Google Earth - 2021; Meridian Consultants, LLC - 2021

FIGURE **1**

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Regional and Local Vicinity

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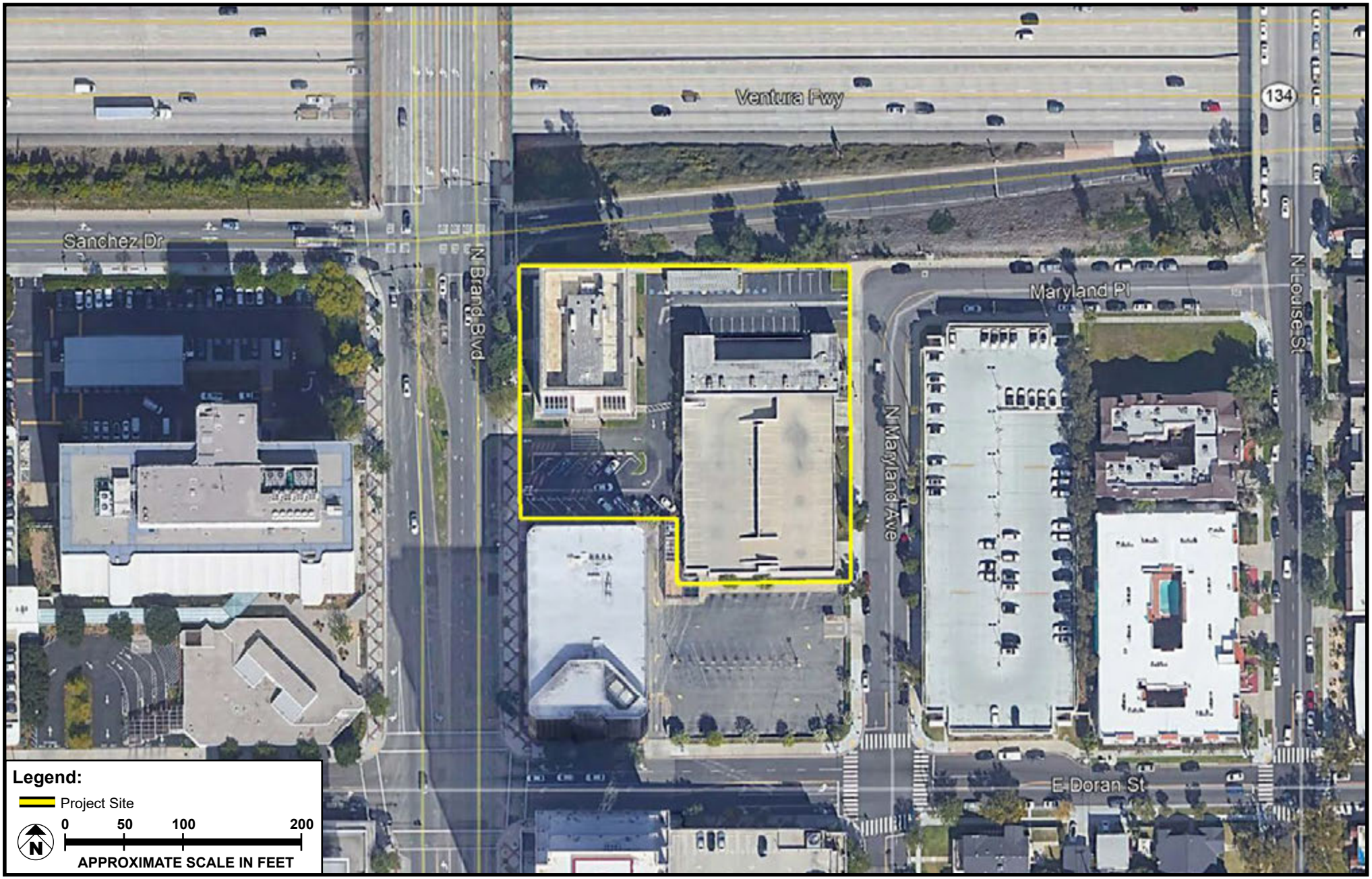

SOURCE: Google Earth - 2021

FIGURE **2**

Meridian Consultants

Site Map, Existing Conditions

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NOISE DESCRIPTORS

Fundamentals of Sound

Because the human ear does not respond uniformly to sounds at all frequencies, sound-pressure level alone is not a reliable indicator of loudness. For example, the human ear is less sensitive to low and high frequencies than to the medium frequencies that more closely correspond to human speech. In response to the sensitivity of the human ear to certain sound frequencies, the A-weighted noise level, referenced in units of dBA, was developed to better correspond with people's subjective judgment of sound levels. To support assessing a community reaction to noise, scales have been developed that average sound-pressure levels over time and quantify the result in terms of a single numerical descriptor. Several scales have been developed that address community noise levels. The equivalent sound level (Leq) is the average A-weighted sound level measured over a given time interval. Leq can be measured over any period but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods.

Table 1: Noise Descriptors identifies various noise descriptors developed to measure sound levels over different periods of time.

A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound wave energy (e.g., doubling the volume of traffic on a roadway) would result in a barely perceptible change in sound level. In general, changes in a noise level of less than 3 dBA are not noticed by the human ear.[1] Changes from 3 to 5 dBA may be noticed by some individuals who are extremely sensitive to changes in noise. An increase of greater than 5 dBA is readily noticeable, while the human ear perceives a 10 dBA increase in sound level to be a doubling of sound volume.

Noise sources can generally be categorized in two types: (1) point sources, such as stationary equipment; and (2) line sources, such as a roadway. Sound generated by a point source typically diminishes (attenuates) at a rate of 6 dBA for each doubling of distance from the source to the receptor at acoustically hard sites, and at a rate of 7.5 dBA at acoustically soft sites.[2] A hard or reflective site consists of asphalt, concrete, or very hard-packed soil, which does not provide any excess ground-effect attenuation. An acoustically soft or absorptive site is characteristic of normal earth and most ground with vegetation. As an example, a 60-dBA noise level measured at 50 feet from a point source at an acoustically hard site would be 54 dBA at 100 feet from the source and 48 dBA at 200 feet from the source. Noise from the same point source at an acoustically soft site would be 52.5 dBA at 100 feet and 45 dBA at 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3 dBA and 4.5 dBA per doubling of distance from the source to the receptor for hard and soft sites, respectively.[3] Noise levels generated by a variety of activities are shown in **Figure 3: Common Noise**

1 US Department of Transportation, Federal Highway Administration (USDOT FHWA), Fundamentals and Abatement of Highway Traffic Noise (Springfield, VA: Author, September 1980), 81.

2 USDOT FHWA, Fundamentals and Abatement, 97.

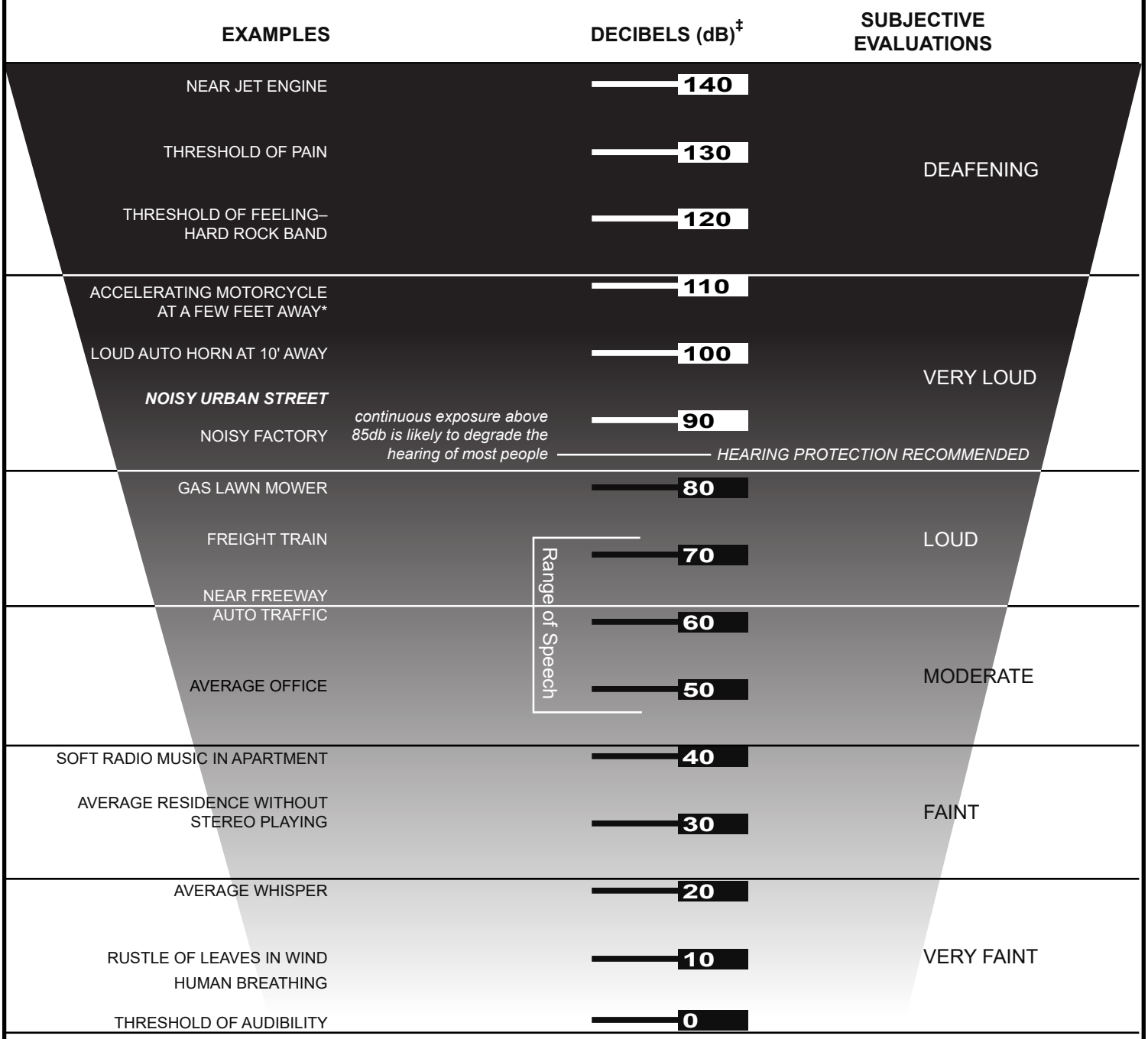
3 USDOT FHWA, Fundamentals and Abatement, 97.

Levels. Man-made or natural barriers can also attenuate sound levels, as illustrated in **Figure 4: Noise Attenuation by Barriers**.

TABLE 1
NOISE DESCRIPTORS

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measure sound to a reference pressure.
A-weighted decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Hertz (Hz)	The frequency of the pressure vibration, which is measured in cycles per second.
Kilo hertz (kHz)	One thousand cycles per second.
Equivalent sound level (Leq)	The sound level containing the same total energy as a time varying signal over a given time period. The Leq is the value that expresses the time averaged total energy of a fluctuating sound level. Leq can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods.
Community noise equivalent level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments add 5 dBA for the evening, 7:00 PM to 10:00 PM, and add 10 dBA for the night, 10:00 PM to 7:00 AM. The 5- and 10-dB penalties are applied to account for increased noise sensitivity during the evening and nighttime hours. The logarithmic effect of adding these penalties to the 1-hour Leq measurements typically results in a CNEL measurement that is within approximately 3 dBA of the peak-hour Lean[a]
Nighttime (Lights)	Lights is the average noise exposure during the hourly periods from 10:00 PM to 7:00 AM.
Sound pressure level	The sound pressure is the force of sound on a surface area perpendicular to the direction of the sound. The sound pressure level is expressed in dB.
Ambient noise	The level of noise that is all encompassing within a given environment, being usually a composite of sounds from many and varied sources near to and far from the observer. No specific source is identified in the ambient environment.

[a] *California Department of Transportation,* Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol, *(Sacramento, California: November 2009), pp. N51-N54.*



** NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.*

‡*NOTE: dB are "average" values as measured on the A–scale of a sound–level meter.*

SOURCE: Meridian Consultants, LLC - 2021

FIGURE **3**

Meridian Consultants

Common Noise Levels

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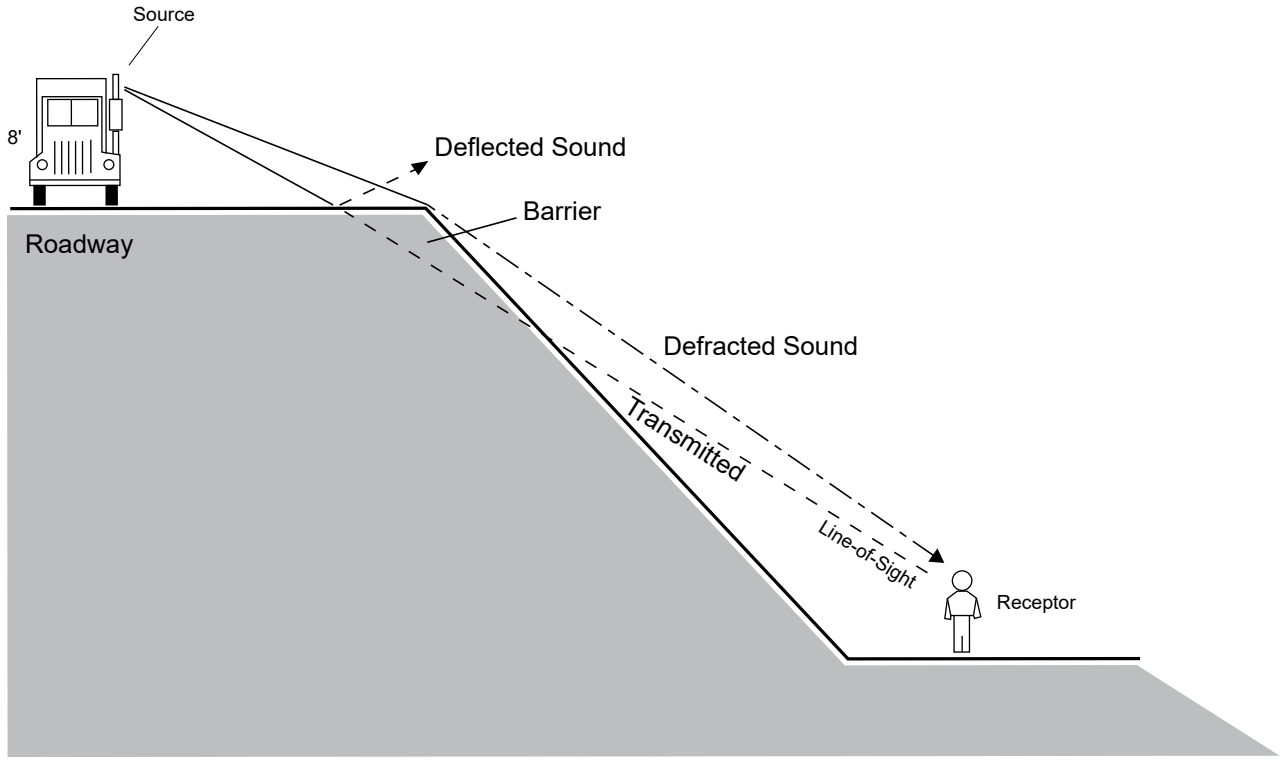
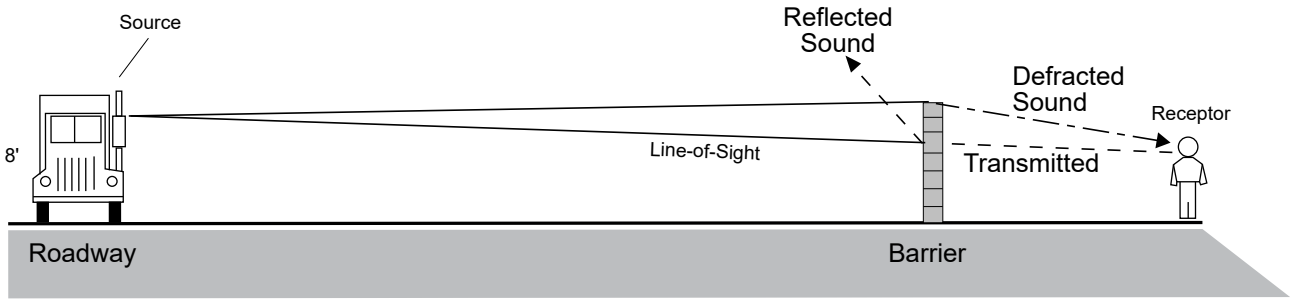


"Barrier Effect" Resulting from Differences in Elevation.



"Barrier Effect" Resulting from Typical Soundwall.

SOURCE: Meridian Consultants, LLC - 2021

FIGURE **4**

Meridian Consultants

Noise Attenuation by Barriers

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Fundamentals of Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or root-mean-square (RMS) velocity is typically used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response to ground-borne vibration. The RMS vibration velocity level can be presented in inches per second (ips) or in VdB (a decibel unit referenced to 1 microinch per second). Commonly, ground-borne vibration generated by man-made activities (i.e., road traffic, construction) attenuates rapidly with distance from the source of the vibration.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as the operation of mechanical equipment, the movement of people, or the slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

REGULATORY SETTING

City of Glendale General Plan Noise Element

The City of Glendale General Plan Noise Element establishes noise criteria for the various land uses throughout the City.[4] **Table 2: Land Use Compatibility for Community Noise Exposure**, identifies the acceptable limit of noise exposure for various land-use categories within the City. Noise exposure for commercial uses is "normally acceptable" when the CNEL at exterior commercial locations is equal to or below 70 dBA, "conditionally acceptable" when the CNEL is between 67.5 to 77.5 dBA, and "normally unacceptable" when the CNEL exceeds 75 dBA. Noise exposure for low density residential uses is "normally acceptable" when the CNEL at exterior residential locations is equal to or below 60 dBA, "conditionally acceptable" when the CNEL is between 55 to 70 dBA, "normally unacceptable" when the CNEL is between 70 to 75 dBA, and "clearly unacceptable" when the CNEL exceeds 75 dBA. These guidelines apply to noise sources such as vehicular traffic, aircraft, and rail movements.

4 City of Glendale, *General Plan*, "Noise Element" (2007).

TABLE 2
LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE

Land Use Categories	Community Noise Equivalent Level (CNEL) 55	60	65	70	75	80
Residential—Low-Density Single-Family, Duplex, Mobile Homes						
Residential—Multifamily						
Transient Lodging - Motel, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Businesses, Commercial, and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

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

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

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

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: City of Glendale, General Plan, "Noise Element" (2007).

