



4.11 NOISE

This section evaluates the potential short-term and long-term noise impacts associated with the construction and operation of the Cypress City Center project (proposed project). This section is based in part on information provided in the Noise Element of the City's General Plan, the Amended and Restated Cypress Business and Professional Center Specific Plan (Specific Plan), and noise measurements conducted on the project site on July 10 and July 11, 2019. The assumptions used in the noise analysis and the noise modeling results are provided in Appendix H.

4.11.1 Methodology

Evaluation of noise and vibration impacts associated with the proposed project includes the following:

- Determination of the short-term construction noise and vibration impacts
- Determination of the long-term off-site and on-site traffic noise impacts
- Determination of the long-term stationary noise and vibration impacts from project operations.
- Determination of the required mitigation measures to reduce short-term construction-related noise and vibration impacts and long-term stationary and mobile source noise and vibration impacts.

The evaluation of noise and vibration impacts was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the City of Cypress Noise Element and Municipal Code, City of Los Alamitos Municipal Code, and Federal Transit Administration (FTA) criteria.

4.11.1.1 Characteristics of Sound

Noise is usually defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health.

To the human ear, sound has two important characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity is the average rate of sound energy transmitted through a unit area perpendicular to the direction in which the sound waves are traveling. This characteristic of sound can be precisely measured with instruments. In analyzing the potential noise impacts of a proposed project, the existing noise environment in the vicinity of the project site is identified and the potential noise effects of the project are evaluated in terms of sound intensity and the effect on adjacent sensitive land uses.



4.11.1.2 Measurement of Sound

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

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

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

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

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



than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period.

4.11.1.3 Vibration

According to the United States Department of Transportation (USDOT) FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or anthropogenic causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency. Vibration is often described in units of velocity (inches per second) and discussed in decibel units in order to compress the range of numbers required to describe vibration. Vibration impacts are generally associated with activities such as train operations, construction, and heavy truck movements.

The background vibration velocity level in residential areas is generally 50 vibration velocity decibels (VdB). Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. 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 is rarely perceptible. The relevant range of vibration for the purposes of this analysis is from approximately 50 VdB, the typical background vibration velocity level, to 100 VdB, the general threshold where minor damage can occur in buildings.

4.11.2 Existing Environmental Setting

4.11.2.1 Overview of the Existing Noise Environment

The primary existing noise sources in the vicinity of the project site are transportation facilities. Traffic on Katella Avenue is a steady source of ambient noise. Other sources of noise in the vicinity of the project site include aircraft noise from the Joint Forces Training Base (JFTB) Los Alamitos, commercial activity, and event noise at the Los Alamitos Race Course. Noise generated from commercial activity includes parking lot activities, rooftop heating ventilation air conditioning (HVAC) equipment, trash pick-up, and truck delivery and truck unloading activities. Noise generated from events held at the Los Alamitos Race Course includes parking lot activities, crowd noise, and the Public Announcement system. The Los Alamitos Race Course conducts year-round quarter horse races Fridays through Sundays, starting at 7:00 p.m. on Fridays, 6:00 p.m. on Saturdays, and 5:00 p.m. on Sundays with a closing time of 11:00 p.m. In addition, three thoroughbred events are scheduled each year. Based on long-term noise level measurements obtained from the Noise Impact Analysis prepared for the *Barton Place EIR* (Urban Crossroads, April 2015), events at the race course may be audible or distinguishable at the project site.

4.11.2.2 Existing Sensitive Land Uses in the Project Vicinity

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of



their intended purpose. Noise-sensitive land uses include residences, hospitals, school classrooms, churches, libraries, and parks. Noise-sensitive land uses in the vicinity of the project site include residences to the west and south and a church (Seventh-Day Adventist Church) to the west of the project site. Other land uses immediately adjacent to the project site include the Los Alamitos Race Course to the north, commercial/retail uses to the east and west, and office and commercial uses to the south.

4.11.2.3 Existing Noise Levels

The existing noise levels at the project site are assessed from ambient noise levels measurements conducted on the project site, existing aircraft noise, and existing traffic noise levels along roadways in the project vicinity. The existing noise levels in the area surrounding the project site are further described in detail below.

Short-Term Noise Measurements. Three short-term (20-minute) noise level measurements were conducted on the project site on Wednesday, July 10, 2019, using a Larson David Model 824 Type 1 sound level meter. Table 4.11.A shows the results of the short-term measurements along with a description of the measurement location and noise sources that occurred during the measurement. As shown in Table 4.11.A, measured L_{eq} noise levels at the northwestern portion of the project site ranged from 55.2 to 55.8 dBA L_{eq} . In addition, the Community Noise Equivalent Level (CNEL) level at these locations range from 57.1 to 60.5 dBA CNEL, which was calculated based on the noise level profile of the long-term noise level measurement at LT-2. Figure 4.11.1 shows the short-term monitoring locations.

Long-Term Noise Measurements. Long-term (24-hour) noise level measurements were conducted from July 10 to July 11, 2019, using Larson Davis Spark 706RC noise dosimeters at two locations on the project site. Tables 4.11.B and 4.11.C show the hourly equivalent continuous sound level (L_{eq}) results from the long-term measurements, and Table 4.11.D shows the calculated CNEL from the long-term noise level measurements. As shown in Table 4.11.D, the calculated CNELs are 65.8 dBA CNEL and 61.2 dBA CNEL at LT-1 and LT-2, respectively. The long-term monitoring locations are also shown in Figure 4.11.1.

4.11.2.4 Existing Aircraft Noise Levels

The Joint Forces Training Base (JFTB) Los Alamitos is located approximately 0.5 mile south of the project site in the City of Los Alamitos. According to the Airport Environs Land Use Plan for JFTB Los Alamitos and Exhibit SAF-8 in the Safety Element of the City's General Plan, the project site is within the 60 dBA CNEL noise contour, but outside of the 65 dBA CNEL noise contour for JFTB Los Alamitos. In addition, the Long Beach Municipal Airport is located approximately 5.4 miles northwest of the project site. According to the Los Angeles County Airport Land Use Plan, the project site is located outside of the 65 dBA CNEL noise contour for the Long Beach Municipal Airport. In addition, there are no private airstrips located on or within the vicinity of the project site.



Table 4.11.A: Short-Term Ambient Noise Level Measurements

Monitor No.	Location Description	Date	Start Time	Duration (minutes)	Noise Level				Noise Source
					dBA L _{eq}	dBA L _{max}	dBA L _{min}	dBA CNEL ¹	
ST-1	In the parking lot, approximately 30 ft east of Siboney Street, across from the Los Alamitos Seventh-day Adventist Church entrance.	7/10/19	10:12 a.m.	20	55.2	69.2	45.1	57.1	Light traffic on Siboney Street. Faint and constant traffic noise from Katella Avenue.
ST-2	Middle of the parking lot approximately 350 ft west of Winners Circle.	7/10/19	11:39 a.m.	20	54.3	66.5	47.8	57.3	Traffic on Katella Avenue
ST-3	In the parking lot, approximately 20 ft south of the fifth row of light poles and approximately 250 ft east of Siboney Street.	7/10/19	10:49 a.m.	20	55.8	66.6	47.1	60.5	Faint traffic noise on Katella Avenue

Source: Compiled by LSA (2019).

¹ The CNEL level was calculated based on the noise level profile of LT-2.

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

ft = foot/feet

L_{eq} = equivalent continuous sound level

L_{max} = maximum A-weighted sound level

L_{min} = minimum A-weighted sound level



Table 4.11.B: Long-Term (24-Hour) Noise Level Measurement Results at LT-1

	Start Time	Date	Noise Level (dBA Leq)
1	10:00 AM	7/10/19	60
2	11:00 AM	7/10/19	61
3	12:00 PM	7/10/19	61
4	1:00 PM	7/10/19	61
5	2:00 PM	7/10/19	62
6	3:00 PM	7/10/19	62
7	4:00 PM	7/10/19	62
8	5:00 PM	7/10/19	62
9	6:00 PM	7/10/19	62
10	7:00 PM	7/10/19	61
11	8:00 PM	7/10/19	62
12	9:00 PM	7/10/19	61
13	10:00 PM	7/10/19	58
14	11:00 PM	7/10/19	56
15	12:00 AM	7/11/19	54
16	1:00 AM	7/11/19	53
17	2:00 AM	7/11/19	53
18	3:00 AM	7/11/19	53
19	4:00 AM	7/11/19	57
20	5:00 AM	7/11/19	61
21	6:00 AM	7/11/19	64
22	7:00 AM	7/11/19	64
23	8:00 AM	7/11/19	64
24	9:00 AM	7/11/19	62

Source: Compiled by LSA (2019).

