NOISE AND VIBRATION IMPACT ANALYSIS

RITZ-CARLTON RESIDENCES PROJECT

NEWPORT BEACH, ORANGE COUNTY, CALIFORNIA

LSA

February 2022

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Submitted to:

Kevin Martin
Lyon Living
4901 Birch Street
Newport Beach, CA 92660

Prepared by:

LSA
20 Executive Park, Suite 200
Irvine, California 92614-4731
(949) 553-0666

Project No. NCH2101

LSA

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LIST OF ABBREVIATIONS AND ACRONYMS

Caltrans	California Department of Transportation
City	City of Newport Beach
CNEL	Community Noise Equivalent Level
dB	decibel(s)
dBA	A-weighted decibel(s)
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
HVAC	heating, ventilation, and air conditioning
in/sec	inch/inches per second
JWA	John Wayne Airport
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
L_{max}	maximum instantaneous noise level
L_V	velocity in decibels
OITC	Outdoor-Indoor Transmission Class
PPV	peak particle velocity
project	Ritz-Carlton Residences Project
RMS	root-mean-square (velocity)
STC	Sound Transmission Class
VdB	vibration velocity decibels

INTRODUCTION

This noise and vibration impact analysis has been prepared to evaluate the potential noise and vibration impacts associated with the proposed Ritz-Carlton Residences Project (project) in Newport Beach, California. This report is intended to satisfy the City of Newport Beach (City) requirement for a project-specific noise and vibration impact analysis by examining the impacts of the proposed project onto surrounding uses and identify, if necessary, mitigation measures to reduce project noise and vibration impacts.

This analysis also supports the proposed project's use of an Addendum to the 2006 General Plan Environmental Impact Report (General Plan EIR) (City of Newport Beach 2006). This analysis is prepared pursuant to CEQA Guidelines Section 15164(a) which states: "the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in PRC Section 21166 and Section 15162 calling for preparation of a subsequent EIR have occurred."

PROJECT LOCATION AND DESCRIPTION

The project site is the Newport Beach Marriott Resort Hotel, located at 900 Newport Center Drive in the City of Newport Beach, California. Figure 1 shows a map of the regional and project site location. The Newport Beach Marriott Resort Hotel is a 9.53-acre property located immediately southwest of Fashion Island, within Newport Center. The resort hotel campus includes 532 hotel rooms and expansive amenities, including three swimming pools, a day spa, restaurants, conference/ballroom space, meeting rooms, and ancillary support uses. The resort hotel components are contained within five separate buildings and one parking structure. Figure 2 shows the overall site plan.

The buildings range from 30 feet in height to 151 feet in height and overlook the Newport Beach Country Club golf course. The buildings are predominantly oriented towards Newport Harbor and the Pacific Ocean to the south.

The project site is accessible from Newport Center Drive and Santa Barbara Drive and includes approximately 698 parking spaces, including self-parking and valet parking options. The Newport Beach Marriott Resort Hotel was originally constructed in 1975 and renovated in 1986, including the construction of the Pacific Pointe building and the parking structure. The hotel operates under Use Permit 2095.

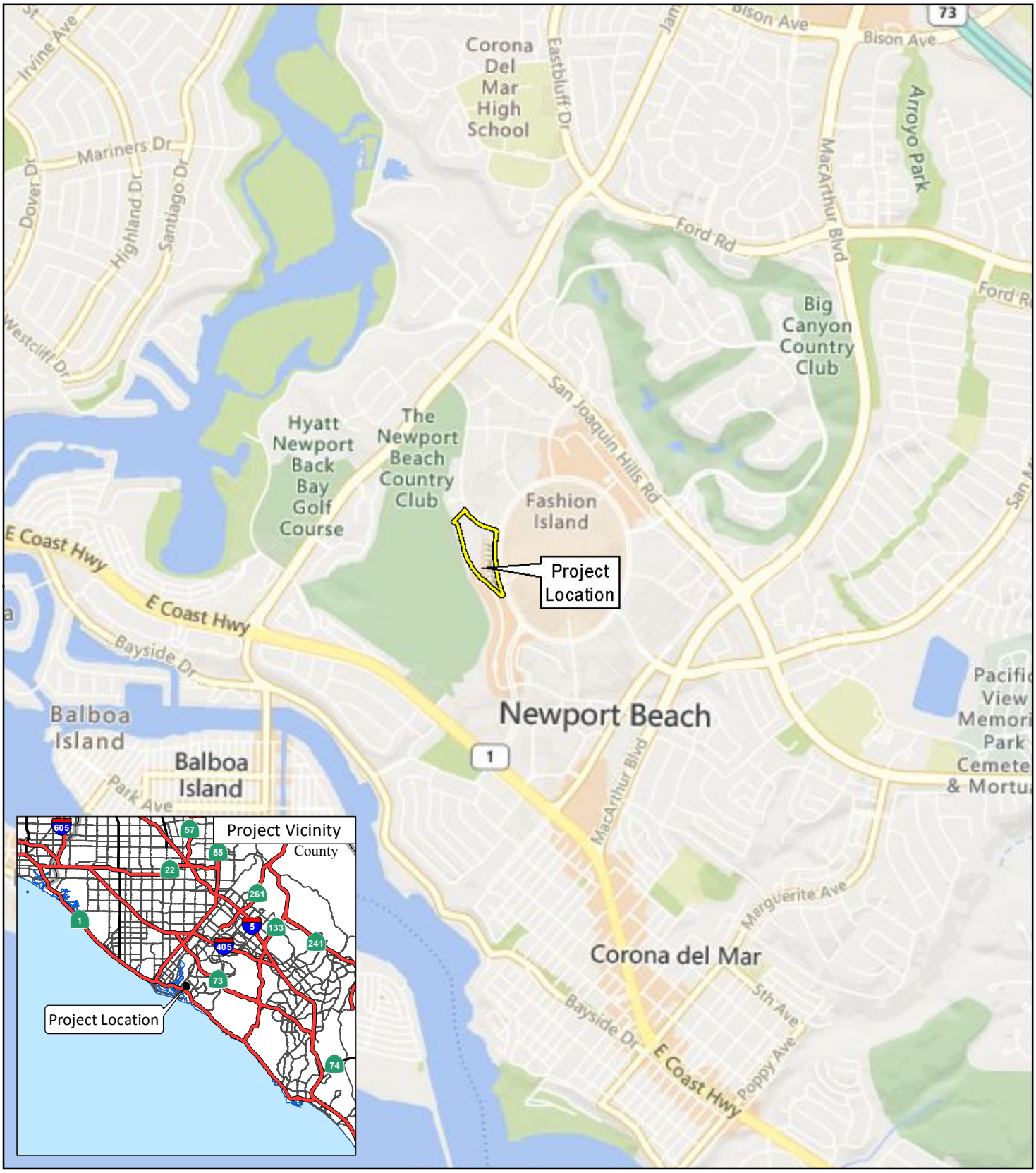
Surrounding Land Uses

The project site is located within the Newport Center-Fashion Island subarea, which is a largely mixed-use area of the City. Newport Center is bounded by MacArthur Boulevard to the east, San Joaquin Hills Road to the north, Jamboree Road to the west, and Pacific Coast Highway to the south. Land uses in the project area include the Fashion Island retail shopping center, major commercial office developments, residential developments including the Granville and Meridian condominium communities, the Colony at Fashion Island apartment homes, and the Newport Beach Country Club. The Meridian condominium community is located immediately adjacent to the project site on the north along Santa Barbara Drive, with the guard-gated Granville condominiums located immediately

to the southeast. Mid-rise commercial office buildings are located across Santa Barbara Drive to the north, and Fashion Island is located across Newport Center Drive to the north/northeast. The Newport Beach Country Club golf course abuts the southern property line.