City of Glendale Municipal Code

Noise

Noise standards for specific land uses are identified in the City of Glendale's Noise Ordinance, which is located in Chapter 8.36, Section 8.36.040 of the Glendale Municipal Code (GMC). Under Section 8.36.040 of the Noise Ordinance, exterior and interior noise is regulated by reference to "presumed noise standards," which are presented in **Table 3: Interior and Exterior Presumed Noise Standards**. Under Section 8.36.050 of the Noise Ordinance, where noise levels are below the presumed noise standards, the actual ambient noise level controls, and any noise more than 5 dBA above the actual ambient noise

level is considered a violation of the Noise Ordinance. Where the actual ambient noise level exceeds the presumed noise standard, the actual ambient noise level is used, and any noise more than 5 dBA above the actual ambient noise level is considered a violation of the Noise Ordinance. However, under the Noise Ordinance, the actual ambient noise levels are not allowed to exceed the presumed noise level by more than 5 dBA.

The City does not have regulations that establish maximum construction noise levels. However, Section 8.36.080 of the GMC states that it is unlawful for any person within a residential zone, or within a radius of five hundred feet therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects within the City between the hours of 7:00 PM on one day and 7:00 AM of the next day, or from 7:00 PM on Saturday to 7:00 AM on Monday, or from 7:00 PM preceding a holiday. Moreover, Section 8.36.290(K) of the GMC provides an exemption from the Noise Ordinance for any activity, operation, or noise, which cannot be brought into compliance (with the Noise Ordinance) because it is technically infeasible to do so. "Technical infeasibility" for the purpose of this section means that noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or any other noise reduction devices or techniques during the operation of the equipment.

TABLE 3
INTERIOR AND EXTERIOR PRESUMED NOISE STANDARDS

Land Use Category		Noise Standards	
Category	Uses	Interior CNEL	Exterior CNEL
Residential	Single Family	45[1]	65[2]
	Multifamily	45[1]	65[3]
	Residential within Mixed Use	45[1]	-
Commercial	Hotel, Motel, Transient, Lodging	45[1]	-
Institutional	Hospital, School, Church, Library	45	-
Open Space	Parks[4]	-	65[1]

Source: City of Glendale General Plan Noise Element, 2007.
[1] Applies to the indoor environment excluding bathrooms, toilets, closets, and corridors
[2] Applies to the outdoor environment limited to the private yard of single family residences (normally the rear yard).
[3] Applies to the patio area where there is an expectation of privacy (i.e., not a patio area which also serves as, or is adjacent to, the primary entrance to the unit).
[4] Only applies to parks where peace and quiet are determined to be of prime importance, such as hillside open space areas to the public. Generally, would not apply to urban parks or active-use parks.

Vibration

Section 8.36.210 of the GMC provides that vibration created by the operation of any device would be a violation of City standards if such vibration were above the vibration perception threshold of an individual at or beyond the property boundary of a source on private property. For sources on a public space or public right-of-way, a violation would occur if the vibration perception threshold of an individual were

exceeded at a distance of 150 feet from the source. The Noise Ordinance does not define the level of vibration that is deemed perceptible by an individual and does not establish maximum allowable vibration levels.

EXISTING CONDITIONS

The Gateway District is located in a highly urbanized area in Glendale – an active noise environment. Located at the northern portion of the Downtown Specific Plan (DSP), the Gateway District includes multi-storied towers and features corporate headquarters, hotels, mixed-use and residential buildings, complementary/accessory service and retain businesses at the street level, as well as an introduction of appropriate night-time entertainment uses.[5]

The predominant noise source in the City come from mobile noise sources, including motor vehicles. A number of freeways and arterial roadways expose the City to significant noise levels. The Union Pacific Railroad along the west side of the City also contributes to the overall noise environment. Aircraft operating in the area are not a major contributor of noise in the area. The noise environment in Glendale varies from the busy, high-density corridor along freeways and major arterials to the lower density, residential communities on the hillsides. Other sources of noise within the City are from non-transportation sources including commercial and construction activities.[6]

Ambient Noise Levels

Short-term sound monitoring was conducted at four (4) locations to measure the ambient sound environment in the Project vicinity (refer to **Figure 5: Noise Monitoring Locations**. Measurements were taken over 10-minute intervals on August 16, 2021 and are presented in **Table 4: Ambient Noise Measurements**. As shown in **Table 4**, ambient noise levels ranged from a low of 63.9 dBA (Leq-10minute) at the southeast corner of Doran Street and Maryland Avenue (Site 3) to a high of 71.6 dBA (Leq-10minute) west of the Project site along Sanchez Drive between Central Avenue and Brand Boulevard (Site 4). Ambient noise levels currently exceed the presumed noise standard for multi-family residential uses west of the Project site along Sanchez Drive between Central Avenue and Brand Boulevard. The segment along Sanchez Drive includes a one-way eastbound roadway that connect the SR-134 Freeways ramps in the eastbound direction between Central Avenue and Brand Boulevard.

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5 City of Glendale, Glendale Downtown Specific Plan, accessed November 2021, https://www.glendaleca.gov/home/showdocument?id=25132

6 City of Glendale, Noise Element, May 2007, accessed November 2021, https://www.glendaleca.gov/home/showpublisheddocument/828/635231021922170000

TABLE 4 AMBIENT NOISE MEASUREMENTS					
	Monitoring Site Number/Description	Time Period	Noise Source	Presumed Noise Standard, dBA CNEL	dBA Leq 10minute
1	Southwest corner of the Project site along Brand Boulevard between Sanchez Drive and Doran Street	1:06 PM-1:16 PM	Vehicle traffic along N. Brand Boulevard	N/A[1]	71.4
2	Northeast corner of the Project site along Maryland Avenue and Maryland Place	1:18 PM-1:28 PM	Vehicle traffic along SR-134	N/A[1]	69.5
3	Southeast corner of Doran Street and Maryland Avenue	1:30 PM-1:40 PM	Vehicle traffic along E. Doran Street and N. Maryland Avenue	65[2]	63.9
4	West of the Project site along Sanchez Drive between Central Avenue and Brand Boulevard.	1:48 PM-1:58 PM	Vehicle traffic along SR-134 and Sanchez Drive	65[2]	71.6

*Source: Refer to **Attachment A** for noise monitoring data sheets.*

Notes: dBA = A-weighted decibels; Leq = average equivalent sound level.

[1] There are no presumed noise standards for the commercial use.

[2] Presumed Noise Standard for multi-family residential uses.

Existing Off-Site Roadway Noise Levels

In addition to the ambient noise measurements within the Project site, the existing traffic noise on local roadways in the surrounding areas was calculated to quantify 24-hour CNEL noise levels using information provided in the Project's Transportation Impact Study.[7] The transportation study analyzed six intersections within the Project vicinity. These intersections and connecting roadway segments were selected for the generation of existing off-site traffic noise.

Table 5: Estimated Existing Roadway Noise Levels provides the calculated 24-hour CNEL noise levels for the analyzed local roadway segments based on existing traffic volumes. As shown in **Table 5**, 24-hour noise levels ranged from a low of 50.0 dBA CNEL at the commercial uses along Maryland Avenue north of Doran Street (Intersection 4) to a high of 63.3 dBA CNEL at the commercial and multi-family residential uses along the Sanchez Drive (SR-134 EB On-Ramp) east of Brand Boulevard (Intersection 2).

In terms of the City's land use noise compatibility categories based on roadway traffic only, all studied intersections are classified as normally acceptable. Specifically, the noise exposure compatibility categories based on roadway traffic only are summarized as follows:

7 Linscott, Law, and Greenspan, Transportation Impact Analysis for the 606 N. Maryland Avenue Residential Project, June 22, 2021.

- Normally Acceptable: Locations where commercial and multi-family residential uses are dominant along Brand Boulevard, SR-134 Ramps, and Doran Street. Locations where residential uses are dominant along Maryland Place, Maryland Avenue, Doran Street, and Louise Street.
- Conditionally Acceptable: No existing roadway noise levels would within conditionally acceptable levels.
- Normally Unacceptable: No existing roadway noise levels would be within normally unacceptable levels.
- Clearly Unacceptable: No existing roadway noise levels would be within clearly unacceptable levels.

Sensitive Uses

The Project site is predominantly surrounded by a mix of high-rise commercial office buildings as well as high-rise and low-rise (one-, two- and three-story residential buildings). As mentioned previously, the Project site is bounded by the SR-134 Eastbound On-Ramp to the north, an existing commercial building, and an associated surface parking lot to the south, Brand Boulevard to the west, and Maryland Avenue to the east. Multi-family residential uses are located to the east of the Project site along Maryland Avenue and Louise Street, to the west along Doran Street, and to the north along Monterey Road. An overview of the surrounding land uses relative to the noise monitoring locations provided in **Table 4** above is provided:

- Site 1: Located at the southwest corner of the Project site along Brand Boulevard. There are no sensitive receptors within the vicinity of this noise monitoring location.
- Site 2: Located at the northeast corner of the Project site along N. Maryland Avenue and Maryland Place. Sensitive receptors include the multi-family residential uses along Maryland Place.
- Site 3: Located at the southeast corner of E. Doran Street and N. Maryland Avenue, sensitive receptors include multi-family residential uses along Doran Street and Maryland Avenue.
- Site 4: Located west of the Project site along Sanchez Drive, sensitive receptors include multi-family residential uses along Sanchez Drive.

Vibration Conditions

Based on field observations, the primary source of existing ground-borne vibration in the vicinity of the Project site is vehicle traffic on local roadways and SR-134. According to the Federal Transit Administration,[8] typical road traffic–induced vibration levels are unlikely to be perceptible by people. Trucks and buses typically generate ground-borne vibration velocity levels of approximately 63 VdB (at a 50-foot distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. A vibration level of 72 VdB is above the 60 VdB level of perceptibility.

8 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* FTA report no. 0123 (September 2018), https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf, accessed August 2021.

TABLE 5
ESTIMATED EXISTING ROADWAY NOISE LEVELS

Intersection	Roadway Segment	Adjacent Land Use	Existing Roadway Noise Level dBA CNEL	Existing Noise Exposure Compatibility Category
Brand Boulevard				
1	North of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.1	Normally Acceptable
	South of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.2	Normally Acceptable
2	North of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	53.1	Normally Acceptable
	South of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	54.2	Normally Acceptable
3	North of Doran Street	Commercial	54.3	Normally Acceptable
	South of Doran Street	Commercial	53.7	Normally Acceptable
Goode Avenue (SR-134 WB Off-Ramp)				
1	East of Brand Boulevard	Commercial	57.8	Normally Acceptable
	West of Brand Boulevard	Commercial	52.3	Normally Acceptable
Sanchez Drive (SR-134 EB On-Ramp)				
2	East of Brand Boulevard	Commercial/Residential (Multi-family)	63.3	Normally Acceptable
	West of Brand Boulevard	Commercial	60.5	Normally Acceptable
Doran Street				
3	East of Brand Boulevard	Commercial/Residential	53.2	Normally Acceptable
	West of Brand Boulevard	Commercial/Residential	63.0	Normally Acceptable
4	East of Maryland Avenue	Residential (Multi-family)	61.3	Normally Acceptable
	West of Maryland Avenue	Commercial	56.7	Normally Acceptable
5	East of Louise Street	Residential (Multi-family)	61.0	Normally Acceptable

TABLE 5
ESTIMATED EXISTING ROADWAY NOISE LEVELS

Intersection	Roadway Segment	Adjacent Land Use	Existing Roadway Noise Level dBA CNEL	Existing Noise Exposure Compatibility Category
	West of Louise Street	Residential (Multi-family)	61.2	Normally Acceptable
Maryland Avenue				
4	North of Doran Street	Commercial	50.0	Normally Acceptable
	South of Doran Street	Commercial/Residential (Multi-family)	60.5	Normally Acceptable
Maryland Place				
5	East of Louise Street	N/A	N/A	N/A
	West of Louise Street	Residential/Commercial	51.7	Normally Acceptable
Louise Street				
5	North of Maryland Place	Residential (Multi-Family)	54.9	Normally Acceptable
	South of Maryland Place	Residential (Multi-Family)	61.0	Normally Acceptable
6	North of Doran Street	Residential (Multi-Family)	61.2	Normally Acceptable
	South of Doran Street	Residential (Multi-Family)	60.3	Normally Acceptable

Source: Linscott, Law, and Greenspan, Transportation Impact Analysis for the 606 N. Maryland Avenue Residential Project, June 22, 2021.
N/A = no data available.

*Roadway noise model results are provided in **Attachment D**.*

North

West

South

East

SOURCE: Google Earth - 2021

FIGURE **5a**

Meridian Consultants

Noise Monitoring Location (Site 1)

184-003-21

North

West

South

East

SOURCE: Google Earth - 2021

FIGURE **5b**

Meridian Consultants

Noise Monitoring Location (Site 2)

184-003-21

North

West

South

East

SOURCE: Google Earth - 2021

FIGURE **5c**

Meridian Consultants

Noise Monitoring Location (Site 3)

184-003-21

North

West

South

East

SOURCE: Google Earth - 2021

FIGURE **5d**

Meridian Consultants

Noise Monitoring Location (Site 4)

184-003-21

METHODOLOGY

Ambient Noise Measurements

To determine existing noise levels in the area (ambient), Meridian Consultants monitored four (4) locations on August 16, 2021, within the Project area vicinity, as shown in **Figure 5**. Noise-level monitoring was conducted for 10-minute intervals at each location using a Larson Davis Model 831 sound-level meter. This meter satisfies Section 8.36.030 of the City's Municipal Code related to decibel measurement criteria and the American National Standards Institute standard for general environmental noise measurement instrumentation. Random incidence microphones with windscreens were used, given the outdoor (i.e., free field) conditions of monitoring. The sound level averages were measured as A-weighted, slow-time-weighted (1-minute period) sound pressure level variables, commonly used for measuring environmental sounds. Sound levels presented in this report are in terms of dBA.

The Larson Davis Model 831 is a Type 1 precision sound-level meter. This meter meets all requirements of ANSI S1.4-1983 and ANSI1.43-1997 Type 1 standards, as well as International Electrotechnical Commission (IEC) IEC61672-1 Ed. 1.0, IEC60651 Ed 1.2, and IEC60804 Type 1, Group X standards. The sound-level meter was located approximately 5 feet above ground and was covered with a Larson Davis windscreen. The sound-level meter was field calibrated with an external calibrator prior to operation.

Construction Scenario

Construction activities typically generate noise from the operation of equipment required for construction of various facilities. Noise impacts from on-site construction and staging of construction trucks were evaluated by determining the noise levels generated by different types of construction activity, calculating the construction-related noise level at nearby noise-sensitive receptor locations, and comparing these construction-related noise levels to existing ambient noise levels (i.e., noise levels without project-related construction noise). The actual noise level would vary, depending upon the equipment type, model, the type of work activity being performed, and the condition of the equipment.

In order to calculate a construction noise levels, hourly activity or utilization factors (i.e., the percentage of normal construction activity that would occur, or construction equipment that would be active, during each hour of the day) are estimated based on the temporal characteristics of other previous and current construction projects. The hourly activity factors express the percentage of time that construction activities would emit average noise levels. Typical noise levels for each type of construction equipment were obtained from the FHWA Roadway Construction Noise Model. Calculated noise levels associated with construction at noise-sensitive receptor locations were then compared to estimated existing noise levels and the construction noise significance thresholds identified below.

Future dates represent approximations based on the general Project timeline and are subject to change pending unpredictable circumstances that may arise. As such, for purposes of this analysis, project construction is assumed to begin in August 2022 and is expected to last until June 2025. Construction

would occur over five phases: (1) demolition; (2) grading; (3) building construction; (4) paving; and (5) architectural coating.

Each phase of construction would result in varying levels of intensity and a number of construction personnel. The construction workforce would consist of approximately 13 worker trips per day and 150 total hauling trips during demolition; 10 worker trips per day and 9,500 total hauling trips during grading; 296 worker trips per day and 64 vendor trip per day during building construction; 13 worker trip per day during paving; and 59 worker trips per day during architectural coating.

Ground-Borne Vibration

Ground-borne vibration impacts were evaluated by identifying potential vibration sources, estimating the distance between vibration sources and surrounding structure locations and surrounding structure locations and vibration sensitive receptors, and making a significance determination based on the significance thresholds.

The majority of the Project's operational-related vibration sources, such as mechanical and electrical equipment, would incorporate vibration attenuation mounts, as required by the particular equipment specifications. Therefore, operation of the Project would not increase the existing vibration levels in the immediate vicinity of the Project and, as such, vibration impacts associated with the Project would be minimal. Therefore, the ground borne vibration analysis is limited to Project-related construction activities.

THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, a project would have a potentially significant impact related to noise and groundborne vibration if it would result in:

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

The Project site is not located within an airport land use plan and is not located within two miles of public airport or public use airport or within the vicinity of a private airstrips. The nearest public or private airport/airstrip to the Project site is Hollywood Burbank Airport located approximately 6.0 miles northwest of the Project site. As such, the Project would result in no impacts to these screening criteria and no further analyses of these topics are necessary.

Construction Noise

The City's General Plan and Municipal Code do not establish numeric maximum acceptable source noise levels or noise level increases at potentially affected receivers. Chapter 8.36 of the Glendale Municipal Code (GMC) prohibits construction activities within 500 feet of a residential zone between the hours of 7:00 PM on one date and 7:00 AM of the next day or from 7:00 PM on Saturday to 7:00 AM on Monday or from 7:00 PM preceding a holiday.

The FTA *Transit Noise and Vibration Impact Assessment Manual*[9] provides a general noise assessment guideline to assess potential noise impacts construction of transit projects. A general noise assessment is suitable and appropriate given the current stage of planning and evaluation for this Project. The FTA's General Assessment Construction Noise Criteria identifies daytime and nighttime thresholds for residential, commercial, and industrial land uses, which are considered reasonable criteria for use in assessing the potential for adverse community reaction to noise generated by construction activities. The construction noise criteria threshold for residential uses is 90 dBA (Leq-1hour) during the daytime and 80 dBA (Leq-1hour) during the nighttime period. Additionally, construction noise thresholds for commercial and industrial uses are 100 dBA (Leq-1hour) during both the daytime and nighttime periods. Since the construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as Leq noise levels.

