



**APPENDIX D**  
Noise Study

**NOISE**  
**TECHNICAL STUDY**  
**FOR THE**  
**LUCIA PARK PROJECT**

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

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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:

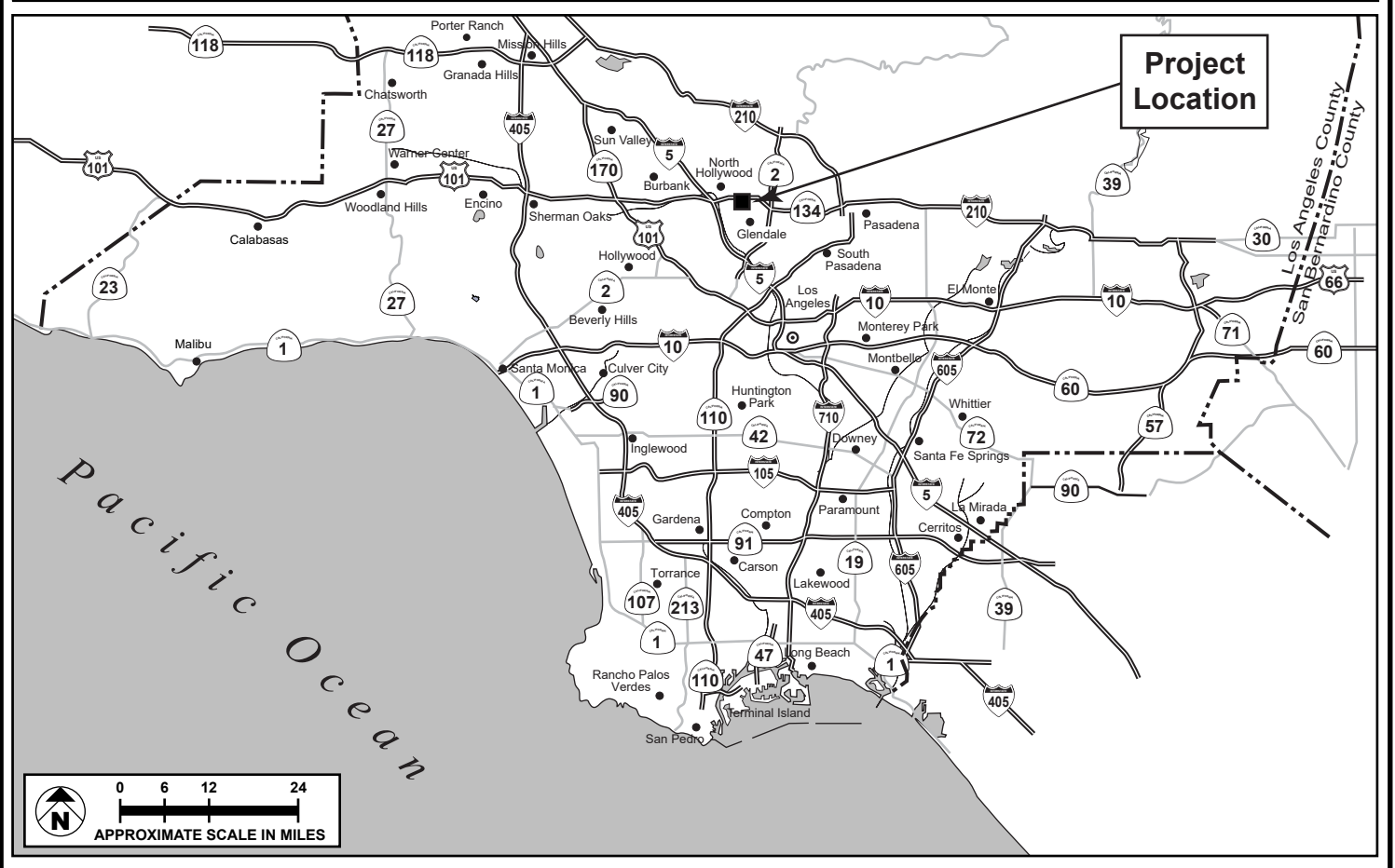
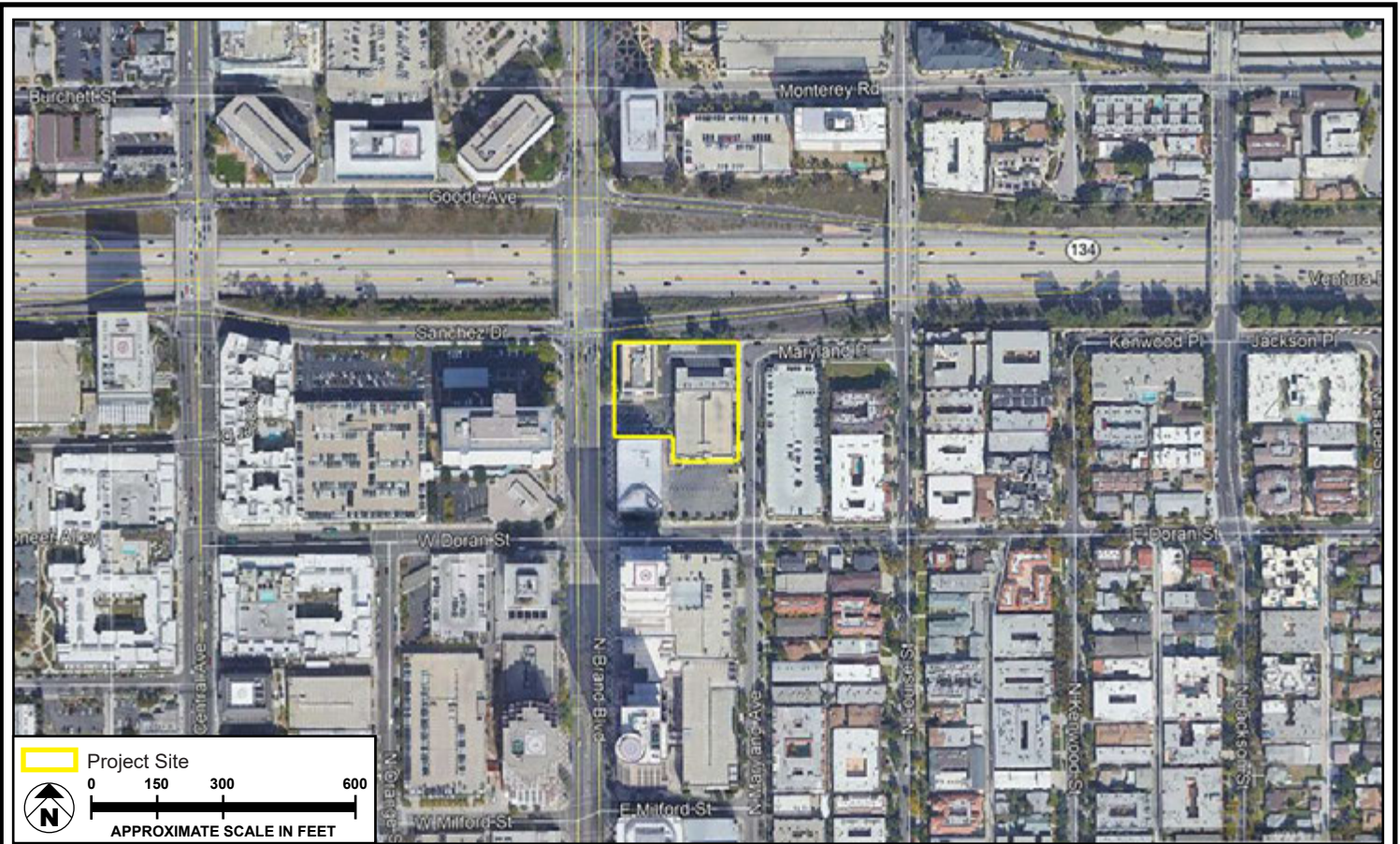
- Construction activities would not result in short-term and temporary noise impacts to nearby noise-sensitive receptors due to on-site construction equipment and activities. Compliance with the City's Noise Ordinance and standards established in the local general plan would ensure implementation of 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.