In addition to several residential communities, including Meridian, Granville, Colony at Fashion Island, Vivante Senior Housing (currently under construction), and other pending projects, Newport Center is characterized by high- and mid-rise office buildings surrounding Fashion Island, which provide residents and visitors shopping, entertainment, and restaurant amenities. The majority of the high-rise buildings are located in Blocks 400-600, with building heights exceeding 300 feet above ground level. Low- and mid-rise buildings are concentrated in the southeastern portion of Newport Center closest to MacArthur Boulevard and Pacific Coast Highway. Newport Center is considered a major employment center, which includes research and development and high technology businesses in addition to substantial medical office uses. The Newport Beach Civic Center is located in Newport Center between Avocado Avenue and MacArthur Boulevard.

The closest off-site sensitive receptors to the project site are the Granville Condominiums located approximately 33 feet (ft) to the south of the area of disturbance. The Granville Condominiums are also located 105 ft from the construction activities (average distance).



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LEGEND

ProjectLocation

FIGURE 1

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FEET

SOURCE: Bing (2021)

The Ritz Carlton Residences

Project Location and Vicinity

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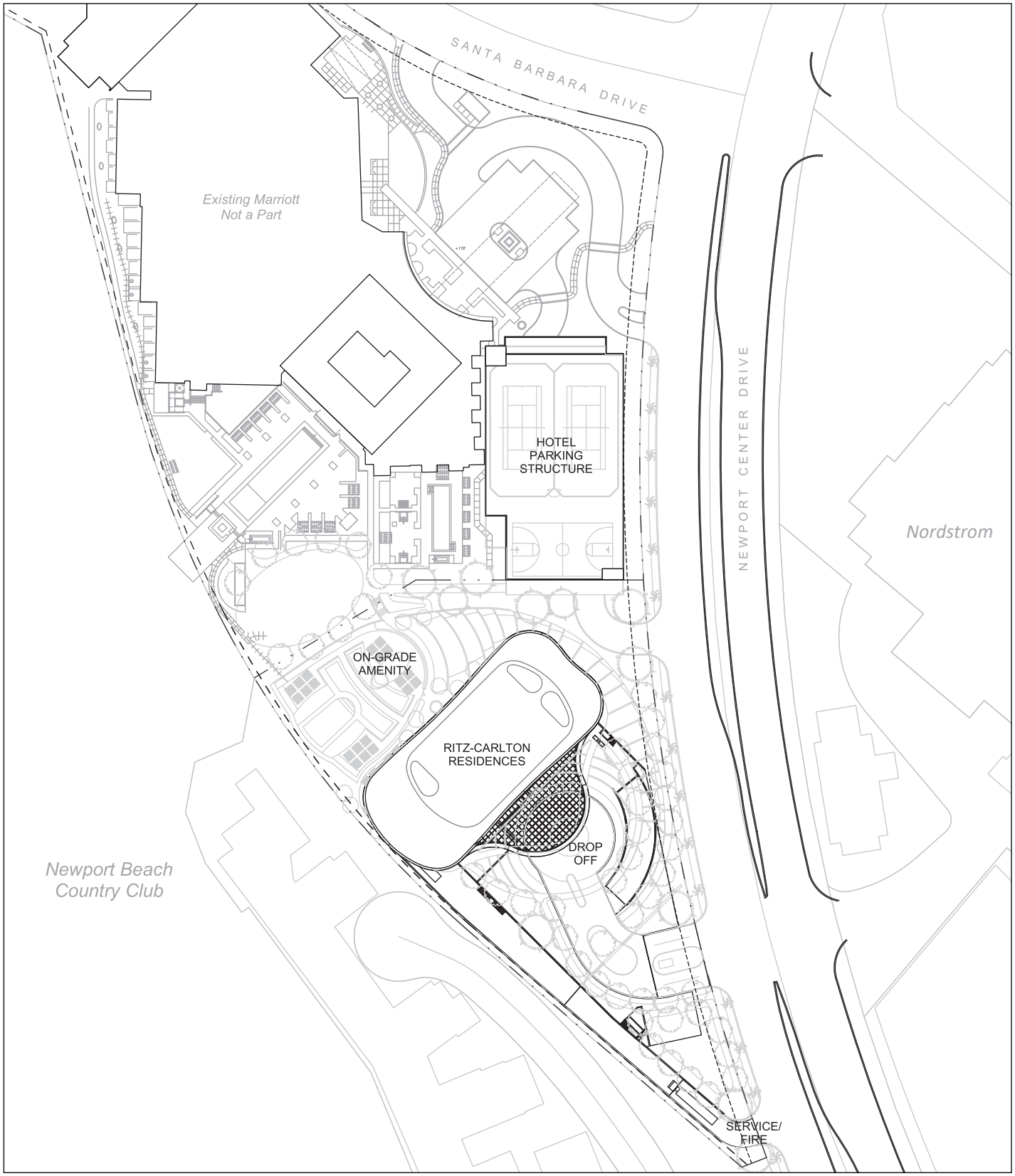

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FIGURE 2

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Ritz-Carlton Residences Project

Overall Site Map

SOURCES: Newport Center Hotel, LLC; MVE + Partners, 10/15/2021

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Proposed Project

The proposed project at the Newport Beach Marriott Resort Hotel consists of the conversion of up to 30 percent of the existing 532 hotel rooms to construct hotel-branded residences. The project contemplates the demolition of the southernmost building, Harbor Landing, and construction of a new residential building in the same location (see next paragraph for more detail regarding the new building). The project would remove 133 hotel units by demolishing the Harbor Landing building and converting 26 hotel rooms in the Harbor Point building via interior reconfiguration into hotel-branded residences. The remainder of the Harbor Point building would change from 153 hotel rooms to 127 hotel rooms, but the building itself would not be demolished and no exterior improvements are proposed. Together, there would be 159 fewer traditional hotel rooms than now exist.

The new 22-story building will accommodate up to 159 hotel-branded residences, representing 30% of the total units at the Newport Beach Marriott Resort Hotel. The total units at the Newport Beach Marriott Resort Hotel will remain unchanged at 532, with 373 hotel rooms and up to 159 hotel-branded residences.

The new building is proposed to be up to 295 feet above ground level, with limited projections for rooftop appurtenances such as elevator overruns and screened mechanical equipment, as permitted by City code. Onsite circulation for hotel drop-off/pick-up and parking will remain as existing. Residents and guests of the hotel-branded residences will be directed to a separate entrance on the south side of the property for access to the new residential building drop-off/pick-up, parking, and valet areas.