Roadway Noise

As mentioned previously, the City's General Plan Noise Element is used to establish satisfactory noise levels of significance for land uses within the City. As shown in **Table 2**, the exterior noise level criteria for normally acceptable multi-family residential uses range between 50 to 65 dBA CNEL. Additionally, exterior noise level criteria for normally acceptable office buildings, business commercial and professional uses range between 50 to 70 dBA CNEL.

There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment (ambient) to which one has adapted.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. As such, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. Although the FICON recommendations were specifically

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9 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018, accessed September 2021, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL). FICON identifies a readily perceptible 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. According to the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

Ground-Borne Vibration

Section 8.36.210 of the GMC provides that vibration created by the operation of any device would be a violation of City standards if such vibration were above the vibration perception threshold of an individual at or beyond the property boundary of a source on private property. For sources on a public space or public right-of-way, a violation would occur if the vibration perception threshold of an individual were exceeded at a distance of 150 feet from the source. However, a numerical threshold to identify the point at which a vibration impact is deemed perceptible is not identified in the GMC. Thus, the Caltrans Transportation and Construction Vibration Guidance Manual[10] is used as a screening tool to assess the potential for adverse vibration effects related to structural damage. Impacts related to vibration would be considered significant if it exceeds the following standards:

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site nonengineered timber and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

NOISE ANALYSIS

Construction

Noise from Project construction activities would be affected by the amount of construction equipment, the location of this equipment, the timing and duration of construction activities, and the relative distance to noise-sensitive receptors. Construction activities that would occur during the construction phases would generate both steady-state and episodic noise that would be heard both on and off the Project site. Each phase involves the use of different types of construction equipment and, therefore,

10 Caltrans, *Transportation and Construction Vibration Guidance Manual* (September 2018), accessed August 2021, http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

has its own distinct noise characteristics. The Project would be constructed using typical construction techniques; no blasting or impact pile driving would be required.

On-Site Construction Noise

Individual pieces of construction equipment that would be used during construction produce maximum noise levels of 73 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in **Table 6: Typical Maximum Noise Levels for Project Construction Equipment**. These construction equipment reference noise levels are based on measured noise data compiled by the FHWA and would occur when equipment is operating under full power conditions. However, equipment used on construction sites typically operate at less than full power. The acoustical usage factor is the percentage of time that each type of construction equipment is anticipated to be in full power operation during a typical construction day. These values are estimates and will vary based on the actual construction process and schedule.

TABLE 6
TYPICAL MAXIMUM NOISE LEVELS FOR PROJECT CONSTRUCTION EQUIPMENT

Equipment Description	Typical Duty Cycle (%)	Spec Lmax (dBA)	Actual Lmax (dBA)
Air Compressor	40	80.0	77.7
Backhoe	40	80.0	77.6
Concrete/Industrial saw	20	90.0	89.6
Crane	16	85.0	80.6
Dozer	40	85.0	81.7
Drum Mixer	50	80.0	80.0
Forklift	40	85.0	N/A
Front End Loader	40	80.0	79.1
Generator	50	82.0	80.6
Grader	40	85.0	N/A
Paver	50	85.0	77.2
Roller	20	85.0	80.0
Tractor	40	84.0	N/A
Welder	40	73.0	74.0

Source: FHWA Roadway Construction Noise Model (RCNM) version 1.1
Note: N/A = not available.

Construction equipment operates at its noisiest levels for certain percentages of time during operation. It is important to note, equipment would operate at different percentages over the course of an hour.[11]

11 Federal Highway Administration, Traffic *Noise Model (2006)*.

During a construction day, the highest noise levels would be generated when multiple pieces of construction equipment are operated concurrently.

To characterize construction-period noise levels, the average (hourly Leq) noise level associated with each construction stage was calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage. These noise levels are typically associated with multiple pieces of equipment operating simultaneously.

The estimated construction noise levels were calculated for a scenario in which a reasonable number of construction equipment was assumed to be operating simultaneously, given the physical size of the Project Site and logistical limitations, and with the noise equipment located at the construction area nearest to the affected receptors to present a conservative impact analysis. This is considered a worst-case evaluation because construction of the Project would typically use fewer pieces of equipment simultaneously at any given time and, as such, would likely generate lower noise levels than reported herein.

Separate forecasts of construction noise levels from on-site construction at each of the noise monitoring sites within the immediate vicinity were completed. The forecast noise levels at the nearest sensitive uses (refer to **Figure 6: Sensitive Receptor Map**) to the Project Site from construction activity are shown in **Table 7: Project Construction Noise Estimates**. As shown, construction noise levels would range between 62.8 dBA (Leq-1hour) at the multi-family residential uses on the corner of Sanchez Drive and Central Avenue (Site 4) to a high of 98.9 dBA (Leq-1hour) at commercial use adjacent to the Project site (Site 1). Noise levels due to construction would not exceed the daytime 90 dBA Leq threshold for residential uses and 100 dBA Leq threshold for commercial uses. Additionally, the Project would be required to adhere to Section 8.36.290(K) of the GMC, which requires noise limitations to be implemented during construction to the extent feasible. Noise limitations include the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of the equipment. More specifically, using optimal muffler systems on all equipment would reduce construction noise levels by 10 dBA or more.[12] Temporary abatement techniques such as the use of a noise barrier can achieve a 5-dBA noise level reduction when it is tall enough to break the line-of-sight to the receiver. Modifications such as dampening of metal surfaces or the redesign of a particular piece of equipment can achieve noise reduction of up to 5 dBA.[13] Moving stationary equipment away from sensitive receptors will reduce noise levels at the receptor as every doubling of distance will reduce noise by 4 to 6 dBA. As such, adherence

12 FHWA, *Special Report—Measurement, Prediction, and Mitigation*, updated June 2017, https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm, Accessed January 2021.

13 FHWA, *Special Report—Measurement, Prediction, and Mitigation*, updated June 2017, accessed July 2019, https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm.

to the GMC would further reduce construction noise levels at all of the Sites to below significance thresholds.

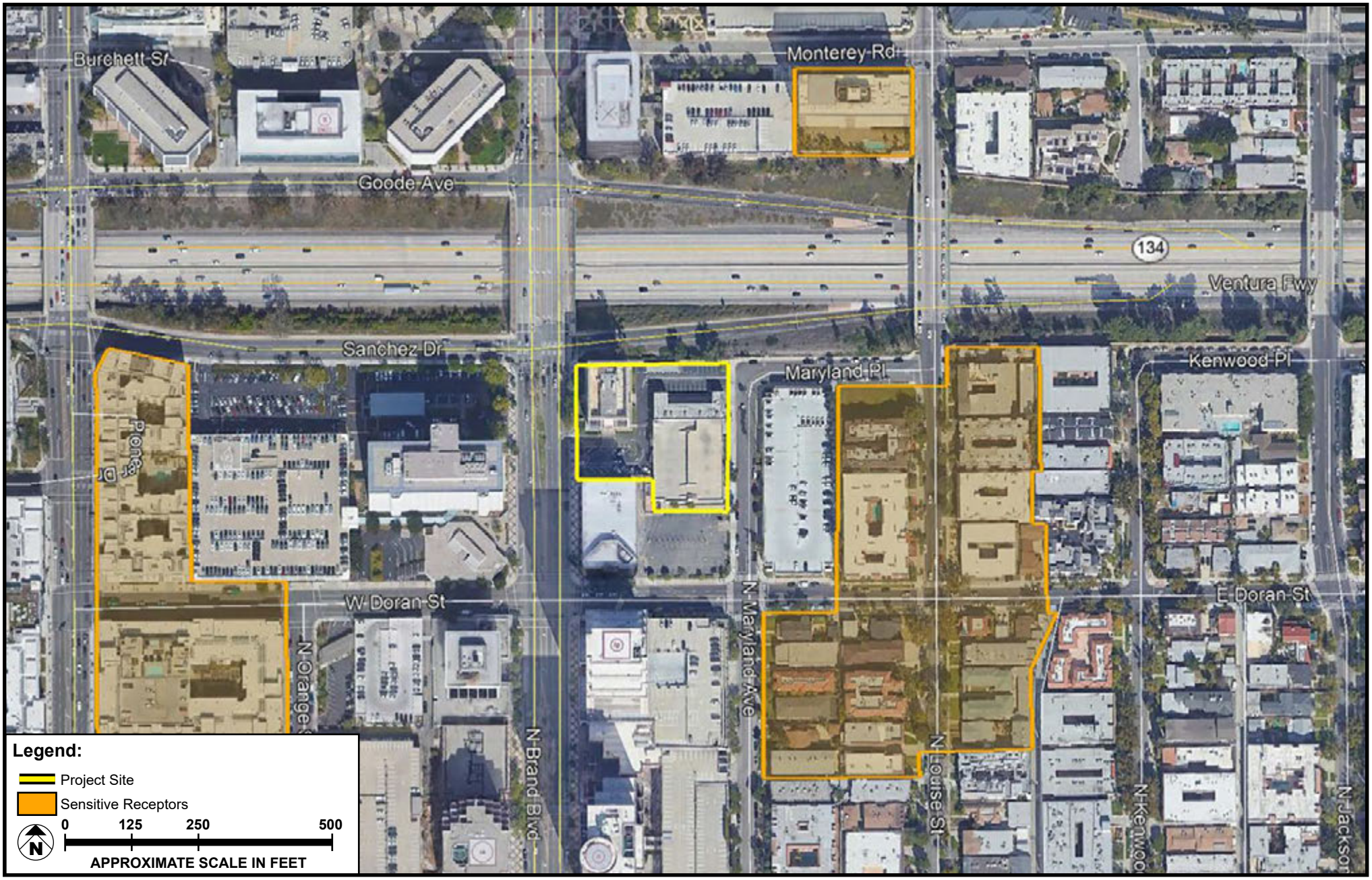
Moreover, the Project would comply with the GMC as it relates to construction equipment by ensuring that the operation of noise generating construction equipment would not occur between the hours of 7:00 PM on one day and 7:00 AM of the next day, or from 7:00 PM on Saturday to 7:00 AM on Monday, or from 7:00 PM preceding a holiday. Compliance with the above practices would ensure construction noise levels are reduced to the maximum extent feasible; thus, construction noise levels would not be considered significant.

TABLE 7
PROJECT CONSTRUCTION NOISE ESTIMATES

Noise Monitoring Site	Nearest Off Site Building Structures	Distance from Project Site (feet)	Max dBA (Leq 1hour)	Significance Threshold (dBA)	Exceeds Threshold?
Site 1	Commercial use adjacent to the Project site	10	98.9	100.0	No
Site 2	Multi-family residential uses along Maryland Place and Louise Street	205	73.7	90.0	No
Site 3	Multi-family residential uses along Doran Street and Maryland Avenue	195	74.2	90.0	No
Site 4	Multi-family residential uses on the corner of Sanchez Drive and Central Avenue	720	62.8	90.0	No

Source: RCNM Version 1.1

*Refer to **Appendix B** for construction noise work sheets.*



SOURCE: Google Earth - 2021

FIGURE **6**

Meridian Consultants

Sensitive Receptor Map

184-003-21

Off-Site Construction Noise

Construction of the Project would require worker, haul, and vendor truck trips to and from the site to work on the site, export demolition debris, and deliver supplies to the site. Trucks traveling to and from the Project site would be required to travel along a haul route approved by the City. At the maximum approximately 9,500 total hauling trips would take place during the grading phase, totaling to approximately 125 haul truck trips per workday. Haul truck traffic would take the most direct route to the freeway ramp, which includes the freeway ramp.

Noise associated with construction trips were estimated using the Caltrans FHWA Traffic Noise Model based on the maximum number of worker and hauling trips in a day. Project haul truck trips which includes medium- and heavy-duty trucks would generate noise levels of approximately 49.9 dBA and 57.1 dBA, respectively, measured at the nearest sensitive receptors along the haul route. As shown in **Table 4**, existing noise levels at the Project site ranged from 69.5 dBA to 71.4 dBA. The noise level increases from truck trips would be below the significance threshold of 5 dBA. As such, off-site construction noise impacts would not be considered significant.

Construction Vibration

As discussed previously, the existing Chase Building would remain on site as part of the Project. The Chase Building is a historical resource as defined by CEQA and appears to be eligible for listing in the National Register of Historic Places, California Register of Historical Resources, and Glendale Register of Historic Resources. As such, the Chase Building was included in the building damage analysis below using the Caltrans vibration threshold of 0.12 PPV for historic buildings.

Table 8: On-Site Construction Vibration Impacts-Building Damage and **Table 9: On-Site Construction Vibration Impacts-Human Annoyance** presents the construction vibration impacts associated with on-site construction in terms of building damage and human annoyance, respectively. It is important to note pile driving would not be required during construction. As shown in **Table 8**, the forecasted vibration levels due to on-site construction activities would not exceed the building damage significance threshold at the nearby residential receptors. However, vibration levels would exceed the building damage significance threshold at the on-site historical Chase Building for vibratory rollers, large bulldozers, caisson drilling, and loaded trucks. Implementation of **Mitigation Measure MM NOI-1** and **MM NOI-2** would require the Applicant to retain a vibration monitor to ensure construction-inducted vibration levels do not expose the existing Chase Building to vibration levels of 0.12 ppv in/sec or greater. Adherence to these measures would include a monitoring plan consisting of measures to reduce vibration levels, such as but not limited to utilizing quiet pile driving technology (auger displacement installation) to reduce friction thus making penetration for a large range of soils less vibration intensive. Therefore, impacts related to building damage from on-site construction vibration would not be considered significant.

As shown in **Table 9**, the forecasted vibration levels due to on-site construction activities would not exceed the human annoyance threshold for infrequent events of 80 VdB for the nearby residential receptors surrounding the Project area during construction. However, vibration levels would exceed the human annoyance threshold at the on-site historical Chase Building for vibratory rollers, large bulldozers,

caisson drilling, loaded trucks, and jackhammers. Implementation of **Mitigation Measure MM NOI-1** would also serve to reduce vibration levels which may result in human annoyance. As such, impacts related to human annoyance from on-site construction vibration would not be considered significant.

TABLE 8
ON SITE CONSTRUCTION VIBRATION IMPACTS BUILDING DAMAGE

Site	Building Structures	Estimated Vibration Velocity Levels at the Nearest Building Structures from the Project Construction Equipment						Significance Threshold (PPV ips)
		Vibratory Roller	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jackhammer	Small bulldozer	
FTA Reference Vibration Levels at 25 feet								
		0.210	*0.089*	*0.089*	*0.076*	*0.035*	*0.003*	
1	Chase Building (15 Feet)	0.452	0.191	0.191	0.164	0.075	0.006	0.12
2	Residential uses along Maryland Place (205 Feet)	0.009	0.004	0.004	0.003	0.001	0.000	0.2
3	Residential uses E. Doran Street and N. Maryland Avenue (195 Feet)	0.010	0.004	0.004	0.003	0.002	0.000	0.2
4	Residential uses along Sanchez Drive (2720 Feet)	0.001	0.001	0.001	0.000	0.000	0.000	0.2

Source: US Department of Transportation, Federal Transportation Authority, Transit Noise and Vibration Impact Assessment
*Note: Refer to **Attachment C** for construction vibration worksheets.*

Operation

Roadway Noise

Table 9: Off-Site Roadway Noise Levels—Existing Plus Project illustrates the change in AM and PM peak hour noise levels from existing traffic volumes and from traffic generated by the Project. The difference in traffic noise between existing conditions and existing plus Project conditions represents the increase in noise attributable to Project-related traffic. As shown in **Table 9**, the maximum noise level increases along the analyzed roadways would range from negligible changes at various roadway segments to a high of 1.1 dBA CNEL along Maryland Avenue north of Doran Street (Intersection 4). Project-related traffic would not cause noise levels along the analyzed roadways to increase by more than 3.0 dBA. Thus, the proposed Project would not result in a permanent increase in noise levels above ambient levels in the vicinity of the Project Site in excess of the City's Noise Element. As such, roadway noise under this scenario would not result in a significant noise level increase at sensitive receptors.

Fixed Mechanical Equipment Noise

The Project would introduce various stationary noise sources, including heating, ventilation, and air conditioning systems, which would be located either on the roof, the side of a structure, or on the ground. All Project mechanical equipment would be required to be designed with appropriate noise-control devices—such as sound attenuators, acoustics louvers, or sound screens/parapet walls—to comply with noise compatibility requirements provided in the GMC. The stationary equipment would be required to comply with GMC Section 30.34.070, which establishes low-sound intensities from mechanical equipment. Therefore, operation of mechanical equipment on the Project building would not exceed the City's threshold of significance.

MITIGATION MEASURES

MM NOI-1: Prior to approval of grading plans and/or prior to issuance of demolition, grading and building permits, and to the satisfaction of the City of Glendale, the applicant shall retain a Professional Structural Engineer with experience in structural vibration analysis and monitoring for historic buildings and a Project Historical Architect as a team to ensure project construction-induced vibration levels do not expose the existing Chase Building to vibration levels of 0.12 ppv in/sec or greater. The Structural Engineer/Project Historical Architect team shall perform the following tasks:

- Survey the Project Site and the existing Chase Building and prepare a report that includes but not limited to the following:
    - Description of existing conditions at the existing Chase Building;
    - Vibration level limits based on building conditions, soil conditions, and planned demolition and construction methods to ensure vibration levels would be below 0.12 ppv in/sec, the potential for damage to the existing Chase Building;
    - Specific measures to be taken during construction to ensure the specified vibration level limits are not exceeded; and
    - A monitoring plan to be implemented during demolition and construction that includes post-construction and post-demolition surveys of the existing Chase Building. The plan should include, but not limited to, monitoring instrument specifications, instrument calibration certificates, list of exact monitoring locations, data collection protocol, alarming and alerting protocol, reporting protocol, and maintenance and service outage protocol. Any of the measures can be removed when no longer necessary to achieve the 0.12 ppv in/sec threshold of structure damage at the existing Chase Building.
- Examples of measures that may be specified for implementation during demolition or construction include, but are not limited to:
    - Prohibition of certain types of impact equipment;
    - Requirement for lighter tracked or wheeled equipment;

- Specifying demolition by non-impact methods, such as sawing concrete;
- Phasing operations to avoid simultaneous vibration sources; and
- Installation of vibration measuring devices to guide decision making for subsequent activities. Monitoring shall be conducted, at minimum, during all ground-disturbing significant impact construction activities (i.e., demolition, shoring, excavation, and foundation work). Warning thresholds, as specified in the monitoring plan, shall be below the specified vibration limits to allow the Contractor to take the necessary steps to reduce vibration, including but not limited to halting/staggering concurrent activities, utilizing quieter or lower-vibratory techniques, or reducing the speed or intensity of equipment. A monitoring record that documents all alarms and includes information regarding compliance with these vibration measures shall be provided to the City upon request.