dBA Leq = equivalent continuous sound level measured in A-weighted decibels

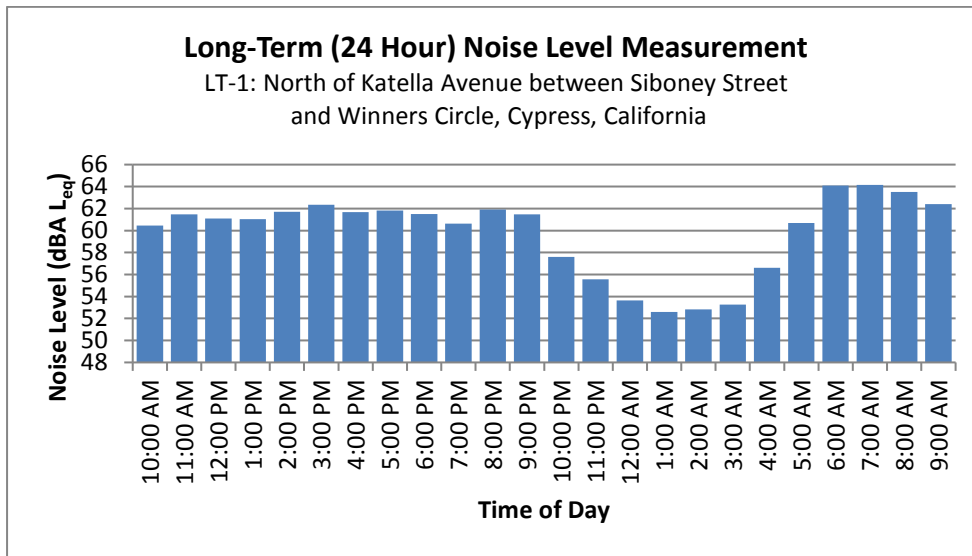




Table 4.11.C: Long-Term (24-Hour) Noise Level Measurement Results at LT-2

	Start Time	Date	Noise Level (dBA Leq)
1	10:00 AM	7/10/19	59
2	11:00 AM	7/10/19	58
3	12:00 PM	7/10/19	57
4	1:00 PM	7/10/19	58
5	2:00 PM	7/10/19	58
6	3:00 PM	7/10/19	59
7	4:00 PM	7/10/19	58
8	5:00 PM	7/10/19	59
9	6:00 PM	7/10/19	59
10	7:00 PM	7/10/19	56
11	8:00 PM	7/10/19	59
12	9:00 PM	7/10/19	58
13	10:00 PM	7/10/19	52
14	11:00 PM	7/10/19	50
15	12:00 AM	7/11/19	48
16	1:00 AM	7/11/19	51
17	2:00 AM	7/11/19	51
18	3:00 AM	7/11/19	50
19	4:00 AM	7/11/19	50
20	5:00 AM	7/11/19	54
21	6:00 AM	7/11/19	59
22	7:00 AM	7/11/19	58
23	8:00 AM	7/11/19	57
24	9:00 AM	7/11/19	58

Source: Compiled by LSA (2019).

dBA Leq = equivalent continuous sound level measured in A-weighted decibels

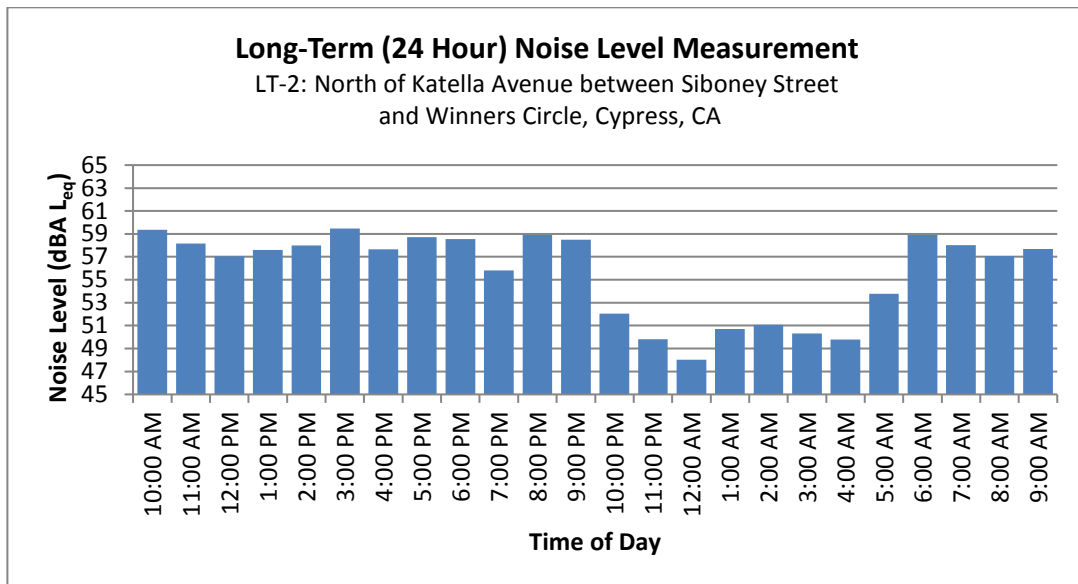




Table 4.11.D: Long-Term Ambient Noise Level Measurements

Monitoring No.	Location	Start Date	Start Time	Duration (hours)	Noise Level (dBA CNEL)	Noise Sources
LT-1	North of Katella Avenue between Siboney Street and Winners Circle	7/10/19	10:00 a.m.	24	65.8	Traffic on Katella Avenue, Siboney Street, and Winners Circle.
LT-2	North of Katella Avenue between Siboney Street and Winners Circle	7/10/19	10:00 a.m.	24	62.1	Traffic on Katella Avenue, Siboney Street, and Winners Circle.

Source: Compiled by LSA (2019).

dBA = A-weighted decibels

CNEL = Community Noise Equivalent Level

4.11.2.5 Existing Traffic Noise Levels

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to evaluate traffic noise in the vicinity of the project site. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Traffic volumes on roadways within the vicinity of the project site were obtained from the *Cypress City Center Traffic Impact Analysis* (LSA 2019). The standard vehicle mix for Southern California roadways was used for the roadways in the vicinity of the project site. The existing traffic noise levels along roadway segments within the vicinity of the project site are presented in Table 4.11.E. These traffic noise levels are representative of a worst-case scenario that assumes a flat terrain and no shielding between the traffic and the noise contours. The specific assumptions used in developing these noise levels and the model printouts are provided in Appendix H.

4.11.3 Regulatory Setting

4.11.3.1 Federal Regulations

Federal Transit Administration. The USDOT FTA identifies guidelines for the maximum acceptable vibration levels for different types of land uses. These guidelines are based on the potential for interference or annoyance from vibration levels in a building and the potential for building damage. According to the FTA, ground vibrations from construction activities generally do not reach levels that can damage structures, but they can achieve the audible and feel-able ranges in buildings very close to the construction site. Exceptions include non-engineered timber and masonry buildings such as residential buildings and old or fragile buildings, where special care must be taken to avoid damage. Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures, and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment, such as air compressors, light trucks, and hydraulic loaders, generates little or no ground vibration.



Table 4.11.E: Existing (2019) Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
Cerritos Avenue west of Los Alamitos Boulevard	22,200	< 50	107	225	67.6
Cerritos Avenue from Los Alamitos Boulevard to Bloomfield Street	25,660	< 50	95	200	66.8
Cerritos Avenue from Bloomfield Street and Denni Street	26,255	59	119	251	68.3
Cerritos Avenue from Denni Street and Moody Street	27,365	72	147	314	69.8
Cerritos Avenue from Moody Street and Walker Street	30,485	76	158	337	70.2
Cerritos Avenue from Walker Street and Valley View Street	27,125	73	147	312	69.3
Cerritos Avenue east of Valley View Street	21,190	62	125	265	68.6
Los Alamitos Boulevard north of Cerritos Avenue	17,390	< 50	80	157	64.4
Los Alamitos Boulevard from Cerritos Avenue to Katella Avenue	25,125	< 50	98	198	66.0
Los Alamitos Boulevard from Katella Avenue to Farquhar Avenue	33,830	63	116	241	67.3
Los Alamitos Boulevard south of Farquhar Avenue	35,980	64	121	251	67.5
Bloomfield Street north of Cerritos Avenue	12,950	< 50	76	158	65.2
Bloomfield Street from Cerritos Avenue to Katella Avenue	11,990	< 50	73	150	64.9
Denni Street north of Cerritos Avenue	7,660	< 50	< 50	90	62.0
Lexington Drive from Cerritos Avenue to Katella Avenue	4,825	< 50	< 50	65	61.0
Moody Street north Cerritos Avenue	10,410	< 50	67	137	64.3
Walker Street north of Cerritos Avenue	15,900	< 50	87	181	66.1
Walker Street from Cerritos Avenue to Katella Avenue	19,850	< 50	99	209	67.1
Valley View Street north of Cerritos Avenue	37,440	90	182	387	70.4
Valley View Street from Cerritos Avenue to Katella Avenue	38,235	91	185	392	70.5
Valley View Street from Katella Avenue to Oranewood Avenue	51,485	109	224	477	71.8
Valley View Street south of Oranewood Avenue	42,570	97	198	421	71.0
Katella Avenue from I-605 Ramps to Wallingsford Road	49,955	90	182	385	70.4
Katella Avenue from Wallingsford Road to Los Alamitos Road	44,415	85	169	357	69.9
Katella Avenue from Los Alamitos Road to Bloomfield Street	38,980	79	155	327	69.3



Table 4.11.E: Existing (2019) Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
Katella Avenue from Bloomfield Street to Denni Street/Lexington Drive	37,135	77	151	317	69.1
Katella Avenue from Denni Street/Lexington Drive to Cottonwood Way	37,390	77	151	318	69.1
Katella Avenue from Cottonwood Way to Siboney Street	37,940	78	153	321	69.2
Katella Avenue from Siboney Street to Winners Circle	37,460	77	151	319	69.1
Katella Avenue from Winners Circle to Walker Street	37,610	77	152	320	69.1
Katella Avenue from Walker Street to Valley View Street	43,675	99	201	428	71.1
Katella Avenue east of Valley View Street	30,070	80	159	334	69.4
Siboney Street north of Katella Avenue	3,130	< 50	< 50	< 50	53.8
Winners Circle north of Katella Avenue	1,960	< 50	< 50	< 50	53.6

Source: Compiled by LSA (2019).

Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.

ADT = average daily traffic

ft = foot/feet

CNEL = Community Noise Equivalent Level

I-605 = Interstate 605

dBA = A-weighted decibels

Occasionally, large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. With no enforceable regulations in the Cities of Cypress or Los Alamitos, the FTA guidelines for potential interference or annoyance shown in Table 4.11.F and potential building damage shown in Table 4.11.G are used to assess vibration impacts of the proposed project and determining the significance vibration impacts.

Table 4.11.F: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L _v (VdB) ¹	Description of Use
Workshop	90	Distinctly feelable vibration. Appropriate to workshops and non-sensitive areas.
Office	84	Feelable vibration. Appropriate to offices and non-sensitive areas.
Residential Day	78	Feelable vibration. Appropriate for computer equipment and low-power optical microscopes (up to 20X).
Institutional	75	Institutional land uses with primarily daytime use. These uses include schools, churches, and doctors' offices.
Residential Night and Operating Rooms	72	Vibration not feelable, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100X) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

¹ As measured in 1/3-octave bands of frequency over the frequency range 8 to 80 Hertz.

FTA = Federal Transit Administration

VdB = vibration velocity decibels

L_v = vibration velocity in decibels



Table 4.11.G: Interpretation of Vibration Criteria for Detailed Analysis

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

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

¹ RMS vibration velocity in decibels (VdB) re 1 μ inch/sec.

μ inch/sec = microinches per second

L_v = vibration velocity in decibels

VdB = vibration velocity decibels

FTA = Federal Transit Administration

PPV = peak particle velocity

inch/sec = inches per second

RMS = root-mean-square

4.11.3.2 State Regulations

State of California Noise Requirements. The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element, which is to be prepared according to guidelines adopted by the Governor’s Office of Planning and Research (OPR). The purpose of the Noise Element, as defined by the OPR guidelines, is to limit the exposure of the community to excessive noise levels. In addition, the *State CEQA Guidelines* include thresholds of significance for analyzing environmental noise impacts.

State of California Building Code. The State of California’s noise insulation standards are codified in the California Code of Regulations, Title 24; the Building Standards Administrative Code, Part 2; and the California Building Code (which has been adopted by the City of Cypress, with modifications, as the City’s Building Code). These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations (Chapter 2-35, Part 2, Title 24) specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

4.11.3.3 Regional Regulations

There are no regional regulations related to noise that are applicable to the proposed project.

4.11.3.4 Local Regulations

City of Cypress General Plan. The City’s General Plan Noise Element has established interior and exterior noise standards for various land use categories shown in Table 4.11.H. As shown in Table 4.11.H, the City’s exterior and interior noise standards are 50–60 dBA CNEL and 45–55 dBA CNEL, respectively, for single- and multifamily residences. It should be noted that the City’s exterior noise standard only applies to private yards of single-family residences, private patios, or balconies



Table 4.11.H: City of Cypress Interior and Exterior Noise Standards

Categories	Land Use Categories	dBA CNEL	
	Uses	Interior ¹	Exterior ²
Residential	Single Family Duplex, Multiple Family	45 ³ –55	50–60
	Mobile Home	45	65 ⁴
Commercial Industrial	Hotel, Motel, Transient Lodging	45	--
	Commercial Retail, Bank, Restaurant	55	--
	Office Building, Research and Development, Professional Offices, City Office Building	50	--
	Amphitheater, Concert Hall Auditorium, Meeting Hall	45	--
	Gymnasium (Multipurpose)	50	--
	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	65	--
	Movie Theaters	45	--
Institutional	Hospital, Schools' Classrooms	45	65
	Church, Library	45	--
Open Space	Parks	--	65

Source: City of Cypress General Plan Noise Element, Table N-3.

¹ Indoor environmental including: bedrooms, living areas, bathrooms, toilets, closets, corridors.

² Outdoor environment limited to: private yards of single-family residences, private patios, or balconies of multifamily residences which are served by a means of exit from inside the dwelling (balconies 6 ft deep or less are exempt), mobile home parks, park picnic areas, and school playgrounds.

³ Noise level requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of the Uniform Building Code.

⁴ Exterior noise levels should be such that interior noise levels will not exceed 45 dBA CNEL.

of multifamily residences which are served by a means of exit from inside the dwelling, mobile home parks, park picnic areas, and school playgrounds. Multifamily residences with balconies that are 6 ft deep or less are exempted from the City's exterior noise standard. Although the City's interior noise standard is 45–55 dBA CNEL, the interior noise standard of 45 dBA CNEL was used for a conservative noise analysis. Although the City has not adopted exterior noise standards for hotels, movie theaters, and commercial uses, the City has established an interior noise standard of 45 dBA CNEL for hotels and movie theaters and an interior noise standard of 55 dBA CNEL for commercial retail and restaurant uses.

City of Cypress Municipal Code.

Construction Noise Standards. Section 13-70(e) of the City's Municipal Code states that "noise sources associated with construction, repair, remodeling or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, and before 9:00 a.m. and after 8:00 p.m. on Saturdays, or at any time on Sundays or a federal holiday."

To provide a comprehensive and conservative analysis, the operational noise level limits discussed below were used to evaluate noise generated from project construction. The anytime maximum daytime exterior noise level of 80 dBA L_{max} for residential uses in the City of Cypress was used as the acceptable threshold for determining impacts at noise-sensitive land uses from project construction. This threshold is considered a reasonable threshold of significance for potential construction noise



impacts because the City of Cypress has established maximum exterior noise standards to control operational noise levels.

Operational Noise Standards. Sections 13-68 and 13-69 of the City’s Municipal Code has established exterior and interior noise standards for residential uses from stationary noise sources. The exterior and interior stationary source noise standards are shown in Table 4.11.I. Based on the City’s Municipal Code, residential land uses adjacent to the project site in the City of Cypress are designated as Noise Zone 2 because they are zoned as Planned Business Park.

Table 4.11.I: City of Cypress Stationary Noise Standards

Noise Zone	Exterior/ Interior	Time Period	L ₅₀ (30 mins) ¹	L ₂₅ (15 mins) ²	L ₈ (5 mins) ³	L ₂ (1 min) ⁴	L _{max} (Anytime) ⁵
1	Exterior	7:00 AM to 10:00 PM	55	60	65	70	75
		10:00 PM to 7:00 AM	50	55	60	65	70
2	Exterior	7:00 AM to 10:00 PM	60	65	70	75	80
		10:00 PM to 7:00 AM	55	60	65	70	75
1 and 2	Interior	7:00 AM to 10:00 PM	--	--	55	60	65
		10:00 PM to 7:00 AM	--	--	45	50	55

Source: City of Cypress Municipal Code (July 2019).

Note: It shall be unlawful for any person at any location within the incorporated area of the city to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person when the foregoing causes the noise level when measured on any other residential property either incorporated or unincorporated to exceed the applicable noise standard. In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by 5 dBA. In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

- ¹ The noise standard for a cumulative period of more than 30 minutes in any hour
- ² The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour
- ³ The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour
- ⁴ The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour
- ⁵ The noise standard plus 20 dBA for any period of time.

L_{max} = maximum instantaneous noise level
min/mins = minute/minutes

City of Los Alamitos Municipal Code. The project site is located within and under the jurisdiction of the City of Cypress. However, due to the close proximity to the City of Los Alamitos, and to present a conservative analysis, the analysis in this section also applies the City of Los Alamitos noise standards to land uses located within that city. The City of Los Alamitos Municipal Code, Chapter 17.24, Noise, provides noise control guidelines for evaluating non transportation or stationary-source noise impacts from operations at private properties.

Construction Noise Standards. Section 17.24.020(D) of the City of Los Alamitos Municipal Code, states that “noise sources associated with construction, repair, remodeling or grading of any real property; provided a permit has been obtained from the city; and provided the activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.”



To provide a comprehensive and conservative analysis, the operational noise level limits discussed below were used to evaluate noise generated from project construction because the City of Los Alamitos has not established noise level limits that apply to construction. The anytime maximum exterior noise level of 75 dBA L_{max} for residential uses in the City of Los Alamitos was used as the acceptable threshold for determining impacts at noise-sensitive land uses from project construction. This threshold is considered a reasonable threshold of significance for potential construction noise impacts because the City of Los Alamitos has established maximum exterior noise standards to control operational noise levels.

Operational Noise Standards. Sections 17.24.050 and 17.24.060 of the City of Los Alamitos Municipal Code has established exterior and interior noise standards for various noise zones from stationary noise sources. The exterior and interior stationary source noise standards are shown in Table 4.11.J. Land uses in Noise Zone 1 are all residential properties. Land uses in Noise Zone 2 are all professional office and public institutional properties. Land uses in Noise Zone 3 are all commercial properties, with the exception of professional office properties. Land uses in Noise Zone 4 are all industrial properties.