Parking spaces required by City code will be maintained in an existing 6-level, 400-space parking structure proposed to be demolished and rebuilt in substantially the same location and a new 5-level, 408-space subterranean parking structure constructed below the new building. The new building for the hotel-branded residences will be accessed via Newport Center Drive in two ways, including entrance into a porte cochere for valet parking, and through direct access into the below-grade parking structure.

The project will include the construction of new extensive hardscape and landscape areas, and guest-serving amenities including, but not limited to, a swimming pool, a fitness facility, and meeting rooms.

Operations for the hotel and the hotel branded residences will be managed by professionally trained Ritz-Carlton staff. While dedication of staff for the hotel and hotel-branded residences will be separate, they will remain under the same Marriott umbrella and General Manager. Marriott maintenance and groundskeeping staff will service both the hotel and the hotel-branded residences. A temporary sales office for the hotel-branded residences will be located within the hotel.

In addition to existing hotel amenities such as a lounge, fitness center, full-service spa, pools, event lawns, conference center, ballrooms and restaurants that will remain available for hotel guest and resident use, the project proposes new pool facilities, fitness facilities, meeting rooms, and other food service amenities for exclusive use of the residents. Recreation opportunities provided by the

hotel include bike rentals and an event lawn area where hotel guests, residents, and guests of the hotel-branded residences may attend events.

Project Construction

Construction is anticipated to be completed in 42 months from the start of demolition. This timeline includes approximately 6 months of demolition and site preparation and approximately 36 months for construction of the new subterranean parking structure and residential building. More specifically, the proposed project would require the demolition of approximately 263,194 square feet and the export of 205,700 cubic yards of soil. Construction equipment would be staged completely onsite in the development area so as not to impede hotel operations and guests. Offsite parking will be provided daily for workers with a shuttle to the hotel, if necessary.

During construction, hotel operations would be slightly impacted, as guests would be redirected to a nearby offsite parking area. However, the hotel and all hotel amenities would remain in operation with possible minimal closure of select outdoor amenities subject to noise and dust during the grading and site preparation phase of construction.

Project construction specifications will include the following elements for all construction work associated with the project:

- Construction equipment, fixed or mobile, will be equipped with properly operating and maintained noise mufflers consistent with manufacturers' standards.
- Construction staging areas will be located away from off-site sensitive uses during the later phases of project development.
- The project contractor will place all stationary construction equipment so that emitted noise is directed away from the sensitive receptors nearest the proposed project site whenever feasible.
- The construction contractor will schedule high-noise-producing activities between the hours of 8:00 a.m. and 5:00 p.m. to minimize disruption to sensitive uses.
- A "noise disturbance coordinator" shall be established. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler) and shall be required to implement reasonable measures to reduce noise levels. All notices that are sent to residential units within 500 ft of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.

NOISE AND VIBRATION FUNDAMENTALS

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant 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 sound wave, which results in the tone's range from high to low. Loudness is the strength of a sound, and it describes a noisy or quiet environment; it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound wave combined with the reception characteristics of the human ear. Sound intensity refers to the power carried by sound waves per unit area in a direction perpendicular to that area. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound pressure level and its effect on adjacent sensitive land uses.

Measurement of Sound

Sound pressure level is measured with the A-weighted decibel 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, unlike linear units (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 1 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 only a doubling of the sound's loudness. 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 levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., 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 accounts 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 human 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 (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noise occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise 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 and sleeping hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The City uses the CNEL noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. 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. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. Additionally, an increase of more than 5 dBA is typically considered readily perceptible in an exterior environment. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas.

Table A lists definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of sound level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. It is usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Handbook of Acoustical Measurements and Noise Control* (Harris 1991).

Table B: Common Sound Levels and Their Noise Sources

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 ft		
	— 100 —	
Gas lawn mower at 3 ft		
	— 90 —	
Diesel truck at 50 ft at 50 mph		Food blender at 3 ft
	— 80 —	Garbage disposal at 3 ft
Noisy urban area, daytime		
Gas lawn mower, 100 ft	**— 70 —**	Vacuum cleaner at 10 ft
Commercial area		Normal speech at 3 ft
Heavy traffic at 300 ft	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing

Source: *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans 2013).
Caltrans = California Department of Transportation
dBA = A-weighted decibels
ft = feet
mph = miles per hour

FUNDAMENTALS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items sitting on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile-driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 ft from the vibration source, although there are

examples of ground-borne vibration causing interference out to distances greater than 200 ft (FTA 2018). When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile-driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2018). Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where "L_v" is the vibration velocity in decibels (VdB), "V" is the RMS velocity amplitude, and "V_{ref}" is the reference velocity amplitude, or 1×10^{-6} inches/second (in/sec) used in the United States.

REGULATORY SETTING

APPLICABLE NOISE STANDARDS

City of Newport Beach

The City regulates noise based on the criteria presented in the Noise Element of the General Plan as well as the Municipal Code. As discussed below, the City does not have adopted construction noise thresholds; therefore, Federal Transit Administration (FTA) criteria will be used to assess potential construction noise impacts.

City of Newport Beach Noise Element of the General Plan

The City of Newport Beach has adopted a Noise Element of the General Plan to control noise in the planning process in order to maintain compatible land use with environmental noise levels and to ensure that Newport Beach residents will be protected from excessive noise intrusion.

Noise Policies. To protect City of Newport Beach residents from excessive noise, the Noise Element contains the following policies related to the Project:

N 1.1 ***Noise Compatibility of New Development:*** *Require that all proposed projects are compatible with the noise environment through use of Table N2 and enforce the interior and exterior noise standards shown in Table N3.*

N 1.4 ***New Developments in Urban Areas:*** *Require that applicants of residential portions of mixed-use projects and high-density residential developments in urban areas (such as the Airport Area and Newport Center) demonstrate that the design of the structure will adequately isolate noise between adjacent uses and units (common floor/ceilings) in accordance with the California Building Code. (Imp 7.1)*

N.1.5 ***New Exterior Noise Level Standards:*** *Consider a higher exterior noise level standard for residential portions of mixed-use developments of 65 dBA CNEL, provided that the interior standard of 45 dBA CNEL is met.*

N 1.8 ***Significant Noise Impacts:*** *Require the employment of noise mitigation measures for existing sensitive uses when a significant noise impact is identified. A significant noise impact occurs when there is an increase in the ambient CNEL produced by new development impacting existing sensitive uses. The CNEL increase is shown in the table below.*

CNEL (dBA)	dBA increase
55	3
60	2
65	1
70	1
Over 75	Any increase is considered significant

N 2.1 ***New Development:*** *Require that proposed noise-sensitive uses in areas of 60 dBA and greater, as determined the analyses stipulated by Policy N1.1, demonstrate that they meet interior and exterior noise levels.*

N 2.2 ***Design of Sensitive Land Uses:*** *Require the use of walls, berms, interior noise insulation, double paned windows, or other noise mitigation measures, as appropriate, in the design of new residential or other new noise sensitive land uses that are adjacent to major roads. Application of the Noise Standards in Table N3 shall govern this requirement.*

N 3.1 ***New Development:*** *Ensure new development is compatible with the noise environment by using airport noise contours no larger than those contained in the 1985 JWA Master Plan, as guides to future planning and development decisions.*