MM NOI-2: To the satisfaction of the City, in the unanticipated event of discovery of vibration-caused damage, the Structural Engineer and the Project Historical Architect shall document any damage to the existing Chase Building caused by construction of the project and shall recommend necessary repairs. Until the conclusion of vibration causing activities, a report from the Structural Engineer or Project Historical Architect shall be submitted monthly to the City of Glendale, documenting the presence or absence of damage, and, if needed, the status of any required repairs. The project applicant shall be responsible for any repairs associated with vibration-caused damage as a result of construction of the project. Any such repairs shall be undertaken and completed as required to conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 Code of Federal Regulations 68), and shall apply the California Historical Building Code (California Code of Regulations, Title 24, Part 8) and other applicable codes

CUMULATIVE NOISE

For purposes of this analysis, development of any related projects will be considered to contribute to cumulative noise impacts. Noise, by definition, is a localized phenomenon and drastically reduces as distance from the source increases. As a result, only related projects, and growth in the general area of the Project site (within 500 feet) would contribute to cumulative noise impacts. Cumulative construction-noise impacts have the potential to occur when multiple construction projects in the local area generate noise within the same time frame and contribute to the local ambient noise environment. It is expected that, as with the Project, any related projects would adhere to Section 8.36.290(K) of the GMC and implement noise reduction techniques such as mufflers, shields, sound barriers, which would minimize any noise-related nuisances during construction. In addition, distance attenuation and intervening structures would further reduce construction noise levels and not result in noticeable increases. Therefore, the combined construction-noise impacts of related projects within a 0.5 mile radius and the Project's contribution would not cause a significant cumulative impact.

TABLE 9
OFF SITE ROADWAY NOISE LEVELS EXISTING PLUS PROJECT

Intersection	Roadway Segment	Adjacent Land Use	Existing (dBA CNEL)	Existing plus Project (dBA CNEL)	Difference	Significant Impact?
1	North of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.1	53.1	0.0	**No**
	South of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.2	53.2	0.0	**No**
2	North of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	53.1	53.1	0.0	**No**
	South of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	54.2	54.2	0.0	**No**
3	North of Doran Street	Commercial	54.3	54.3	0.0	**No**
	South of Doran Street	Commercial	53.7	53.7	0.0	**No**
1	East of Brand Boulevard	Commercial	57.8	57.8	0.0	**No**
	West of Brand Boulevard	Commercial	52.3	52.3	0.0	**No**
2	East of Brand Boulevard	Commercial/Residential (Multi-family)	63.3	63.3	0.0	**No**
	West of Brand Boulevard	Commercial	60.5	60.5	0.0	**No**
Doran Street						
3	East of Brand Boulevard	Commercial/Residential	53.2	53.6	+0.4	**No**
	West of Brand Boulevard	Commercial/Residential	63.0	63.1	+0.1	**No**
4	East of Maryland Avenue	Residential (Multi-family)	61.3	61.3	0.0	**No**
	West of Maryland Avenue	Commercial	56.7	57.1	+0.4	**No**
6	East of Louise Street	Residential (Multi-family)	61.0	61.0	0.0	**No**
	West of Louise Street	Residential (Multi-family)	61.2	61.3	+0.1	**No**

TABLE 9
OFF SITE ROADWAY NOISE LEVELS EXISTING PLUS PROJECT

Intersection	Roadway Segment	Adjacent Land Use	Existing (dBA CNEL)	Existing plus Project (dBA CNEL)	Difference	Significant Impact?
Maryland Avenue						
4	North of Doran Street	Commercial	50.0	51.1	+1.1	**No**
	South of Doran Street	Commercial/Residential (Multi-family)	60.5	60.6	+0.1	**No**
Maryland Place						
5	East of Louise Street	N/A	N/A	N/A	N/A	**No**
	West of Louise Street	Residential/Commercial	51.7	51.9	+0.2	**No**
Louise Street						
5	North of Maryland Place	Residential (Multi-Family)	54.9	54.9	0.0	**No**
	South of Maryland Place	Residential (Multi-Family)	61.0	61.0	0.0	**No**
6	North of Doran Street	Residential (Multi-Family)	61.2	61.2	0.0	**No**
	South of Doran Street	Residential (Multi-Family)	60.3	60.3	0.0	**No**

Source: Linscott, Law, and Greenspan, Transportation Impact Analysis for the 606 N. Maryland Avenue Residential Project, June 22, 2021.
N/A = no data available.

*Roadway noise model results are provided in **Attachment D**.*

Roadway Noise

Table 10: Off-Site Roadway Traffic Noise Impacts—Cumulative plus Project illustrates the change in noise levels from cumulative conditions without the Project-related vehicular traffic to cumulative conditions with the Project. The cumulative scenario represents ambient traffic growth, related project traffic growth, and the Project's incremental contribution to cumulative traffic within the City. As shown in **Table 10**, the maximum noise level increases along the analyzed roadways would range from negligible changes at various roadway segments to a high of 1.0 dBA CNEL along Maryland Avenue north of Doran Street (Intersection 4). Project-related traffic would not cause noise levels along the analyzed roadways to increase by more than 3.0 dBA. Thus, the proposed Project would not result in a permanent increase in noise levels above ambient levels in the vicinity of the Project Site in excess of the City's Noise Element. As such, roadway noise under this scenario would not result in a significant noise level increase at sensitive receptors.

Stationary Noise

With regard to stationary sources, cumulative significant noise impacts may result from cumulative development. Stationary sources of noise that could be introduced in the area by cumulative projects could include mechanical equipment, loading docks, and parking lots. Noise levels within the proposed parking levels would fluctuate with the amount of automobile and human activity. It is anticipated that parking related noise would be similar to existing levels as the Project Site currently includes surface parking. As such, the parking levels within the residential building would not introduce a new source of noise in the Project vicinity. Given that these related projects would be required to adhere to the City's noise standards, all stationary sources would be required to have shielding or other noise-abatement measures so as not to cause a substantial increase in ambient noise levels. Moreover, due to distance, it is unlikely that noise from multiple cumulative projects would interact to create a significant combined noise impact. As such, it is not anticipated that a significant cumulative increase in permanent ambient noise levels would occur.

TABLE 10
OFF SITE ROADWAY NOISE LEVELS CUMULATIVE PLUS PROJECT

Intersection	Roadway Segment	Adjacent Land Use	Cumulative (dBA CNEL)	Cumulative plus Project (dBA CNEL)	Difference	Significant Impact?
Brand Boulevard						
1	North of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.8	53.8	0.0	**No**
	South of Goode Avenue (SR-134 WB Off-Ramp)	Commercial	53.9	54.0	+0.1	**No**
2	North of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	53.9	53.9	0.0	**No**
	South of Sanchez Drive (SR-134 EB On-Ramp)	Commercial	54.9	55.0	+0.1	**No**
3	North of Doran Street	Commercial	55.0	55.1	+0.1	**No**
	South of Doran Street	Commercial	54.5	54.5	0.0	**No**
Goode Avenue (SR-134 WB Off-Ramp)						
1	East of Brand Boulevard	Commercial	58.5	58.6	+0.1	**No**
	West of Brand Boulevard	Commercial	52.9	52.9	0.0	**No**
Sanchez Drive (SR-134 EB On-Ramp)						
2	East of Brand Boulevard	Commercial/Residential (Multi-family)	63.9	63.9	0.0	**No**
	West of Brand Boulevard	Commercial	61.1	61.1	0.0	**No**
Doran Street						
3	East of Brand Boulevard	Commercial/Residential	53.7	54.0	+0.3	**No**
	West of Brand Boulevard	Commercial/Residential	64.3	64.4	+0.1	**No**
4	East of Maryland Avenue	Residential (Multi-family)	61.8	61.8	0.0	**No**
	West of Maryland Avenue	Commercial	57.2	57.5	+0.3	**No**
6	East of Louise Street	Residential (Multi-family)	61.5	61.5	0.0	**No**
	West of Louise Street	Residential (Multi-family)	61.7	61.8	+0.1	**No**

TABLE 10
OFF SITE ROADWAY NOISE LEVELS CUMULATIVE PLUS PROJECT

Intersection	Roadway Segment	Adjacent Land Use	Cumulative (dBA CNEL)	Cumulative plus Project (dBA CNEL)	Difference	Significant Impact?
Maryland Avenue						
4	North of Doran Street	Commercial	50.4	51.4	+1.0	**No**
	South of Doran Street	Commercial/Residential (Multi-family)	60.9	60.9	0.0	**No**
Maryland Place						
5	East of Louise Street	N/A	N/A	N/A	N/A	**No**
	West of Louise Street	Residential/Commercial	52.0	52.2	+0.2	**No**
Louise Street						
5	North of Maryland Place	Residential (Multi-Family)	55.3	55.3	0.0	**No**
	South of Maryland Place	Residential (Multi-Family)	61.4	61.4	0.0	**No**
6	North of Doran Street	Residential (Multi-Family)	61.6	61.6	0.0	**No**
	South of Doran Street	Residential (Multi-Family)	60.7	60.7	0.0	**No**

Source: Linscott, Law, and Greenspan, Transportation Impact Analysis for the 606 N. Maryland Avenue Residential Project, June 22, 2021.
N/A = no data available.

*Roadway noise model results are provided in **Attachment D**.*

CERTIFICATION

The contents of this noise study represent an accurate depiction of the noise environment and impacts associated with the proposed Lucia Park Project. The information contained in this noise study is based on the best available information at the time of preparation. If you have any questions, please contact me directly at (805) 413-4187.

Christ Kirikian, INCE Associate
Principal, Director of Air Quality & Acoustics
ckirikian@meridianconsultantsllc.com

Attachment A

Noise Monitoring Data Sheets

Monitoring Location: Site 1
Monitoring Date: 08/16/2021

Monitoring Period

Time	LAeq	LASmax	LASmin
13:06:33	66.4	72.5	61.6
13:07:33	72.1	81.4	60.9
13:08:33	67.8	74.7	60.4
13:09:33	68.1	73.6	60.8
13:10:33	74.5	87.4	60.7
13:11:33	64.7	68.0	60.7
13:12:33	76.6	92.8	61.1
13:13:33	65.4	71.0	63.1
13:14:33	73.2	84.9	62.8
13:15:33	68.0	76.1	61.9
13:16:33	70.3	70.9	70.6

15-minute LAeq **71.4**

Monitoring Location: Site 2
Monitoring Date: 08/16/2021

Monitoring Period

Time	LAeq	LASmax	LASmin
13:18:07	69.8	71.0	68.7
13:19:07	69.6	72.4	66.0
13:20:07	68.4	69.9	66.2
13:21:07	69.6	74.2	67.6
13:22:07	69.7	71.8	67.6
13:23:07	69.9	71.1	68.1
13:24:07	69.8	71.7	68.0
13:25:07	70.1	73.9	68.0
13:26:07	69.9	72.3	68.7
13:27:07	69.0	72.6	67.1
13:28:07	68.8	68.5	68.1

15-minute LAeq **69.5**

Monitoring Location: Site 3
Monitoring Date: 08/16/2021

Monitoring Period

Time	LAeq	LASmax	LASmin
13:30:20	70.6	82.3	57.8
13:31:20	62.5	70.1	54.6
13:32:20	63.1	70.1	54.9
13:33:20	62.5	70.8	53.8
13:34:20	60.2	65.7	54.3
13:35:20	61.9	67.3	56.0
13:36:20	64.3	74.7	54.2
13:37:20	61.5	67.2	55.8
13:38:20	62.7	67.0	57.2
13:39:20	61.0	67.5	54.0
13:40:20	55.8	55.6	55.5

15-minute LAeq **63.9**

Monitoring Location: Site 4
Monitoring Date: 08/16/2021

Monitoring Period

Time	LAeq	LASmax	LASmin
13:48:04	72.2	76.5	68.4
13:49:04	70.5	74.9	66.7
13:50:04	71.6	74.9	68.7
13:51:04	70.4	76.9	67.5
13:52:04	71.9	74.9	68.4
13:53:04	72.3	79.1	68.7
13:54:04	72.4	77.7	68.9
13:55:04	71.8	74.8	69.6
13:56:04	71.5	77.0	67.6
13:57:04	72.4	76.8	69.0
13:58:04	69.9	70.2	69.8

15-minute LAeq **71.6**

Attachment B

Construction Noise Worksheet

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Descı Demolition

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	205	0
Dozer	No	40		81.7	205	0
Tractor	No	40	84		205	0
Backhoe	No	40		77.6	205	0
Front End Loader	No	40		79.1	205	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	77.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.7	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66.9	62.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.3	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	195	0
Dozer	No	40		81.7	195	0
Tractor	No	40	84		195	0
Backhoe	No	40		77.6	195	0
Front End Loader	No	40		79.1	195	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	77.8	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	72.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.7	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	67.3	63.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.8	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	720	0
Dozer	No	40		81.7	720	0
Tractor	No	40	84		720	0
Backhoe	No	40		77.6	720	0
Front End Loader	No	40		79.1	720	0

	Calculated (dBA)		Results											
			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	66.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	60.8	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	55.9	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.4	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Descı Grading

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		205	0
Dozer	No	40		81.7	205	0
Backhoe	No	40		77.6	205	0
Tractor	No	40	84		205	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	72.7	68.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.7	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.7	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		195	0
Dozer	No	40		81.7	195	0
Backhoe	No	40		77.6	195	0
Tractor	No	40	84		195	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	73.2	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.7	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	72.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.2	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		720	0
Dozer	No	40		81.7	720	0
Backhoe	No	40		77.6	720	0
Tractor	No	40	84		720	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq

Grader		61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		54.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		60.8	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	61.8	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Descı Building Construction

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	205	0
Forklift	No	40		85	205	0
Generator	No	50		80.6	205	0
Backhoe	No	40		77.6	205	0
Welder / Torch	No	40		74	205	0
Welder / Torch	No	40		74	205	0
Welder / Torch	No	40		74	205	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	68.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	72.7	68.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	68.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	61.7	57.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	61.7	57.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	61.7	57.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.7	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	195	0
Forklift	No	40		85	195	0
Generator	No	50		80.6	195	0
Backhoe	No	40		77.6	195	0
Welder / Torch	No	40		74	195	0
Welder / Torch	No	40		74	195	0
Welder / Torch	No	40		74	195	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	68.7	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	73.2	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	68.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.7	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.2	72.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	720	0
Forklift	No	40		85	720	0
Generator	No	50		80.6	720	0
Backhoe	No	40		77.6	720	0
Welder / Torch	No	40		74	720	0
Welder / Torch	No	40		74	720	0
Welder / Torch	No	40		74	720	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	57.4	49.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift	61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	57.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	50.8	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	50.8	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	50.8	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.8	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Descı Paving

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80	205	0
Paver	No	50		77.2	205	0
Paver	No	50		77.2	205	0
Roller	No	20		80	205	0
Backhoe	No	40		77.6	205	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Drum Mixer	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	65	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	65	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	67.7	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80	195	0
Paver	No	50		77.2	195	0
Paver	No	50		77.2	195	0
Roller	No	20		80	195	0
Backhoe	No	40		77.6	195	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Drum Mixer	68.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	65.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	65.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	68.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.7	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.2	69.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80	720	0
Paver	No	50		77.2	720	0
Paver	No	50		77.2	720	0
Roller	No	20		80	720	0
Backhoe	No	40		77.6	720	0

	Calculated (dBA)		Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Drum Mixer	56.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.1	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.1	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	56.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.8	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Descr Architectural Coating

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	205	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	195	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	65.8	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.8	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	720	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	54.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Attachment C

Construction Vibration Worksheet

Meridian Consultants LLC

Lucia Park Project
Construction Vibration Model
(205 feet)

Rev: 11-12-2012

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	205	0.004	0.001	60
Jackhammer		1	0.035	205	0.001	0.000	51
Large bulldozer		1	0.089	205	0.004	0.001	60
Loaded trucks		1	0.076	205	0.003	0.001	58
Pile Drive (impact)		1	0.644	205	0.027	0.007	77
Vibratory Roller		1	0.210	205	0.009	0.002	67
Small bulldozer		1	0.003	205	0.000	0.000	30

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Meridian Consultants LLC

Lucia Park Project
Construction Vibration Model
(195 feet)

Rev: 11/12/2012

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	195	0.004	0.001	60
Jackhammer		1	0.035	195	0.002	0.000	52
Large bulldozer		1	0.089	195	0.004	0.001	60
Loaded trucks		1	0.076	195	0.003	0.001	59
Pile Drive (impact)		1	0.644	195	0.030	0.007	77
Vibratory Roller		1	0.210	195	0.010	0.002	68
Small bulldozer		1	0.003	195	0.000	0.000	31

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Meridian Consultants LLC

Lucia Park Project
Construction Vibration Model
(720 feet)

Rev: 11-12-2012

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	720	0.001	0.000	43
Jackhammer		1	0.035	720	0.000	0.000	35
Large bulldozer		1	0.089	720	0.001	0.000	43
Loaded trucks		1	0.076	720	0.000	0.000	42
Pile Drive (impact)		1	0.644	720	0.004	0.001	60
Vibratory Roller		1	0.210	720	0.001	0.000	51
Small bulldozer		1	0.003	720	0.000	0.000	14

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), May 2006, pg. 12-12.**

-Fragile Buildings- 0.20 in/sec

Attachment D

Roadway Noise Worksheets

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 1
Brand Boulevard / Goode Avenue - SR-134 WB Off-Ramp

rev. (Date)

Brand Boulevard

Southbound

	right	through	left
Existing Traffic AM	255	827	0
Existing Traffic PM	214	848	0
Existing Traffic + Project AM	255	828	0
Existing Traffic + Project PM	214	854	0
Future Cumulative Baseline AM	285	959	0
Future Cumulative Baseline PM	244	1,013	0
Future Cumulative + Project AM	285	960	0
Future Cumulative + Project PM	244	1,019	0
Net New Project Trips AM	0	1	0
Net New Project Trips PM	0	6	0

N
W E
S

Northbound

	left	through	right
Existing Traffic AM	263	502	0
Existing Traffic PM	451	526	0
Existing Traffic + Project AM	273	507	0
Existing Traffic + Project PM	456	525	0
Future Cumulative Baseline AM	287	627	0
Future Cumulative Baseline PM	490	650	0
Future Cumulative + Project AM	297	632	0
Future Cumulative + Project PM	495	649	0
Net New Project Trips AM	10	5	0
Net New Project Trips PM	5	-1	0