Table 4.11.J: City of Los Alamitos Stationary Noise Standards

Noise Zone	Exterior/ Interior	Time Period	L_{50} (30 mins) ¹	L_{25} (15 mins) ²	L_8 (5 mins) ³	L_2 (1 min) ⁴	L_{max} (Anytime) ⁵
1	Exterior	7:00 AM to 10:00 PM	55	60	65	70	75
		10:00 PM to 7:00 AM	50	55	60	65	70
2	Exterior	Anytime	55	60	65	70	75
3	Exterior	Anytime	60	65	70	75	80
4	Exterior	Anytime	70	75	80	85	90
1	Interior	7:00 AM to 10:00 PM	--	--	55	60	65
		10:00 PM to 7:00 AM	--	--	45	50	55
2, 3, and 4	Interior	Anytime	--	--	55	60	65

Source: City of Los Alamitos Municipal Code (July 2019).

Note: It shall be unlawful for a person to create noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by a person that causes the noise level when measured on a residential, public institutional, professional, commercial, or industrial property either within or without the city to exceed the applicable noise standard. Each of the noise limit specified above shall be reduced by 5 dBA for impact or predominant tone noises, or for noises consisting of speech or music. In the event that the noise source and the affected property are within different noise zoning districts, the noise standards of the affected property shall apply. In the event the ambient noise level exceeds either of the first two noise limit categories above, the cumulative period applicable to said category shall be increased to reflect the ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under that category shall be increased to reflect the maximum ambient noise level.

¹ The noise standard for a cumulative period of more than 30 minutes in any hour

² The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour

³ The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour

⁴ The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour

⁵ The noise standard plus 20 dBA for any period of time.

L_{max} = maximum instantaneous noise level

min/mins = minute/minutes



Amended and Restated Specific Plan (Specific Plan). Because the Specific Plan supersedes any conflicting provisions in the City’s Municipal Code regarding the zoning standards applicable to the proposed project, the proposed project would adhere to the construction hours set forth in the Specific Plan. Therefore, the construction hours for the proposed project would be limited to weekdays and Saturdays between the hours of 7:00 a.m. and 8:00 p.m. No construction shall be permitted outside of these hours or on Sundays or federal holidays.

4.11.4 Thresholds of Significance

The thresholds for noise and vibration impacts used in this analysis are consistent with Appendix G of the *State CEQA Guidelines* and the City’s *Initial Study/Environmental Checklist*. The proposed project may be deemed to have a significant impact with respect to noise if it would result in:

Threshold 4.11.1: 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?

Threshold 4.11.2: Generation of excessive groundborne vibration or groundborne noise levels?

Threshold 4.11.3: 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 levels?

In addition to the *State CEQA Guidelines* Appendix G thresholds above, the quantitative noise and vibration standards in Table 4.11.K below, are used in this analysis to evaluate construction and operational impacts related to noise and vibration.

Table 4.11.K: Summary of Noise and Vibration Standards/Significance Criteria

Noise Analysis	Jurisdiction	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Cypress and Los Alamitos	Project-related traffic noise increase	≥ 3 dBA CNEL	
On-Site Traffic	Cypress	Interior multifamily residence	45 dBA CNEL	
		Interior hotel and movie theater	45 dBA CNEL	
		Interior commercial retail	55 dBA CNEL	
Operational	Cypress	Exterior residential land use	60 dBA L ₅₀	55 dBA L ₅₀
		≥ 30 minutes	60 dBA L ₅₀	55 dBA L ₅₀
		≥ 15 minutes	65 dBA L ₂₅	60 dBA L ₂₅
		≥ 5 minutes	70 dBA L ₈	65 dBA L ₈
		≥ 1 minute	75 dBA L ₂	70 dBA L ₂
		Anytime	80 dBA L _{max}	75 dBA L _{max}
		Interior residential land use	55 dBA L ₈	45 dBA L ₈
		≥ 5 minutes	55 dBA L ₈	45 dBA L ₈
≥ 1 minute	60 dBA L ₂	50 dBA L ₂		
Anytime	65 dBA L _{max}	55 dBA L _{max}		



Table 4.11.K: Summary of Noise and Vibration Standards/Significance Criteria

Noise Analysis	Jurisdiction	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Operational	Los Alamitos	Exterior residential land use	55 dBA L ₅₀	50 dBA L ₅₀
		≥ 30 minutes	55 dBA L ₅₀	50 dBA L ₅₀
		≥ 15 minutes	60 dBA L ₂₅	55 dBA L ₂₅
		≥ 5 minutes	65 dBA L ₈	60 dBA L ₈
		≥ 1 minute	70 dBA L ₂	65 dBA L ₂
		Anytime	75 dBA L _{max}	70 dBA L _{max}
		Interior residential land use	55 dBA L ₈	45 dBA L ₈
		≥ 5 minutes	55 dBA L ₈	45 dBA L ₈
		≥ 1 minute	60 dBA L ₂	50 dBA L ₂
		Anytime	65 dBA L _{max}	55 dBA L _{max}
		Exterior office/commercial land use	55 dBA L ₅₀ /60 dBA L ₅₀	
		≥ 30 minutes	55 dBA L ₅₀ /60 dBA L ₅₀	
		≥ 15 minutes	60 dBA L ₅₀ /65 dBA L ₂₅	
		≥ 5 minutes	65 dBA L ₅₀ /70 dBA L ₈	
		≥ 1 minute	70 dBA L ₅₀ /75 dBA L ₂	
		Anytime	75 dBA L ₅₀ /80 dBA L _{max}	
		Interior office/commercial land use	55 dBA L ₈	
		≥ 5 minutes	55 dBA L ₈	
≥ 1 minute	60 dBA L ₂			
Anytime	65 dBA L _{max}			
Construction	Cypress and Los Alamitos	Permitted hours of construction: Weekdays and Saturdays between 7:00 a.m. and 8:00 p.m. No construction shall be permitted outside of these hours or on Sundays and federal holidays.		
	Cypress	Noise level threshold	80 dBA L _{max}	N/A
	Los Alamitos	Noise level threshold	75 dBA L _{max}	N/A
	Cypress and Los Alamitos	Vibration level threshold	See Tables 4.11.F and 4.11.G	

Source: Compiled by LSA (2019).

Note: "Daytime" = 7:00 a.m.–10:00 p.m.; "Nighttime" = 10:00 p.m.–7:00 a.m.

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

L₅₀ = The noise standard for a cumulative period of more than 30 minutes in any hour

L₂₅ = The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour

L₈ = The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour

L₂ = The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour

L_{max} = The noise standard plus 20 dBA for any period of time.

N/A = Not applicable. Construction during nighttime hours is not permitted. Therefore, no nighttime construction noise level threshold is identified.

4.11.5 Project Impacts

Threshold 4.11.1: Would the project 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?

Less Than Significant with Mitigation Incorporated.



Construction Noise Impacts. Construction noise associated with the proposed project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for on-site construction activities as well as construction vehicle traffic on surrounding roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Other primary sources of acoustical disturbance would be random incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts. During construction, exterior noise levels could negatively affect residences and the church in the vicinity of the construction site. The closest residences are located approximately 890 ft west and 350 ft south of the project site. In addition, the closest church is located approximately 465 ft west of the project site. Construction activities would expose nearby sensitive receptors to peak noise levels from 64.1 dBA to 66.5 dBA L_{max} during the site preparation and grading phase (Phase 1), 65.8 dBA to 68.3 dBA L_{max} during the construction of buildings phase (Phase 2), and 64.9 dBA to 67.4 dBA during the paving phase (Phase 3). These noise levels would not exceed the anytime maximum daytime exterior noise standard of 80 dBA L_{max} in the City of Cypress and noise levels would not exceed the anytime maximum daytime exterior noise standard of 75 dBA L_{max} in the City of Los Alamitos.

In addition, the proposed project would use the Geopier system during the construction of the proposed hotel and apartments. Installation of piles using the Geopier system, or similar methods, generates a maximum noise level of 90 dBA L_{max} at 50 ft. Based on a usage factor of 60 percent, noise levels generated by the installation of Geopiers during construction would be 87.8 dBA L_{eq} at a distance of 50 ft. The closest residences are located approximately 900 ft west and 350 ft south of the project site. In addition, the closest church is located approximately 465 ft west of the project site. Noise levels generated from where the installation of Geopiers would take place would range from 64.9 to 73.1 dBA L_{max} at the closest sensitive receptors. These noise levels would not exceed the anytime maximum daytime exterior noise standard of 80 dBA L_{max} in the City of Cypress and noise levels would not exceed the anytime maximum daytime exterior noise standard of 75 dBA L_{max} in the City of Los Alamitos. The proposed project would comply with the permitted construction hours from 7:00 a.m. to 8:00 p.m. on weekdays and Saturdays specified in the Specific Plan. No construction shall be permitted outside of these hours or on Sundays or federal holidays (Regulatory Compliance Measure NOI-1). The implementation of Mitigation Measure NOI-1 would further minimize construction-related noise to a less than significant impact.

Less Than Significant Impact.

Operational Noise.

