4.8 NOISE

4.8.1 INTRODUCTION

The Noise section of the EIR discusses the existing noise environment in the immediate project vicinity and identifies potential noise-related impacts and mitigation measures associated with the proposed project. Specifically, this section analyzes potential construction noise levels attributable to the proposed project and the resultant impacts of these noise levels upon any surrounding sensitive receptors. In addition, this section assesses existing and future anticipated traffic noise levels along roadways surrounding the project site, as well as train noise along the nearby Union Pacific Railroad (UPRR) tracks, and the potential effects of such off-site traffic and train noise upon any sensitive outdoor areas within the proposed project. Groundborne vibration from construction equipment sources is also evaluated to determine whether on-site vibratory construction equipment could result in adverse effects to nearby structures. Information presented in this section is primarily drawn from the *Environmental Noise Assessment* prepared specifically for the proposed project by j.c. brennan & associates, Inc. (see Appendix N).[1]

4.8.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Fundamentals of Acoustics

Acoustics is the science of sound. Sound is a mechanical energy of vibration transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough, 20 times per second, they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel (dB) scale uses the hearing

[1] j.c. brennan & associates, Inc. *Lincoln40 Residential Environmental Noise Assessment. March 15,* 2017.

threshold (20 micropascals or vibrations per second), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. A-weighting is the most commonly used of a family of curves defined in the International Electrotechnical Commission (IEC) standard 61672:2003 and various national standards relating to the measurement of sound pressure level. A-weighting is applied to instrument-measured sound levels in an effort to account for the relative loudness perceived by the human ear, as the ear is less sensitive to low frequencies. A-weighting is employed by arithmetically adding a table of values, listed by octave or third-octave bands, to the measured sound pressure levels in dB. The resulting octave band measurements are usually added (logarithmic method) to provide a single A-weighted value describing the sound; the units are written as dBA. A strong correlation exists between A-weighted sound levels and the way the human ear perceives sound. Accordingly, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound. In addition, because of the logarithmic nature of the decibel scale, provided two sources of noise differ in intensity by at least 10 dB, their noise would not be additive. Two noise levels differing by 10 dB, which are added together, essentially equal the higher of the two noise levels.[2]

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

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2 Because the decibel scale is logarithmic, decibels must be converted into energy before undergoing mathematical conversion, so the formula for adding two sources of noise is as follows:

$L_{sum} = 10 * Log_{10} (10 \wedge ^{(L_1 / 10)} + 10 \wedge ^{(L_2 / 10)})$

Which for theoretical values of 60 and 70 for L_1 and L_2, respectively, computes as follows:

$L_{sum} = 10 * Log_{10} (10 \wedge ^{(70 / 10)} + 10 \wedge ^{(60 / 10)})$

Which reduces to:

L_{sum} = 70.41 dB or 70 dB after rounding.

The day/night average noise level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, L_{dn} tends to disguise short-term variations in the noise environment.

Table 4.8-1 provides a list of several examples of the noise levels associated with common activities.

Table 4.8-1
Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	--100--	
Gas Lawn Mower at 1 meter (3 feet)	--90--	
Diesel Truck at 15 meters (50 feet), at 80 kilometers/hour (50 miles/hour)	--80--	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 meters (100 feet)	--70--	Vacuum Cleaner at 3 meter (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	--60--	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. November, 2009.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; or
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. According to j.c. brennan & associates, Inc., a completely satisfactory way of measuring the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction does not exist. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: sleep disturbance can occur at levels above 35 dBA; interference with human speech begins at about 60 dBA; and hearing damage can result from prolonged exposure to noise levels in excess of 85 to 90 dBA.[3]

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, car doors slamming, and engines revving outside a nightclub, contribute very little to 24-hour noise levels but are capable of causing sleep disturbance and severe annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1.0 dB cannot be perceived;
- Outside of the laboratory, a 3.0 dB change is considered a barely perceivable difference;
- A change in level of at least 5.0 dB is required before any noticeable change in human response would be expected; and
- A 10 dB change is subjectively heard as approximately a doubling in loudness, and would typically cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately six dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

Existing Sensitive Receptors

Certain land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and shielding from noise sources) and the type of activities typically involved. Residences, schools, libraries, churches, hospitals, nursing homes,

[3] United States Environmental Protection Agency. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974.

auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Accordingly, such land uses are referred to as sensitive receptors. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved.

In the immediate vicinity of the project site, sensitive land uses include single-family residential uses located north of the project site across the railroad tracks, and as close as 135 feet from the site. Residential uses are located directly adjacent to the west and a cut-out portion of the project boundaries, at the southwest corner. Additional multi-family residential uses are located across Olive Drive at distances of approximately 75 feet from the site. These land uses could potentially experience noise impacts associated with project construction, and/or increased roadway traffic associated with the project. In addition, the noise analysis evaluates the potential for any increased railroad noise levels at residential uses to the north due to reflections off of building facades or any proposed sound barriers.

Existing Ambient Noise Levels

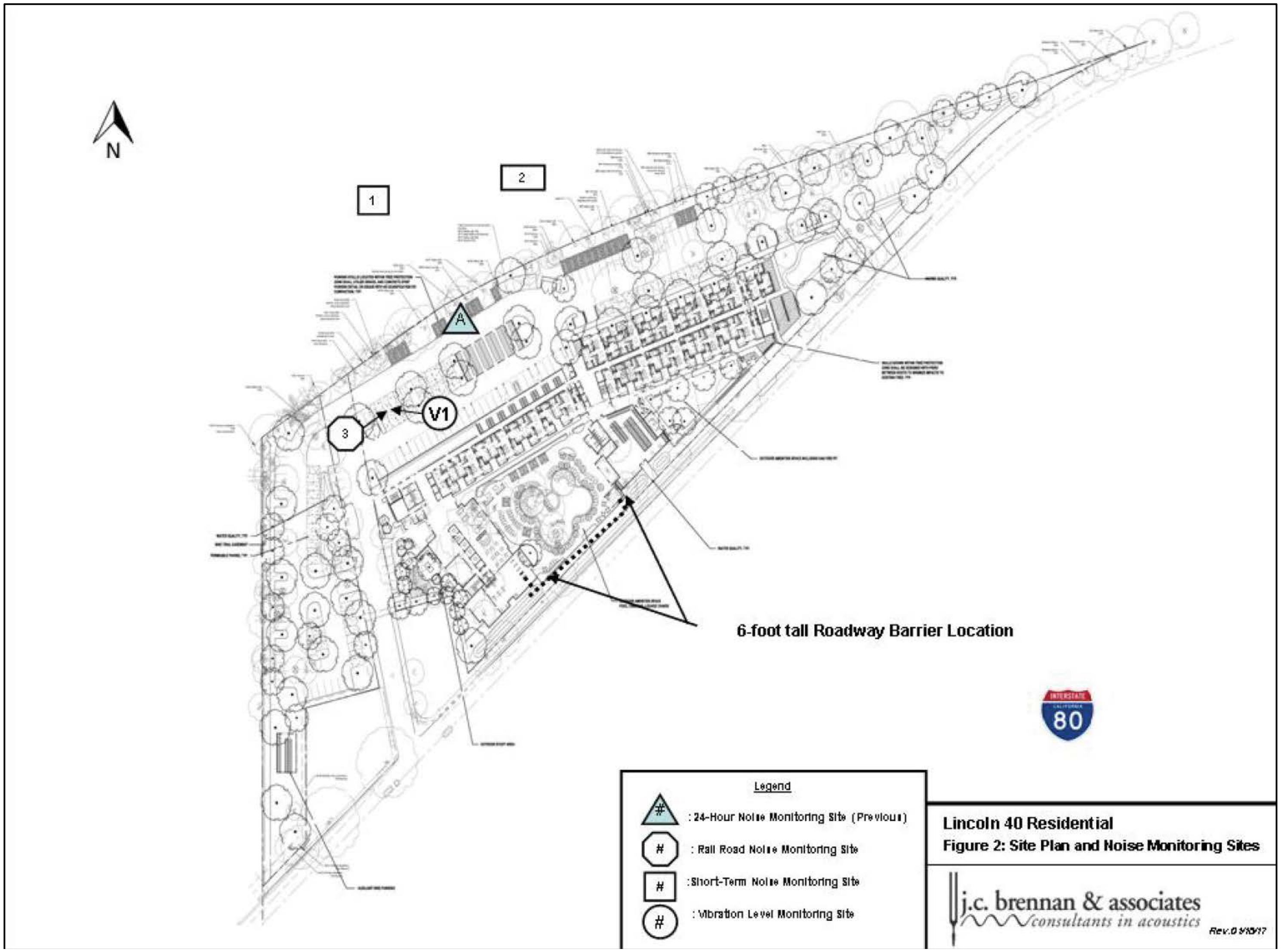
To quantify existing ambient noise levels in the vicinity of the project site, j.c. brennan & associates, Inc. staff conducted short-term noise level measurements on the project site and at residential areas to the north, within the Old East Davis neighborhood. In addition, continuous 24-hour noise level measurements were conducted on the site. Figure 4.8-1 shows the locations of the noise measurement sites. The noise level measurements were conducted in 2015 and 2016 for this project. The ambient noise levels measured are presented in Table 4.8-2. The maximum value (L_{max}) represents the highest noise level measured during an interval. The average value (L_{eq}) represents the energy average of all of the noise measured during an interval. The median value (L_{50}) represents the sound level exceeded 50 percent of the time during an interval.