Goode Avenue - SR

Eastbound

	left	through	right
Existing Traffic AM	0	0	0
Existing Traffic PM	0	0	0
Existing Traffic + Project AM	0	0	0
Existing Traffic + Project PM	0	0	0
Future Cumulative Baseline AM	0	0	0
Future Cumulative Baseline PM	0	0	0
Future Cumulative + Project AM	0	0	0
Future Cumulative + Project PM	0	0	0
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

Westbound

	right	through	left
Existing Traffic AM	555	328	798
Existing Traffic PM	508	334	531
Existing Traffic + Project AM	555	328	801
Existing Traffic + Project PM	508	334	541
Future Cumulative Baseline AM	614	375	912
Future Cumulative Baseline PM	561	406	654
Future Cumulative + Project AM	614	375	915
Future Cumulative + Project PM	561	406	664
Net New Project Trips AM	0	0	3
Net New Project Trips PM	0	0	10

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

ADT

Road	Brand Boulevard		Goode Avenue - SR-134 WB Off-Ran	
Leg	North of	South of	East of	West of
Cross Street	Goode Avenue - SR-134 WB Off-Ran		Brand Boulevard	
Existing Traffic AM	17,112.0	19,120.0	13,448.0	6,768.0
Existing Traffic PM	16,768.0	18,848.0	10,984.0	7,992.0
Existing Traffic + Project AM	17,160.0	19,272.0	13,472.0	6,848.0
Existing Traffic + Project PM	16,808.0	19,008.0	11,064.0	8,032.0
Future Cumulative Baseline AM	19,880.0	22,280.0	15,208.0	7,576.0
Future Cumulative Baseline PM	19,744.0	22,456.0	12,968.0	9,120.0
Future Cumulative + Project AM	19,928.0	22,432.0	15,232.0	7,656.0
Future Cumulative + Project PM	19,784.0	22,616.0	13,048.0	9,160.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level A	Dist Adj	Ld A	Ld MT	Ld HT	Ld Total	Le A	Le MT	Le HT	Le Total	Ln A	Ln MT	Ln HT	Ln Total
Brand Boulevard n/o Goode Avenue – SR-134																																	
Existing Traffic AM		4	12	17,112	25	470	0	0	1.8%	0.7%	53.2	####	####	####	269	107	16	3	23	10	59.4	71.1	78.7	-9.8	50.7	45.5	49.1	53.7	47.7	37.9	39.0	48.6	34.5	36.1	39.9	42.2
Existing Traffic PM		4	12	16,768	25	470	0	0	1.8%	0.7%	53.1	####	####	####	264	105	15	3	23	9	59.4	71.1	78.7	-9.8	50.6	45.4	49.1	53.6	47.6	37.8	38.9	48.5	34.4	36.0	39.8	42.1
Existing Traffic + Project AM		4	12	17,160	25	470	0	0	1.8%	0.7%	53.2	####	####	####	270	107	16	3	23	10	59.4	71.1	78.7	-9.8	50.7	45.5	49.2	53.7	47.7	37.9	39.0	48.6	34.5	36.1	39.9	42.2
Existing Traffic + Project PM		4	12	16,808	25	470	0	0	1.8%	0.7%	53.1	####	####	####	265	105	15	3	23	9	59.4	71.1	78.7	-9.8	50.6	45.4	49.1	53.6	47.6	37.8	38.9	48.6	34.4	36.0	39.8	42.1
Future Cumulative Baseline AM		4	12	19,880	25	470	0	0	1.8%	0.7%	53.8	####	####	####	313	124	18	4	27	11	59.4	71.1	78.7	-9.8	51.3	46.2	49.8	54.4	48.3	38.6	39.6	49.3	35.2	36.7	40.6	42.9
Future Cumulative Baseline PM		4	12	19,744	25	470	0	0	1.8%	0.7%	53.8	####	####	####	311	123	18	4	27	11	59.4	71.1	78.7	-9.8	51.3	46.1	49.8	54.3	48.3	38.5	39.6	49.2	35.1	36.7	40.5	42.8
Future Cumulative + Project AM		4	12	19,928	25	470	0	0	1.8%	0.7%	53.9	####	####	####	314	124	18	4	27	11	59.4	71.1	78.7	-9.8	51.3	46.2	49.8	54.4	48.4	38.6	39.6	49.3	35.2	36.7	40.6	42.9
Future Cumulative + Project PM		4	12	19,784	25	470	0	0	1.8%	0.7%	53.8	####	####	####	311	123	18	4	27	11	59.4	71.1	78.7	-9.8	51.3	46.1	49.8	54.3	48.3	38.6	39.6	49.3	35.1	36.7	40.5	42.8
Brand Boulevard s/o Goode Avenue – SR-134																																	
Existing Traffic AM		5	0	19,120	25	520	0	0	1.8%	0.7%	53.2	####	####	####	301	119	17	4	26	11	59.4	71.1	78.7	-10.2	50.7	45.6	49.2	53.7	47.7	38.0	39.0	48.7	34.5	36.1	40.0	42.3
Existing Traffic PM		5	0	18,848	25	520	0	0	1.8%	0.7%	53.2	####	####	####	297	118	17	4	26	11	59.4	71.1	78.7	-10.2	50.7	45.5	49.1	53.7	47.7	37.9	39.0	48.6	34.5	36.0	39.9	42.2
Existing Traffic + Project AM		5	0	19,272	25	520	0	0	1.8%	0.7%	53.3	####	####	####	303	120	18	4	26	11	59.4	71.1	78.7	-10.2	50.8	45.6	49.2	53.8	47.8	38.0	39.1	48.7	34.6	36.1	40.0	42.3
Existing Traffic + Project PM		5	0	19,008	25	520	0	0	1.8%	0.7%	53.2	####	####	####	299	119	17	4	26	11	59.4	71.1	78.7	-10.2	50.7	45.5	49.2	53.7	47.7	37.9	39.0	48.6	34.5	36.1	39.9	42.2
Future Cumulative Baseline AM		5	0	22,280	25	520	0	0	1.8%	0.7%	53.9	####	####	####	351	139	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.2	49.9	54.4	48.4	38.6	39.7	49.3	35.2	36.8	40.6	42.9
Future Cumulative Baseline PM		5	0	22,456	25	520	0	0	1.8%	0.7%	53.9	####	####	####	353	140	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.3	49.9	54.4	48.4	38.7	39.7	49.4	35.2	36.8	40.6	43.0
Future Cumulative + Project AM		5	0	22,432	25	520	0	0	1.8%	0.7%	53.9	####	####	####	353	140	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.2	49.9	54.4	48.4	38.7	39.7	49.4	35.2	36.8	40.6	42.9
Future Cumulative + Project PM		5	0	22,616	25	520	0	0	1.8%	0.7%	54.0	####	####	####	356	141	21	4	31	13	59.4	71.1	78.7	-10.2	51.4	46.3	49.9	54.5	48.5	38.7	39.8	49.4	35.3	36.8	40.7	43.0
Goode Avenue – SR-134 WB Off-Ramp e/o																																	
Existing Traffic AM		2	0	13,448	60	104	0	0	1.8%	0.7%	67.0	####	####	####	212	84	12	3	18	8	74.2	80.8	84.5	-3.2	67.1	56.9	56.6	67.9	64.2	49.4	46.5	64.4	51.0	47.5	47.4	53.7
Existing Traffic PM		2	0	10,984	60	104	0	0	1.8%	0.7%	66.1	####	####	####	173	69	10	2	15	6	74.2	80.8	84.5	-3.2	66.3	56.1	55.8	67.0	63.3	48.5	45.6	63.5	50.1	46.6	46.5	52.8
Existing Traffic + Project AM		2	0	13,472	60	104	0	0	1.8%	0.7%	67.0	####	####	####	212	84	12	3	18	8	74.2	80.8	84.5	-3.2	67.1	57.0	56.7	67.9	64.2	49.4	46.5	64.4	51.0	47.5	47.4	53.7
Existing Traffic + Project PM		2	0	11,064	60	104	0	0	1.8%	0.7%	66.2	####	####	####	174	69	10	2	15	6	74.2	80.8	84.5	-3.2	66.3	56.1	55.8	67.0	63.3	48.5	45.6	63.5	50.1	46.6	46.6	52.9
Future Cumulative Baseline AM		2	0	15,208	60	104	0	0	1.8%	0.7%	67.5	####	####	####	239	95	14	3	21	9	74.2	80.8	84.5	-3.2	67.7	57.5	57.2	68.4	64.7	49.9	47.0	64.9	51.5	48.0	47.9	54.3
Future Cumulative Baseline PM		2	0	12,968	60	104	0	0	1.8%	0.7%	66.9	####	####	####	204	81	12	3	18	7	74.2	80.8	84.5	-3.2	67.0	56.8	56.5	67.7	64.0	49.2	46.3	64.2	50.8	47.3	47.3	53.6
Future Cumulative + Project AM		2	0	15,232	60	104	0	0	1.8%	0.7%	67.6	####	####	####	240	95	14	3	21	9	74.2	80.8	84.5	-3.2	67.7	57.5	57.2	68.4	64.7	49.9	47.0	64.9	51.5	48.0	48.0	54.3
Future Cumulative + Project PM		2	0	13,048	60	104	0	0	1.8%	0.7%	66.9	####	####	####	205	81	12	3	18	7	74.2	80.8	84.5	-3.2	67.0	56.8	56.5	67.7	64.0	49.2	46.4	64.2	50.8	47.4	47.3	53.6
Goode Avenue – SR-134 WB Off-Ramp w/o																																	
Existing Traffic AM		2	0	6,768	40	270	0	0	1.8%	0.7%	55.5	####	860	650	107	42	6	1	9	4	67.4	76.3	81.2	-7.4	54.9	47.1	47.9	56.3	51.9	39.5	37.7	52.3	38.8	37.6	38.7	43.1
Existing Traffic PM		2	0	7,992	40	270	0	0	1.8%	0.7%	56.2	####	####	767	126	50	7	2	11	5	67.4	76.3	81.2	-7.4	55.6	47.8	48.6	57.0	52.7	40.2	38.5	53.1	39.5	38.3	39.4	43.9
Existing Traffic + Project AM		2	0	6,848	40	270	0	0	1.8%	0.7%	55.6	####	870	657	108	43	6	1	9	4	67.4	76.3	81.2	-7.4	55.0	47.1	47.9	56.3	52.0	39.5	37.8	52.4	38.8	37.7	38.7	43.2
Existing Traffic + Project PM		2	0	8,032	40	270	0	0	1.8%	0.7%	56.3	####	####	771	126	50	7	2	11	5	67.4	76.3	81.2	-7.4	55.7	47.8	48.6	57.0	52.7	40.2	38.5	53.1	39.5	38.4	39.4	43.9
Future Cumulative Baseline AM		2	0	7,576	40	270	0	0	1.8%	0.7%	56.0	####	962	727	119	47	7	2	10	4	67.4	76.3	81.2	-7.4	55.4	47.6	48.4	56.8	52.4	40.0	38.2	52.8	39.2	38.1	39.2	43.6
Future Cumulative Baseline PM		2	0	9,120	40	270	0	0	1.8%	0.7%	56.8	####	####	876	144	57	8	2	12	5	67.4	76.3	81.2	-7.4	56.2	48.4	49.2	57.6	53.2	40.8	39.0	53.6	40.0	38.9	40.0	44.4
Future Cumulative + Project AM		2	0	7,656	40	270	0	0	1.8%	0.7%	56.1	####	972	735	120	48	7	2	10	4	67.4	76.3	81.2	-7.4	55.5	47.6	48.4	56.8	52.5	40.0	38.3	52.9	39.3	38.2	39.2	43.7
Future Cumulative + Project PM		2	0	9,160	40	270	0	0	1.8%	0.7%	56.8	####	####	879	144	57	8	2	12	5	67.4	76.3	81.2	-7.4	56.2	48.4	49.2	57.6	53.3	40.8	39.0	53.7	40.1	38.9	40.0	44.5

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 2
Brand Boulevard / Sanchez Drive - SR-134 EB On-Ramp

rev. (Date)

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Brand Boulevard

Southbound

	right	through	left
Existing Traffic AM	0	1,188	445
Existing Traffic PM	0	940	425
Existing Traffic + Project AM	0	1,192	445
Existing Traffic + Project PM	0	956	425
Future Cumulative Baseline AM	0	1,388	491
Future Cumulative Baseline PM	0	1,180	472
Future Cumulative + Project AM	0	1,392	491
Future Cumulative + Project PM	0	1,196	472
Net New Project Trips AM	0	4	0
Net New Project Trips PM	0	16	0

Eastbound

	left	through	right
Existing Traffic AM	265	333	433
Existing Traffic PM	98	486	264
Existing Traffic + Project AM	265	333	434
Existing Traffic + Project PM	98	486	268
Future Cumulative Baseline AM	300	401	471
Future Cumulative Baseline PM	117	557	289
Future Cumulative + Project AM	300	401	472
Future Cumulative + Project PM	117	557	293
Net New Project Trips AM	0	0	1
Net New Project Trips PM	0	0	4

Sanchez Drive - SR-134 EB On-Ramp

N

W E

S

Northbound

	left	through	right
Existing Traffic AM	0	470	285
Existing Traffic PM	0	859	612
Existing Traffic + Project AM	0	485	295
Existing Traffic + Project PM	0	863	617
Future Cumulative Baseline AM	0	581	369
Future Cumulative Baseline PM	0	1,001	724
Future Cumulative + Project AM	0	596	379
Future Cumulative + Project PM	0	1,005	729
Net New Project Trips AM	0	15	10
Net New Project Trips PM	0	4	5

Westbound

	right	through	left
Existing Traffic AM	0	0	0
Existing Traffic PM	0	0	0
Existing Traffic + Project AM	0	0	0
Existing Traffic + Project PM	0	0	0
Future Cumulative Baseline AM	0	0	0
Future Cumulative Baseline PM	0	0	0
Future Cumulative + Project AM	0	0	0
Future Cumulative + Project PM	0	0	0
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