Long-Term Off-Site Traffic Noise Impacts. The FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to evaluate traffic noise in the vicinity of the project site. Table 4.11.L shows the modeled traffic noise levels under the existing (2019) year without and with the proposed project. Table 4.11.M shows the modeled traffic noise levels under the opening year (2021) conditions without and with the proposed project. These traffic noise levels are representative of a worst-case scenario that assumes a flat terrain and no shielding between the traffic and the noise contours. The specific assumptions used in developing these noise levels and the model printouts are provided in Appendix H.



As shown in Tables 4.11.L and 4.11.M, the modeled project-related traffic noise increase would be less than 3 dBA under both scenarios. Noise level increases less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, the proposed project's long-term off-site traffic noise impacts would be less than significant.

Project Land Use Compatibility. The proposed project's land use compatibility is based on the City's exterior and interior noise standards established in the Noise Element of the City's General Plan. The City's has an exterior noise standard for single-family and multifamily residences of 50 to 60 dBA CNEL and an interior noise standard of 45 to 55 dBA CNEL. While the 60 dBA CNEL is the upper limit for exterior noise, an interior noise standard of 45 dBA CNEL with windows closed was used to evaluate potential interior noise impacts. The proposed project's multifamily residences would be exempt from the City's exterior noise standards because the proposed upper floor balconies would be 6 ft in depth or less. Although the City has not adopted exterior noise standards for hotels, movie theaters, and commercial uses, the City has established an interior noise standard of 45 dBA CNEL for hotels and movie theaters and an interior noise standard of 55 dBA CNEL for commercial retail and restaurant uses.

Table 4.11.N shows the modeled exterior and interior traffic noise levels under the Opening Year (2021) with project scenario at each modeled on-site receptor. Although the proposed project may be exposed to intermittent noise levels from parking activities at adjacent land uses and events at the Los Alamitos Race Course, the intermittent noise levels would not be high or frequent enough to contribute to the CNEL level. The interior noise levels were calculated from the exterior noise levels by applying an exterior-to-interior noise level reduction of 24 dBA (USEPA 1978) based on standard construction in Southern California with window and doors closed. Traffic noise levels at Receptors R-5 through R-7 shown in Table 4.11.N are considered conservative because noise attenuation provided by the proposed buildings was not factored in and traffic noise levels would be lower. Figure 4.11.1 shows the noise monitoring locations and the locations of the modeled receptors.

Table 4.11.N shows that the modeled traffic noise levels under the Opening Year (2021) with project scenario at the modeled on-site receptors representing the apartment, hotel, movie theater, and commercial uses would not exceed their respective interior noise standards. As discussed above, the exterior noise standards for the multifamily residences are not applicable because the proposed balconies would be 6 ft in depth or less. Therefore, the proposed uses on the project site would be compatible with surrounding uses based on the noise standards established by the City. Therefore, the proposed project would result in the development of land uses consistent with the City's noise standards and long-term on-site traffic noise impacts would be less than significant.

Long-Term Stationary-Source Noise Impacts. The proposed project would include several on-site stationary noise sources, such as truck delivery and truck unloading activities, HVAC equipment, trash pick-up/compactor operations, and parking lot activities.



Table 4.11.L: Existing (2019) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Condition (dBA)
Cerritos Avenue west of Los Alamitos Boulevard	22,200	< 50	107	225	67.6	22,200	< 50	107	225	67.6	0.0
Cerritos Avenue from Los Alamitos Boulevard to Bloomfield Street	25,660	< 50	95	200	66.8	25,660	< 50	95	200	66.8	0.0
Cerritos Avenue from Bloomfield Street and Denni Street	26,255	59	119	251	68.3	26,255	59	119	251	68.3	0.0
Cerritos Avenue from Denni Street and Moody Street	27,365	72	147	314	69.8	27,365	72	147	314	69.8	0.0
Cerritos Avenue from Moody Street and Walker Street	30,485	76	158	337	70.2	30,565	76	158	337	70.2	0.0
Cerritos Avenue from Walker Street and Valley View Street	27,125	73	147	312	69.3	27,285	74	148	313	69.4	0.1
Cerritos Avenue east of Valley View Street	21,190	62	125	265	68.6	21,350	62	125	266	68.7	0.1
Los Alamitos Boulevard north of Cerritos Avenue	17,390	< 50	80	157	64.4	17,580	< 50	80	158	64.4	0.0
Los Alamitos Boulevard from Cerritos Avenue to Katella Avenue	25,125	< 50	98	198	66.0	25,300	< 50	98	199	66.0	0.0
Los Alamitos Boulevard from Katella Avenue to Farquhar Avenue	33,830	63	116	241	67.3	34,070	63	117	242	67.3	0.0
Los Alamitos Boulevard south of Farquhar Avenue	35,980	64	121	251	67.5	36,220	65	121	252	67.6	0.1
Bloomfield Street north of Cerritos Avenue	12,950	< 50	76	158	65.2	13,030	< 50	77	159	65.3	0.1
Bloomfield Street from Cerritos Avenue to Katella Avenue	11,990	< 50	73	150	64.9	12,070	< 50	73	151	64.9	0.0
Denni Street north of Cerritos Avenue	7,660	< 50	< 50	90	62.0	7,740	< 50	< 50	91	62.0	0.0
Lexington Drive from Cerritos Avenue to Katella Avenue	4,825	< 50	< 50	65	61.0	4,950	< 50	< 50	67	61.1	0.1
Moody Street north Cerritos Avenue	10,410	< 50	67	137	64.3	10,490	< 50	67	138	64.3	0.0
Walker Street north of Cerritos Avenue	15,900	< 50	87	181	66.1	16,060	< 50	87	182	66.2	0.1
Walker Street from Cerritos Avenue to Katella Avenue	19,850	< 50	99	209	67.1	20,295	< 50	101	212	67.2	0.1
Valley View Street north of Cerritos Avenue	37,440	90	182	387	70.4	37,770	91	183	389	70.4	0.0
Valley View Street from Cerritos Avenue to Katella Avenue	38,235	91	185	392	70.5	38,565	92	186	394	70.5	0.0



Table 4.11.L: Existing (2019) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Condition (dBA)
Valley View Street from Katella Avenue to Oranewood Avenue	51,485	109	224	477	71.8	51,965	109	225	480	71.8	0.0
Valley View Street south of Oranewood Avenue	42,570	97	198	421	71.0	43,050	98	199	424	71.0	0.0
Katella Avenue from I-605 Ramps to Wallingsford Road	49,955	90	182	385	70.4	50,750	91	184	389	70.4	0.0
Katella Avenue from Wallingsford Road to Los Alamitos Road	44,415	85	169	357	69.9	45,215	85	171	361	69.9	0.0
Katella Avenue from Los Alamitos Road to Bloomfield Street	38,980	79	155	327	69.3	40,185	80	158	334	69.4	0.1
Katella Avenue from Bloomfield Street to Denni Street/Lexington Drive	37,135	77	151	317	69.1	38,465	78	154	324	69.2	0.1
Katella Avenue from Denni Street/Lexington Drive to Cottonwood Way	37,390	77	151	318	69.1	38,930	79	155	327	69.3	0.2
Katella Avenue from Cottonwood Way to Siboney Street	37,940	78	153	321	69.2	39,525	79	157	330	69.4	0.2
Katella Avenue from Siboney Street to Winners Circle	37,460	77	151	319	69.1	39,105	79	156	328	69.3	0.2
Katella Avenue from Winners Circle to Walker Street	37,610	77	152	320	69.1	39,230	79	156	329	69.3	0.2
Katella Avenue from Walker Street to Valley View Street	43,675	99	201	428	71.1	44,810	100	205	435	71.2	0.1
Katella Avenue east of Valley View Street	30,070	80	159	334	69.4	30,400	81	160	337	69.5	0.1
Siboney Street north of Katella Avenue	3,130	< 50	< 50	< 50	53.8	3,810	< 50	< 50	< 50	54.7	0.9
Winners Circle north of Katella Avenue	1,960	< 50	< 50	< 50	53.6	2,950	< 50	< 50	< 50	55.4	1.8

Source: Compiled by LSA (2019).

Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.