Table 4.8-2
Summary of Existing Background Noise Measurement Data

Site	Date	L_{dn}	Average Measured Hourly Noise Levels (dBA) – Daytime (7 AM – 10 PM) Low-High (Average)			Nighttime (10 PM – 7 AM) Low-High (Average)		
			L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
Continuous (24-Hour) Noise Level Measurements								
A	July 15 to 16, 2015	76.8	69.4	48.3	93.2	70.6	52.1	92.8
Short-Term Noise Level Measurements						**Time**		
1	August 15, 2016	N/A	49.2	48.2	63.9	11:02 AM		
2	August 15, 2016	N/A	48.1	47.3	58.4	11:34 AM		

Source: j.c. brennan & associates, Inc., March 15, 2017.

Figure 4.8-1
Noise Measurement Locations



Source: j.c. brennan & associates, Inc., March 15, 2017.

Existing Roadway Noise Levels

To predict existing noise levels due to traffic, j.c. brennan & associates used the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108). Traffic volumes for existing conditions were obtained from the traffic study prepared for the project (Fehr & Peers).

The PM peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes. Truck percentages and vehicle speeds on the local area roadways were estimated from field observations. Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. The project's technical noise expert, j.c. brennan & associates, believes that this traffic noise analysis is representative of the majority of sensitive receptors located closest to the project-area roadway segments analyzed.

Table 4.8-3 presents the existing traffic noise levels in terms of L_{dn} at closest sensitive receptors along each roadway segment, as well as the distances to existing traffic noise contours. Appendix N to this EIR provides details regarding the FHWA modeling, including the complete inputs and results.

Table 4.8-3
Existing Traffic Noise Levels and Distances to Contours

Roadway	Segment	Exterior Traffic Noise Level (dBA L_{dn}) at Nearest Sensitive Receptor	Distance (feet) to Traffic Noise Contours (L_{dn})[1]		
			70 dB	65 dB	60 dB
1st Street	C Street to D Street	61.0	13	27	59
D Street	1st Street to 2nd Street	55.8	6	12	26
1st Street	D Street to E Street	61.8	14	31	66
E Street	1st Street to 2nd Street	57.0	7	15	32
1st Street	E Street to F Street	54.4	5	10	21
Richards Blvd.	Olive Drive to 1st Street	66.6	30	64	137
Olive Drive	West of Richards Blvd	56.8	7	14	30
Olive Drive	East of Richards Blvd	60.3	11	24	53
Richards Blvd.	I-80 WB ramp to Olive Drive	66.5	29	63	136
Richards Blvd.	I-80 EB ramp to W Chiles Road	67.5	34	73	157
Cowell Blvd.	Research Park Drive to Drew Avenue	66.1	27	59	127

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 15, 2017.

Railroad Noise Levels

Railroad activity in the project vicinity occurs on the UPRR line, which is located directly to the north of the proposed project site. The UPRR tracks are currently used for passenger and freight train operations. The passenger train operations, conducted by Amtrak on the UPRR tracks, involve 34 passenger trains per day.[4] Amtrak trains stop and idle for a limited period of time (approximately one minute) at the Davis Amtrak station, located to the northwest of the project site, when passing through the rail corridor. According to the *Lincoln40 Residential Environmental Noise Assessment* prepared for the proposed project by j.c. brennan & associates, approximately 21 UPRR freight trains pass the site along the main line during a 24-hour period.[5]

In addition, the California Northern rail line, operated by the California Northern Railroad Company, is a freight line that runs through Davis and Woodland, and along Interstate 5 (I-5) passed Dunnigan. In Davis, the California Northern rail line connects with the UPRR tracks east of the Davis Amtrak station, north of the project site, and curves northward towards Woodland. The freight line schedule varies depending on seasonal demands. The rail line carries an average of two trains daily, using between one and 50 rail cars and one or two locomotives, traveling at an average speed of 15 miles per hour.

In order to quantify noise exposure from existing train operations, j.c. brennan utilized continuous (24-hour) noise level measurements from Site A. These noise level measurements were conducted between Wednesday July 15, 2015 and Thursday July 16, 2015. Based upon the noise measurement results, the overall L_{dn} measured at Site A was 76.8 dBA L_{dn} (see Table 4.8-2). The sound level meter was programmed to identify train pass-bys at the site. In this case, noise levels due to train pass-bys are represented by the graphed sound exposure levels (SEL's). The measured SEL's account for the sound energy during each train pass-by, and the overall duration (number of seconds) of the train event. The SEL essentially compresses all of the sound energy during the entire event into one second. In general, the measured SEL due to a train pass-by is approximately 10 dB higher than the measured maximum noise level.

In addition, noise level measurements and field observations of Amtrak trains were conducted at the site on August 15th and October 13th, 2016 (see Site 3 on Figure 4.8-1). Table 4.8-4 shows the results of the Amtrak noise measurements. Based upon the noise level data, the distance to L_{dn} noise level railroad contours are shown in Table 4.8-5.

Based upon the noise measurement data shown in Table 4.8-2 and Table 4.8-4, the L_{dn} associated with the Amtrak trains was 67 dBA L_{dn}, and the overall noise level associated with freight train operations was 76.7 dBA L_{dn}. Therefore, the freight train operations clearly dominate the overall noise environment associated with both freight and Amtrak operations.

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4 Bomar, Clem A. Division of Rail and Mass Transportation. Personal Communication [email] with Nick Pappani, Vice President of Raney Planning & Management, Inc. September 06, 2016.

5 j.c. brennan & associates, Inc. *Lincoln40 Residential Environmental Noise Assessment. March 15,* 2017.

Table 4.8-4
Measured Amtrak Event Noise Levels

Site	Date	Event Description	Duration	Distance to L_{dn} Contour		
				SEL	L_{eq}	L_{max}
3	08/15/16	AMTRAK arriving	00:25	88.8 dBA	74.8 dBA	82.6 dBA
3	08/15/16	AMTRAK departing	00:39	89.6 dBA	73.8 dBA	80.9 dBA
3	10/13/16	AMTRAK arriving from Sacramento	00:23	83.6 dBA	70.0 dBA	75.4 dBA
3	10/13/16	AMTRAK arriving from Martinez	02:59	97.0 dBA	74.5 dBA	93.0 dBA
3	10/13/16	AMTRAK arriving from Sacramento	01:05	90.3 dBA	72.2 dBA	77.6 dBA

Source: j.c. brennan & associates, Inc., March 15, 2017.