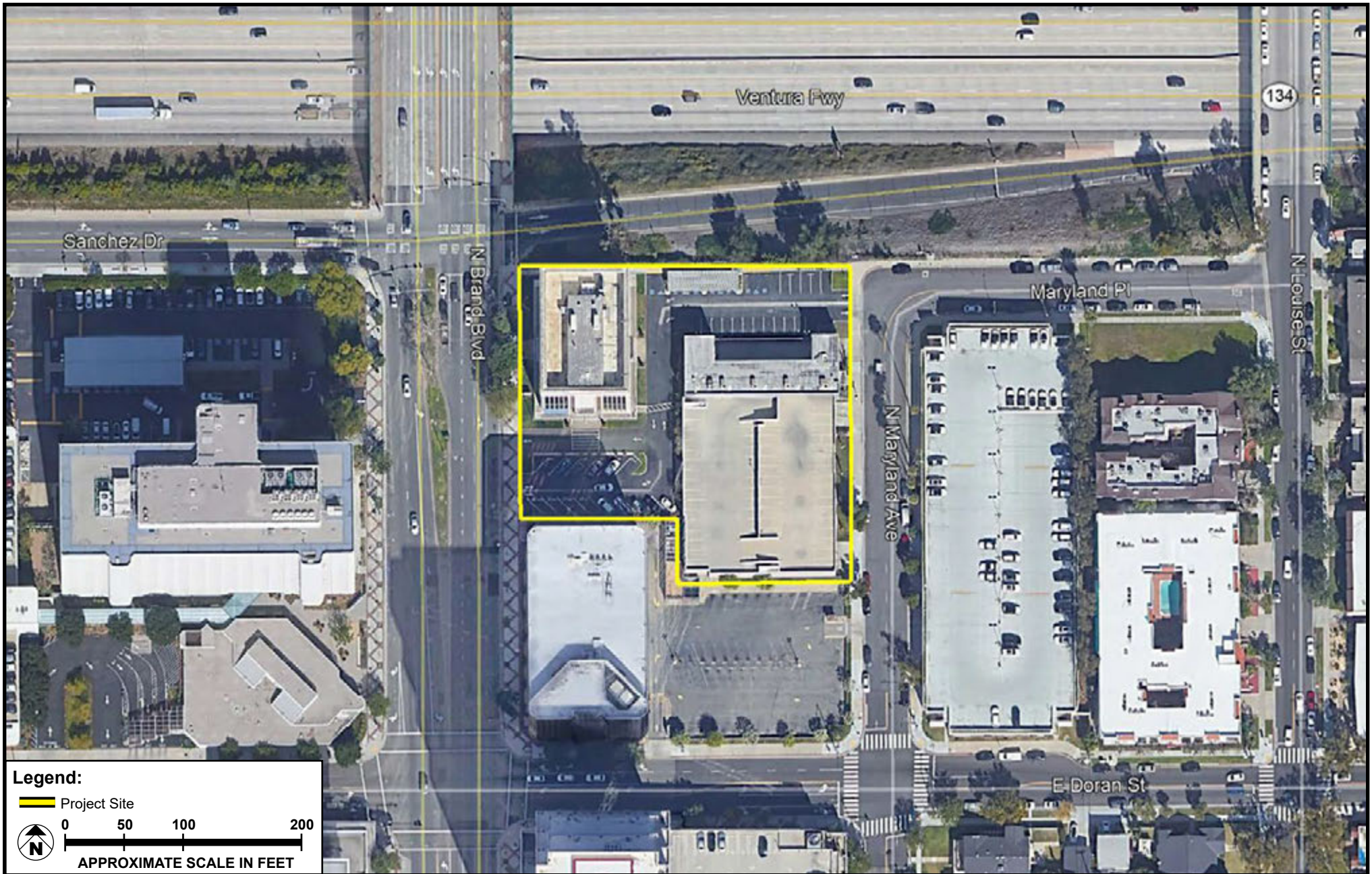
The Project site is currently occupied by a two-story office building providing 5,297 square feet of floor area, an existing six-story commercial Chase Bank building (Chase Building) providing approximately 45,125 square feet of office floor area, an associated parking structure, and surface parking 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



SOURCE: Google Earth - 2021

FIGURE 2



# 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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> Noise levels generated by a variety of activities are shown in **Figure 3: Common Noise**