N 3.2 ***Residential Development:*** *Require that residential development in the Airport Area be located outside of the 65 dBA CNEL noise contour no larger than shown in the 1985 JWA Master Plan and require residential developers to notify prospective purchasers or tenants of aircraft overflight and noise.*

N 4.1 ***Stationary Noise Sources:*** *Enforce interior and exterior noise standards outlined in Table N3, and in the City's Municipal Code to ensure that sensitive noise receptors are not exposed to excessive noise levels from stationary noise sources, such as heating, ventilation, and air conditioning equipment.*

N 4.6 ***Maintenance or Construction Activities:*** *Enforce the Noise Ordinance noise limits and limits on hours of maintenance or construction activity in or adjacent to residential areas, including noise that results from in-home hobby or work-related activities.*

N 5.1 ***Limiting Hours of Activity:*** *Enforce the limits on hours of construction activity.*

Land Use Compatibility. The noise criteria identified in the City of Newport Beach Noise Element (Table N2) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown in Table C, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels and prevent noise/land use conflicts. The Land Use Noise Compatibility Matrix in the City of Newport Beach General Plan provides guidelines to evaluate the acceptability of transportation-related noise level impacts.

The Project's residential uses are considered *normally compatible* with exterior noise levels below 65 dBA CNEL. For *normally compatible* uses, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Table C: Land Use Compatibility Matrix

Table N2 Land Use Noise Compatibility Matrix

Land Use Categories		Community Noise Equivalent Level (CNEL)						
Categories	Uses	<55	55–60	60–65	65–70	70–75	75–80	>80
Residential	Single Family, Two Family, Multiple Family	A	A	B	C	C	D	D
Residential	Mixed Use	A	A	A	C	C	C	D
Residential	Mobile Home	A	A	B	C	C	D	D
Commercial Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Recreational **Institutional** Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special **Industrial, Institutional**	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

SOURCE: Newport Beach, 2006

Zone A: Clearly Compatible—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B: Normally Compatible**—New construction or development should be undertaken only after detailed analysis of the noise reduction requirements and are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

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

Zone D: Clearly Incompatible—New construction or development should generally not be undertaken.

In addition, the City of Newport Beach Noise Element indicates that while California requires interior noise levels in multifamily residential uses not exceed 45 L_{dn}, it is commonly used as an interior standard for all residential uses but is not required under the California Administrative Code, Title 24, and Part 2. City of Newport Beach Noise Element Policy N 1.5 requires an interior noise standard of 45 dBA CNEL for all residential uses.

City of Newport Beach Municipal Code

Section 10.26.025, Community Noise Control, provides the exterior and interior residential noise standards, which represent the maximum acceptable noise levels as measured from any receiving property in the City. It is considered unlawful to create noise on any property that results in noise

levels exceeding 55 dBA L_{eq} for a period of 15 minutes at residential uses during daytime hours from 7:00 a.m. to 10:00 p.m. and 50 dBA L_{eq} for a period of 15 minutes at residential uses during nighttime hours from 10:00 p.m. to 7:00 a.m. For commercial uses, exterior noise levels shall not exceed 65 dBA L_{eq} during daytime hours and 60 dBA L_{eq} during nighttime hours. Maximum instantaneous noise levels may not exceed the above values plus 20 dBA for any period of time.

Section 10.28.040, Construction Activity – Noise Regulations, states:

> A. No person shall, while engaged in construction, remodeling, digging, grading, demolition, painting, plastering or any other related building activity, operate any tool, equipment or machine in a manner which produces loud noise that disturbs, or could disturb, a person of normal sensitivity who works or resides in the vicinity, unless authorized to do so in accordance with subsection (B) of this section.
>
> B. The provisions of subsection (A) of this section shall not apply to the following:
>
> 1. Work performed on any weekday, which is not a federal holiday, between the hours of 7:00 a.m. and 6:30 p.m.
>
> 2. Work performed on a Saturday, in any area of the City that is not designated as a high-density area, between the hours of 8:00 a.m. and 6:00 p.m.

The City's Noise Element and Municipal Code do not provide specific noise level requirements or vibration impact criteria associated with construction activities; therefore, the FTA criteria will be used in this analysis.

Federal Transit Administration

Because the City does not have construction noise level limits, construction noise was assessed using criteria from the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018). Table D shows the FTA's Detailed Analysis Construction Noise Criteria based on the composite noise levels of the two noisiest pieces of equipment per construction phase. This provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction when the noise criteria are exceeded.

Table D: General Assessment Construction Noise Criteria

Land Use	Daytime 1-hour L_{eq} (dBA)	Nighttime 1-hour L_{eq} (dBA)
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
dBA = A-weighted decibels
FTA = Federal Transit Administration
L_{eq} = equivalent continuous sound level

APPLICABLE VIBRATION STANDARDS

Federal Transit Administration

Construction Damage Criteria

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table E lists the potential vibration building damage criteria associated with construction activities, as suggested in the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

Table E: Construction Vibration Damage Criteria

Building Category	Approximate L_V (VdB)[1]
Reinforced concrete, steel, or timber (no plaster)	102
Engineered concrete and masonry (no plaster)	98
Non-engineered timber and masonry buildings	94
Buildings extremely susceptible to vibration damage	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) re 1 µin/sec.
FTA = Federal Transit Administration
µin/sec = microinches per second
L_V = velocity in decibels
RMS = root-mean-square
VdB = vibration velocity decibels

FTA guidelines shows that a vibration level of up to 102 VdB (FTA 2018) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction building vibration damage criterion is 94 VdB.

Construction Annoyance Criteria

The City of Newport Beach has not identified or adopted vibration standards. However, the 2006 General Plan EIR identified a limit of 72 VdB for frequent events (more than 70 vibrations events per day) at residential uses and buildings where people normally sleep. For infrequent events with fewer than 70 vibration events per day, the vibration limit is 80 VdB. It should be noted that the General Plan EIR conservatively identified a residential-nighttime threshold of 72 VdB for all circumstances of vibrational energy; including for construction activities which due to City noise ordinances, would not be expected to occur during the nighttime period (10:00 p.m. to 7:00 a.m.). The 2006 General Plan EIR also identified a limit of 75 VdB for frequent events (more than 70 vibrations events per day) at institutional land uses with primarily daytime uses. For infrequent events with fewer than 70 vibration events per day, the vibration limit is 83 VdB. For the purposes of this analysis, these levels are identified as appropriate for office uses.

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

This section describes the existing noise environment in the project site vicinity. Noise monitoring was used to quantify existing noise levels at the project site. In Newport Beach, vehicle traffic is the primary source of noise. Other significant local noise sources include commercial and mechanical equipment noise. Other noise sources that can influence the existing environment at times include airport noise and construction noise.

EXISTING NOISE LEVEL MEASUREMENTS

To assess existing noise levels, LSA conducted three long-term noise measurements and three short-term noise measurements in the vicinity of the project site. The long-term noise measurements were recorded from January 6 through January 10, 2022. The long-term noise measurements captured data in order to calculate the hourly L_{eq} and CNEL at each location, which incorporate the nighttime hours. Sources that dominate the existing noise environment include traffic on Newport Center Drive, parking lot activity, adjacent commercial operations, and occasional aircraft. The short-term noise measurements were recorded on January 6, 2022. The short-term noise measurements were located along Newport Center Drive and captured the primary traffic noise source in the vicinity. Noise measurement data collected during the short-term and long-term noise monitoring are summarized in Tables F and G. Figure 3 shows the noise monitoring locations. Noise measurement sheets are provided in Appendix A.