Table 4.8-5
Distances to Railroad Noise Contours

Site	Date	Distance to Noise Contours			
		75 dBA L_{dn} Contour	70 dBA L_{dn} Contour	65 dBA L_{dn} Contour	60 dBA L_{dn} Contour
A	July 15-16, 2015 (South of Railroad track, 50 feet from centerline)	65 feet	139 feet	300 feet	647 feet

Source: j.c. brennan & associates, Inc., March 15, 2017.

Vibration

While vibration is similar to noise, both involving a source, a transmission path, and a receiver, vibration differs from noise because noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

The City of Davis does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 4.8-6 indicates that the threshold for architectural damage to structures is 0.2 peak particle velocity in inches per second (in/sec p.p.v) and continuous vibrations of 0.1 in/sec p.p.v, or greater, would likely cause annoyance to sensitive receptors.

Table 4.8-6
Effects of Vibration on People and Buildings

Peak Particle Velocity mm/sec	Peak Particle Velocity in/sec	Human Reaction	Effect on Buildings
0.15 - 0.30	0.006 - 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10 - 15	0.4 - 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans. Transportation Related Earthborne Vibrations. TAV-02-01-R9601. February 20, 2002.

4.8.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to noise.

California State Building Codes

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise.

City of Davis General Plan

The applicable goals, policies, and standards from the Noise Chapter of the Davis General Plan are presented below.

Goal NOISE 1 Maintain community noise levels that meet health guidelines and allow for a high quality of life.

Policy NOISE 1.1 Minimize vehicular and stationary noise sources, and noise emanating from temporary activities.

Standard NOISE 1.1a: The City shall strive to achieve the "normally acceptable" exterior noise levels shown in Table 4.8-7 (Table 19 of the General Plan) and the target interior noise levels in Table 4.8-8 (Table 20 of the General Plan) in future development areas and in currently developed areas.

Standard NOISE 1.1b: New development shall generally be allowed only in areas where exterior and interior noise levels consistent with Table 4.8-7 (Table 19 of the General Plan) and Table 4.8-8 (Table 20 of the General Plan) can be achieved.

Standard NOISE 1.1c: New development and changes in use shall generally be allowed only if they will not adversely impact attainment within the community of the exterior and interior noise standards shown in Table 4.8-7 (Table 19 of the General Plan) and Table 4.8-8 (Table 20 of the General Plan). Cumulative and project specific impacts by new development on existing residential land uses shall be mitigated consistent with the standards in Table 4.8-7 (Table 19 of the General Plan) and Table 4.8-8 (Table 20 of the General Plan).

Table 4.8-7 Exterior Noise Level Standards				
	Community Noise Exposure L_{dn} or CNEL, dBA			
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Unacceptable**	**Clearly Unacceptable**
Residential	Under 60	60-70[1]	70-75	Above 75
Transient Lodging - Motels, Hotels	Under 60	65-75	75-80	Above 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	Under 60	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	Under 50	50-70	N/A	Above 70
Sports Arenas, Outdoor Spectator Sports	NA	Under 75	N/A	Above 75
Playgrounds, Neighborhood Parks	Under 70	N/A	70-75	Above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Under 70	N/A	70-80	Above 80
Office Buildings, Business Commercial and Professional	Under 65	65-75	Above 75	N/A
Industrial, Manufacturing, Utilities, Agriculture	Under 65	70-80	Above 80	N/A

Notes:
Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without special noise insulation requirements.
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is conducted, and needed noise attenuation features are included in the construction or development.
Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be conducted and needed noise attenuation features shall be included in the construction or development.
Clearly Unacceptable: New construction or development shall not be undertaken.
N/A: Not applicable.
[1] The City Council shall have discretion within the "conditionally acceptable" range for residential use to allow levels in outdoor spaces to go up to 65 dBA if cost effective or aesthetically acceptable measures are not available to reduce noise levels in outdoor spaces to the "normally acceptable" levels. Outdoor spaces which are designed for visual use only (for example, street-side landscaping in an apartment project), rather than outdoor use space may be considered acceptable up to 70 dBA.

City of Davis, January 2007.

Table 4.8-8 Standards for Interior Noise Levels	
Use	**Noise Level (dBA)**
Residences, schools through grade 12, hospitals and churches	45
Offices	55

City of Davis, January 2007.

Standard NOISE 1.1d Required noise mitigation measures for new and existing housing shall be provided with the first stage and prior to completion of new developments or the completion of capacity-enhancing roadway changes wherever noise levels currently exceed or are projected within 5 years to exceed the normally acceptable exterior noise levels in Table 4.8-7 (Table 19 of the General Plan).

Policy NOISE 1.2 Discourage the use of sound walls whenever alternative mitigation measures are feasible, while also facilitating the construction of sound walls where desired by the neighborhood and there is no other way to reduce noise to acceptable exterior levels shown in Table 4.8-7 (Table 19 of the General Plan).

Standard NOISE 1.2a Where sound walls are built, they should include dense landscaping along them to mitigate their visual impact, as illustrated in Figure 38 of the General Plan.

Standard NOISE 1.2b Where sound walls are built, they should provide adequate openings and visibility from surrounding areas to increase safety and access, as illustrated in Figure 38 of the General Plan. Openings should be designed so as to maintain necessary noise attenuation.

Standard NOISE 1.2c Review sound walls and other noise mitigations through the design review process.

Goal NOISE 2 Provide for indoor noise environments that are conducive to living and working.

Policy NOISE 2.1 Take all technically feasible steps to ensure that interior noise levels can be maintained at the levels shown in Table 4.8-8 (Table 20 of the General Plan).

Standard NOISE 2.1a New residential development or construction shall include noise attenuation measures necessary to achieve acceptable interior noise levels shown in Table 4.8-8 (Table 20 of the General Plan).

Standard NOISE 2.1b Existing areas that will be subjected to noise levels greater than the acceptable noise levels shown in Table 4.8-8 (Table 20 of the General Plan) as a result of increased traffic on existing city streets (including streets remaining in existing configurations and streets being widened) shall be mitigated to the acceptable levels in Table 4.8-8 (Table

20 of the General Plan). If traffic increases are caused by specific projects, then the City shall be the lead agency in implementing cumulative noise mitigation projects. Project applicants shall pay their fair share for any mitigation.

City of Davis Noise Ordinance

Section 24 of the City of Davis Municipal Code establishes a maximum noise level standard of 55 dB during the hours of 7:00 AM to 9:00 PM, and 50 dB during the hours of 9:00 PM to 7:00 AM for stationary noise sources. The ordinance defines maximum noise level as the "maximum continuous sound level or repetitive peak level produced by a sound source or group of sources." For the purposes of this analysis, j.c. brennan & associates, Inc. interprets this definition to be equivalent to the average noise level descriptor, L_{eq}. The Municipal Code makes exemptions for certain typical activities which may occur within the City. The exemptions are listed in Article 24.02.040, Special Provisions, and are summarized below:

a) Normal operation of power tools for non-commercial purposes are typically exempted between the hours of 8 AM and 8 PM unless the operation unreasonably disturbs the peace and quiet of any neighborhood.
b) Construction or landscape operations would be exempt during the hours of 7 AM to 7 PM Mondays through Fridays and between the hours of 8 AM to 8 PM Saturdays and Sundays assuming that the operations are authorized by valid city permit or business license, or carried out by employees or contractors of the city and one of the following conditions apply:
   (1) No individual piece of equipment shall produce a noise level exceeding eighty-three dBA at a distance of twenty-five feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty feet from the equipment as possible.
   (2) The noise level at any point outside of the property plane of the project shall not exceed eighty-six dBA.
   (3) The provisions of subdivisions (1) and (2) of this subsection shall not be applicable to impact tools and equipment; provided, that such impact tools and equipment shall have intake and exhaust mufflers recommended by manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers shall also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation. In the absence of manufacturer's recommendations, the director of public works may prescribe such means of accomplishing maximum noise attenuation as he or she may determine to be in the public interest.
   Construction projects located more than two hundred feet from existing homes may request a special use permit to begin work at 6:00 AM on weekdays from June 15th until September 1st. No percussion type tools (such as ramsets or jackhammers) can be used before 7:00 AM.