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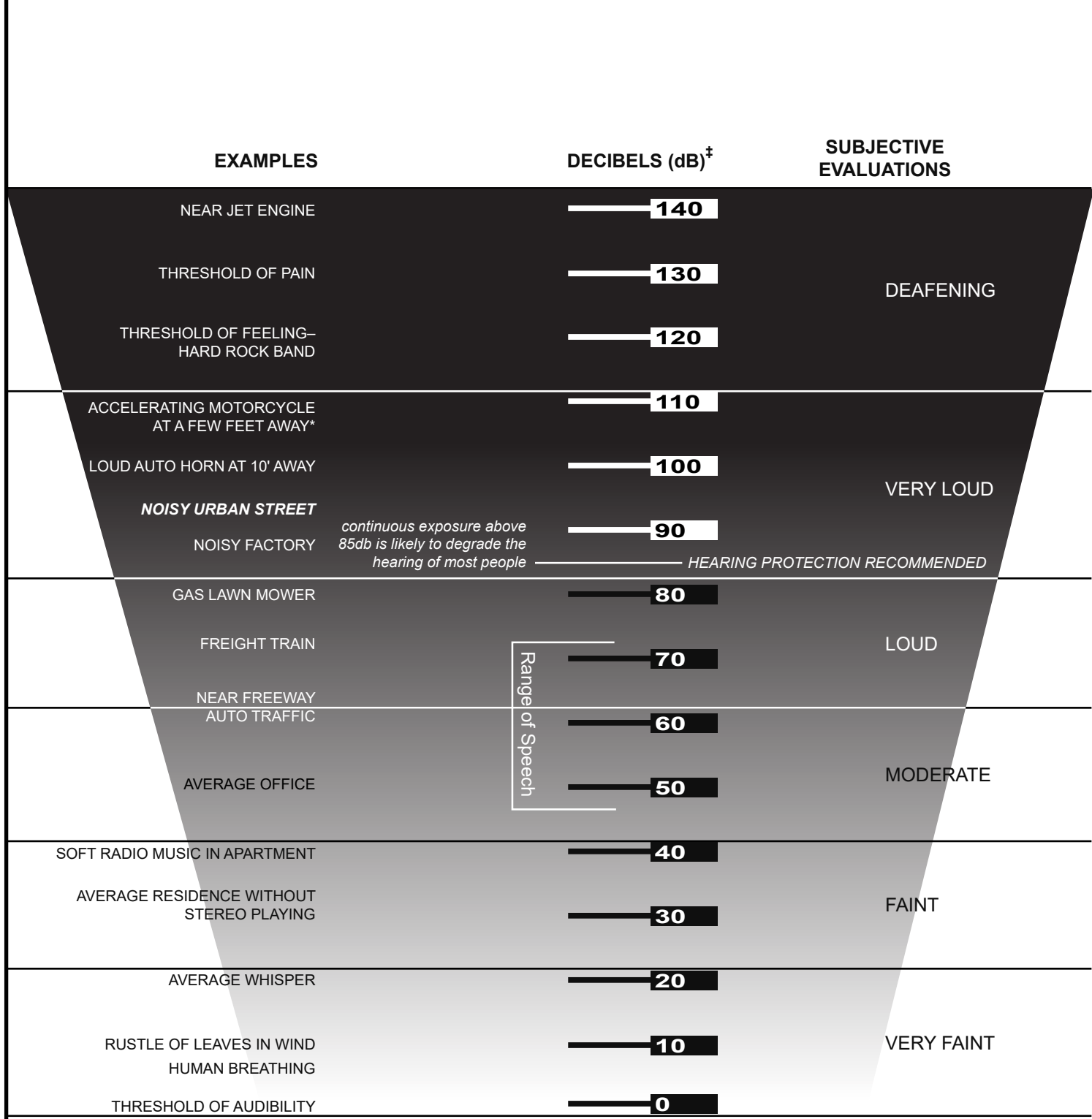
1 US Department of Transportation, Federal Highway Administration (USDOT FHWA), Fundamentals and Abatement of Highway Traffic Noise (Springfield, VA: Author, September 1980), 81.  
2 USDOT FHWA, Fundamentals and Abatement, 97.  
3 USDOT FHWA, Fundamentals and Abatement, 97.

**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 Leq <sup>a</sup>
Nighttime (L <sub>night</sub> )	L <sub>night</sub> 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.

<sup>a</sup> California Department of Transportation, Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol, (Sacramento, California: November 2009), pp. N51-N54.