AIRCRAFT NOISE

Airport-related noise levels are primarily associated with aircraft engine noise made while aircraft are taking off, landing, or running their engines while still on the ground. The closest airport to the project site is John Wayne Airport (JWA), approximately 4.3 miles to the north. The project site is outside the 60 dBA CNEL noise contour of JWA based on the JWA Airport Impact Zones map in the Airport Environs Land Use Plan (Orange County Airport Land Use Commission 2008), and the 2021 Third Quarter 65 dB CNEL contour (JWA 2021) for JWA. Because the project is located outside of the nearest airport's 60 dBA CNEL contour, no further analysis related to airport noise is required in this report.

Table F: Existing Noise Level Measurements – Long Term

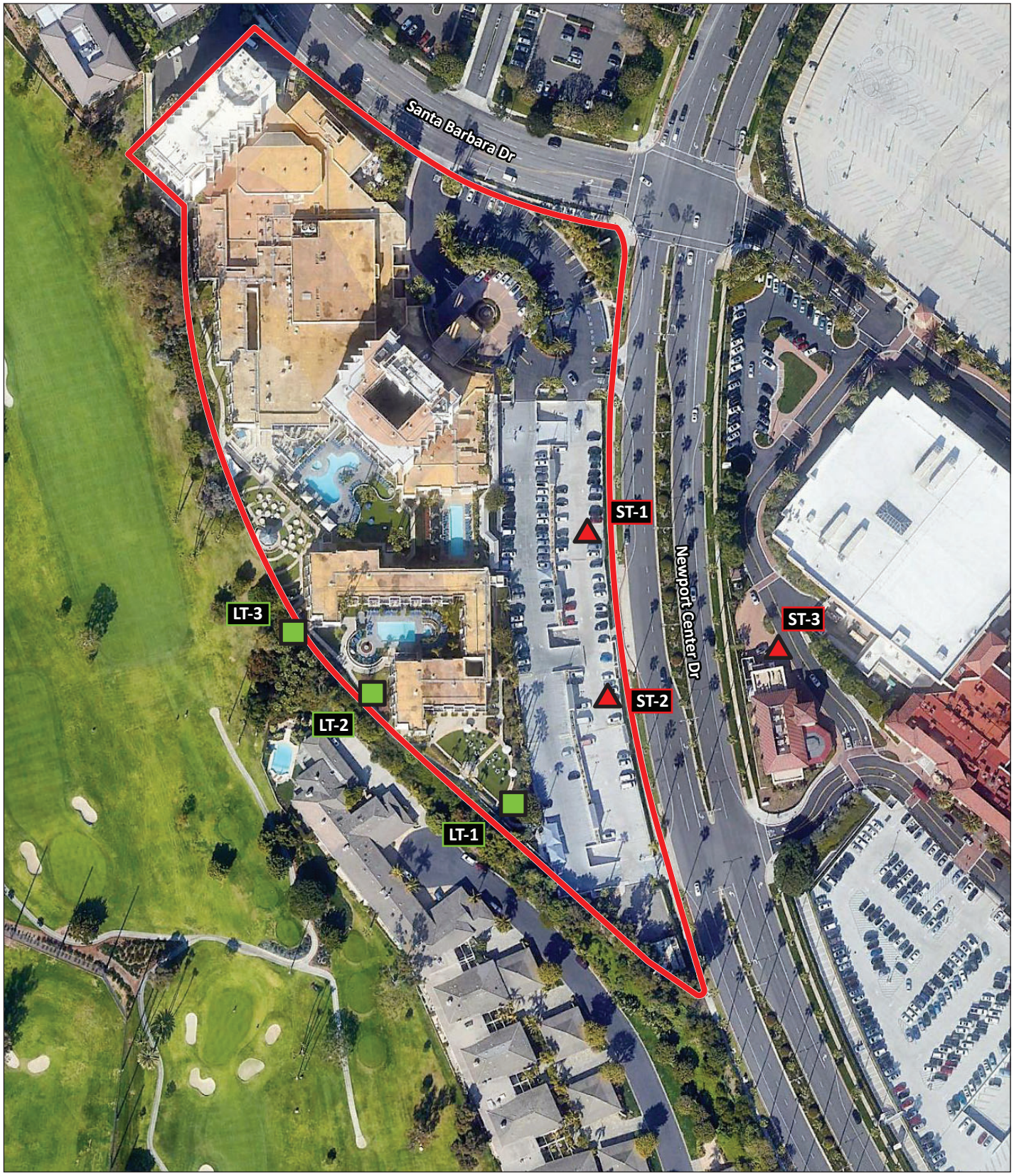
Location	Description	Date	Daytime Noise Levels[1] (dBA L_{eq})	Nighttime Noise Levels[2] (dBA L_{eq})	Daily Noise Levels (dBA CNEL)	Highest Daily Noise Level (dBA CNEL)
LT-1	900 Newport Center Drive, Newport Beach. On light pole near event lawn at south end of parcel.	1/6/2022	54.0-57.6	45.9-51.1	58.3	58.3
		1/7/2022	52.8-59.7	43.2-47.8	57.0	
		1/8/2022	51.1-60.2	42.4-47.5	56.4	
		1/9/2022	49.5-60.0	42.8-49.8	56.6	
		1/10/2022	56.0-58.0	43.2-52.8	57.0	
LT-2	900 Newport Center Drive, Newport Beach. On a tree just south of the existing pool area.	1/6/2022	53.4-57.2	46.4-50.6	58.0	58.0
		1/7/2022	52.8-59.1	41.2-47.8	56.7	
		1/8/2022	50.8-60.1	39.8-50.0	56.2	
		1/9/2022	50.6-59.8	40.4-50.0	56.2	
		1/10/2022	56.0-62.9	40.2-50.3	56.9	
LT-3	900 Newport Center Drive, Newport Beach. On western fence at south edge of construction limits.	1/6/2022	52.8-60.1	44.6-50.0	58.0	58.0
		1/7/2022	52.0-60.6	40.6-48.0	56.9	
		1/8/2022	49.9-59.5	40.0-45.7	55.5	
		1/9/2022	49.4-59.3	40.8-47.7	55.4	
		1/10/2022	57.3-61.4	40.3-50.6	57.0	

Source: Compiled by LSA (January 6–January 10, 2022).
[1] Daytime Noise Levels = noise levels during the hours from 7:00 a.m. to 10:00 p.m.
[2] Nighttime Noise Levels = noise levels during the hours from 10:00 p.m. to 7:00 a.m.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet
L_{eq} = equivalent continuous sound level