The permit shall be revoked if any noise complaint is received by the police department.

(4) No individual powered blower shall produce a noise level exceeding seventy dBA measured at a distance of fifty feet.

(5) No powered blower shall be operated within one hundred feet radius of another powered blower simultaneously.

(6) On single-family residential property, the seventy dBA at fifty feet restriction shall not apply if operated for less than ten minutes per occurrence.

c) The City Code also exempts air conditioners, pool pumps, and similar equipment from the noise regulations, provided that they are in good working order.

d) Work related to public health and safety is exempt from the noise requirements.

e) Safety devices are exempt from the noise requirements.

f) Emergencies are exempt from the noise requirements.

In addition, Section 24 of the City of Davis Municipal Code establishes the noise violations which can be issued by the Davis Police Department. A Sound (Noise) Permit from the Police Department is required for the following uses:

- Amplified sound at any indoor or outdoor event and more than 100 people will attend; and
- Install, use or operate within the City a loudspeaker or other amplifying equipment in a fixed or moveable position or mounted upon any sound truck for purposes of giving instruction, directions, talks, addresses, lectures or transmitting music to any persons upon a street, alley, sidewalk, park, place or other outdoor property.

The Sound (Noise) Permit outlines the noise limits allowable under the permit as well as the requirements for a noise permit.

4.8.4 IMPACTS AND MITIGATION MEASURES

Existing literature, noise and vibration measurements, and application of accepted noise and vibration prediction and propagation algorithms were used to predict impacts due to and upon development of the proposed project. More specific detail on methodology is provided below.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required California Environmental Quality Act (CEQA) review. “[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project.” (*Ballona Wetlands Land Trust v. City of Los Angeles*, (2011) 201 Cal.App.4th 455, 473 (*Ballona*).) The impacts discussed in this section of the EIR relate both to noise that may be caused by the proposed project (e.g. construction noise and operational traffic added to surrounding streets) as well as effects of existing environmental noise sources on residents and users of the project (e.g. railroad noise and background traffic on surrounding streets). The California Supreme Court recently held that “CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project’s future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards.” (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 392; see also

Mission Bay Alliance v. Office of Community Investment & Infrastructure (2016) 6 Cal.App.5th 160, 197 [“identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA's legislative purpose nor required by the CEQA statutes”], quoting *Ballona*, *supra*, 201 Cal.App.4th at p. 474.) Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the proposed project’s future users or residents will be exposed to preexisting environmental noise-related hazards, but instead whether project-generated noise will exacerbate the pre-existing conditions. Nonetheless, for informational purposes, this report considers both the proposed project’s contribution to on- and off-site noise levels as well as exposure of future users or residents of the proposed project to potential hazards associated with the preexisting noise environment.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the City’s General Plan, and professional judgment, a significant impact would occur if the proposed project would result in the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without project;
- For a project located within 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, expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The first four thresholds listed above, taken from Appendix G of the CEQA Guidelines, are hereby defined more specifically for the City of Davis based upon General Plan and Noise Ordinance requirements, as well as previous EIRs prepared and certified by the Davis City Council:

- *Exposure of persons to or generation of noise levels in excess of general plan standards or noise ordinance*

  Specifically, 60 to 70 dB L_{dn} for transportation noise sources at existing residential uses. For non-transportation noise sources, the standards of the *City of Davis Municipal Code* Section 24 apply. See Table 4.8-7 and Table 4.8-8 above.

- *Exposure of persons to or generation of excessive groundborne vibration*

  A limit of 0.2 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage.

- *A substantial permanent increase in ambient noise levels in the project vicinity above levels without the project*

  Table 4.8-9 is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

  Based on Table 4.8-9, an increase in the traffic noise level of 1.5 dB or more would be significant where the pre-project noise level exceeds 65 dB L_{dn}. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB L_{dn}. The rationale for the Table 4.8-9 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Table 4.8-9
Significance of Changes in Noise Exposure

Ambient Noise Level Without Project, L_{dn}	Increase Required for Significant Impact
< 60 dB	+ 5.0 dB or more
60 to 65 dB	+ 3.0 dB or more
> 65 dB	+ 1.5 dB or more

FICON provides guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been widely accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

Source: FICON.

Off-site traffic noise increase threshold test

The test of significance for increases in off-site traffic noise is two-fold. First, traffic noise levels are reviewed to see if the project's contribution to traffic noise would exceed the FICON levels identified in Table 4.8-9. If the project's increase in traffic noise levels along surrounding roadways would exceed the FICON criteria shown in Table 4.8-9, the proposed project would be considered to have a significant noise impact along that roadway segment.

The second part of the significance test would be applied if the project does not result in the traffic noise level increases shown in Table 4.8-9 (i.e., the project does not exceed the FICON criteria). In this case, each roadway segment is assessed to determine:

1) whether the project's traffic noise contribution would cause any new receptors along the roadway to be exposed to exterior noise levels exceeding the Table

4.8-7 and Table 4.8-8 standards (i.e., the City's General Plan Noise Element standards); and

2) whether the project's traffic would cause any receptor locations already exceeding the values in Table 4.8-7 and Table 4.8-8 to experience a perceivable increase in noise at these locations, defined as 1.0 dB.

- *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without project*

  Section 24.02.240 of the City's Noise Ordinance is used, specifically,

  b) Construction or landscape operations would be exempt during the hours of 7 AM to 7 PM Mondays through Fridays and between the hours of 8 AM to 8 PM Saturdays and Sundays assuming that the operations are authorized by valid city permit or business license, or carried out by employees or contractors of the city and one of the following conditions apply:
     1) No individual piece of equipment shall produce a noise level exceeding eighty-three dBA at a distance of twenty-five feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty feet from the equipment as possible.
     2) The noise level at any point outside of the property plane of the project shall not exceed eighty-six dBA.

Issues Not Discussed Further

Airports do not exist within two miles of the proposed project site. The UC Davis University Airport is located approximately 2.8 miles west of the project site and the Medlock Field airport is located approximately 4.9 miles north of the project site. Therefore, the issue of airport or airplane noise is not addressed further.

Method of Analysis

Below are descriptions of the methodologies utilized to determine traffic noise, train noise, as well as construction noise and vibration impacts. Further modeling details and calculations are provided in Appendix N to this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

Traffic Noise

The noise level measurements were conducted to determine typical background noise levels and for comparison to the project related noise levels. The sound level meters were programmed to record the hourly maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured during each hour. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the ambient noise level measurement survey. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

To describe future noise levels due to traffic, the FHWA model was used in conjunction with the Calveno reference noise emission curves, and accounts for vehicle volume and speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. Direct inputs to the model included traffic volumes provided by Fehr & Peers. The FHWA model is based upon the noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict L_{dn}/CNEL values, determination of the day/night distribution of traffic and adjustment of the traffic volume input data is necessary to yield an equivalent hourly traffic volume.