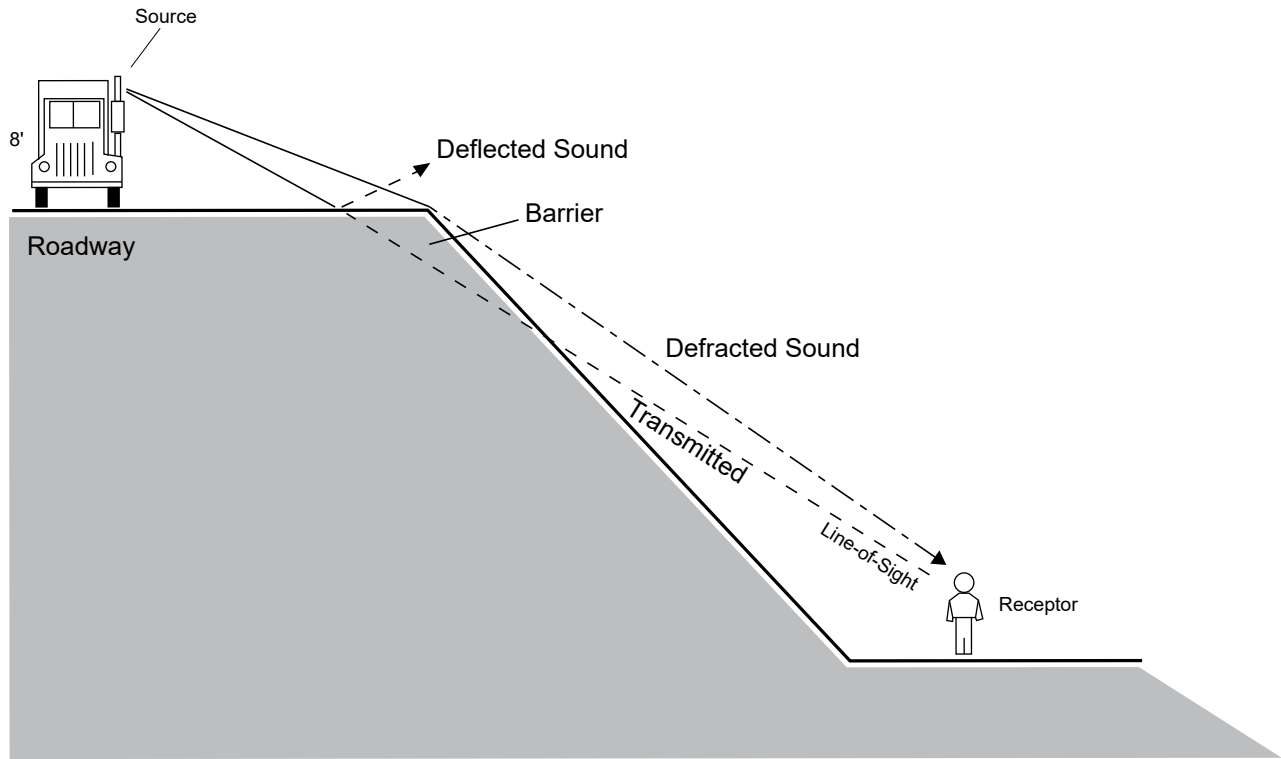


Range of Speech

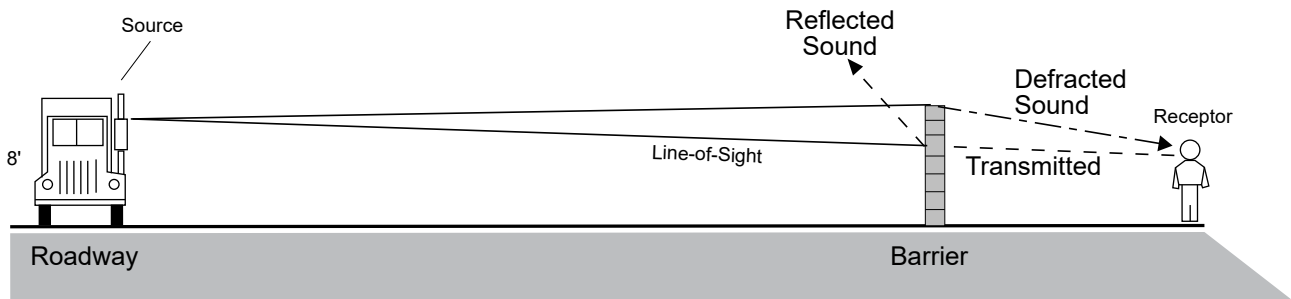
\* NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.  
<sup>‡</sup> NOTE: dB are "average" values as measured on the A-scale of a sound-level meter.

SOURCE: Meridian Consultants, LLC - 2021

FIGURE 3



"Barrier Effect" Resulting from Differences in Elevation.



"Barrier Effect" Resulting from Typical Soundwall.

SOURCE: Meridian Consultants, LLC - 2021

FIGURE 4

## 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.<sup>4</sup> **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.

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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	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Residential—Multifamily	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Transient Lodging - Motel, Hotels	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Schools, Libraries, Churches, Hospitals, Nursing Homes	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Auditoriums, Concert Halls, Amphitheaters	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Sports Arena, Outdoor Spectator Sports	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Playgrounds, Neighborhood Parks	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Office Buildings, Businesses, Commercial, and Professional	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray
Industrial, Manufacturing, Utilities, Agriculture	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray

-  *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 insulation 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 <sup>1</sup>	65 <sup>2</sup>
	Multifamily	45 <sup>1</sup>	65 <sup>3</sup>
Commercial	Residential within Mixed Use	45 <sup>1</sup>	-
	Hotel, Motel, Transient, Lodging	45 <sup>1</sup>	-
Institutional	Hospital, School, Church, Library	45	-
Open Space	Parks <sup>4</sup>	-	65 <sup>1</sup>

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

<sup>1</sup> Applies to the indoor environment excluding bathrooms, toilets, closets, and corridors

<sup>2</sup> Applies to the outdoor environment limited to the private yard of single family residences (normally the rear yard).

<sup>3</sup> 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).

<sup>4</sup> 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.<sup>5</sup>

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.<sup>6</sup>

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

<sup>6</sup> 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 <sup>1</sup>	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 <sup>1</sup>	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 <sup>2</sup>	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 <sup>2</sup>	71.6

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

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

<sup>1</sup> There are no presumed noise standards for the commercial use.

<sup>2</sup> 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.<sup>7</sup> 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 be 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,<sup>8</sup> 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.

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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](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
<b><i>Brand Boulevard</i></b>				
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
<b><i>Goode Avenue (SR-134 WB Off-Ramp)</i></b>				
1	East of Brand Boulevard	Commercial	57.8	Normally Acceptable
	West of Brand Boulevard	Commercial	52.3	Normally Acceptable
<b><i>Sanchez Drive (SR-134 EB On-Ramp)</i></b>				
2	East of Brand Boulevard	Commercial/Residential (Multi-family)	63.3	Normally Acceptable
	West of Brand Boulevard	Commercial	60.5	Normally Acceptable
<b><i>Doran Street</i></b>				
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
<b>Maryland Avenue</b>				
4	North of Doran Street	Commercial	50.0	Normally Acceptable
	South of Doran Street	Commercial/Residential (Multi-family)	60.5	Normally Acceptable
<b>Maryland Place</b>				
5	East of Louise Street	N/A	N/A	N/A
	West of Louise Street	Residential/Commercial	51.7	Normally Acceptable
<b>Louise Street</b>				
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



North



West



South



East



SOURCE: Google Earth - 2021

FIGURE 5b



North



West



South



East



SOURCE: Google Earth - 2021

FIGURE 5c



North



West



South



East



SOURCE: Google Earth - 2021

FIGURE 5d



## 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*<sup>9</sup> 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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<sup>9</sup> 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](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<sup>10</sup> 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,

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<sup>10</sup> 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](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.

<b>TABLE 6 TYPICAL MAXIMUM NOISE LEVELS FOR PROJECT CONSTRUCTION EQUIPMENT</b>			
<b>Equipment Description</b>	<b>Typical Duty Cycle (%)</b>	<b>Spec Lmax (dBA)</b>	<b>Actual Lmax (dBA)</b>
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.<sup>11</sup>

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.<sup>12</sup> 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.<sup>13</sup> 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

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12 FHWA, *Special Report—Measurement, Prediction, and Mitigation*, updated June 2017, [https://www.fhwa.dot.gov/Environment/noise/construction\\_noise/special\\_report/hcn04.cfm](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](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.