Table G: Short-Term Noise Level Measurements

Location	Measured Noise Level (dBA L_{eq})	Daytime Noise Levels[2] (dBA L_{eq})	Evening Noise Levels[3] (dBA L_{eq})	Nighttime Noise Levels[4] (dBA L_{eq})	Average Daily Noise Level (dBA CNEL)
ST-1: 900 Newport Center Drive, on parking structure, across the street from the corner of Nordstrom.	56.4	47.3-58.0	46.1-55.9	40.2-50.6	54.8
ST-2: 900 Newport Center Drive, on parking structure across the street from COCINA enoteca restaurant.	56.9	49.4-60.1	48.2-58.0	42.3-52.7	56.9
ST-3: COCINA enoteca restaurant, approximately 10 feet north of the northeast corner of the building	57.7	62.3-76.4	66.6-73.4	47.5-70.4	56.7

Source: Compiled by LSA (January 11, 2022).
[1] Hourly noise levels were calculated based on a 20-minute short-term measurement and then adjusting it to the pattern of the nearest acoustically equivalent long-term measurement on the corresponding day.
[2] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.
[3] Evening Noise Levels = noise levels during the hours of 7:00 p.m. to 10:00 p.m.
[4] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.
dBA = A-weighted decibels
CNEL = Community Noise Equivalent Level
L_{eq}=equivalent continuous sound level



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Long Term Monitoring Locations
Short Term Monitoring Locations
Project Site Boundary

FIGURE 3

Ritz-Carlton Residences Project
Noise Monitoring Locations

SOURCES: Google Earth, 1/22/2020; LSA, 2022

P:\NCH2101\BACKGROUND\Noise\Noise Monitoring\Figure 3.ai (2/8/2022)

PROJECT IMPACT ANALYSIS

SHORT-TERM CONSTRUCTION NOISE IMPACTS

General Plan EIR Significance Determination: Less than Significant Impact.

The General Plan EIR found that under the General Plan, the primary source of temporary or periodic noise within the City would be construction activity and maintenance work, including both construction-site activity and the transport of workers and equipment to and from the construction sites. The General Plan EIR determined that construction noise is not subject to the noise standards in the Municipal Code, but only during limited hours of the day and days of the week. Therefore, the General Plan EIR determined that since construction noise would be exempt from the City code, impacts were considered less than significant.

Project-Specific Analysis and Significance Determination: Less than Significant Impact; no new or substantially more severe significant impact.

Two types of short-term noise impacts would occur during project construction: (1) equipment delivery and construction worker commutes; and (2) project construction operations.

The first type of short-term construction noise would result from transport of construction equipment and materials to the project site and construction worker commutes. The project is estimated to generate 1,197 hauling truck trips over a 180-day demolition phase (6.65 trips per day) and a total of 15,125 hauling truck trips over a 100-day grading phase (151 trips per day) based on the California Emission Estimator Model (Version 2020.4.0) output, shown in Appendix C of the *Air Quality and Greenhouse Gas Impact Analysis for the Ritz-Carlton Residences Project* (Air Quality and GHG Analysis) (LSA 2022). These transportation activities would incrementally raise noise levels on access roads leading to the site. It is expected that larger trucks used in equipment delivery would generate higher noise impacts than trucks associated with worker commutes. The single-event noise from equipment trucks passing at a distance of 50 ft from a sensitive noise receptor would reach a maximum level of 84 dBA L_{max}. However, the pieces of heavy equipment for grading and construction activities would be moved on site just one time and would remain on site for the duration of each construction phase. This one-time trip, when heavy construction equipment is moved on and off site, would not add to the daily traffic noise in the project vicinity. The total number of daily vehicle trips would be minimal when compared to existing traffic volumes on the affected streets, and the long-term noise level change associated with these trips would not be perceptible. Therefore, equipment transport noise and construction-related worker commute impacts would be short term and would not result in a significant off-site noise impact.

The second type of short-term noise impact is related to noise generated during site preparation, grading, building construction, architectural coating, and paving on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the project site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources

and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table H lists the maximum noise levels recommended for noise impact assessments for the project-specific construction equipment list based on a distance of 50 ft between the equipment and a noise receptor.

Table H: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 Feet[1]
Backhoe	16	85
Compressor	100	81
Concrete Mixer	40	85
Concrete Saw	4	78
Crane	16	83
Dozer	40	80
Excavator	40	85
Generator	100	78
Grader	8	85
Scraper	40	88
Paver	10	89
Roller	20	80
Welder	40	74

Source: *Highway Construction Noise Handbook* (FHWA 2006).
dBA = A-weighted decibel(s)
FHWA = Federal Highway Administration
ft = foot/feet
L_{max} = maximum instantaneous noise level

In addition to the reference maximum noise level, the usage factor provided in Table H is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

Typical operating cycles for these types of construction equipment may involve 1 to 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings.

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period.

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft.

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time.

D = distance from the receiver to the piece of equipment.

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table I, and the construction equipment list within the Air Quality and Greenhouse Gas Impact Analysis Report (LSA 2022), the composite noise level of each construction phase was calculated. The proposed project would not include blasting, pile driving, or on-site rock crushing.

Table I: Potential Construction Noise Impacts at Nearest Receptor

Receptor (Location)	Construction Phase	Composite Noise Level (dBA L_{eq}) at 50 feet	Distance (feet)[1]	Composite Noise Level (dBA L_{eq})
Residential (North)	Demolition	86.3	600	64.7
	Site Preparation	85.2	600	63.6
	Paving	85.6	600	64.0
Offices (North)	Demolition	86.3	650	64.0
	Site Preparation	85.2	650	62.9
	Paving	85.6	650	63.3
Commercial/Retail (East)	Demolition	86.3	330	69.9
	Site Preparation	85.2	330	68.8
	Paving	85.6	330	69.2
Residential (South)	Demolition	86.3	105	79.8
	Site Preparation	85.2	105	78.7
	Paving	85.6	105	79.1

Source: Compiled by LSA (2022).
1. The distance represents an average distance from activity to surrounding uses.
dBA L_{eq} = average A-weighted hourly noise level

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA while halving the distance would increase noise levels by 6 dBA.

Table I shows the nearest uses to the project site, their average distance from the construction activities, appropriate for assessing the average hourly noise level for a construction phase, and noise levels expected during the three loudest phases of construction. These noise level projections do not take into account intervening topography or barriers. Appendix B provides the construction information in developing the construction noise levels.

Construction noise levels will fluctuate throughout the construction period as equipment moves between the various areas on the project site. In order to assess the specific noise levels at the surrounding sensitive receptors, the average noise level experienced during demolition (the loudest phase of construction) was assessed based on the average distance of activities to the nearest surrounding receptor, which would be approximately 105 ft from the property line of the existing condominium residences to the south.

It is expected that average composite noise levels during construction at the nearest off-site residential land uses to the south would reach 79.8 dBA L_{eq} during the demolition phase. Similarly, it is expected that composite noise levels during construction at the nearest commercial land uses 330 ft to the east would reach 69.9 dBA L_{eq} during the demolition phase. These predicted noise levels would only occur when all construction equipment is operating simultaneously.

While construction-related, short-term noise levels have the potential to be higher than existing ambient noise levels in the project area under existing conditions, the noise impacts would no longer occur once project construction is completed. At residential receptors to the south, hourly average construction noise levels during all phases would be louder than existing ambient daytime (7:00 a.m. to 7:00 p.m.) hourly average noise levels of 51.1 to 58.0 dBA L_{eq} measured at LT-1. At receptors farther away from traffic sources, hourly average construction noise levels during all phases would at times be louder than the lowest existing ambient daytime hourly average noise levels of 49.5 dBA L_{eq} and 49.4 dBA L_{eq} measured at LT-1 and LT-2, respectively.