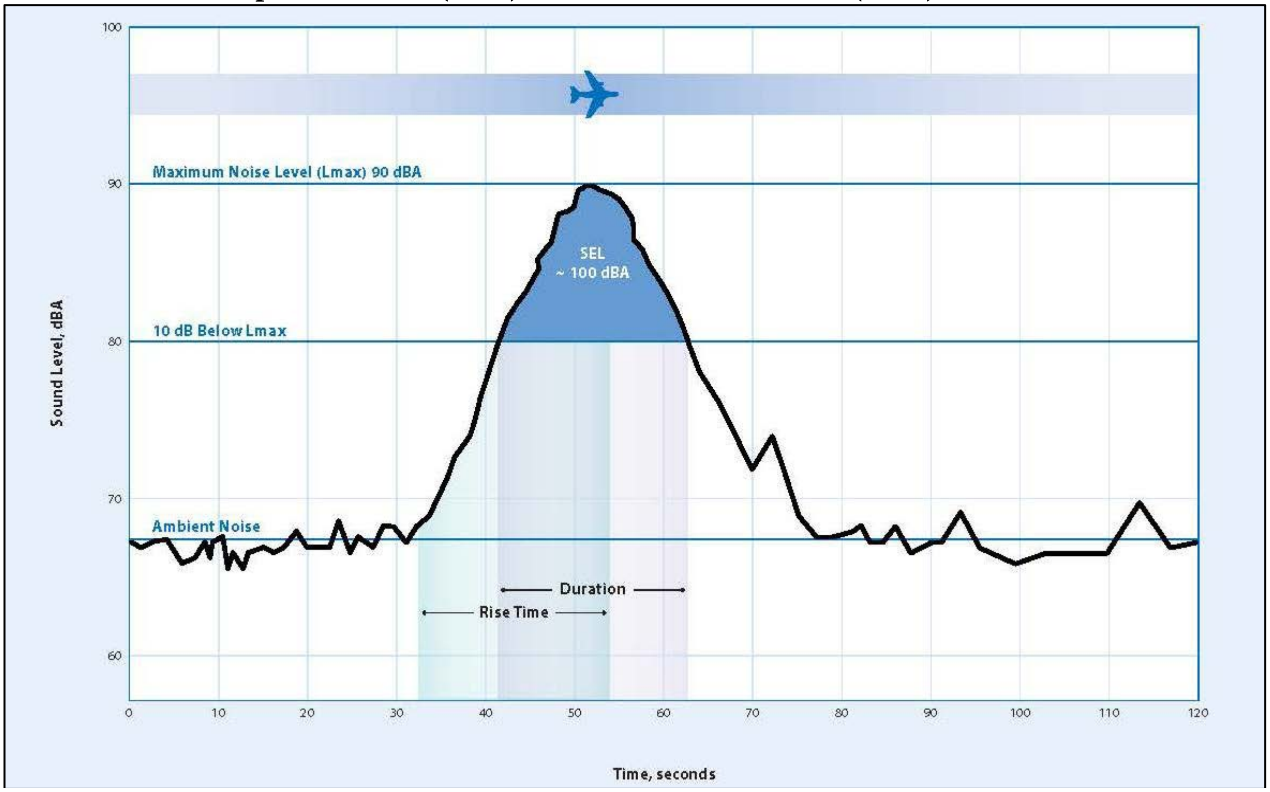
<u>Railroad Noise</u>

To quantify existing railroad noise levels in the vicinity of the project site, j.c. brennan & associates, Inc. staff utilized continuous 24-hour noise level measurements, which were previously conducted at the project site, to discern the contribution of noise due to train activity. The noise level measurements were conducted between Wednesday July 15, 2015 and Thursday July 16, 2015.

Similar to traffic noise, the sound level meter was programmed to record the maximum, median, and average noise levels during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period. In addition, the sound level meter was programmed to identify train pass-bys at the site. In this case, noise levels due to train pass-bys are represented by the graphed SELs. The measured SELs account for the sound energy during each train pass-by, and the overall duration (number of seconds) of the train event. The SEL essentially compresses all of the sound energy during the entire event into one second. In general, the measured SEL due to a train pass-by is approximately 10 dB higher than the measured maximum noise level.

Figure 4.8-2 shows the relationship between a maximum noise level and an SEL, which is based upon an aircraft overflight; however, it is the same principle for a train pass-by.

Figure 4.8-2
Sound Exposure Level (SEL), Maximum Noise Level (L_{max}) and Duration



<u>Construction Noise and Vibration</u>

Construction noise and vibration was analyzed using data compiled for various pieces of construction equipment at a representative distance of 50 feet. Construction activities are discussed relative to the applicable City of Davis noise policies.

Project-Specific Impacts and Mitigation Measures

The following discussion of potential noise and vibration impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.8-1 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Based on the analysis below, and with implementation of mitigation, the impact is *less than significant.*

During the construction of the proposed project, including roads, water and sewer lines, and related infrastructure, noise from construction activities would temporarily add to the noise environment in the project vicinity. The City of Davis Noise Ordinance establishes allowable hours of operation and noise limits for construction activities. The most restrictive Noise Ordinance standard would be the requirement that construction equipment does not exceed 83 dBA at a distance of 25 feet. However, as shown in Table

4.8-10, activities involved in construction could be expected to generate maximum noise levels ranging from 82 to 96 dB at a distance of 25 feet.

Table 4.8-10
Construction Equipment Noise

Type of Equipment	Predicted Noise Levels, L_{max} dB				Distances to Noise Contours (feet)	
	Noise Level at 25'	Noise Level at 50'	Noise Level at 100'	Noise Level at 200'	70 dB L_{max} contour	65 dB L_{max} contour
Backhoe	84	78	72	66	126	223
Compactor	89	83	77	71	223	397
Compressor (air)	84	78	72	66	126	223
Concrete Saw	96	90	84	78	500	889
Dozer	88	82	76	70	199	354
Dump Truck	82	76	70	64	100	177
Excavator	87	81	75	69	177	315
Generator	87	81	75	69	177	315
Jackhammer	94	89	83	77	446	792
Pneumatic Tools	91	85	79	73	281	500

Source: j.c. brennan & associates, Inc., March 15, 2017.

A significant setback would exist from where the majority of construction would occur on the site to those residences to the west based upon the proposed landscape buffer along the west side of the project site. The majority of construction is expected to occur at distances of 100 to 200 feet from the nearest property line. Therefore, noise levels would range between 66 dB and 83 dB. However, it can be expected that some construction will occur within 50 feet of the nearest residences to the west, and within 25 feet of the residence within the "carve-out" area of the project boundary; therefore, the worst-case maximum noise levels are expected to range between 82 dB and 96 dB.

As a result, construction would result in periods of elevated ambient noise levels and the potential for annoyance, and construction of the proposed project would result in a ***significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level. The City of Davis Noise Ordinance provides provisions for reducing overall noise levels due to construction activities. Construction noise levels can comply with the City of Davis Municipal Code through the implementation of the strategies contained in the Noise Ordinance. Specifically as a means of complying with the 83 dBA at a distance of 25 feet, the project should employ sound control devices on equipment, muffled exhausts on equipment, and installation of acoustic barriers around stationary equipment which block line-of-sight to the equipment. As a means of complying with the 86 dBA at the property line, the installation of six-foot tall temporary barriers at the property line can be employed, which could be constructed of plywood, prefabricated temporary acoustic barriers or tightly fitted straw or hay bales.

4.8-1 *Prior to issuance of any grading permit, the applicant shall submit proposed noise-reduction practices (to ensure individual piece of equipment shall not produce a noise level exceeding 83 dBA at a distance of 25 feet and the noise level at any point outside the property plane of the project shall not exceed 86 dBA), for review and approval by the Department of Community Development and Sustainability. One or more of the following measures shall be utilized to reduce the impact of construction noise (below the above stated single-source and property boundary standards):*

- *Electric construction equipment as an alternative to diesel-powered equipment.*
- *Sound-control devices on construction equipment.*
- *Muffled exhaust on construction equipment.*
- *Construction equipment staging and operation setbacks from nearby sensitive receptors.*
- *Limits on idling time for construction vehicles and equipment.*
- *Installation of acoustic barriers around stationary construction noise sources.*
- *Installation of temporary barriers between the project site and adjacent sensitive receptors.*

4.8-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant.*

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 4.8-11 shows the typical vibration levels produced by construction equipment.

The most significant source of ground-borne vibrations during the project construction would occur from the use of vibratory compactors. The closest portions of the project site where construction activities would include vibratory compactors is more than 50 feet from any adjacent buildings.

The Table 4.8-11 data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec p.p.v. threshold of damage to buildings and less than the 0.1 in/sec threshold of annoyance criteria at distances of 50 feet. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors. In addition, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

Table 4.8-11
Vibration Levels for Various Construction Equipment

Type of Equipment	Peak Particle Velocity @ 25 feet	Peak Particle Velocity @ 50 feet
Large Bulldozer	0.089	0.029
Loaded Trucks	0.076	0.025
Pile Driving (Sonic)	0.734	0.50
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.029
Jackhammer	0.035	0.011
Vibratory Hammer	0.070	0.023
Vibratory Compactor/roller	0.210	0.070

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

Conclusion

Because construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors, implementation of the proposed project would not expose persons to or generate excessive ground borne vibration or ground borne noise levels. Therefore, potential impacts related to construction vibration would be considered ***less than significant***.