ADT = average daily traffic

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

ft = foot/feet

I-605 = Interstate 605



Table 4.11.M: Opening Year (2021) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Condition (dBA)
Cerritos Avenue west of Los Alamitos Boulevard	23,370	< 50	110	233	67.8	23,370	< 50	110	233	67.8	0.0
Cerritos Avenue from Los Alamitos Boulevard to Bloomfield Street	26,480	< 50	97	204	66.9	26,480	< 50	97	204	66.9	0.0
Cerritos Avenue from Bloomfield Street and Denni Street	27,085	60	121	257	68.4	27,085	60	121	257	68.4	0.0
Cerritos Avenue from Denni Street and Moody Street	28,405	73	151	321	69.9	28,405	73	151	321	69.9	0.0
Cerritos Avenue from Moody Street and Walker Street	31,680	78	162	345	70.4	31,760	78	162	346	70.4	0.0
Cerritos Avenue from Walker Street and Valley View Street	28,065	75	151	319	69.5	28,220	75	151	320	69.5	0.0
Cerritos Avenue east of Valley View Street	22,050	63	128	272	68.8	22,210	63	129	273	68.8	0.0
Los Alamitos Boulevard north of Cerritos Avenue	17,940	< 50	81	160	64.5	18,110	< 50	81	161	64.5	0.0
Los Alamitos Boulevard from Cerritos Avenue to Katella Avenue	26,190	< 50	100	204	66.2	26,360	< 50	100	205	66.2	0.0
Los Alamitos Boulevard from Katella Avenue to Farquhar Avenue	34,605	63	118	244	67.4	34,850	63	118	245	67.4	0.0
Los Alamitos Boulevard south of Farquhar Avenue	36,790	65	122	254	67.6	37,030	65	123	255	67.7	0.1
Bloomfield Street north of Cerritos Avenue	13,230	< 50	77	160	65.3	13,310	< 50	78	161	65.4	0.1
Bloomfield Street from Cerritos Avenue to Katella Avenue	12,260	< 50	74	153	65.0	12,345	< 50	74	153	65.0	0.0
Denni Street north of Cerritos Avenue	8,390	< 50	< 50	96	62.4	8,470	< 50	< 50	96	62.4	0.0
Lexington Drive from Cerritos Avenue to Katella Avenue	5,850	< 50	< 50	74	61.9	5,970	< 50	< 50	75	62.0	0.1
Moody Street north Cerritos Avenue	10,860	< 50	69	141	64.5	10,940	< 50	69	142	64.5	0.0
Walker Street north of Cerritos Avenue	16,440	< 50	88	185	66.3	16,600	< 50	89	186	66.3	0.0
Walker Street from Cerritos Avenue to Katella Avenue	20,645	< 50	102	215	67.3	21,085	< 50	103	218	67.3	0.0
Valley View Street north of Cerritos Avenue	38,760	92	186	395	70.5	39,070	93	187	398	70.6	0.1
Valley View Street from Cerritos Avenue to Katella Avenue	39,625	93	189	401	70.6	39,940	94	190	403	70.7	0.1



Table 4.11.M: Opening Year (2021) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Condition (dBA)
Valley View Street from Katella Avenue to Oranewood Avenue	53,000	111	228	487	71.9	53,485	111	229	489	71.9	0.0
Valley View Street south of Oranewood Avenue	43,810	99	202	429	71.1	44,300	100	203	432	71.1	0.0
Katella Avenue from I-605 Ramps to Wallingsford Road	51,410	92	185	393	70.5	52,205	92	187	397	70.6	0.1
Katella Avenue from Wallingsford Road to Los Alamitos Road	45,780	86	172	364	70.0	46,575	87	174	368	70.1	0.1
Katella Avenue from Los Alamitos Road to Bloomfield Street	40,260	80	158	334	69.4	41,470	81	161	341	69.6	0.2
Katella Avenue from Bloomfield Street to Denni Street/Lexington Drive	38,610	78	154	325	69.3	39,940	80	158	333	69.4	0.1
Katella Avenue from Denni Street/Lexington Drive to Cottonwood Way	39,535	79	157	330	69.4	41,290	81	161	340	69.5	0.1
Katella Avenue from Cottonwood Way to Siboney Street	40,305	80	159	335	69.4	41,875	82	162	343	69.6	0.2
Katella Avenue from Siboney Street to Winners Circle	40,185	80	158	334	69.4	41,820	82	162	343	69.6	0.2
Katella Avenue from Winners Circle to Walker Street	40,250	80	158	334	69.4	41,865	82	162	343	69.6	0.2
Katella Avenue from Walker Street to Valley View Street	45,915	102	208	442	71.3	47,040	103	211	450	71.4	0.1
Katella Avenue east of Valley View Street	30,950	81	161	341	69.6	31,270	82	162	343	69.6	0.0
Siboney Street north of Katella Avenue	3,540	< 50	< 50	< 50	54.3	4,210	< 50	< 50	< 50	55.1	0.8
Winners Circle north of Katella Avenue	2,150	< 50	< 50	< 50	54.0	3,130	< 50	< 50	< 50	55.7	1.7

Source: Compiled by LSA (2019).

Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.

ADT = average daily traffic

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

ft = foot/feet

I-605 = Interstate 605



Table 4.11.N: Noise Impact Analysis

Receptor No.	Use	Exterior Noise Level	Exterior Noise Standard	Interior Noise Level	Interior Noise Standard	Exceed Noise Standard?
		(dBA CNEL)				
R-1	Hotel	66.8	-- ¹	42.8	45	No
R-2	Hotel	66.9	--	42.9	45	No
R-3	Hotel	66.2	--	42.2	45	No
R-4	Multifamily Residence	60.5	N/A ²	36.5	45	No
R-5	Multifamily Residence	59.7	N/A	35.7	45	No
R-6	Multifamily Residence	57.4	N/A	33.4	45	No
R-7	Multifamily Residence	55.4	N/A	31.4	45	No
R-8	Commercial	69.5	--	45.5	55	No
R-9	Commercial	66.7	--	42.7	55	No
R-10	Commercial	63.4	--	39.4	55	No
R-11	Movie Theater	59.8	--	35.8	45	No

Source: Compiled by LSA (2019).

¹ No exterior noise standard for this use.

² N/A = Not Applicable. The multifamily residences are exempt from the City's exterior noise standard because the balconies would be 6 ft in depth or less.

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels



Truck Delivery and Truck Unloading Activities. The proposed project would include two truck loading docks, one on the northeast corner of the project site and the other on the southeastern corner of the project site. Noise sources at loading docks may include maneuvering and idling trucks, truck refrigeration units, forklifts, banging and clanging of equipment (i.e., handcarts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. Although a typical truck unloading process takes an average of 15 to 20 minutes, the maximum loading and unloading noise level for each truck delivery occurs in a much shorter time period (at most 5 minutes). In addition, maximum noise levels of slow-moving heavy and small trucks at the loading areas range between 70 and 73 dBA at 50 ft. The maximum noise level associated with loading docks is typically 76.5 dBA at 50 ft.

City of Cypress. The closest off-site residences in the City of Cypress (Noise Zone 2) are located approximately 1,400 ft west of the proposed truck loading docks. At this distance, noise levels generated from truck delivery and unloading activities would be attenuated by 28.5 dBA compared to the noise levels at 50 ft from the source. The residences would also be shielded by intervening buildings that would provide a minimum noise attenuation of 10 dBA. Noise associated with the on-site truck delivery and unloading activities would be 38 dBA L_{max} (i.e., 76.5 dBA - 28.5 dBA - 10.0 dBA = 38.0 dBA). This noise level would not exceed the City of Cypress daytime and nighttime exterior 5-minute noise standard of 70 dBA and 65 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the United States Environmental Protection Agency's (USEPA) Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels at the closest residences to the west of the loading docks would be 14 dBA L_{max} (38 dBA - 24 dBA = 14 dBA). This noise level would not exceed the City of Cypress daytime and nighttime interior 5-minute noise standard of 55 dBA and 45 dBA, respectively.

City of Los Alamitos. The closest residences and office/commercial uses in the City of Alamitos are located approximately 415 ft and 200 ft south from the proposed truck loading docks, respectively. At the distances of 415 ft and 200 ft, noise levels generated from the truck delivery and unloading activities would be attenuated by 18.5 dBA and 12.5 dBA, respectively, compared to the noise levels at 50 ft from the source. The residences would also be shielded by intervening buildings that would provide a minimum noise attenuation of 10 dBA. Noise associated with the on-site truck delivery and unloading activities would be 48 dBA L_{max} (i.e., 76.5 dBA - 18.5 dBA - 10.0 dBA = 48.0 dBA) at the closest residences and 64 dBA (76.5 dBA - 12.5 dBA = 64.0 dBA) at the closest office/commercial use. Noise levels at the closest residences would not exceed the City of Los Alamitos daytime and nighttime exterior 5-minute noise standard of 65 dBA and 60 dBA, respectively. Noise levels at the closest office and commercial use would not exceed the City of Los Alamitos exterior 5-minute noise standard of 65 dBA and 70 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the USEPA's Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels would be 24 dBA L_{max} (48 dBA - 24 dBA = 24 dBA) at the closest residences and 40 dBA (64 dBA - 24 dBA = 40 dBA) at the closest office/commercial use. Noise levels would not exceed the City of Los Alamitos daytime and nighttime interior 5-minute noise standard of 55 dBA and 45 dBA, respectively, for residences. In addition, noise levels would not exceed the City of Los Alamitos interior 5-minute noise standard of 55 dBA for office and commercial uses.



The proposed project would not require a substantial amount of truck deliveries and noise generated by these activities is expected to be less than significant. Therefore, the proposed project's off-site noise impacts from on-site truck delivery and unloading activities would be less than significant.

HVAC Equipment. The proposed project would require the use of rooftop heating, ventilation, and air conditioning (HVAC) units for the proposed buildings. Noise generated from HVAC units could impact sensitive receptors within the vicinity of the project site by exceeding the City's daytime and nighttime exterior noise standard. However, noise levels from HVAC equipment would be minimized with compliance with Section 3.11.100(b) in the City's Municipal Code (Regulatory Compliance Measure NOI-2), which requires that mechanical equipment in residential, commercial, and industrial zoning districts be enclosed within a structure or completely screened from the view of surrounding properties by the use of a fence or wall. Mitigation Measure NOI-2, which would require the project Applicant/Developer to demonstrate, to the satisfaction of the City of Cypress Community Development Department, that on-site stationary noise sources, such as rooftop air conditioners, compliance with City noise standards as stated in the City's Municipal Code Sections 13-68 and 13-69 would further minimize noise generated from HVAC units. Therefore, the noise levels generated by the proposed project's HVAC equipment would be less than significant with adherence to Section 3.11.100(b) and Sections 13-68 and 13-69 in the City's Municipal Code.