As stated above, noise impacts associated with construction activities are regulated by the City's noise ordinance. The proposed project will be required to comply with the construction hours specified in the City's Noise Ordinance, which states that construction activities are allowed between 7:00 a.m. and 6:30 p.m., Monday through Friday, and from 8:00 a.m. to 6:00 p.m. on Saturday. No construction is permitted outside of these hours or on Sundays and federal holidays.

As it relates to off-site uses, for informational purposes, construction-related noise impacts would remain below the 80 dBA L_{eq} and 85 dBA L_{eq} 8-hour construction noise level criteria as established by the FTA for residential and commercial land uses. With adherence to the City's construction hours and implementation of construction noise project design features, construction noise impacts would be considered less than significant.

The less than significant finding is consistent with the 2006 General Plan EIR which states "*Construction activities would be an ongoing occurrence in the City and, in particular cases, could occur in close proximity to noise-sensitive uses. Although the proposed General Plan Update limits construction activities to specific days of the week and hours of the day, construction equipment generates high noise levels, as shown in Table 4.9-9 and may not always be reducible to the levels specified in the City Noise Ordinance. Section 10.26.035 of the Municipal Code (Exemptions), exempts "noise sources associated with construction, repair, remodeling, demolition, or grading of any real property." Section 10.26.035 also states that construction noise should fall under the provisions of Section 10.28 of the Code (Loud and Unreasonable Noise). Thus, construction noise is not subject to the noise standards in the Municipal Code, but only during limited hours of the day and days of the week. In sum, existing and future construction noise levels at individual construction sites may not substantially differ, but previously unexposed areas could experience new sources of*

construction noise. Both existing and future noise would be exempt from the City code and when construction noise occurs, impacts would be considered less than significant."

Therefore, the proposed project would not lead to new or substantially more severe significant impacts associated with construction noise beyond those identified in the General Plan EIR.

SHORT-TERM CONSTRUCTION VIBRATION IMPACTS

General Plan EIR Significance Determination: Significant and Unavoidable Impact.

As identified in the General Plan EIR, construction activities that would occur under the General Plan would have the potential to generate groundborne vibration. As such, the General Plan EIR found that construction activities will occur at discrete locations in the City and vibration from such activity may impact existing buildings and their occupants if they are located close enough to the construction sites. The General Plan EIR determined that vibration levels could be problematic if sensitive uses are located within about 100 feet of potential project construction sites, where sensitive receptors would experience vibration levels that exceed the FTA's vibration annoyance impact threshold of 72 VdB. The General Plan EIR found that if impacts occur, the only mitigation that could eliminate the vibration impact is ensuring a distance of approximately 150 feet between construction and existing sensitive receptors. However, the General Plan EIR concluded that it is not feasible to prohibit construction within 150 feet of all existing receptors, thus, when construction vibration occurs, impacts would be significant.

Project-Specific Analysis and Significance Determination: Significant and Unavoidable Impact; no new or substantially more severe significant impact.

Ground-borne noise and vibration from construction activity would be mostly low to moderate. While there is currently limited information regarding vibration source levels, to provide a comparison of vibration levels expected for a project of this size (as shown in Table J), a large bulldozer would generate approximately 87 VdB of ground-borne vibration when measured at 25 ft based on the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts occur normally within the buildings. The formula for vibration transmission is provided below.

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

As discussed above, vibration levels above 94 VdB would result in potential damage to non-engineered timber and masonry building and levels above 72 VdB would have the potential to cause annoyance at sensitive residential receptors.

Table J: Vibration Source Amplitudes for Construction Equipment

Equipment		Reference Lv at 25 feet[1]
Pile Driver	Impact, upper range	104
	Impact, typical	93
Hoe Ram		87
Large Bulldozer		**87**
Caisson Drilling		87
Loaded Trucks		**86**
Jackhammer		79
Small Bulldozer		58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
Note: **Bolded** equipment is expected to be used during construction.
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
µin/sec = micro-inches per second
FTA = Federal Transit Administration
L_V = velocity in decibels
RMS = root-mean-square
VdB = vibration velocity decibels

The closest off-site structures to the project site are the existing residential buildings to the southwest, approximately 33 ft from the potential construction activities. These buildings are assumed to be non-engineered timber and masonry. Using the equations above, the operation of a large bulldozer would generate ground-borne vibration levels of 83 VdB. At this level, vibration from construction would not result in damage to surrounding buildings; however, those levels would exceed the 72 VdB threshold for annoyance to sensitive uses. Therefore, construction of the project could expose people to excessive ground-borne vibration. This impact would be significant and unavoidable, as construction would need to be 100 feet or more away from structures to avoid annoyance. The General Plan EIR identified all construction vibration impacts to be significant and unavoidable; therefore the proposed project would not lead to new or substantially more severe significant impacts associated with construction vibration beyond those identified in the General Plan EIR.

LONG-TERM NOISE IMPACTS

General Plan EIR Significance Determination: Significant and Unavoidable Impact.

The General Plan EIR evaluated future roadway noise levels within the City with the implementation of the General Plan. The General Plan EIR found that the 24 roadway segments along Birch Street, Campus Drive, Coast Highway, Irvine Avenue, Jamboree Road, MacArthur Boulevard, and Newport Coast Drive would have a significant increase in noise at 100 feet from the centerline. As identified in the General Plan EIR, the changes in motor vehicle trips and circulation patterns would increase noise levels within the City by a maximum of 3.7 dBA CNEL, although most increases in noise would be between 1 and 3 dBA. The General Plan EIR concluded that while there are a number of policies in the General Plan under Goal N2 that would help mitigate the impact of traffic noise on receptors, impacts would remain significant and unavoidable. The General Plan EIR did not evaluate long-term noise impacts associated with other sources of project operation.

Project-Specific Analysis and Significance Determination: Less than Significant Impact; no new or substantially more severe significant impact.

Potential sources of noise during project operation could include vehicle traffic, noise from the heating, ventilation, and air conditioning (HVAC) units, and noise from use of the on-site recreational areas by residents. Impacts from these noise sources are evaluated below.

Traffic Noise Impacts to Off-Site Receivers

Consistent with the findings in the *Newport Beach Marriott Hotel and Spa Trip Generation* (Pirzadeh & Associates 2022), the proposed project would not generate new vehicle trips and would result in a net reduction of 549 fewer daily trips to the site when compared to existing conditions. Traffic noise levels would either remain the same or decrease as a result of the project. Therefore, no mitigation measures are required because there would be no impact from project-related traffic on off-site sensitive receptors. Therefore, the proposed project would not lead to new or substantially more severe significant impacts associated with traffic noise beyond those identified in the General Plan EIR.

Heating, Ventilation, and Air Conditioning Equipment

The project would have rooftop heating, ventilation, and air conditioning (HVAC) units. The HVAC equipment could operate 24 hours per day. Rooftop HVAC equipment would generate a noise level of 71.2 dBA L_{eq} at 5 ft.