Mitigation Measure(s)
None required.

4.8-3 Transportation noise impacts to existing sensitive receptors in the project vicinity. Based on the analysis below, the impact is *less than significant.*

Vehicle trips associated with operation of the proposed project would result in changes to traffic on the existing roadway network within the project vicinity. As a result, project buildout would cause an increase in traffic noise levels on local roadways. To assess noise impacts due to project-related traffic increases on the existing local roadway network, noise levels have been calculated for both the Existing and Existing Plus Project traffic conditions.

Traffic noise levels are predicted at a distance of 50 feet from the roadway centerline. For each roadway analyzed, the 50 feet represents the nearest residence to the roadway. The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Table 4.8-12 are generally considered by j.c. brennan & associates to be conservative estimates of noise exposure along the project-area roadways.

Table 4.8-12
Existing and Existing Plus Project Traffic Noise Levels

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Existing + Project Traffic Noise Contours (feet)[2]		
		Existing	Existing + Project	Change	Significance Criteria[1]	Significant? (Y/N)	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1st Street	C Street to D Street	61.0	61.1	0.1	+ 3.0 dB or more	No	13	27	59
D Street	1st Street to 2nd Street	55.8	55.8	0.0	+ 5.0 dB or more	No	6	12	26
1st Street	D Street to E Street	61.8	61.8	0.0	+ 3.0 dB or more	No	14	31	66
E Street	1st Street to 2nd Street	57.0	57.1	0.1	+ 5.0 dB or more	No	7	15	32
1st Street	E Street to F Street	54.4	54.5	0.1	+ 5.0 dB or more	No	5	10	22
Richards Blvd.	Olive Drive to 1st Street	66.6	66.6	0.0	+ 1.5 dB or more	No	30	64	138
Olive Drive	West of Richards Blvd	56.8	56.8	0.0	+ 5.0 dB or more	No	7	14	31
Olive Drive	East of Richards Blvd	60.3	60.7	0.4	+ 3.0 dB or more	No	12	26	56
Richards Blvd.	I-80 WB ramp to Olive Drive	66.5	66.6	0.1	+ 1.5 dB or more	No	30	64	138
Richards Blvd.	I-80 EB ramp to W Chiles Road	67.5	67.5	0.0	+ 1.5 dB or more	No	34	73	158
Cowell Blvd.	Research Park Drive to Drew Avenue	66.1	66.1	0.0	+ 1.5 dB or more	No	27	59	127

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 15, 2017.

With respect to the first part of the test of significance, Table 4.8-12 shows the predicted traffic noise level increases on the local roadway network for the "Existing" and "Existing Plus Project" scenarios. As shown in Table 4.8-12, the largest increase in transportation noise levels from the proposed project would be 0.4 dBA L_{dn} on Olive Drive, east of Richards Boulevard, which would not exceed the FICON criteria for this segment (3 dB increase) (see Table 4.8-9).

With respect to the second part of the test of significance, Table 4.8-12 demonstrates that the proposed project is not predicted to cause increases in existing traffic noise levels which would trigger a new exceedance of the City of Davis' 60 dB L_{dn} exterior noise level standard at sensitive receptor locations. In some cases, existing residences currently exceed the 60 dB CNEL/L_{dn} exterior noise level standard.

The existing residences would experience elevated exterior traffic noise levels with implementation of the proposed project; however, the proposed project's contribution to traffic noise increases at these locations is predicted to be 0.4 dB, or less, which is not perceivable, and thus, does not trigger the threshold of 1.0 dB increase used for this analysis.

Therefore, traffic-related noise increases attributable to project vehicles would result in ***less than significant*** impacts to existing sensitive receptors along nearby roadways.

<u>Mitigation Measure(s)</u>
None required.

4.8-4 Vehicular traffic noise impacts to new sensitive receptors in the project vicinity. Based on the analysis below, the impact is *less than significant*.

Development of the proposed project would introduce new sensitive receptors to the area. These new sensitive receptors could be exposed to potentially substantial exterior or interior noise levels associated with nearby transportation noise.

<u>Exterior Noise Levels</u>

Under the "Existing" and "Existing Plus Project" conditions, the project site would be exposed to traffic noise levels greater than 60 dB CNEL/L_{dn}, and would exceed the exterior noise level standard of 60 dB CNEL/L_{dn} at the proposed common outdoor activity area, without incorporation of any sound barriers. The proposed project includes a sound level barrier between six feet and eight feet in height at the proposed common outdoor activity areas adjacent to Olive Drive (see Figure 4.8-1). Based upon a barrier calculation, a six-foot tall barrier at the proposed outdoor activity area would result in traffic noise levels less than 60 dB CNEL/L_{dn}.

Interior Noise Levels

Modern construction typically provides a 25 dB exterior-to-interior noise level reduction with windows closed. Therefore, sensitive receptors exposed to exterior noise of 70 dB L_{dn}, or less, will typically comply with the City's 45 dB CNEL/L_{dn} interior noise level standard. The exterior traffic noise levels for the proposed project are less than 65 dB CNEL/L_{dn}. Therefore, the interior traffic noise levels would comply with the City's interior noise level standard of 45 dB CNEL/L_{dn}.

Conclusion

With the proposed sound barrier, the proposed outdoor activity areas adjacent to Olive Drive would not exceed the outdoor noise level standard of 60 dB CNEL/L_{dn}. In addition, the interior noise levels throughout the project would not exceed the interior level standard of 45 dB CNEL/L_{dn}. As a result, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.8-5 Railroad noise at new sensitive receptors. Based on the analysis below and with the implementation of mitigation, the impact is *less than significant*.

Development of the proposed project would introduce new sensitive receptors to the area. These new sensitive receptors could be exposed to potentially substantial exterior or interior noise levels associated with the railroad activity from the adjacent UPRR rail line. It should be noted that CEQA does not require an analysis of the environment's impact on the project. However, this impact is evaluated for the purposes of considering the project's consistency with policies in the City's General Plan.

Exterior Railroad Noise Level Impacts

Based upon the previous analysis of railroad noise levels and distances to the railroad noise contours shown in Table 4.8-2 and Table 4.8-5, the overall noise level due to rail operations is approximately 77 dB L_{dn} at a distance of 50 feet from the rail centerline. Based upon a distance of 230 feet to the common outdoor area, the predicted railroad noise levels would be 64 dB L_{dn} at the common outdoor area. The common area is shielded by buildings on the project site, and would receive a minimum of 5 dB of shielding. Therefore, the predicted noise levels due to rail operations at the common outdoor area is less than 60 dB L_{dn} and would comply with the City of Davis exterior noise level standard.

Interior Railroad Noise Impacts

The nearest first row of proposed residential buildings is approximately 150 feet from the centerline of the railroad track. The predicted exterior noise levels at the nearest residences is 71 dB L_{dn}. Modern construction typically provides a 25 dB exterior-to-interior noise level reduction with windows closed. Therefore, the first row of residences may exceed the interior noise level standard of 45 dB L_{dn} by approximately 1.0 dB L_{dn}.

Conclusion

Based on the above discussion, railroad activity on the adjacent UPRR tracks may exceed the interior noise level standard for future residents, resulting in a ***significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.8-5(a) *Prior to building permit issuance, the applicant shall retain an expert acoustical consultant to perform a focused noise analysis to evaluate interior noise levels taking into consideration final building materials, any adjustments to building locations, façade and fenestration improvements, etc. to determine if the final site and building plans would result in interior noise levels with the potential to exceed the standard of 45 dB L_{dn}. The focused noise analysis results shall be submitted for review and approval by the Department of Community Development and Sustainability.*

4.8-5(b) *If the final site and building plans result in interior noise levels with the potential to exceed the standard of 45 dB L_{dn} within one or more residential units, then windows facing the railroad tracks for all such residential units shall include appropriately-rated STC windows, as determined by the acoustical consultant.*

4.8-6 Railroad noise may increase at residences north of the project site due to reflections of sound off of building facades. Based on the analysis below, the impact is *less than significant*.