ADT

Road	Brand Boulevard		Sanchez Drive - SR-134 EB On-Ram	
Leg	North of	South of	East of	West of
Cross Street	Sanchez Drive - SR-134 EB On-Ram		Brand Boulevard	
Existing Traffic AM	18,944.0	19,008.0	8,504.0	8,248.0
Existing Traffic PM	18,576.0	21,400.0	12,184.0	6,784.0
Existing Traffic + Project AM	19,096.0	19,248.0	8,584.0	8,256.0
Existing Traffic + Project PM	18,736.0	21,632.0	12,224.0	6,816.0
Future Cumulative Baseline AM	22,080.0	22,472.0	10,088.0	9,376.0
Future Cumulative Baseline PM	22,160.0	25,552.0	14,024.0	7,704.0
Future Cumulative + Project AM	22,232.0	22,712.0	10,168.0	9,384.0
Future Cumulative + Project PM	22,320.0	25,784.0	14,064.0	7,736.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level A	Dist Adj	Ld A	Ld MT	Ld HT	Ld Total	Le A	Le MT	Le HT	Le Total	Ln A	Ln MT	Ln HT	Ln Total
Brand Boulevard n/o Sanchez Drive – SR-134																																		
Existing Traffic AM		5	0	18,944	25	520	0	0	1.8%	0.7%	53.2	####	####	####	298	118	17	4	26	11	59.4	71.1	78.7	-10.2	50.7	45.5	49.1	53.7	47.7	37.9	39.0	48.6	34.5	36.1	39.9	42.2
Existing Traffic PM		5	0	18,576	25	520	0	0	1.8%	0.7%	53.1	####	####	####	292	116	17	4	25	10	59.4	71.1	78.7	-10.2	50.6	45.4	49.1	53.6	47.6	37.8	38.9	48.5	34.4	36.0	39.8	42.1
Existing Traffic + Project AM		5	0	19,096	25	520	0	0	1.8%	0.7%	53.2	####	####	####	301	119	17	4	26	11	59.4	71.1	78.7	-10.2	50.7	45.5	49.2	53.7	47.7	38.0	39.0	48.7	34.5	36.1	39.9	42.2
Existing Traffic + Project PM		5	0	18,736	25	520	0	0	1.8%	0.7%	53.1	####	####	####	295	117	17	4	25	11	59.4	71.1	78.7	-10.2	50.6	45.5	49.1	53.7	47.6	37.9	38.9	48.6	34.5	36.0	39.9	42.2
Future Cumulative Baseline AM		5	0	22,080	25	520	0	0	1.8%	0.7%	53.9	####	####	####	347	138	20	4	30	12	59.4	71.1	78.7	-10.2	51.3	46.2	49.8	54.4	48.4	38.6	39.6	49.3	35.2	36.7	40.6	42.9
Future Cumulative Baseline PM		5	0	22,160	25	520	0	0	1.8%	0.7%	53.9	####	####	####	349	138	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.2	49.8	54.4	48.4	38.6	39.7	49.3	35.2	36.7	40.6	42.9
Future Cumulative + Project AM		5	0	22,232	25	520	0	0	1.8%	0.7%	53.9	####	####	####	350	139	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.2	49.8	54.4	48.4	38.6	39.7	49.3	35.2	36.8	40.6	42.9
Future Cumulative + Project PM		5	0	22,320	25	520	0	0	1.8%	0.7%	53.9	####	####	####	351	139	20	4	30	13	59.4	71.1	78.7	-10.2	51.4	46.2	49.9	54.4	48.4	38.6	39.7	49.3	35.2	36.8	40.6	42.9
Brand Boulevard s/o Sanchez Drive – SR-134																																		
Existing Traffic AM		5	17	19,008	25	470	0	0	1.8%	0.7%	53.7	####	####	####	299	119	17	4	26	11	59.4	71.1	78.7	-9.8	51.1	46.0	49.6	54.2	48.2	38.4	39.4	49.1	35.0	36.5	40.4	42.7
Existing Traffic PM		5	17	21,400	25	470	0	0	1.8%	0.7%	54.2	####	####	####	337	133	19	4	29	12	59.4	71.1	78.7	-9.8	51.6	46.5	50.1	54.7	48.7	38.9	40.0	49.6	35.5	37.0	40.9	43.2
Existing Traffic + Project AM		5	17	19,248	25	470	0	0	1.8%	0.7%	53.7	####	####	####	303	120	17	4	26	11	59.4	71.1	78.7	-9.8	51.2	46.0	49.7	54.2	48.2	38.4	39.5	49.1	35.0	36.6	40.4	42.7
Existing Traffic + Project PM		5	17	21,632	25	470	0	0	1.8%	0.7%	54.2	####	####	####	340	135	20	4	29	12	59.4	71.1	78.7	-9.8	51.7	46.5	50.2	54.7	48.7	39.0	40.0	49.7	35.5	37.1	40.9	43.2
Future Cumulative Baseline AM		5	17	22,472	25	470	0	0	1.8%	0.7%	54.4	####	####	####	354	140	20	4	30	13	59.4	71.1	78.7	-9.8	51.9	46.7	50.3	54.9	48.9	39.1	40.2	49.8	35.7	37.2	41.1	43.4
Future Cumulative Baseline PM		5	17	25,552	25	470	0	0	1.8%	0.7%	54.9	####	####	####	402	159	23	5	35	14	59.4	71.1	78.7	-9.8	52.4	47.3	50.9	55.4	49.4	39.7	40.7	50.4	36.2	37.8	41.7	44.0
Future Cumulative + Project AM		5	17	22,712	25	470	0	0	1.8%	0.7%	54.4	####	####	####	357	142	21	5	31	13	59.4	71.1	78.7	-9.8	51.9	46.7	50.4	54.9	48.9	39.2	40.2	49.9	35.7	37.3	41.1	43.4
Future Cumulative + Project PM		5	17	25,784	25	470	0	0	1.8%	0.7%	55.0	####	####	####	406	161	23	5	35	15	59.4	71.1	78.7	-9.8	52.5	47.3	50.9	55.5	49.5	39.7	40.8	50.4	36.3	37.8	41.7	44.0
Sanchez Drive – SR-134 EB On-Ramp e/o																																		
Existing Traffic AM		3	0	8,504	60	195	0	0	1.8%	0.7%	62.3	####	####	816	134	53	8	2	12	5	74.2	80.8	84.5	-6.0	62.4	52.2	51.9	63.1	59.4	44.6	41.8	59.6	46.2	42.8	42.7	49.0
Existing Traffic PM		3	0	12,184	60	195	0	0	1.8%	0.7%	63.9	####	####	####	192	76	11	2	16	7	74.2	80.8	84.5	-6.0	64.0	53.8	53.5	64.7	61.0	46.2	43.3	61.2	47.8	44.3	44.3	50.6
Existing Traffic + Project AM		3	0	8,584	60	195	0	0	1.8%	0.7%	62.3	####	####	824	135	54	8	2	12	5	74.2	80.8	84.5	-6.0	62.5	52.3	52.0	63.2	59.5	44.7	41.8	59.7	46.3	42.8	42.7	49.0
Existing Traffic + Project PM		3	0	12,224	60	195	0	0	1.8%	0.7%	63.9	####	####	####	192	76	11	2	17	7	74.2	80.8	84.5	-6.0	64.0	53.8	53.5	64.7	61.0	46.2	43.3	61.2	47.8	44.4	44.3	50.6
Future Cumulative Baseline AM		3	0	10,088	60	195	0	0	1.8%	0.7%	63.0	####	####	968	159	63	9	2	14	6	74.2	80.8	84.5	-6.0	63.2	53.0	52.7	63.9	60.2	45.4	42.5	60.4	47.0	43.5	43.4	49.7
Future Cumulative Baseline PM		3	0	14,024	60	195	0	0	1.8%	0.7%	64.5	####	####	####	221	87	13	3	19	8	74.2	80.8	84.5	-6.0	64.6	54.4	54.1	65.3	61.6	46.8	43.9	61.8	48.4	44.9	44.9	51.2
Future Cumulative + Project AM		3	0	10,168	60	195	0	0	1.8%	0.7%	63.1	####	####	976	160	63	9	2	14	6	74.2	80.8	84.5	-6.0	63.2	53.0	52.7	63.9	60.2	45.4	42.5	60.4	47.0	43.6	43.5	49.8
Future Cumulative + Project PM		3	0	14,064	60	195	0	0	1.8%	0.7%	64.5	####	####	####	221	88	13	3	19	8	74.2	80.8	84.5	-6.0	64.6	54.4	54.1	65.3	61.6	46.8	43.9	61.8	48.4	45.0	44.9	51.2
Sanchez Drive – SR-134 EB On-Ramp w/o																																		
Existing Traffic AM		2	0	8,248	60	35	0	0	1.8%	0.7%	69.7	####	####	792	130	51	7	2	11	5	74.2	80.8	84.5	1.5	69.8	59.6	59.3	70.5	66.8	52.0	49.1	67.0	53.6	50.2	50.1	56.4
Existing Traffic PM		2	0	6,784	60	35	0	0	1.8%	0.7%	68.8	####	862	651	107	42	6	1	9	4	74.2	80.8	84.5	1.5	68.9	58.8	58.5	69.7	66.0	51.2	48.3	66.2	52.8	49.3	49.2	55.5
Existing Traffic + Project AM		2	0	8,256	60	35	0	0	1.8%	0.7%	69.7	####	####	793	130	51	8	2	11	5	74.2	80.8	84.5	1.5	69.8	59.6	59.3	70.5	66.8	52.0	49.2	67.0	53.6	50.2	50.1	56.4
Existing Traffic + Project PM		2	0	6,816	60	35	0	0	1.8%	0.7%	68.8	####	866	654	107	43	6	1	9	4	74.2	80.8	84.5	1.5	69.0	58.8	58.5	69.7	66.0	51.2	48.3	66.2	52.8	49.3	49.2	55.6
Future Cumulative Baseline AM		2	0	9,376	60	35	0	0	1.8%	0.7%	70.2	####	####	900	148	58	9	2	13	5	74.2	80.8	84.5	1.5	70.4	60.2	59.9	71.1	67.4	52.6	49.7	67.6	54.2	50.7	50.6	56.9
Future Cumulative Baseline PM		2	0	7,704	60	35	0	0	1.8%	0.7%	69.4	####	978	740	121	48	7	2	10	4	74.2	80.8	84.5	1.5	69.5	59.3	59.0	70.2	66.5	51.7	48.9	66.7	53.3	49.9	49.8	56.1
Future Cumulative + Project AM		2	0	9,384	60	35	0	0	1.8%	0.7%	70.2	####	####	901	148	59	9	2	13	5	74.2	80.8	84.5	1.5	70.4	60.2	59.9	71.1	67.4	52.6	49.7	67.6	54.2	50.7	50.6	57.0
Future Cumulative + Project PM		2	0	7,736	60	35	0	0	1.8%	0.7%	69.4	####	982	743	122	48	7	2	10	4	74.2	80.8	84.5	1.5	69.5	59.3	59.0	70.3	66.5	51.8	48.9	66.7	53.3	49.9	49.8	56.1

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 3
Brand Boulevard / Doran Street

rev. (Date)

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Brand Boulevard

Southbound

	right	through	left
Existing Traffic AM	335	941	343
Existing Traffic PM	129	898	171
Existing Traffic + Project AM	335	941	348
Existing Traffic + Project PM	129	898	189
Future Cumulative Baseline AM	424	1,062	372
Future Cumulative Baseline PM	209	1,065	187
Future Cumulative + Project AM	424	1,062	377
Future Cumulative + Project PM	209	1,065	205
Net New Project Trips AM	0	0	5
Net New Project Trips PM	0	0	18

Eastbound

	left	through	right
Existing Traffic AM	77	116	60
Existing Traffic PM	279	270	112
Existing Traffic + Project AM	70	127	60
Existing Traffic + Project PM	278	287	112
Future Cumulative Baseline AM	125	134	99
Future Cumulative Baseline PM	369	307	174
Future Cumulative + Project AM	118	145	99
Future Cumulative + Project PM	368	324	174
Net New Project Trips AM	-7	11	0
Net New Project Trips PM	-1	17	0

Doran Street

N

W E

S

Westbound

	right	through	left
Existing Traffic AM	203	180	46
Existing Traffic PM	263	211	47
Existing Traffic + Project AM	232	197	56
Existing Traffic + Project PM	295	224	52
Future Cumulative Baseline AM	222	209	51
Future Cumulative Baseline PM	286	243	52
Future Cumulative + Project AM	251	226	61
Future Cumulative + Project PM	318	256	57
Net New Project Trips AM	29	17	10
Net New Project Trips PM	32	13	5

Northbound

	left	through	right
Existing Traffic AM	42	512	39
Existing Traffic PM	52	887	38
Existing Traffic + Project AM	42	505	49
Existing Traffic + Project PM	52	886	49
Future Cumulative Baseline AM	93	643	42
Future Cumulative Baseline PM	111	1,025	42
Future Cumulative + Project AM	93	636	52
Future Cumulative + Project PM	111	1,024	53
Net New Project Trips AM	0	-7	10
Net New Project Trips PM	0	-1	11

ADT

Road	Brand Boulevard		Doran Street	
Leg	North of	South of	East of	West of
Cross Street	Doran Street		Brand Boulevard	
Existing Traffic AM	19,288.0	13,120.0	7,416.0	6,480.0
Existing Traffic PM	21,016.0	16,272.0	8,000.0	8,424.0
Existing Traffic + Project AM	19,448.0	13,224.0	8,072.0	6,648.0
Existing Traffic + Project PM	21,400.0	16,392.0	8,768.0	8,656.0
Future Cumulative Baseline AM	22,784.0	15,920.0	8,240.0	8,672.0
Future Cumulative Baseline PM	25,128.0	19,752.0	8,936.0	11,304.0
Future Cumulative + Project AM	22,944.0	16,024.0	8,896.0	8,840.0
Future Cumulative + Project PM	25,512.0	19,872.0	9,704.0	11,536.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1)	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Levels A	MT	HT	Dist Adj	Ld A	MT	HT	Total	Le A	MT	HT	Total	Ln A	MT	HT	Total
Brand Boulevard n/o Doran Street																																			
Existing Traffic AM		5	17	19,288	25	452	0	0	1.8%	0.7%	53.9	####	####	####	304	120	18	4	26	11	59.4	71.1	78.7	-9.6	51.4	46.2	49.8	54.4	48.4	38.6	39.7	49.3	35.2	36.8	40.6	42.9
Existing Traffic PM		5	17	21,016	25	452	0	0	1.8%	0.7%	54.3	####	####	####	331	131	19	4	28	12	59.4	71.1	78.7	-9.6	51.7	46.6	50.2	54.8	48.8	39.0	40.0	49.7	35.6	37.1	41.0	43.3
Existing Traffic + Project AM		5	17	19,448	25	452	0	0	1.8%	0.7%	53.9	####	####	####	306	121	18	4	26	11	59.4	71.1	78.7	-9.6	51.4	46.2	49.9	54.4	48.4	38.7	39.7	49.4	35.2	36.8	40.6	42.9
Existing Traffic + Project PM		5	17	21,400	25	452	0	0	1.8%	0.7%	54.3	####	####	####	337	133	19	4	29	12	59.4	71.1	78.7	-9.6	51.8	46.7	50.3	54.8	48.8	39.1	40.1	49.8	35.6	37.2	41.1	43.4
Future Cumulative Baseline AM		5	17	22,784	25	452	0	0	1.8%	0.7%	54.6	####	####	####	359	142	21	5	31	13	59.4	71.1	78.7	-9.6	52.1	46.9	50.6	55.1	49.1	39.3	40.4	50.0	35.9	37.5	41.3	43.6
Future Cumulative Baseline PM		5	17	25,128	25	452	0	0	1.8%	0.7%	55.0	####	####	####	395	157	23	5	34	14	59.4	71.1	78.7	-9.6	52.5	47.4	51.0	55.5	49.5	39.8	40.8	50.5	36.3	37.9	41.8	44.1
Future Cumulative + Project AM		5	17	22,944	25	452	0	0	1.8%	0.7%	54.6	####	####	####	361	143	21	5	31	13	59.4	71.1	78.7	-9.6	52.1	47.0	50.6	55.2	49.1	39.4	40.4	50.1	35.9	37.5	41.4	43.7
Future Cumulative + Project PM		5	17	25,512	25	452	0	0	1.8%	0.7%	55.1	####	####	####	401	159	23	5	35	14	59.4	71.1	78.7	-9.6	52.6	47.4	51.1	55.6	49.6	39.8	40.9	50.5	36.4	38.0	41.8	44.1
Brand Boulevard s/o Doran Street																																			
Existing Traffic AM		6	9	13,120	25	403	0	0	1.8%	0.7%	52.7	####	####	####	206	82	12	3	18	7	59.4	71.1	78.7	-9.1	50.2	45.0	48.7	53.2	47.2	37.5	38.5	48.2	34.0	35.6	39.4	41.7
Existing Traffic PM		6	9	16,272	25	403	0	0	1.8%	0.7%	53.7	####	####	####	256	101	15	3	22	9	59.4	71.1	78.7	-9.1	51.1	46.0	49.6	54.2	48.2	38.4	39.4	49.1	35.0	36.5	40.4	42.7
Existing Traffic + Project AM		6	9	13,224	25	403	0	0	1.8%	0.7%	52.7	####	####	####	208	82	12	3	18	7	59.4	71.1	78.7	-9.1	50.2	45.1	48.7	53.3	47.3	37.5	38.5	48.2	34.1	35.6	39.5	41.8
Existing Traffic + Project PM		6	9	16,392	25	403	0	0	1.8%	0.7%	53.7	####	####	####	258	102	15	3	22	9	59.4	71.1	78.7	-9.1	51.2	46.0	49.6	54.2	48.2	38.4	39.5	49.1	35.0	36.5	40.4	42.7
Future Cumulative Baseline AM		6	9	15,920	25	403	0	0	1.8%	0.7%	53.6	####	####	####	251	99	14	3	22	9	59.4	71.1	78.7	-9.1	51.0	45.9	49.5	54.1	48.1	38.3	39.3	49.0	34.9	36.4	40.3	42.6
Future Cumulative Baseline PM		6	9	19,752	25	403	0	0	1.8%	0.7%	54.5	####	####	####	311	123	18	4	27	11	59.4	71.1	78.7	-9.1	52.0	46.8	50.4	55.0	49.0	39.2	40.3	49.9	35.8	37.4	41.2	43.5
Future Cumulative + Project AM		6	9	16,024	25	403	0	0	1.8%	0.7%	53.6	####	####	####	252	100	15	3	22	9	59.4	71.1	78.7	-9.1	51.1	45.9	49.5	54.1	48.1	38.3	39.4	49.0	34.9	36.4	40.3	42.6
Future Cumulative + Project PM		6	9	19,872	25	403	0	0	1.8%	0.7%	54.5	####	####	####	313	124	18	4	27	11	59.4	71.1	78.7	-9.1	52.0	46.8	50.5	55.0	49.0	39.3	40.3	50.0	35.8	37.4	41.2	43.5
Doran Street e/o Brand Boulevard																																			
Existing Traffic AM		4	0	7,416	35	220	0	0	1.8%	0.7%	55.5	####	942	712	117	46	7	1	10	4	65.1	74.8	80.0	-6.5	54.6	47.5	48.7	56.2	51.6	39.9	38.5	52.1	38.4	38.0	39.4	43.4
Existing Traffic PM		4	0	8,000	35	220	0	0	1.8%	0.7%	55.8	####	####	768	126	50	7	2	11	5	65.1	74.8	80.0	-6.5	54.9	47.8	49.0	56.5	51.9	40.2	38.8	52.4	38.7	38.3	39.8	43.7
Existing Traffic + Project AM		4	0	8,072	35	220	0	0	1.8%	0.7%	55.8	####	####	775	127	50	7	2	11	5	65.1	74.8	80.0	-6.5	54.9	47.8	49.0	56.5	51.9	40.2	38.9	52.4	38.8	38.4	39.8	43.8
Existing Traffic + Project PM		4	0	8,768	35	220	0	0	1.8%	0.7%	56.2	####	####	842	138	55	8	2	12	5	65.1	74.8	80.0	-6.5	55.3	48.2	49.4	56.9	52.3	40.6	39.2	52.8	39.1	38.7	40.2	44.1
Future Cumulative Baseline AM		4	0	8,240	35	220	0	0	1.8%	0.7%	55.9	####	####	791	130	51	7	2	11	5	65.1	74.8	80.0	-6.5	55.0	47.9	49.1	56.6	52.0	40.3	39.0	52.5	38.8	38.5	39.9	43.9
Future Cumulative Baseline PM		4	0	8,936	35	220	0	0	1.8%	0.7%	56.3	####	####	858	141	56	8	2	12	5	65.1	74.8	80.0	-6.5	55.4	48.3	49.5	57.0	52.4	40.7	39.3	52.9	39.2	38.8	40.2	44.2
Future Cumulative + Project AM		4	0	8,896	35	220	0	0	1.8%	0.7%	56.3	####	####	854	140	55	8	2	12	5	65.1	74.8	80.0	-6.5	55.3	48.3	49.5	57.0	52.4	40.7	39.3	52.8	39.2	38.8	40.2	44.2
Future Cumulative + Project PM		4	0	9,704	35	220	0	0	1.8%	0.7%	56.6	####	####	932	153	61	9	2	13	5	65.1	74.8	80.0	-6.5	55.7	48.6	49.8	57.3	52.7	41.0	39.7	53.2	39.6	39.2	40.6	44.6
Doran Street w/o Brand Boulevard																																			
Existing Traffic AM		4	0	6,480	35	30	0	0	1.8%	0.7%	64.5	####	823	622	102	40	6	1	9	4	65.1	74.8	80.0	3.1	63.6	56.5	57.7	65.2	60.6	48.9	47.5	61.1	47.4	47.0	48.5	52.4
Existing Traffic PM		4	0	8,424	35	30	0	0	1.8%	0.7%	65.6	####	####	809	133	53	8	2	11	5	65.1	74.8	80.0	3.1	64.7	57.6	58.8	66.3	61.7	50.0	48.7	62.2	48.5	48.2	49.6	53.6
Existing Traffic + Project AM		4	0	6,648	35	30	0	0	1.8%	0.7%	64.6	####	844	638	105	41	6	1	9	4	65.1	74.8	80.0	3.1	63.7	56.6	57.8	65.3	60.7	49.0	47.6	61.2	47.5	47.1	48.6	52.6
Existing Traffic + Project PM		4	0	8,656	35	30	0	0	1.8%	0.7%	65.8	####	####	831	136	54	8	2	12	5	65.1	74.8	80.0	3.1	64.8	57.7	58.9	66.5	61.9	50.2	48.8	62.3	48.7	48.3	49.7	53.7
Future Cumulative Baseline AM		4	0	8,672	35	30	0	0	1.8%	0.7%	65.8	####	####	833	136	54	8	2	12	5	65.1	74.8	80.0	3.1	64.8	57.8	59.0	66.5	61.9	50.2	48.8	62.3	48.7	48.3	49.7	53.7
Future Cumulative Baseline PM		4	0	11,304	35	30	0	0	1.8%	0.7%	66.9	####	####	####	178	71	10	2	15	6	65.1	74.8	80.0	3.1	66.0	58.9	60.1	67.6	63.0	51.3	49.9	63.5	49.8	49.5	50.9	54.9
Future Cumulative + Project AM		4	0	8,840	35	30	0	0	1.8%	0.7%	65.9	####	####	849	139	55	8	2	12	5	65.1	74.8	80.0	3.1	64.9	57.8	59.0	66.6	61.9	50.3	48.9	62.4	48.8	48.4	49.8	53.8
Future Cumulative + Project PM		4	0	11,536	35	30	0	0	1.8%	0.7%	67.0	####	####	####	182	72	10	2	16	7	65.1	74.8	80.0	3.1	66.1	59.0	60.2	67.7	63.1	51.4	50.0	63.6	49.9	49.5	51.0	54.9