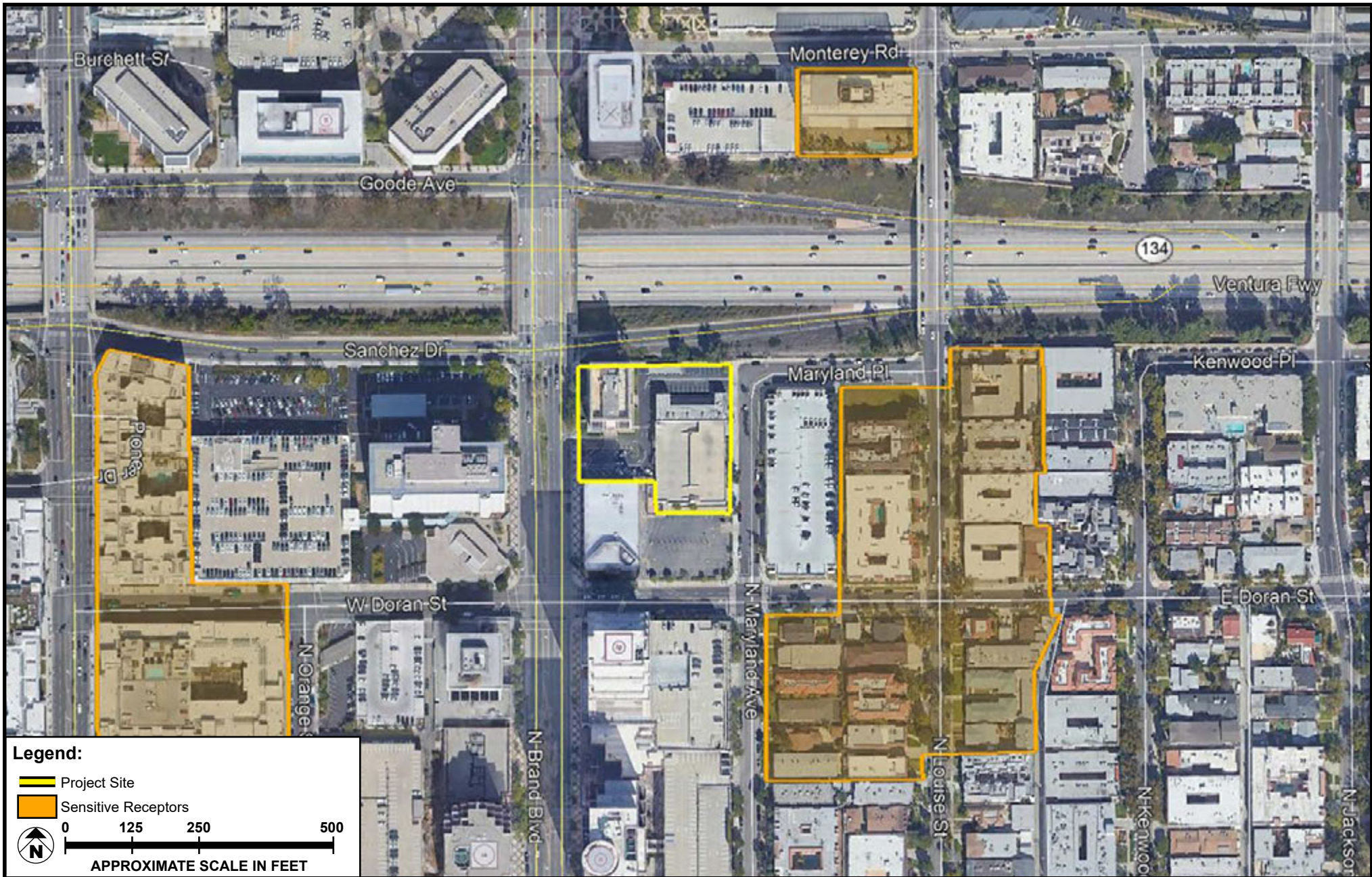
Moreover, the Project would comply with the GMC as it relates to construction equipment by ensuring that the operation of noise generating construction equipment would not occur between the hours of 7:00 PM on one day and 7:00 AM of the next day, or from 7:00 PM on Saturday to 7:00 AM on Monday, or from 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



## ***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 Historical 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-induced 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	
<i>FTA Reference Vibration Levels at 25 feet</i>								
		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?
<b><i>Brand Boulevard</i></b>						
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
<b><i>Goode Avenue (SR-134 WB Off-Ramp)</i></b>						
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
<b><i>Sanchez Drive (SR-134 EB On-Ramp)</i></b>						
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
<b><i>Doran Street</i></b>						
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?
<b><i>Maryland Avenue</i></b>						
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
<b><i>Maryland Place</i></b>						
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
<b><i>Louise Street</i></b>						
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?
<b><i>Brand Boulevard</i></b>						
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
<b><i>Goode Avenue (SR-134 WB Off-Ramp)</i></b>						
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
<b><i>Sanchez Drive (SR-134 EB On-Ramp)</i></b>						
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
<b><i>Doran Street</i></b>						
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?
<b>Maryland Avenue</b>						
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
<b>Maryland Place</b>						
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
<b>Louise Street</b>						
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

A stylized number '4' logo composed of two overlapping brush strokes. The top stroke is light green and the bottom stroke is light blue. The strokes are thick and have a textured, hand-painted appearance.