Trash Pick-Up/Compactor Operations. The proposed project would have trash pick-up at various locations on the project site. The multifamily residential building would include a trash compactor in a fully enclosed and dedicated room inside the building. Therefore, this noise analysis evaluates noise generated at trash pick-up locations at various locations on the project site only because noise generated from the trash compactor would not result in noise impacts. Trash pick-up activities would last approximately 3 minutes and would generate a maximum noise level of 73.4 dBA L_{max} at 50 ft.

City of Cypress. The closest residences in the City of Cypress (Noise Zone 2) are located approximately 950 ft west of the nearest proposed trash pick-up area on the project site. At this distance, noise levels generated from trash pick-up operations would be attenuated by 25.4 dBA compared to the noise levels at 50 ft from the source. The residences would be shielded by intervening buildings that would provide a minimum noise attenuation of 10 dBA. Noise associated with trash pick-up would be 38 dBA L_{max} (i.e., 73.4 dBA – 25.4 dBA – 10.0 dBA = 38.0 dBA). This noise level would not exceed the City of Cypress daytime and nighttime exterior 5-minute noise standards of 65 dBA and 60 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the USEPA's Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels would be 14 dBA L_{max} (38 dBA – 24 dBA = 14 dBA). This noise level would not exceed the City of Cypress daytime and nighttime interior 5-minute noise standard of 55 dBA and 45 dBA, respectively.

City of Los Alamitos. The closest residences and office/commercial uses in the City of Los Alamitos are located approximately 415 ft and 220 ft from the nearest proposed trash pick-up areas. At the distance of 415 ft and 220 ft, noise levels generated from trash pick-up operations would be attenuated by 18.4 dBA and 12.4 dBA, respectively, compared to the noise levels at 50 ft from the source. The residences would be shielded by intervening buildings that would provide a minimum



noise attenuation of 10 dBA. Noise associated with trash pick-up would be 45 dBA L_{max} (i.e., 73.4 dBA – 18.4 dBA – 10.0 dBA = 45.0 dBA) at the closest residences and 61 dBA L_{max} (i.e., 73.4 dBA – 12.4 dBA = 61.0 dBA) at the closest office/commercial uses. Noise levels at the closest residence would not exceed the City of Los Alamitos daytime and nighttime exterior 5-minute noise standard of 65 dBA and 60 dBA, respectively. Noise levels at the closest office and commercial use would not exceed the City of Los Alamitos exterior 5-minute noise standard of 65 dBA and 70 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the USEPA's Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels would be 21 dBA L_{max} (45 dBA – 24 dBA = 21 dBA) at the closest residence and 37 dBA (61 dBA – 24 dBA = 37 dBA) at the closest office/commercial use. Noise levels would not exceed the City of Los Alamitos daytime and nighttime interior 5-minute noise standard of 55 dBA and 45 dBA, respectively, for residences. In addition, noise levels would not exceed the City of Los Alamitos interior 5-minute noise standard of 55 dBA for office and commercial uses.

The proposed project would be required to comply with Section 3.10.070(C) of the City's Municipal Code, which limits trash collection and deliveries in a commercial zoning district to the hours of 5:00 a.m. to 6:00 p.m. Monday through Saturday. For commercial zoning districts that are within 200 ft of residential zoning districts, trash collection is limited to the hours of 7:00 a.m. to 6:00 p.m. Monday through Saturday (Regulatory Compliance Measure NOI-3). Therefore, noise generated from the proposed project's trash collection would be less than significant.

Surface Parking Lot Activities. The proposed project would include designated surface parking areas. Instantaneous maximum sound levels generated by parking activities include car door slamming, engine starting up, cars passing, and conversations in parking areas could be an annoyance to adjacent sensitive receptors. Peak noise levels generated by parking lot activities can range from 61.4 dBA to 74 dBA L_{max} at 25 ft.

City of Cypress. The closest residences in the City of Cypress (Noise Zone 2) are located approximately 880 ft west from the nearest proposed hotel parking lots on the project site. At the distance of 880 ft, noise levels generated from parking activities would be attenuated by 30.9 dBA compared to the noise levels at 25 ft from the source. Noise levels generated by parking activities would reach 43.1 dBA L_{max} (i.e., 74 dBA – 30.9 dBA = 43.1 dBA). This noise level would not exceed the City of Cypress daytime and nighttime exterior maximum noise standards of 80 dBA and 75 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the USEPA's Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels would be 19.1 dBA L_{max} (43.1 dBA – 24 dBA = 19.1 dBA). This noise level would not exceed the City of Cypress daytime and nighttime maximum interior noise standards of 65 dBA and 55 dBA, respectively.

City of Los Alamitos. The closest residences and office/commercial uses in the City of Los Alamitos are located approximately 388 ft and 145 ft south of the nearest proposed parking lots on the project site. At the distances of 388 ft and 145 ft, noise levels generated from parking activities would be attenuated by 23.8 dBA and 15.3 dBA, respectively, compared to the noise levels at 25 ft from the source. Noise levels generated by parking activities would reach 50.2 dBA L_{max} (74 dBA – 23.8 dBA = 50.2 dBA) at the closest residences and 58.7 dBA L_{max} (74 dBA – 15.3 dBA = 58.7 dBA) at



the closest office/commercial use. Noise levels at the closest residences would not exceed the City of Los Alamitos daytime and nighttime maximum exterior noise standards of 75 dBA and 70 dBA, respectively. Noise levels at the closest office and commercial uses would not exceed the City of Los Alamitos exterior maximum noise standards of 75 dBA and 80 dBA, respectively. Assuming an exterior-to-interior reduction of 24 dBA with windows and doors closed based on the USEPA's Protective Noise Levels (1978) and standard construction for Southern California (warm climate), interior noise levels would be 26.2 dBA L_{max} ($50.2 \text{ dBA} - 24 \text{ dBA} = 26.2 \text{ dBA}$) at the closest residences and 34.7 dBA L_{max} ($58.7 \text{ dBA} - 24 \text{ dBA} = 34.7 \text{ dBA}$) at the closest office/commercial uses. Noise levels would not exceed the City of Los Alamitos daytime and nighttime maximum interior noise standards of 65 dBA and 55 dBA, respectively, for residences. In addition, noise levels would not exceed the City of Los Alamitos maximum interior noise standards of 65 dBA for office and commercial uses. Therefore, noise from parking lot activities under the proposed project would be less than significant.

With adherence to the regulatory standards outlined in Regulatory Compliance Measures NOI-1, NOI-2, and NOI-3, the noise levels of these stationary activities have the potential to exceed applicable noise standards for the Cities of Cypress and Los Alamitos. However, with the incorporation of Mitigation Measure NOI-2, impacts to ambient noise levels in the area would be reduced to less than significant levels. Therefore, with mitigation incorporated, impacts related to operational noise from stationary sources would be less than significant.

Threshold 4.11.2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant with Mitigation Incorporated. Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures, and soil type. Ground-borne vibration from construction activities associated with the proposed project would cause intermittent and temporary vibration events. Construction activities during the site preparation, grading, and paving phase would have the potential to generate ground-borne vibration. Construction equipment that would generate vibration levels during these phases of construction would include pile driving, large bulldozers, loaded trucks, and jack hammers. Pile driving using the Geopiers system would generate a vibration level of 95 vibration velocity decibels (VdB) (0.22 peak particle velocity [PPV] inches per second [inch/sec]) at 15 ft. Ground-borne vibration levels generated from large bulldozers, loaded trucks, and jack hammers during project construction were estimated using reference vibration levels from the FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*. Large bulldozers, loaded trucks, and jack hammers would generate a vibration level of 87 VdB (0.087 PPV [inch/sec]), 86 VdB (0.076 PPV [inch/sec]), and 79 VdB (0.035 PPV [inch/sec]), respectively.

Table 4.11.O show the vibration levels at the closest residential, church, office, and commercial building from each type of construction equipment. Other buildings in the vicinity of the project site are located further away and would experience lower vibration levels. As shown in Table 4.11.O, vibration levels generated during project construction would not result in a community annoyance because vibration levels would not exceed the FTA community annoyance threshold of 84 VdB for office and commercial uses, 78 VdB for residences during daytime hours, and 75 VdB for



Table 4.11.O: Construction Vibration Levels

Land Use	Direction	Equipment/	Reference Vibration Level (VdB)	Reference Vibration Level (PPV)	Reference Vibration Distance (ft)	Distance (ft) ¹	Maximum Vibration Level (VdB)	Maximum Vibration Level (PPV)
Commercial	West	Pile Driving ¹	95	0.220	15	170	63	0.006
		Large Bulldozers	87	0.089	25	155	63	0.006
		Loaded Trucks	86	0.076	25	155	62	0.005
		Jack Hammer	79	0.035	25	155	55	0.002
Church	West	Pile Driving ¹	95	0.220	15	465	50	0.001
		Large Bulldozers	87	0.089	25	465	49	0.001
		Loaded Trucks	86	0.076	25	465	48	0.001
		Jack Hammer	79	0.035	25	465	41	0.000
Residential	West	Pile Driving ¹	95	0.220	15	900	42	0.000
		Large Bulldozers	87	0.089	25	890	40	0.000
		Loaded Trucks	86	0.076	25	890	39	0.000
		Jack Hammer	79	0.035	25	890	32	0.000
Office/ Commercial	South	Pile Driving ¹	95	0.220	15	220	60	0.004
		Large Bulldozers	87	0.089	25	130	66	0.008
		Loaded Trucks	86	0.076	25	130	65	0.006
		Jack Hammer	79	0.035	25	130	58	0.003
Residential	South	Pile Driving ¹	95	0.220	15	425	51	0.001
		Large Bulldozers	87	0.089	25	350	53	0.002
		Loaded Trucks	86	0.076	25	350	52	0.001
		Jack Hammer	79	0.035	25	350	45	0.001
Commercial	East	Pile Driving ¹	95	0.220	15	480	50	0.001
		Large Bulldozers	87	0.089	25	65	75	0.021
		Loaded Trucks	86	0.076	25	65	74	0.018
		Jack Hammer	79	0.035	25	65	67	0.008

Source: Compiled by LSA Associates, Inc. (2019).