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 4
Maryland Avenue / Doran Street

rev. (Date)

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Maryland Avenue

Southbound

	left	through	right
Existing Traffic AM	39	104	291
Existing Traffic PM	51	361	77
Existing Traffic + Project AM	65	104	291
Existing Traffic + Project PM	96	361	77
Future Cumulative Baseline AM	42	122	315
Future Cumulative Baseline PM	55	409	83
Future Cumulative + Project AM	68	122	315
Future Cumulative + Project PM	100	409	83
Net New Project Trips AM	26	0	0
Net New Project Trips PM	45	0	0

Doran Street

Eastbound

	right	through	left
Existing Traffic AM	55	107	4
Existing Traffic PM	90	87	20
Existing Traffic + Project AM	111	111	8
Existing Traffic + Project PM	141	89	22
Future Cumulative Baseline AM	60	116	4
Future Cumulative Baseline PM	97	94	22
Future Cumulative + Project AM	116	120	8
Future Cumulative + Project PM	148	96	24
Net New Project Trips AM	56	4	4
Net New Project Trips PM	51	2	2

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Westbound

	right	through	left
Existing Traffic AM	7	332	81
Existing Traffic PM	14	224	35
Existing Traffic + Project AM	8	332	81
Existing Traffic + Project PM	18	224	35
Future Cumulative Baseline AM	8	377	88
Future Cumulative Baseline PM	15	260	38
Future Cumulative + Project AM	9	377	88
Future Cumulative + Project PM	19	260	38
Net New Project Trips AM	1	0	0
Net New Project Trips PM	4	0	0

Northbound

	left	through	right
Existing Traffic AM	32	14	36
Existing Traffic PM	204	117	205
Existing Traffic + Project AM	32	15	36
Existing Traffic + Project PM	204	121	205
Future Cumulative Baseline AM	35	15	39
Future Cumulative Baseline PM	221	127	222
Future Cumulative + Project AM	35	16	39
Future Cumulative + Project PM	221	131	222
Net New Project Trips AM	0	1	0
Net New Project Trips PM	0	4	0

ADT

Road	Maryland Avenue		Doran Street	
Leg	North of	South of	East of	West of
Cross Street	Doran Street		Maryland Avenue	
Existing Traffic AM	1,808.0	4,488.0	4,512.0	6,824.0
Existing Traffic PM	3,032.0	5,800.0	6,872.0	8,056.0
Existing Traffic + Project AM	2,544.0	4,528.0	4,552.0	7,480.0
Existing Traffic + Project PM	3,896.0	5,848.0	6,920.0	8,824.0
Future Cumulative Baseline AM	1,960.0	4,864.0	5,104.0	7,608.0
Future Cumulative Baseline PM	3,280.0	6,280.0	7,728.0	9,000.0
Future Cumulative + Project AM	2,696.0	4,904.0	5,144.0	8,264.0
Future Cumulative + Project PM	4,144.0	6,328.0	7,776.0	9,768.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level A	Dist Adj	Ld A	Ld MT	Ld HT	Ld Total	Le A	Le MT	Le HT	Le Total	Ln A	Ln MT	Ln HT	Ln Total
Maryland Avenue n/o Doran Street																																		
Existing Traffic AM		2	0	1,808	25	172	0	0	1.8%	0.7%	47.8	####	230	174	28	11	2	0	2	1	59.4	-5.4	45.3	40.1	43.7	48.3	42.3	32.5	33.6	43.2	29.1	30.7	34.5	36.8
Existing Traffic PM		2	0	3,032	25	172	0	0	1.8%	0.7%	50.0	####	385	291	48	19	3	1	4	2	59.4	-5.4	47.5	42.4	46.0	50.5	44.5	34.8	35.8	45.5	31.3	32.9	36.8	39.1
Existing Traffic + Project AM		2	0	2,544	25	172	0	0	1.8%	0.7%	49.3	####	323	244	40	16	2	1	3	1	59.4	-5.4	46.8	41.6	45.2	49.8	43.8	34.0	35.1	44.7	30.6	32.1	36.0	38.3
Existing Traffic + Project PM		2	0	3,896	25	172	0	0	1.8%	0.7%	51.1	####	495	374	61	24	4	1	5	2	59.4	-5.4	48.6	43.4	47.1	51.6	45.6	35.9	36.9	46.6	32.4	34.0	37.8	40.1
Future Cumulative Baseline AM		2	0	1,960	25	172	0	0	1.8%	0.7%	48.1	####	249	188	31	12	2	0	3	1	59.4	-5.4	45.6	40.5	44.1	48.7	42.6	32.9	33.9	43.6	29.5	31.0	34.9	37.2
Future Cumulative Baseline PM		2	0	3,280	25	172	0	0	1.8%	0.7%	50.4	####	417	315	52	20	3	1	4	2	59.4	-5.4	47.9	42.7	46.3	50.9	44.9	35.1	36.2	45.8	31.7	33.2	37.1	39.4
Future Cumulative + Project AM		2	0	2,696	25	172	0	0	1.8%	0.7%	49.5	####	342	259	42	17	2	1	4	2	59.4	-5.4	47.0	41.8	45.5	50.0	44.0	34.3	35.3	45.0	30.8	32.4	36.2	38.5
Future Cumulative + Project PM		2	0	4,144	25	172	0	0	1.8%	0.7%	51.4	####	526	398	65	26	4	1	6	2	59.4	-5.4	48.9	43.7	47.3	51.9	45.9	36.1	37.2	46.8	32.7	34.3	38.1	40.4
Maryland Avenue s/o Doran Street																																		
Existing Traffic AM		2	0	4,488	25	30	0	0	1.8%	0.7%	59.4	####	570	431	71	28	4	1	6	3	59.4	2.2	56.9	51.7	55.4	59.9	53.9	44.1	45.2	54.8	40.7	42.3	46.1	48.4
Existing Traffic PM		2	0	5,800	25	30	0	0	1.8%	0.7%	60.5	####	737	557	91	36	5	1	8	3	59.4	2.2	58.0	52.8	56.5	61.0	55.0	45.3	46.3	56.0	41.8	43.4	47.2	49.5
Existing Traffic + Project AM		2	0	4,528	25	30	0	0	1.8%	0.7%	59.4	####	575	435	71	28	4	1	6	3	59.4	2.2	56.9	51.8	55.4	60.0	54.0	44.2	45.2	54.9	40.8	42.3	46.2	48.5
Existing Traffic + Project PM		2	0	5,848	25	30	0	0	1.8%	0.7%	60.6	####	743	561	92	36	5	1	8	3	59.4	2.2	58.0	52.9	56.5	61.1	55.1	45.3	46.3	56.0	41.9	43.4	47.3	49.6
Future Cumulative Baseline AM		2	0	4,864	25	30	0	0	1.8%	0.7%	59.8	####	618	467	77	30	4	1	7	3	59.4	2.2	57.2	52.1	55.7	60.3	54.3	44.5	45.5	55.2	41.1	42.6	46.5	48.8
Future Cumulative Baseline PM		2	0	6,280	25	30	0	0	1.8%	0.7%	60.9	####	798	603	99	39	6	1	9	4	59.4	2.2	58.4	53.2	56.8	61.4	55.4	45.6	46.7	56.3	42.2	43.7	47.6	49.9
Future Cumulative + Project AM		2	0	4,904	25	30	0	0	1.8%	0.7%	59.8	####	623	471	77	31	4	1	7	3	59.4	2.2	57.3	52.1	55.7	60.3	54.3	44.5	45.6	55.2	41.1	42.7	46.5	48.8
Future Cumulative + Project PM		2	0	6,328	25	30	0	0	1.8%	0.7%	60.9	####	804	607	100	39	6	1	9	4	59.4	2.2	58.4	53.2	56.9	61.4	55.4	45.6	46.7	56.3	42.2	43.8	47.6	49.9
Doran Street e/o Maryland Avenue																																		
Existing Traffic AM		2	0	4,512	25	30	0	0	1.8%	0.7%	59.4	####	573	433	71	28	4	1	6	3	59.4	2.2	56.9	51.8	55.4	59.9	53.9	44.2	45.2	54.9	40.7	42.3	46.2	48.5
Existing Traffic PM		2	0	6,872	25	30	0	0	1.8%	0.7%	61.3	####	873	660	108	43	6	1	9	4	59.4	2.2	58.7	53.6	57.2	61.8	55.8	46.0	47.0	56.7	42.6	44.1	48.0	50.3
Existing Traffic + Project AM		2	0	4,552	25	30	0	0	1.8%	0.7%	59.5	####	578	437	72	28	4	1	6	3	59.4	2.2	57.0	51.8	55.4	60.0	54.0	44.2	45.3	54.9	40.8	42.3	46.2	48.5
Existing Traffic + Project PM		2	0	6,920	25	30	0	0	1.8%	0.7%	61.3	####	879	664	109	43	6	1	9	4	59.4	2.2	58.8	53.6	57.2	61.8	55.8	46.0	47.1	56.7	42.6	44.2	48.0	50.3
Future Cumulative Baseline AM		2	0	5,104	25	30	0	0	1.8%	0.7%	60.0	####	648	490	80	32	5	1	7	3	59.4	2.2	57.5	52.3	55.9	60.5	54.5	44.7	45.8	55.4	41.3	42.8	46.7	49.0
Future Cumulative Baseline PM		2	0	7,728	25	30	0	0	1.8%	0.7%	61.8	####	981	742	122	48	7	2	10	4	59.4	2.2	59.3	54.1	57.7	62.3	56.3	46.5	47.6	57.2	43.1	44.6	48.5	50.8
Future Cumulative + Project AM		2	0	5,144	25	30	0	0	1.8%	0.7%	60.0	####	653	494	81	32	5	1	7	3	59.4	2.2	57.5	52.3	56.0	60.5	54.5	44.7	45.8	55.4	41.3	42.9	46.7	49.0
Future Cumulative + Project PM		2	0	7,776	25	30	0	0	1.8%	0.7%	61.8	####	988	746	122	48	7	2	11	4	59.4	2.2	59.3	54.1	57.8	62.3	56.3	46.5	47.6	57.2	43.1	44.7	48.5	50.8
Doran Street w/o Maryland Avenue																																		
Existing Traffic AM		4	0	6,824	25	100	0	0	1.8%	0.7%	56.0	####	867	655	107	43	6	1	9	4	59.4	-3.0	53.5	48.3	51.9	56.5	50.5	40.7	41.8	51.4	37.3	38.9	42.7	45.0
Existing Traffic PM		4	0	8,056	25	100	0	0	1.8%	0.7%	56.7	####	####	773	127	50	7	2	11	5	59.4	-3.0	54.2	49.0	52.7	57.2	51.2	41.4	42.5	52.1	38.0	39.6	43.4	45.7
Existing Traffic + Project AM		4	0	7,480	25	100	0	0	1.8%	0.7%	56.4	####	950	718	118	47	7	1	10	4	59.4	-3.0	53.9	48.7	52.3	56.9	50.9	41.1	42.2	51.8	37.7	39.2	43.1	45.4
Existing Traffic + Project PM		4	0	8,824	25	100	0	0	1.8%	0.7%	57.1	####	####	847	139	55	8	2	12	5	59.4	-3.0	54.6	49.4	53.1	57.6	51.6	41.8	42.9	52.5	38.4	40.0	43.8	46.1
Future Cumulative Baseline AM		4	0	7,608	25	100	0	0	1.8%	0.7%	56.5	####	966	730	120	47	7	2	10	4	59.4	-3.0	53.9	48.8	52.4	57.0	51.0	41.2	42.2	51.9	37.8	39.3	43.2	45.5
Future Cumulative Baseline PM		4	0	9,000	25	100	0	0	1.8%	0.7%	57.2	####	####	864	142	56	8	2	12	5	59.4	-3.0	54.7	49.5	53.1	57.7	51.7	41.9	43.0	52.6	38.5	40.1	43.9	46.2
Future Cumulative + Project AM		4	0	8,264	25	100	0	0	1.8%	0.7%	56.8	####	####	793	130	52	8	2	11	5	59.4	-3.0	54.3	49.1	52.8	57.3	51.3	41.6	42.6	52.3	38.1	39.7	43.5	45.8
Future Cumulative + Project PM		4	0	9,768	25	100	0	0	1.8%	0.7%	57.5	####	####	938	154	61	9	2	13	6	59.4	-3.0	55.0	49.9	53.5	58.1	52.0	42.3	43.3	53.0	38.9	40.4	44.3	46.6

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 5
Louise Street / Maryland Place

rev. (Date)

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Louise Street

Southbound

	left	through	right
Existing Traffic AM	15	0	16
Existing Traffic PM	138	0	32
Existing Traffic + Project AM	21	0	16
Existing Traffic + Project PM	141	0	32
Future Cumulative Baseline AM	16	0	17
Future Cumulative Baseline PM	149	0	35
Future Cumulative + Project AM	22	0	17
Future Cumulative + Project PM	152	0	35
Net New Project Trips AM	6	0	0
Net New Project Trips PM	3	0	0

Eastbound

Maryland Place

Westbound

	right	through	left
Existing Traffic AM	183	305	0
Existing Traffic PM	92	399	0
Existing Traffic + Project AM	186	305	0
Existing Traffic + Project PM	104	399	0
Future Cumulative Baseline AM	198	334	0
Future Cumulative Baseline PM	100	438	0
Future Cumulative + Project AM	201	334	0
Future Cumulative + Project PM	112	438	0
Net New Project Trips AM	3	0	0
Net New Project Trips PM	12	0	0

	right	through	left
Existing Traffic AM	0	0	0
Existing Traffic PM	0	0	0
Existing Traffic + Project AM	0	0	0
Existing Traffic + Project PM	0	0	0
Future Cumulative Baseline AM	0	0	0
Future Cumulative Baseline PM	0	0	0
Future Cumulative + Project AM	0	0	0
Future Cumulative + Project PM	0	0	0
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

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Northbound

	left	through	right
Existing Traffic AM	14	193	0
Existing Traffic PM	18	421	0
Existing Traffic + Project AM	14	193	0
Existing Traffic + Project PM	18	421	0
Future Cumulative Baseline AM	15	213	0
Future Cumulative Baseline PM	19	460	0
Future Cumulative + Project AM	15	213	0
Future Cumulative + Project PM	19	460	0
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