Residents located to the north of the proposed project site have expressed concerns with potential reflections of sound associated with railroad operations off of the proposed Lincoln40 building facades or any proposed barriers. In addition, some concern has also been raised with regard to the removal of trees on the project site, and the loss of noise attenuation due to the removal of the trees.

Reflections of sound can occur off of long lengths of building facades when individual trains pass. A perfect reflection can produce an increase in sound of three dB (a doubling of sound energy) when the sound does not travel an additional distance, is not scattered (known as refraction) due to irregular surfaces, or is not shielded by passing railroad cars. However, in the case of the proposed project's site, the distance the sound would need to travel (attenuate) from the railroad track to the project residential building facades, and then back to the residences to the north, is approximately between 400 and 470 feet. Existing railroad noise levels at the residences to the north of the site are approximately 76 dB Ldn. Assuming that the reflected noise levels travel between 400 and 470 feet (from the railroad track to the project building facades and then back to the residences to the north), the sound would attenuate between 13.5 dBA and 14.5 dBA. The reflected sound would be less than 63 dBA Ldn. Therefore, the sound would be approximately 10 dBA less than the noise level currently experienced at the residences to the north. As described previously, because of the logarithmic nature of the decibel scale, provided two sources of noise differ in intensity by at least 10 dB, their noise would not be additive. Two noise levels differing by 10 dB, which are added together, essentially equal the higher of the two noise levels. This assumes that there is a perfect reflection. In reality, some sound would be diffused, shielded by train cars, or would not be reflected due to gaps between the buildings. Therefore, reflected noise is not expected to result in an increase in overall noise levels due to rail operations at the residences to the north.

The removal of trees is not expected to result in loss of buffering any reflected noise levels. Approximately 100 feet of dense vegetation is typically necessary in order to produce a 1 to 2 dBA reduction in noise levels due to absorption. Therefore, reflected noise is not expected to result in an increase in overall noise levels due to rail operations at the residences to the north. As a result, a ***less-than-significant*** impact would occur.

<u>Mitigation Measure(s)</u>
None required.

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other cumulative development within the City's Planning Area. Refer to Chapter 5, Statutorily Required Sections, of this EIR for more detail.

4.8-7 Cumulative impacts on traffic noise-sensitive receptors. Based on the analysis below, the project's contribution to cumulative noise is *less than cumulatively considerable*.

Traffic noise levels are predicted at a distance of 50 feet from the roadway centerline. For each roadway analyzed, the 50 feet represents the nearest residence to the roadway. The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Table 4.8-13 are generally considered to be conservative estimates of noise exposure along the project-area roadways.

Table 4.8-13 shows the predicted traffic noise level increases on the local roadway network for the "Cumulative" and the "Cumulative Plus Project" scenarios. Based upon Table 4.8-13, the project will result in changes in traffic noise levels between 0 dBA and 0.4 dBA L_{dn}, which is not considered a significant increase in traffic noise levels per the FICON standards used for this analysis.

Table 4.8-13
Cumulative and Cumulative Plus Project Traffic Noise Levels

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative	Cumulative + Project	Change	Significance Criteria[1]	Significant? (Y/N)	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1st Street	C Street to D Street	61.9	61.9	0.0	+ 3.0 dB or more	No	15	31	67
D Street	1st Street to 2nd Street	57.2	57.2	0.0	+ 5.0 dB or more	No	7	15	32
1st Street	D Street to E Street	62.7	62.7	0.0	+ 3.0 dB or more	No	16	35	76
E Street	1st Street to 2nd Street	58.3	58.3	0.0	+ 5.0 dB or more	No	8	18	39
1st Street	E Street to F Street	55.5	55.6	0.1	+ 5.0 dB or more	No	5	12	25
Richards Blvd.	Olive Drive to 1st Street	67.4	67.4	0.0	+ 1.5 dB or more	No	34	73	157
Olive Drive	West of Richards Blvd	60.8	60.9	0.1	+ 3.0 dB or more	No	12	27	57
Olive Drive	East of Richards Blvd	60.9	61.3	0.4	+ 3.0 dB or more	No	13	28	61
Richards Blvd.	I-80 WB ramp to Olive Drive	67.3	67.4	0.1	+ 1.5 dB or more	No	33	72	155
Richards Blvd.	I-80 EB ramp to W Chiles Road	68.9	68.9	0.0	+ 1.5 dB or more	No	43	92	197
Cowell Blvd.	Research Park Drive to Drew Avenue	67.2	67.2	0.0	+ 1.5 dB or more	No	33	70	151

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., February 8, 2017.

With respect to the second part of the test of significance, Table 4.8-13 demonstrates that the proposed project's incremental traffic is not predicted to cause increases in Cumulative No Project traffic noise levels which would trigger a new exceedance of the City of Davis' 60 dB L_{dn} exterior noise level standard at sensitive receptor locations. In some cases, existing residences are projected to exceed the 60 dB CNEL/L_{dn} exterior noise level standard in the cumulative setting, without the project's incremental traffic. These residences would experience elevated exterior traffic noise levels with implementation of the proposed project; however, the proposed project's contribution to traffic noise increases at these locations is predicted to be 0.4 dB, or less, which is not perceivable, and thus, does not trigger the threshold of 1.0 dB increase used for this analysis.

Therefore, the proposed project's incremental contribution to traffic noise levels would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

4.8-8 CEQA Cumulative Alternatives Generated Traffic Noise at Existing Sensitive Receptors. Based on the analysis below, the project's contribution to cumulative noise is *less than cumulatively considerable*.

The City of Davis is currently evaluating several sub-scenarios that include different combinations of roadway improvements. Therefore, the traffic impact analysis prepared for the proposed project by Fehr & Peers evaluated three additional CEQA Cumulative Alternatives.

The distances reported in Table 4.8-14 through Table 4.8-16 show the "Cumulative" and the "Cumulative Plus Project" scenarios for CEQA Alternatives One through Three, respectively. The "CEQA Cumulative Condition", includes the Embassy Suites Hotel / Conference Center project and adds traffic generated by the Mace Ranch Innovation Center (MRIC) project and the Nishi project. Within this scenario are included several sub-scenarios that include different combinations of roadway improvements currently being evaluated by the City of Davis within the project vicinity. These sub-scenarios are addressed in this section and described below:

Table 4.8-14
Cumulative and Cumulative Plus Project Traffic Noise Levels CEQA Scenario One

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative	Cumulative + Project	Change	Significance Criteria[1]	Significant? (Y/N)	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1st Street	C Street to D Street	61.6	61.7	0.1	+ 3.0 dB or more	No	14	30	65
D Street	1st Street to 2nd Street	58.0	58.1	0.1	+ 5.0 dB or more	No	8	17	37
1st Street	D Street to E Street	62.5	62.5	0.0	+ 3.0 dB or more	No	16	34	74
E Street	1st Street to 2nd Street	58.3	58.4	0.1	+ 5.0 dB or more	No	8	18	39
1st Street	E Street to F Street	56.0	56.0	0.0	+ 5.0 dB or more	No	6	13	27
Richards Blvd.	Olive Drive to 1st Street	67.2	67.3	0.1	+ 1.5 dB or more	No	33	71	153
Olive Drive	West of Richards Blvd	62.8	62.9	0.1	+ 3.0 dB or more	No	17	36	78
Olive Drive	East of Richards Blvd	61.2	61.5	0.3	+ 3.0 dB or more	No	14	29	63
Richards Blvd.	I-80 WB ramp to Olive Drive	68.3	68.3	0.0	+ 1.5 dB or more	No	38	83	178
Richards Blvd.	I-80 EB ramp to W Chiles Road	69.3	69.3	0.0	+ 1.5 dB or more	No	45	97	209
Cowell Blvd.	Research Park Drive to Drew Avenue	67.6	67.6	0.0	+ 1.5 dB or more	No	35	74	160

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 15, 2017.