**Attachment A**

**Noise Monitoring Data Sheets**

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

**Monitoring Period**

<b>Time</b>	<b>LAeq</b>	<b>LASmax</b>	<b>LASmin</b>
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**

<b>Time</b>	<b>LAeq</b>	<b>LASmax</b>	<b>LASmin</b>
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**

<b>Time</b>	<b>LAeq</b>	<b>LASmax</b>	<b>LASmin</b>
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**

<b>Time</b>	<b>LAeq</b>	<b>LASmax</b>	<b>LASmin</b>
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



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**Attachment B**

**Construction Noise Worksheet**



Roadway Construction Noise Model (RCNM), Version 1.1

Report dat #####

Case Desc: Demolition

---- Receptor #1 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact	Lmax	Lmax	Distance	Shielding	
	Device	Usage(%)	(dBA)	(dBA)	(feet)	(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 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact	Lmax	Lmax	Distance	Shielding	
	Device	Usage(%)	(dBA)	(dBA)	(feet)	(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 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact	Lmax	Lmax	Distance	Shielding	
	Device	Usage(%)	(dBA)	(dBA)	(feet)	(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

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



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
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
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
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
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

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report dat #####

Case Desc: Building Construction

---- Receptor #1 ----

Baselines (dBA)

Descriptio	Land Use	Daytime	Evening	Night
Site 2	Residentia	69.5	69.5	69.5

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	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

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

\*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Baselines (dBA)

Descriptio	Land Use	Daytime	Evening	Night
Site 3	Residentia	63.9	63.9	63.9

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	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

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

\*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Descriptio	Land Use	Daytime	Evening	Night
Site 4	Residentia	71.6	71.6	71.6

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	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

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

---- Receptor #1 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact Device	Lmax Usage(%) (dBA)	Lmax (dBA)	Distance (feet)	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 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact Device	Lmax Usage(%) (dBA)	Lmax (dBA)	Distance (feet)	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 ----

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

		Equipment				
		Spec	Actual	Receptor	Estimated	
Description	Impact Device	Lmax Usage(%) (dBA)	Lmax (dBA)	Distance (feet)	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	

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

\*Calculated Lmax is the Loudest value.



Roadway Construction Noise Model (RCNM), Version 1.1

Report dat #####

Case Desc: Architectural Coating

---- Receptor #1 ----

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

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

		Results								Noise Limit Exceedance (dBA)					
		Calculated (dBA)		Noise Limits (dBA)				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 ----

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

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

		Results								Noise Limit Exceedance (dBA)					
		Calculated (dBA)		Noise Limits (dBA)				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 ----

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

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

		Results								Noise Limit Exceedance (dBA)					
		Calculated (dBA)		Noise Limits (dBA)				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**



**Lucia Park Project  
Construction Vibration Model  
(205 feet)**

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 <sup>a</sup>	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**

**Lucia Park Project  
Construction Vibration Model  
(195 feet)**

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 <sup>a</sup>	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**

**Lucia Park Project  
Construction Vibration Model  
(720 feet)**

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 <sup>a</sup>	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				rev. (Date)				If Peak Hour = 6% of ADT, Scaling Factor = 16.667												
AM Peak Hour and PM Peak Hour								If Peak Hour = 7% of ADT, Scaling Factor = 14.286												
								If Peak Hour = 8% of ADT, Scaling Factor = 12.5												
Intersection: 1								If Peak Hour = 9% of ADT, Scaling Factor = 11.111												
Brand Boulevard / Goode Avenue - SR-134 WB Off-Ramp								If Peak Hour = 10% of ADT, Scaling Factor = 10												
				Brand Boulevard				ADT												
				Southbound				Road				Brand Boulevard								
								Leg				North of								
				right through left				Cross Street				Goode Avenue - SR-134 WB Off-Ramp								
												East of								
												West of								
												Brand Boulevard								
				Existing Traffic AM	255	827	0	Existing Traffic AM	17,112.0	19,120.0	13,448.0	6,768.0								
				Existing Traffic PM	214	848	0	Existing Traffic PM	16,768.0	18,848.0	10,984.0	7,992.0								
				Existing Traffic + Project AM	255	828	0	Existing Traffic + Project AM	17,160.0	19,272.0	13,472.0	6,848.0								
				Existing Traffic + Project PM	214	854	0	Existing Traffic + Project PM	16,808.0	19,008.0	11,064.0	8,032.0								
				Future Cumulative Baseline AM	285	959	0	Future Cumulative Baseline AM	19,880.0	22,280.0	15,208.0	7,576.0								
				Future Cumulative Baseline PM	244	1,013	0	Future Cumulative Baseline PM	19,744.0	22,456.0	12,968.0	9,120.0								
				Future Cumulative + Project AM	285	960	0	Future Cumulative + Project AM	19,928.0	22,432.0	15,232.0	7,656.0								
				Future Cumulative + Project PM	244	1,019	0	Future Cumulative + Project PM	19,784.0	22,616.0	13,048.0	9,160.0								
				Eastbound				Westbound												
				left through right	Future Cumulative + Project AM	244	1,019	0	right through left	Existing Traffic AM	555	328	798							
				Existing Traffic AM	0	0	0	Net New Project Trips AM	0	1	0	Existing Traffic AM	555	328	798					
				Existing Traffic PM	0	0	0	Net New Project Trips PM	0	6	0	Existing Traffic PM	508	334	531					
				Existing Traffic + Project AM	0	0	0					Existing Traffic + Project AM	555	328	801					
				Existing Traffic + Project PM	0	0	0					Existing Traffic + Project PM	508	334	541					
				Future Cumulative Baseline AM	0	0	0					Future Cumulative Baseline AM	614	375	912					
				Future Cumulative Baseline PM	0	0	0					Future Cumulative Baseline PM	561	406	654					
				Future Cumulative + Project AM	0	0	0					Future Cumulative + Project AM	614	375	915					
				Future Cumulative + Project PM	0	0	0					Future Cumulative + Project PM	561	406	664					
				Net New Project Trips AM	0	0	0	Northbound					Net New Project Trips AM	0	0	3				
				Net New Project Trips PM	0	0	0	left through right	Existing Traffic AM	263	502	0	Net New Project Trips PM	0	0	10				
								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									