ADT

Road	Louise Street		Maryland Place	
Leg	North of	South of	East of	West of
Cross Street	Maryland Place		Louise Street	
Existing Traffic AM	5,568.0	4,224.0	0.0	1,824.0
Existing Traffic PM	8,400.0	6,960.0	0.0	2,240.0
Existing Traffic + Project AM	5,640.0	4,224.0	0.0	1,896.0
Existing Traffic + Project PM	8,520.0	6,960.0	0.0	2,360.0
Future Cumulative Baseline AM	6,088.0	4,632.0	0.0	1,968.0
Future Cumulative Baseline PM	9,176.0	7,616.0	0.0	2,424.0
Future Cumulative + Project AM	6,160.0	4,632.0	0.0	2,040.0
Future Cumulative + Project PM	9,296.0	7,616.0	0.0	2,544.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Louise Street n/o Maryland Place																																			
Existing Traffic AM		2	0	5,568	25	156	0	0	1.8%	0.7%	53.1	####	707	535	88	35	5	1	8	3	59.4	71.1	78.7	-5.0	50.6	45.4	49.1	53.6	47.6	37.8	38.9	48.5	34.4	36.0	39.8	42.1
Existing Traffic PM		2	0	8,400	25	156	0	0	1.8%	0.7%	54.9	####	####	806	132	52	8	2	11	5	59.4	71.1	78.7	-5.0	52.4	47.2	50.8	55.4	49.4	39.6	40.7	50.3	36.2	37.8	41.6	43.9
Existing Traffic + Project AM		2	0	5,640	25	156	0	0	1.8%	0.7%	53.2	####	716	541	89	35	5	1	8	3	59.4	71.1	78.7	-5.0	50.6	45.5	49.1	53.7	47.7	37.9	38.9	48.6	34.5	36.0	39.9	42.2
Existing Traffic + Project PM		2	0	8,520	25	156	0	0	1.8%	0.7%	54.9	####	####	818	134	53	8	2	12	5	59.4	71.1	78.7	-5.0	52.4	47.3	50.9	55.5	49.5	39.7	40.7	50.4	36.3	37.8	41.7	44.0
Future Cumulative Baseline AM		2	0	6,088	25	156	0	0	1.8%	0.7%	53.5	####	773	584	96	38	6	1	8	3	59.4	71.1	78.7	-5.0	51.0	45.8	49.4	54.0	48.0	38.2	39.3	48.9	34.8	36.4	40.2	42.5
Future Cumulative Baseline PM		2	0	9,176	25	156	0	0	1.8%	0.7%	55.3	####	####	881	144	57	8	2	12	5	59.4	71.1	78.7	-5.0	52.8	47.6	51.2	55.8	49.8	40.0	41.1	50.7	36.6	38.1	42.0	44.3
Future Cumulative + Project AM		2	0	6,160	25	156	0	0	1.8%	0.7%	53.5	####	782	591	97	38	6	1	8	3	59.4	71.1	78.7	-5.0	51.0	45.9	49.5	54.1	48.0	38.3	39.3	49.0	34.8	36.4	40.3	42.6
Future Cumulative + Project PM		2	0	9,296	25	156	0	0	1.8%	0.7%	55.3	####	####	892	146	58	8	2	13	5	59.4	71.1	78.7	-5.0	52.8	47.6	51.3	55.8	49.8	40.1	41.1	50.8	36.6	38.2	42.0	44.3
Louise Street s/o Maryland Place																																			
Existing Traffic AM		2	0	4,224	25	32	0	0	1.8%	0.7%	58.9	####	536	406	66	26	4	1	6	2	59.4	71.1	78.7	1.9	56.3	51.2	54.8	59.4	53.4	43.6	44.6	54.3	40.2	41.7	45.6	47.9
Existing Traffic PM		2	0	6,960	25	32	0	0	1.8%	0.7%	61.0	####	884	668	110	43	6	1	9	4	59.4	71.1	78.7	1.9	58.5	53.3	57.0	61.5	55.5	45.8	46.8	56.5	42.3	43.9	47.7	50.0
Existing Traffic + Project AM		2	0	4,224	25	32	0	0	1.8%	0.7%	58.9	####	536	406	66	26	4	1	6	2	59.4	71.1	78.7	1.9	56.3	51.2	54.8	59.4	53.4	43.6	44.6	54.3	40.2	41.7	45.6	47.9
Existing Traffic + Project PM		2	0	6,960	25	32	0	0	1.8%	0.7%	61.0	####	884	668	110	43	6	1	9	4	59.4	71.1	78.7	1.9	58.5	53.3	57.0	61.5	55.5	45.8	46.8	56.5	42.3	43.9	47.7	50.0
Future Cumulative Baseline AM		2	0	4,632	25	32	0	0	1.8%	0.7%	59.3	####	588	445	73	29	4	1	6	3	59.4	71.1	78.7	1.9	56.7	51.6	55.2	59.8	53.8	44.0	45.0	54.7	40.6	42.1	46.0	48.3
Future Cumulative Baseline PM		2	0	7,616	25	32	0	0	1.8%	0.7%	61.4	####	967	731	120	48	7	2	10	4	59.4	71.1	78.7	1.9	58.9	53.7	57.4	61.9	55.9	46.2	47.2	56.9	42.7	44.3	48.1	50.4
Future Cumulative + Project AM		2	0	4,632	25	32	0	0	1.8%	0.7%	59.3	####	588	445	73	29	4	1	6	3	59.4	71.1	78.7	1.9	56.7	51.6	55.2	59.8	53.8	44.0	45.0	54.7	40.6	42.1	46.0	48.3
Future Cumulative + Project PM		2	0	7,616	25	32	0	0	1.8%	0.7%	61.4	####	967	731	120	48	7	2	10	4	59.4	71.1	78.7	1.9	58.9	53.7	57.4	61.9	55.9	46.2	47.2	56.9	42.7	44.3	48.1	50.4
Maryland Place e/o Louise Street																																			
Existing Traffic AM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Existing Traffic PM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Existing Traffic + Project AM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Existing Traffic + Project PM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Future Cumulative Baseline AM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Future Cumulative Baseline PM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Future Cumulative + Project AM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Future Cumulative + Project PM		0	0	0	0	0	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####	####
Maryland Place w/o Louise Street																																			
Existing Traffic AM		2	0	1,824	25	87	0	0	1.8%	0.7%	50.8	####	232	175	29	11	2	0	2	1	59.4	71.1	78.7	-2.5	48.3	43.1	46.8	51.3	45.3	35.5	36.6	46.2	32.1	33.7	37.5	39.8
Existing Traffic PM		2	0	2,240	25	87	0	0	1.8%	0.7%	51.7	####	284	215	35	14	2	0	3	1	59.4	71.1	78.7	-2.5	49.2	44.0	47.6	52.2	46.2	36.4	37.5	47.1	33.0	34.6	38.4	40.7
Existing Traffic + Project AM		2	0	1,896	25	87	0	0	1.8%	0.7%	51.0	####	241	182	30	12	2	0	3	1	59.4	71.1	78.7	-2.5	48.4	43.3	46.9	51.5	45.5	35.7	36.8	46.4	32.3	33.8	37.7	40.0
Existing Traffic + Project PM		2	0	2,360	25	87	0	0	1.8%	0.7%	51.9	####	300	227	37	15	2	0	3	1	59.4	71.1	78.7	-2.5	49.4	44.2	47.9	52.4	46.4	36.7	37.7	47.4	33.2	34.8	38.6	40.9
Future Cumulative Baseline AM		2	0	1,968	25	87	0	0	1.8%	0.7%	51.1	####	250	189	31	12	2	0	3	1	59.4	71.1	78.7	-2.5	48.6	43.4	47.1	51.6	45.6	35.9	36.9	46.6	32.4	34.0	37.8	40.2
Future Cumulative Baseline PM		2	0	2,424	25	87	0	0	1.8%	0.7%	52.0	####	308	233	38	15	2	0	3	1	59.4	71.1	78.7	-2.5	49.5	44.4	48.0	52.5	46.5	36.8	37.8	47.5	33.3	34.9	38.8	41.1
Future Cumulative + Project AM		2	0	2,040	25	87	0	0	1.8%	0.7%	51.3	####	259	196	32	13	2	0	3	1	59.4	71.1	78.7	-2.5	48.8	43.6	47.2	51.8	45.8	36.0	37.1	46.7	32.6	34.2	38.0	40.3
Future Cumulative + Project PM		2	0	2,544	25	87	0	0	1.8%	0.7%	52.2	####	323	244	40	16	2	1	3	1	59.4	71.1	78.7	-2.5	49.7	44.6	48.2	52.8	46.7	37.0	38.0	47.7	33.6	35.1	39.0	41.3

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name: Long Beach Riverpark
AM Peak Hour and PM Peak Hour

Intersection: 6
Louise Street / Doran Street

rev. (Date)

If Peak Hour = 6% of ADT, Scaling Factor = 16.667
If Peak Hour = 7% of ADT, Scaling Factor = 14.286
If Peak Hour = 8% of ADT, Scaling Factor = 12.5
If Peak Hour = 9% of ADT, Scaling Factor = 11.111
If Peak Hour = 10% of ADT, Scaling Factor = 10

Louise Street

	Eastbound				Westbound			
	left	through	right		right	through	left
Existing Traffic AM	18	84	47	Existing Traffic AM	50	312	25
Existing Traffic PM	115	425	41	Existing Traffic PM	77	192	19
Existing Traffic + Project AM	18	88	46	Existing Traffic + Project AM	50	313	25
Existing Traffic + Project PM	115	427	41	Existing Traffic + Project PM	77	196	19
Future Cumulative Baseline AM	19	100	51	Future Cumulative Baseline AM	55	355	27
Future Cumulative Baseline PM	125	478	44	Future Cumulative Baseline PM	83	225	21
Future Cumulative + Project AM	19	104	51	Future Cumulative + Project AM	55	356	27
Future Cumulative + Project PM	125	480	44	Future Cumulative + Project PM	83	229	21
Net New Project Trips AM	0	4	0	Net New Project Trips AM	0	1	0
Net New Project Trips PM	0	2	0	Net New Project Trips PM	0	4	0

Doran Street

Southbound

	right	through	left
Existing Traffic AM	48	251	36
Existing Traffic PM	38	313	62
Existing Traffic + Project AM	48	251	36
Existing Traffic + Project PM	38	313	62
Future Cumulative Baseline AM	52	276	39
Future Cumulative Baseline PM	41	344	68
Future Cumulative + Project AM	52	276	39
Future Cumulative + Project PM	41	344	68
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

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Northbound

	left	through	right
Existing Traffic AM	64	146	23
Existing Traffic PM	42	248	27
Existing Traffic + Project AM	64	146	23
Existing Traffic + Project PM	42	248	27
Future Cumulative Baseline AM	69	161	25
Future Cumulative Baseline PM	45	273	29
Future Cumulative + Project AM	69	161	25
Future Cumulative + Project PM	45	273	29
Net New Project Trips AM	0	0	0
Net New Project Trips PM	0	0	0

ADT

Road	Louise Street		Doran Street	
Leg	North of	South of	East of	West of
Cross Street	Doran Street		Louise Street	
Existing Traffic AM	4,392.0	4,448.0	4,240.0	4,584.0
Existing Traffic PM	6,824.0	5,520.0	6,416.0	6,824.0
Existing Traffic + Project AM	4,392.0	4,440.0	4,280.0	4,616.0
Existing Traffic + Project PM	6,824.0	5,520.0	6,464.0	6,872.0
Future Cumulative Baseline AM	4,816.0	4,872.0	4,808.0	5,168.0
Future Cumulative Baseline PM	7,472.0	6,048.0	7,232.0	7,664.0
Future Cumulative + Project AM	4,816.0	4,872.0	4,848.0	5,208.0
Future Cumulative + Project PM	7,472.0	6,048.0	7,280.0	7,712.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level A	Dist MT	Dist HT	Dist Adj	Ld A	Ld MT	Ld HT	Ld Total	Le A	Le MT	Le HT	Le Total	Ln A	Ln MT	Ln HT	Ln Total
Louise Street n/o Doran Street																																			
Existing Traffic AM		2	0	4,392	25	30	0	0	1.8%	0.7%	59.3	####	558	422	69	27	4	1	6	2	59.4	71.1	78.7	2.2	56.8	51.6	55.3	59.8	53.8	44.1	45.1	54.8	40.6	42.2	46.0	48.3
Existing Traffic PM		2	0	6,824	25	30	0	0	1.8%	0.7%	61.2	####	867	655	107	43	6	1	9	4	59.4	71.1	78.7	2.2	58.7	53.6	57.2	61.7	55.7	46.0	47.0	56.7	42.5	44.1	47.9	50.3
Existing Traffic + Project AM		2	0	4,392	25	30	0	0	1.8%	0.7%	59.3	####	558	422	69	27	4	1	6	2	59.4	71.1	78.7	2.2	56.8	51.6	55.3	59.8	53.8	44.1	45.1	54.8	40.6	42.2	46.0	48.3
Existing Traffic + Project PM		2	0	6,824	25	30	0	0	1.8%	0.7%	61.2	####	867	655	107	43	6	1	9	4	59.4	71.1	78.7	2.2	58.7	53.6	57.2	61.7	55.7	46.0	47.0	56.7	42.5	44.1	47.9	50.3
Future Cumulative Baseline AM		2	0	4,816	25	30	0	0	1.8%	0.7%	59.7	####	612	462	76	30	4	1	7	3	59.4	71.1	78.7	2.2	57.2	52.0	55.7	60.2	54.2	44.5	45.5	55.2	41.0	42.6	46.4	48.7
Future Cumulative Baseline PM		2	0	7,472	25	30	0	0	1.8%	0.7%	61.6	####	949	717	118	47	7	1	10	4	59.4	71.1	78.7	2.2	59.1	53.9	57.6	62.1	56.1	46.4	47.4	57.1	42.9	44.5	48.3	50.6
Future Cumulative + Project AM		2	0	4,816	25	30	0	0	1.8%	0.7%	59.7	####	612	462	76	30	4	1	7	3	59.4	71.1	78.7	2.2	57.2	52.0	55.7	60.2	54.2	44.5	45.5	55.2	41.0	42.6	46.4	48.7
Future Cumulative + Project PM		2	0	7,472	25	30	0	0	1.8%	0.7%	61.6	####	949	717	118	47	7	1	10	4	59.4	71.1	78.7	2.2	59.1	53.9	57.6	62.1	56.1	46.4	47.4	57.1	42.9	44.5	48.3	50.6
Louise Street s/o Doran Street																																			
Existing Traffic AM		2	0	4,448	25	30	0	0	1.8%	0.7%	59.4	####	565	427	70	28	4	1	6	3	59.4	71.1	78.7	2.2	56.9	51.7	55.3	59.9	53.9	44.1	45.2	54.8	40.7	42.2	46.1	48.4
Existing Traffic PM		2	0	5,520	25	30	0	0	1.8%	0.7%	60.3	####	701	530	87	34	5	1	7	3	59.4	71.1	78.7	2.2	57.8	52.6	56.3	60.8	54.8	45.0	46.1	55.7	41.6	43.2	47.0	49.3
Existing Traffic + Project AM		2	0	4,440	25	30	0	0	1.8%	0.7%	59.4	####	564	426	70	28	4	1	6	3	59.4	71.1	78.7	2.2	56.8	51.7	55.3	59.9	53.9	44.1	45.2	54.8	40.7	42.2	46.1	48.4
Existing Traffic + Project PM		2	0	5,520	25	30	0	0	1.8%	0.7%	60.3	####	701	530	87	34	5	1	7	3	59.4	71.1	78.7	2.2	57.8	52.6	56.3	60.8	54.8	45.0	46.1	55.7	41.6	43.2	47.0	49.3
Future Cumulative Baseline AM		2	0	4,872	25	30	0	0	1.8%	0.7%	59.8	####	619	468	77	30	4	1	7	3	59.4	71.1	78.7	2.2	57.3	52.1	55.7	60.3	54.3	44.5	45.6	55.2	41.1	42.6	46.5	48.8
Future Cumulative Baseline PM		2	0	6,048	25	30	0	0	1.8%	0.7%	60.7	####	768	581	95	38	5	1	8	3	59.4	71.1	78.7	2.2	58.2	53.0	56.7	61.2	55.2	45.4	46.5	56.1	42.0	43.6	47.4	49.7
Future Cumulative + Project AM		2	0	4,872	25	30	0	0	1.8%	0.7%	59.8	####	619	468	77	30	4	1	7	3	59.4	71.1	78.7	2.2	57.3	52.1	55.7	60.3	54.3	44.5	45.6	55.2	41.1	42.6	46.5	48.8
Future Cumulative + Project PM		2	0	6,048	25	30	0	0	1.8%	0.7%	60.7	####	768	581	95	38	5	1	8	3	59.4	71.1	78.7	2.2	58.2	53.0	56.7	61.2	55.2	45.4	46.5	56.1	42.0	43.6	47.4	49.7
Doran Street e/o Louise Street																																			
Existing Traffic AM		2	0	4,240	25	30	0	0	1.8%	0.7%	59.2	####	538	407	67	26	4	1	6	2	59.4	71.1	78.7	2.2	56.6	51.5	55.1	59.7	53.7	43.9	45.0	54.6	40.5	42.0	45.9	48.2
Existing Traffic PM		2	0	6,416	25	30	0	0	1.8%	0.7%	61.0	####	815	616	101	40	6	1	9	4	59.4	71.1	78.7	2.2	58.4	53.3	56.9	61.5	55.5	45.7	46.8	56.4	42.3	43.8	47.7	50.0
Existing Traffic + Project AM		2	0	4,280	25	30	0	0	1.8%	0.7%	59.2	####	544	411	67	27	4	1	6	2	59.4	71.1	78.7	2.2	56.7	51.5	55.2	59.7	53.7	43.9	45.0	54.6	40.5	42.1	45.9	48.2
Existing Traffic + Project PM		2	0	6,464	25	30	0	0	1.8%	0.7%	61.0	####	821	621	102	40	6	1	9	4	59.4	71.1	78.7	2.2	58.5	53.3	56.9	61.5	55.5	45.7	46.8	56.4	42.3	43.9	47.7	50.0
Future Cumulative Baseline AM		2	0	4,808	25	30	0	0	1.8%	0.7%	59.7	####	611	462	76	30	4	1	7	3	59.4	71.1	78.7	2.2	57.2	52.0	55.7	60.2	54.2	44.4	45.5	55.1	41.0	42.6	46.4	48.7
Future Cumulative Baseline PM		2	0	7,232	25	30	0	0	1.8%	0.7%	61.5	####	918	694	114	45	7	1	10	4	59.4	71.1	78.7	2.2	59.0	53.8	57.4	62.0	56.0	46.2	47.3	56.9	42.8	44.3	48.2	50.5
Future Cumulative + Project AM		2	0	4,848	25	30	0	0	1.8%	0.7%	59.7	####	616	465	76	30	4	1	7	3	59.4	71.1	78.7	2.2	57.2	52.1	55.7	60.3	54.2	44.5	45.5	55.2	41.1	42.6	46.5	48.8
Future Cumulative + Project PM		2	0	7,280	25	30	0	0	1.8%	0.7%	61.5	####	925	699	115	45	7	1	10	4	59.4	71.1	78.7	2.2	59.0	53.8	57.5	62.0	56.0	46.2	47.3	56.9	42.8	44.4	48.2	50.5
Doran Street w/o Louise Street																																			
Existing Traffic AM		2	0	4,584	25	30	0	0	1.8%	0.7%	59.5	####	582	440	72	29	4	1	6	3	59.4	71.1	78.7	2.2	57.0	51.8	55.5	60.0	54.0	44.2	45.3	54.9	40.8	42.4	46.2	48.5
Existing Traffic PM		2	0	6,824	25	30	0	0	1.8%	0.7%	61.2	####	867	655	107	43	6	1	9	4	59.4	71.1	78.7	2.2	58.7	53.6	57.2	61.7	55.7	46.0	47.0	56.7	42.5	44.1	47.9	50.3
Existing Traffic + Project AM		2	0	4,616	25	30	0	0	1.8%	0.7%	59.5	####	586	443	73	29	4	1	6	3	59.4	71.1	78.7	2.2	57.0	51.9	55.5	60.0	54.0	44.3	45.3	55.0	40.8	42.4	46.3	48.6
Existing Traffic + Project PM		2	0	6,872	25	30	0	0	1.8%	0.7%	61.3	####	873	660	108	43	6	1	9	4	59.4	71.1	78.7	2.2	58.7	53.6	57.2	61.8	55.8	46.0	47.0	56.7	42.6	44.1	48.0	50.3
Future Cumulative Baseline AM		2	0	5,168	25	30	0	0	1.8%	0.7%	60.0	####	656	496	81	32	5	1	7	3	59.4	71.1	78.7	2.2	57.5	52.3	56.0	60.5	54.5	44.8	45.8	55.5	41.3	42.9	46.7	49.0
Future Cumulative Baseline PM		2	0	7,664	25	30	0	0	1.8%	0.7%	61.7	####	973	736	121	48	7	2	10	4	59.4	71.1	78.7	2.2	59.2	54.1	57.7	62.2	56.2	46.5	47.5	57.2	43.0	44.6	48.5	50.8
Future Cumulative + Project AM		2	0	5,208	25	30	0	0	1.8%	0.7%	60.1	####	661	500	82	32	5	1	7	3	59.4	71.1	78.7	2.2	57.5	52.4	56.0	60.6	54.6	44.8	45.8	55.5	41.4	42.9	46.8	49.1
Future Cumulative + Project PM		2	0	7,712	25	30	0	0	1.8%	0.7%	61.8	####	979	740	121	48	7	2	10	4	59.4	71.1	78.7	2.2	59.2	54.1	57.7	62.3	56.3	46.5	47.6	57.2	43.1	44.6	48.5	50.8

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%