Note: The FTA-recommended building damage threshold is 94 VdB (0.2 PPV [inch/sec]) at the receiving structure or building.

¹ Piles would be installed using the Geopiers system.

ft = foot/feet

PPV = peak particle velocity

FTA = Federal Transit Administration

VdB = vibration velocity decibels

inch/sec = inch/inches per second

institutional land uses. In addition, vibration levels would not result in building damage because vibration levels would not exceed the FTA's damage threshold of 94 VdB (0.2 PPV [inch/sec]) and nearby buildings were observed to be constructed of non-engineered timber and masonry. The project construction contractor would be required implement Mitigation Measure NOI-1 to further minimize construction-related vibration. Therefore, ground-borne vibration and ground-borne noise levels generated by project construction activities would be less than significant with the implementation of mitigation measures.

The proposed project would not generate ground-borne vibration or ground-borne noise levels during long-term operations. In addition, vibration levels generated from project-related traffic on the adjacent roadway (Katella Avenue) are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Therefore, operation of the proposed project would not result in excessive ground-borne vibration or ground-borne noise levels, and no mitigation is required.



Threshold 4.11.3: 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 levels?

Less Than Significant Impact. The closest airport to the project site is the JFTB Los Alamitos, located approximately 0.5 mile south of the project site. According to the *Airport Environs Land Use Plan for JFTB Los Alamitos* and Exhibit SAF-8 in the Safety Element of the City's General Plan, the project site is within the 60 dBA CNEL noise contour, but outside of the 65 dBA CNEL noise contour for JFTB Los Alamitos. Although the project site is located within Noise Impact Zone 2 (moderate noise impact), it is outside of Noise Impact Zone 1 (high noise impact) defined by the Airport Environs Land Use Plan.

The second closest airport is the Long Beach Municipal Airport, located approximately 5.4 miles northwest of the project site. According to the Los Angeles County Airport Land Use Plan, the project site is located outside of the 65 dBA CNEL noise contour for the Long Beach Municipal Airport. Therefore, aircraft noise generated from the two closest airports would not expose people residing or working on the project site to excessive noise levels due to the proximity of a public airport. This noise impact would be less than significant, and no mitigation is required.

4.11.6 Level of Significance Prior to Mitigation

Prior to the implementation of mitigation measures, the project could potentially result in the generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of established noise standards during construction and operation. The project would result in less than significant impacts related to ground-borne vibration and ground-borne noise levels and to the exposure of people to excessive noise levels within the vicinity of an airport or private airstrip.

4.11.7 Regulatory Compliance Measures and Mitigation Measures

4.11.7.1 Regulatory Compliance Measures

The following regulatory compliance measures are applicable to the proposed project.

Regulatory Compliance Measure NOI-1 The construction contractor shall limit all construction-related activities to between the hours 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. No construction shall be permitted outside of these hours or on Sundays or a federal holiday.

Regulatory Compliance Measure NOI-2 Mechanical equipment, including air conditioning units in residential, commercial, and industrial zoning districts, shall be enclosed within a structure or completely screened from view from surrounding properties by the use of a fence or wall consistent with Section 3.11.100(b) of the City of Cypress Municipal Code.



Regulatory Compliance Measure NOI-3

Trash collection and compacting shall be limited to between the hours of 5:00 a.m. and 6:00 p.m. Monday through Saturday in commercial zoning districts and between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday in commercial zoning districts that are within 200 feet of residential zoning districts, consistent with Section 3.10.070(C) of the City of Cypress Municipal Code.

4.11.7.2 Mitigation Measures

The following mitigation measures are applicable to the proposed project.

Mitigation Measure NOI-1

Prior to the issuance of a grading permit, the construction contractor shall demonstrate, to the satisfaction of the City of Cypress Director of Community Development, or designee, the following:

- Construction contracts shall specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices.
- Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from noise-sensitive receptors.
- All construction entrances shall clearly post construction hours, allowable workdays, and the phone number of the job superintendent. This will allow surrounding owners and residents to contact the job superintendent with concerns. If the developer receives a noise related complaint, appropriate corrective actions shall be implemented and a report taken indicating the action with a copy of the report provided to the reporting party upon request.



Mitigation Measure NOI-2

Prior to the issuance of building permits, the project Applicant/Developer shall demonstrate, to the satisfaction of the City of Cypress Director of Community Development, or designee, that on-site stationary noise sources, such as rooftop air conditioners, shall not exceed City noise standards as stated within the City's Municipal Code Sections 13-68 and 13-69.

4.11.8 Level of Significance after Mitigation

With the implementation of mitigation measures, all impacts would be reduced to a less than significant level.

4.11.9 Cumulative Impacts

As defined in the *State CEQA Guidelines*, cumulative impacts are the incremental effects of an individual project when viewed in connection with the effects of past, current, and probable future projects. A cumulative noise or vibration impact would occur if multiple sources of noise and vibration combine to create impacts in close proximity to a sensitive receptor. Therefore, the cumulative area for noise and vibration impacts is the project site and any sensitive receptors in the immediately surrounding area.

Less Than Significant with Mitigation Incorporated.

Construction Noise. Construction activities associated with the proposed project and other construction projects in the area may overlap, resulting in construction noise in the area. However, construction noise impacts primarily affect the areas immediately adjacent to each construction site. Construction noise for the proposed project was determined to be less than significant with the implementation of Mitigation Measure NOI-1, which requires compliance with the construction hour restrictions specified in the Specific Plan. Cumulative development in the vicinity of the project site could result in elevated construction noise levels at sensitive receptors in the area surrounding the project site. However, each project would be required to comply with the applicable city's Municipal Code limitations on construction. Therefore, cumulative construction noise impacts would be less than significant with the implementation of Mitigation Measure NOI-1.

Less Than Significant Impact.

Operational Stationary Source Noise. Long-term stationary noise sources associated with the development at the proposed project, combined with other cumulative projects, could cause local noise level increases. Noise levels associated with the proposed project and related projects together could result in higher noise levels than considered separately. As previously described, on-site noise sources associated with the proposed project would not exceed any applicable noise standards. Additionally, each of the related projects would be required to comply with the city's noise level standards and include mitigation measures if standards are exceeded. Therefore, cumulative noise impacts from stationary noise sources would be less than significant.



Operational Traffic Source Noise Impacts. According to the USEPA's, cumulative noise impacts represent the combined and incremental effects of human activities that accumulate over time. While the incremental impacts may be insignificant by themselves, the combined effect may result in a significant impact. Conversely, although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project.

Cumulative noise impacts would occur as a result of increased traffic volumes on local roadways due to future growth in the vicinity of the project site. A project's contribution to a cumulative traffic noise increase could be considered significant when the combined effect exceeds the perception level (i.e., auditory level increase) threshold. A cumulative significant impact would occur when the proposed project and related projects create a barely perceptible noise level increase of 3 dBA.

The *Traffic Impact Analysis* (LSA 2019 [Appendix J of this Draft EIR]) prepared for the proposed project includes a cumulative analysis of traffic impacts under the project opening year (2021) conditions, based on all of the related projects identified in Table 4.A, in Chapter 4.0, Existing Setting, Environmental Analysis, Impacts, and Mitigation Measures, of this Draft EIR. Trip generation estimates for the related projects were obtained from the available approved traffic studies or from calculations based on applicable Institute of Transportation Engineers' (ITE) trip generation rates. Table D of the Traffic Impact Analysis summarizes the list of related projects and their respective trip generation estimates. Trip distribution for the related projects is based on the available approved traffic studies or has been estimated by LSA. Figure 9 in the Traffic Impact Analysis shows the locations of the related projects. Figure 10 in the Traffic Analysis shows the trips associated with the related projects at the study intersections.

The information in that cumulative traffic analysis was used to determine the "No Project" cumulative baseline for analyzing the proposed project's traffic noise impacts in 2021, as shown in Table 4.11.M. Table 4.11.M further shows that project-related traffic would result in small (1.7 dBA or less) noise level increases along roadway segments in the vicinity of the project site under the project opening year (2021) condition. Therefore, none of the roadway segments in the vicinity of the project site would experience a substantial noise level increase greater than the applicable noise thresholds and the proposed project would not have a cumulatively significant traffic noise impact.