<b>Project Name: Long Beach Riverpark</b>				rev. (Date)					<b>If Peak Hour = 6% of ADT, Scaling Factor = 16.667</b>						
<b>AM Peak Hour and PM Peak Hour</b>									<b>If Peak Hour = 7% of ADT, Scaling Factor = 14.286</b>						
Intersection: 2									<b>If Peak Hour = 8% of ADT, Scaling Factor = 12.5</b>						
Brand Boulevard / Sanchez Drive - SR-134 EB On-Ramp									<b>If Peak Hour = 9% of ADT, Scaling Factor = 11.111</b>						
									<b>If Peak Hour = 10% of ADT, Scaling Factor = 10</b>						
				<b>Brand Boulevard</b>				<b>ADT</b>							
				Southbound				Road	Brand Boulevard		Sanchez Drive - SR-134 EB On-Ramp				
				right	through	left	Leg	North of	South of	East of	West of				
								Cross Street	Sanchez Drive - SR-134 EB On-Ramp		Brand Boulevard				
				Existing Traffic AM				Existing Traffic AM	18,944.0	19,008.0	8,504.0	8,248.0			
				Existing Traffic PM				Existing Traffic PM	18,576.0	21,400.0	12,184.0	6,784.0			
				Existing Traffic + Project AM				Existing Traffic + Project AM	19,096.0	19,248.0	8,584.0	8,256.0			
				Existing Traffic + Project PM				Existing Traffic + Project PM	18,736.0	21,632.0	12,224.0	6,816.0			
				Future Cumulative Baseline AM				Future Cumulative Baseline AM	22,080.0	22,472.0	10,088.0	9,376.0			
				Future Cumulative Baseline PM				Future Cumulative Baseline PM	22,160.0	25,552.0	14,024.0	7,704.0			
				Future Cumulative + Project AM				Future Cumulative + Project AM	22,232.0	22,712.0	10,168.0	9,384.0			
				Future Cumulative + Project PM				Future Cumulative + Project PM	22,320.0	25,784.0	14,064.0	7,736.0			
								Westbound							
								right	through	left					
<b>Sanchez Drive - SR</b>				Eastbound			Future Cumulative + Project PM			Existing Traffic AM					
				left	through	right	Net New Project Trips AM			Existing Traffic PM					
				Existing Traffic AM			Net New Project Trips PM			Existing Traffic + Project AM					
				Existing Traffic PM			W			Existing Traffic + Project PM					
				Existing Traffic + Project AM			E			Future Cumulative Baseline AM					
				Existing Traffic + Project PM			S			Future Cumulative Baseline PM					
				Future Cumulative Baseline AM			Future Cumulative + Project AM			Future Cumulative + Project PM					
				Future Cumulative Baseline PM			Future Cumulative + Project PM			Net New Project Trips AM					
				Future Cumulative + Project AM			Northbound			Net New Project Trips PM					
				Future Cumulative + Project PM			left			Existing Traffic AM					
Net New Project Trips AM			through			Existing Traffic PM									
Net New Project Trips PM			right			Existing Traffic + Project AM									
						Existing Traffic + Project PM									
						Future Cumulative Baseline AM									
						Future Cumulative Baseline PM									
						Future Cumulative + Project AM									
						Future Cumulative + Project PM									
						Net New Project Trips AM									
						Net New Project Trips PM									

2  
**NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes**

ROADWAY NAME	Segment	Land Use	Median Lanes	ADT Volume	Design Dist. from Center (m)	Barrier Alpha Factor	Vehicle Mix Medium Heavy Trucks (dB(A))	Traffic Volumes													Ref. Energy Level (dB(A))	Dist. (ft)				Dist. (m)				Total A	MT	HT	Total A	MT	HT
								Day	Eve	Night	MT	TD	HT	Mt	HTe	MTn	HTn	A	MT	HT		Aj	A	MT	HT	A	MT	HT							
<b>Brand Boulevard n/o Sanchez Drive – SR-134</b>																																			
Existing Traffic AM																																			
Existing Traffic PM																																			
Existing Traffic + Project AM																																			
Existing Traffic + Project PM																																			
Future Cumulative Baseline AM																																			
Future Cumulative Baseline PM																																			
Future Cumulative + Project AM																																			
Future Cumulative + Project PM																																			
<b>Brand Boulevard n/o Sanchez Drive – SR-134</b>																																			
Existing Traffic AM																																			
Existing Traffic PM																																			
Existing Traffic + Project AM																																			
Existing Traffic + Project PM																																			
Future Cumulative Baseline AM																																			
Future Cumulative Baseline PM																																			
Future Cumulative + Project AM																																			
Future Cumulative + Project PM																																			
<b>Sanchez Drive – SR-134 EB On-Ramp e/o</b>																																			
Existing Traffic AM																																			
Existing Traffic PM																																			
Existing Traffic + Project AM																																			
Existing Traffic + Project PM																																			
Future Cumulative Baseline AM																																			
Future Cumulative Baseline PM																																			
Future Cumulative + Project AM																																			
Future Cumulative + Project PM																																			
<b>Sanchez Drive – SR-134 EB On-Ramp w/o</b>																																			
Existing Traffic AM																																			
Existing Traffic PM																																			
Existing Traffic + Project AM																																			
Existing Traffic + Project PM																																			
Future Cumulative Baseline AM																																			
Future Cumulative Baseline PM																																			
Future Cumulative + Project AM																																			
Future Cumulative + Project PM																																			

(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 asphalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

	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%

<b>Project Name: Long Beach Riverpark</b>				rev. (Date)								<b>If Peak Hour = 6% of ADT, Scaling Factor = 16.667</b>					
<b>AM Peak Hour and PM Peak Hour</b>												<b>If Peak Hour = 7% of ADT, Scaling Factor = 14.286</b>					
												<b>If Peak Hour = 8% of ADT, Scaling Factor = 12.5</b>					
Intersection: 3												<b>If Peak Hour = 9% of ADT, Scaling Factor = 11.111</b>					
Brand Boulevard / Doran Street												<b>If Peak Hour = 10% of ADT, Scaling Factor = 10</b>					
<b>Brand Boulevard</b>										ADT							
										Brand Boulevard				Doran Street			
Southbound										North of		South of		East of		West of	
										Doran Street							
				right	through	left											
Existing Traffic AM				335	941	343	Existing Traffic AM				19,288.0	13,120.0	7,416.0	6,480.0			
Existing Traffic PM				129	898	171	Existing Traffic PM				21,016.0	16,272.0	8,000.0	8,424.0			
Existing Traffic + Project AM				335	941	348	Existing Traffic + Project AM				19,448.0	13,224.0	8,072.0	6,648.0			
Existing Traffic + Project PM				129	898	189	Existing Traffic + Project PM				21,400.0	16,392.0	8,768.0	8,656.0			
Future Cumulative Baseline AM				424	1,062	372	Future Cumulative Baseline AM				22,784.0	15,920.0	8,240.0	8,672.0			
Future Cumulative Baseline PM				209	1,065	187	Future Cumulative Baseline PM				25,128.0	19,752.0	8,936.0	11,304.0			
Future Cumulative + Project AM				424	1,062	377	Future Cumulative + Project AM				22,944.0	16,024.0	8,896.0	8,840.0			
Future Cumulative + Project PM				209	1,065	205	Future Cumulative + Project PM				25,512.0	19,872.0	9,704.0	11,536.0			
Eastbound							Westbound										
			left	through	right				right	through	left						
Existing Traffic AM				77	116	60	Existing Traffic AM				203	180	46				
Existing Traffic PM				279	270	112	Existing Traffic PM				263	211	47				
Existing Traffic + Project AM				70	127	60	Existing Traffic + Project AM				232	197	56				
Existing Traffic + Project PM				278	287	112	W				E	52					
Future Cumulative Baseline AM				125	134	99				S							
Future Cumulative Baseline PM				369	307	174	Future Cumulative Baseline AM				222	209	51				
Future Cumulative + Project AM				118	145	99	Future Cumulative Baseline PM				286	243	52				
Future Cumulative + Project PM				368	324	174	Future Cumulative + Project AM				251	226	61				
Net New Project Trips AM				-7	11	0	Future Cumulative + Project PM				318	256	57				
Net New Project Trips PM				-1	17	0	Net New Project Trips AM				29	17	10				
							Net New Project Trips PM				32	13	5				
							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				