Table 4.8-15
Cumulative and Cumulative Plus Project Traffic Noise Levels CEQA Scenario Two

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative	Cumulative + Project	Change	Significance Criteria[1]	Significant? (Y/N)	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1st Street	C Street to D Street	61.6	61.7	0.1	+ 3.0 dB or more	No	14	30	65
D Street	1st Street to 2nd Street	58.0	58.1	0.1	+ 5.0 dB or more	No	8	17	37
1st Street	D Street to E Street	62.5	62.5	0.0	+ 3.0 dB or more	No	16	34	74
E Street	1st Street to 2nd Street	58.3	58.4	0.1	+ 5.0 dB or more	No	8	18	39
1st Street	E Street to F Street	56.0	56.1	0.1	+ 5.0 dB or more	No	6	13	27
Richards Blvd.	Olive Drive to 1st Street	67.2	67.3	0.1	+ 1.5 dB or more	No	33	71	154
Olive Drive	West of Richards Blvd	62.8	62.9	0.1	+ 3.0 dB or more	No	17	36	78
Olive Drive	East of Richards Blvd	61.2	61.7	0.5	+ 3.0 dB or more	No	14	30	65
Richards Blvd.	I-80 WB ramp to Olive Drive	68.3	68.3	0.0	+ 1.5 dB or more	No	39	83	179
Richards Blvd.	I-80 EB ramp to W Chiles Road	69.3	69.3	0.0	+ 1.5 dB or more	No	45	97	209
Cowell Blvd.	Research Park Drive to Drew Avenue	67.6	67.6	0.0	+ 1.5 dB or more	No	35	75	161
3rd Street	J Street to K Street	63.5	63.5	0.0	+ 3.0 dB or more	No	18	40	86
K Street	2nd Street to 3rd Street	47.4	47.4	0.0	+ 5.0 dB or more	No	2	3	7
3rd Street	K Street to L Street	63.5	63.5	0.0	+ 3.0 dB or more	No	18	40	86
L Street	2nd Street to 3rd Street	65.4	65.4	0.0	+ 1.5 dB or more	No	25	53	115

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 15, 2017.

Table 4.8-16
Cumulative and Cumulative Plus Project Traffic Noise Levels CEQA Scenario Three

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative	Cumulative + Project	Change	Significance Criteria[1]	Significant? (Y/N)	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1st Street	C Street to D Street	61.6	61.6	0.0	+ 3.0 dB or more	No	14	30	64
D Street	1st Street to 2nd Street	58.0	58.0	0.0	+ 5.0 dB or more	No	8	17	37
1st Street	D Street to E Street	62.5	62.5	0.0	+ 3.0 dB or more	No	16	34	74
E Street	1st Street to 2nd Street	58.3	58.3	0.0	+ 5.0 dB or more	No	8	18	39
1st Street	E Street to F Street	56.0	56.0	0.0	+ 5.0 dB or more	No	6	12	27
Richards Blvd.	Olive Drive to 1st Street	67.2	67.2	0.0	+ 1.5 dB or more	No	33	70	152
Olive Drive	West of Richards Blvd	62.8	62.8	0.0	+ 3.0 dB or more	No	17	36	77
Olive Drive	East of Richards Blvd	60.3	60.3	0.0	+ 3.0 dB or more	No	11	24	52
Richards Blvd.	I-80 WB ramp to Olive Drive	68.3	68.3	0.0	+ 1.5 dB or more	No	38	83	179
Richards Blvd.	I-80 EB ramp to W Chiles Road	69.3	69.3	0.0	+ 1.5 dB or more	No	45	97	208
Cowell Blvd.	Research Park Drive to Drew Avenue	67.6	67.6	0.0	+ 1.5 dB or more	No	34	74	160
3rd Street	J Street to K Street	63.5	63.5	0.0	+ 3.0 dB or more	No	18	40	85
K Street	2nd Street to 3rd Street	47.4	47.4	0.0	+ 1.5 dB or more	No	2	3	7
3rd Street	K Street to L Street	63.5	63.5	0.0	+ 3.0 dB or more	No	18	40	85
L Street	2nd Street to 3rd Street	65.4	65.4	0.0	+ 1.5 dB or more	No	25	53	115

Notes:
[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 15, 2017.

CEQA Cumulative Scenario One

- Nishi
- MRIC

CEQA Cumulative Scenario Two

- Nishi
- MRIC
- I-80 / Richards Boulevard Improvements

CEQA Cumulative Scenario Three

- Nishi
- MRIC
- I-80 / Richards Boulevard Improvements
- I-80 / Olive Drive Ramp Closure

The analyses for each CEQA alternative are generally considered to be conservative estimates of noise exposure along the project-area roadways. Appendix N provides the complete inputs and results of the FHWA traffic noise modeling.

With respect to the first part of the test of significance, based upon Table 4.8-14 through Table 4.8-16, the Cumulative CEQA Scenarios One through Three would result in changes in traffic noise levels between 0 dBA and 0.5 dBA CNEL/L_{dn}. Thus, the change in traffic noise levels caused by the proposed project's incremental traffic is not considered to be a cumulatively considerable increase in noise levels per the FICON criteria (see Table 4.8-9). In addition, as discussed above, except in carefully controlled laboratory experiments, a change of 1.0 dBA cannot be perceived.

With respect to the second part of the test of significance, Table 4.8-14 through Table 4.8-16 demonstrate that the proposed project's incremental contribution is not predicted to cause increases in traffic noise levels which would trigger a new exceedance of the City of Davis' 60 dB L_{dn} exterior noise level standard at sensitive receptor locations. In some cases, existing residences would exceed the City of Davis 60 dB CNEL/L_{dn} exterior noise level standard under each of the CEQA Cumulative scenarios, without the project's incremental traffic. These residences would experience elevated exterior traffic noise levels with implementation of the proposed project; however, the proposed project's contribution to traffic noise increases at these locations is predicted to be 0.5 dB, or less, which is not perceivable, and thus, does not trigger the threshold of 1.0 dB increase used for this analysis. Therefore, the proposed project's incremental contribution to traffic noise levels would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

4.8-9 Cumulative traffic noise effects on proposed uses. Based on the analysis below, the project's contribution to the cumulative exposure of future on-site noise-sensitive land uses to increased noise is *less than cumulatively considerable*.

Exterior Noise Levels

Under the "Cumulative" and "Cumulative Plus Project" conditions, the project site would be exposed to traffic noise levels greater than 60 dB CNEL/L_{dn}, and would exceed the exterior noise level standard of 60 dB CNEL/L_{dn} at the proposed common outdoor activity area. The proposed common outdoor activity area is where individuals can congregate and have an area which provides a quiet environment for relaxation.

Under all of the Cumulative CEQA scenarios, the project site would be exposed to traffic noise levels which exceed the 60 dB CNEL/L_{dn} exterior noise level standard at the common outdoor activity area. However, the proposed project includes a sound barrier between six feet and eight feet in height at the proposed common outdoor activity areas adjacent to Olive Drive (see Figure 4.8-1 above). Based upon a barrier calculation, a six-foot tall barrier at the proposed outdoor activity area would result in traffic noise levels less than 60 dB CNEL/L_{dn}.

Interior Noise Levels

Modern construction typically provides a 25 dB exterior-to-interior noise level reduction with windows closed. Therefore, sensitive receptors exposed to exterior noise of 70 dB L_{dn}, or less, would typically comply with the City's 45 dB CNEL/L_{dn} interior noise level standard. Under all cumulative scenarios, the exterior traffic noise levels would be less than 65 dB CNEL/L_{dn}. Therefore, the interior traffic noise levels would comply with the City's interior noise level standard of 45 dB CNEL/L_{dn}.

Conclusion

Based on the above discussion, the proposed project's contribution to cumulative traffic noise effects on proposed uses would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.