Project Name: Long Beach Riverpark			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				
AM Peak Hour and PM Peak Hour																										
Intersection:			4																							
Maryland Avenue / Doran Street																										
<b>Maryland Avenue</b>																										
Southbound										ADT																
										Maryland Avenue					Doran Street											
										North of		South of			East of		West of									
										Doran Street					Maryland Avenue											
										Existing Traffic AM		Existing Traffic PM			Existing Traffic + Project AM		Existing Traffic + Project PM			Future Cumulative Baseline AM		Future Cumulative Baseline PM				
										111		111			8		8			60		116				
										97		94			22		22			116		120				
										148		96			24		148		96			148		96		
Eastbound										Westbound																
			left			through			right						right			through			left					
Existing Traffic AM			39			104			291			Net New Project Trips AM			56			4			4					
Existing Traffic PM			51			361			77			Net New Project Trips PM			51			2			2					
Existing Traffic + Project AM			65			104			291						N											
Existing Traffic + Project PM			96			361			77						W			E								
Future Cumulative Baseline AM			42			122			315						S											
Future Cumulative Baseline PM			55			409			83																	
Future Cumulative + Project AM			68			122			315																	
Future Cumulative + Project PM			100			409			83			Northbound														
Net New Project Trips AM			26			0			0			Existing Traffic AM			32			14			36					
Net New Project Trips PM			45			0			0			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					









<b>Project Name: Long Beach Riverpark</b>										rev. (Date)		<b>If Peak Hour = 6% of ADT, Scaling Factor = 16.667</b>								
<b>AM Peak Hour and PM Peak Hour</b>												<b>If Peak Hour = 7% of ADT, Scaling Factor = 14.286</b>								
												<b>If Peak Hour = 8% of ADT, Scaling Factor = 12.5</b>								
Intersection: 6												<b>If Peak Hour = 9% of ADT, Scaling Factor = 11.111</b>								
Louise Street / Doran Street												<b>If Peak Hour = 10% of ADT, Scaling Factor = 10</b>								
	<b>Louise Street</b>													ADT						
	Southbound									Louise Street				Doran Street						
					right	through	left				North of		South of		East of		West of			
											Doran Street				Louise Street					
					Existing Traffic AM	48	251	36			Existing Traffic AM	4,392.0	4,448.0	4,240.0	4,584.0					
					Existing Traffic PM	38	313	62			Existing Traffic PM	6,824.0	5,520.0	6,416.0	6,824.0					
					Existing Traffic + Project AM	48	251	36			Existing Traffic + Project AM	4,392.0	4,440.0	4,280.0	4,616.0					
					Existing Traffic + Project PM	38	313	62			Existing Traffic + Project PM	6,824.0	5,520.0	6,464.0	6,872.0					
					Future Cumulative Baseline AM	52	276	39			Future Cumulative Baseline AM	4,816.0	4,872.0	4,808.0	5,168.0					
					Future Cumulative Baseline PM	41	344	68			Future Cumulative Baseline PM	7,472.0	6,048.0	7,232.0	7,664.0					
					Future Cumulative + Project AM	52	276	39			Future Cumulative + Project AM	4,816.0	4,872.0	4,848.0	5,208.0					
					Future Cumulative + Project PM	41	344	68			Future Cumulative + Project PM	7,472.0	6,048.0	7,280.0	7,712.0					
					Eastbound						Westbound									
						left	through	right				right	through	left						
Doran Street					Existing Traffic AM	18	84	47			Net New Project Trips AM	0	0	0						
					Existing Traffic PM	115	425	41			Net New Project Trips PM	0	0	0						
					Existing Traffic + Project AM	18	88	46				N								
					Existing Traffic + Project PM	115	427	41				W								
					Future Cumulative Baseline AM	19	100	51				S								
					Future Cumulative Baseline PM	125	478	44												
					Future Cumulative + Project AM	19	104	51												
					Future Cumulative + Project PM	125	480	44												
					Net New Project Trips AM	0	4	0			Northbound									
					Net New Project Trips PM	0	2	0				left	through	right						
						Existing Traffic AM	64	146	23			Existing Traffic AM	50	312	25					
						Existing Traffic PM	42	248	27			Existing Traffic PM	77	192	19					
						Existing Traffic + Project AM	64	146	23			Existing Traffic + Project AM	50	313	25					
					Existing Traffic + Project PM	42	248	27			Existing Traffic + Project PM	77	196	19						
					Future Cumulative Baseline AM	69	161	25			Future Cumulative Baseline AM	55	355	27						
					Future Cumulative Baseline PM	45	273	29			Future Cumulative Baseline PM	83	225	21						
					Future Cumulative + Project AM	69	161	25			Future Cumulative + Project AM	55	356	27						
					Future Cumulative + Project PM	45	273	29			Future Cumulative + Project PM	83	229	21						
					Net New Project Trips AM	0	0	0			Net New Project Trips AM	0	1	0						
					Net New Project Trips PM	0	0	0			Net New Project Trips PM	0	4	0						