The closest off-site uses are the condominium residences to the south, which are 318 ft from the nearest location that HVAC would potentially be located. The reduction of rooftop HVAC equipment noise levels would be provided primarily by distance attenuation to off-site uses as well as the proposed building edge/roofline breaking line-of-sight from source to receiver. At the nearest off-site residential land uses, noise levels from HVAC are estimated to approach 30.0 dBA L_{eq}. This noise level would not exceed the City's exterior daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise standards of 55 dBA L_{eq} and 50 dBA L_{eq}, respectively. In addition, these noise levels would be well below the lowest nighttime hourly noise level of 39.8 dBA L_{eq} measured at LT-2. Therefore, project-related HVAC noise levels would not contribute to ambient noise levels at the nearest residences. Therefore, the proposed project would not lead to new or substantially more severe significant impacts associated with HVAC noise levels.

Outdoor Activity (Pool/Amenity) Area

The project would have an on-grade outdoor activity pool/amenity area northwest of the proposed building. The closest off-site uses are condominium residences to the southwest, 140 ft from the acoustical center of the outdoor activity area. The reduction of outdoor activity noise levels would be provided primarily by distance attenuation to off-site uses. Assuming 20 people talking continuously with raised voice levels, activity noise levels are estimated to approach 45.6 dBA L_{eq} at the nearest off-site residential land uses. This noise level would not exceed the City's exterior daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise standards of 55 dBA L_{eq} and 50 dBA L_{eq}, respectively. In addition, hotel amenity spaces are typically limited to daytime hours of operation and are closed during nighttime hours. Therefore, the proposed project would

not lead to new or substantially more severe significant impacts associated with outdoor activity noise.

Composite Noise Levels

Table K presents a summary of the composite noise levels at the residential uses to the south. The results show that noise impacts associated with the proposed project would not cause an increase in noise experienced at the residential uses to the south, assuming a conservative scenario in which both HVAC and maximum noise levels from amenity/pool activity would occur during daytime hours. Therefore, the proposed project would not lead to new or substantially more severe significant impacts beyond those identified in the General Plan EIR.

Table K: Composite Noise Levels at Nearest Receptor

Receptor Location	Daytime/Nighttime Conditions	Stationary Noise Sources (dBA L_{eq})		Composite Noise Level (dBA L_{eq})	Daytime/Nighttime Noise Limit (dBA L_{eq})
		HVAC Equipment	Outdoor Activity[1]		
Residential Condominium Uses south of proposed project.	Daytime 7:00 a.m. to 10:00 p.m.	30.0	45.6	45.7	55
Residential Condominium Uses south of proposed project.	Nighttime 10:00 p.m. to 7:00 a.m.	30.0	--	30.0	50

Source: Compiled by LSA (2022).
[1] Pool/amenity areas would be limited to daytime hours of operation and closed during nighttime hours, therefore, noise levels outdoor activities would not contribute to the composite noise levels at nearest receptors.
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

LONG-TERM VIBRATION IMPACTS

General Plan EIR Significance Determination.

The General Plan EIR did not evaluate potential long-term vibration impacts.

Project-Specific Analysis and Significance Determination: Less than Significant Impact; no new or substantially more severe significant impact.

The streets surrounding the project area are paved, smooth, and unlikely to cause significant ground-borne vibration. In addition, the rubber tires and suspension systems of buses and other on-road vehicles make it unusual for on-road vehicles to cause ground-borne noise or vibration problems. It is therefore assumed that no such vehicular vibration impacts would occur, and no vibration impact analysis of on-road vehicles is necessary. Additionally, once constructed, the proposed project would not contain uses that would generate ground-borne vibration. Therefore, the proposed project would not lead to new or substantially more severe significant impacts associated with long-term vibration impacts.

LAND USE COMPATIBILITY ASSESSMENT

General Plan EIR Significance Determination: Significant and Unavoidable Impact.

As discussed in the General Plan EIR, locations throughout the City would experience changes in noise levels as a result of an increase in motor vehicle traffic. The General Plan EIR found that based on the information in the existing and future noise contours, noise levels in excess of standards established by the City could occur where schools, libraries, health care facilities, and residential uses within the City are, and will continue to be, exposed to exterior noise levels that exceed the City's standard of 60 dBA CNEL. As such, the General Plan EIR concluded that implementation of General Plan policies associated with Goals N1 and N2 (including requiring that all remodeling/additions to structures comply with the General Plan noise standards, requiring the use of walls, berms, interior noise insulation, double paned windows, or other noise mitigation measures in new residential or other new land uses) would reduce noise impacts to future land uses, but would do little to remediate noise effects on existing land uses. As such, this impact was considered significant and unavoidable.

Project-Specific Analysis and Significance Determination: Less than Significant Impact; no new or substantially more severe significant impact.

The land use compatibility of the project site was assessed based on the Land Use Compatibility guidelines contained in the City of Newport Beach General Plan. Outdoor amenity areas and indoor sleeping areas associated with the proposed project would be exposed to traffic noise along Newport Center Drive, adjacent commercial uses, and occasional aircraft operations.

Exterior Ambient Noise Impacts

Based on monitoring results shown in Tables F and G, noise levels at the project site are up to 58.3 dBA CNEL. Per Table N-2 (see Table C above) of the City's General Plan Noise Element, noise levels of up to 60 dBA CNEL are considered clearly compatible. Additionally, the outdoor activity/amenity area including the proposed pools, lounge, and deck would be set back from the adjacent roadways and shielded by the proposed buildings, resulting in noise levels well below 60 dBA CNEL at these areas. Therefore, the existing noise environment would be compatible for the proposed land uses.

Interior Noise Levels

Based on the architectural plans for the proposed project, it was confirmed that all units will have central air conditioning, thus allowing for windows and glass doors to be closed. The exterior façade of the proposed residential units would be comprised of a storefront window system-type glass assembly. Using data from the transmission loss test report (Western Electro-Acoustic Laboratory 2013) for the Quest Series Ecowall 141, a minimum reduction of 23 dBA CNEL can be expected with a similar assembly that has a Sound Transmission Class (STC) rating of 38 and an Outdoor-Indoor Transmission Class (OITC) rating of 27. With a reduction of 23 dBA, interior levels are expected to be approximately 39 dBA CNEL, which would be well below the City's interior noise level standard of 45 dBA CNEL.

Therefore, the proposed project would not lead to new or substantially more severe significant impacts associated with land use compatibility beyond those identified in the General Plan EIR.

PROJECT IMPACT CONCLUSIONS

OFF-SITE CONSTRUCTION IMPACTS

As described in the analysis above, construction of the proposed project would not result in short-term noise on adjacent land uses when compliant with the construction hours specified in the City's Municipal Code and implementation of the Project Design Features related to construction specifications. Consistent with the findings of the General Plan EIR, vibration levels would result in an annoyance impact to the closest receptors to the project site. However, vibration levels would not exceed the building damage threshold and would cease to occur when construction is complete.

OFF-SITE OPERATIONS IMPACTS

The proposed project would not result in an increase in traffic volumes; therefore, the proposed project would not result in a long-term traffic noise level increase. Implementation of the proposed project would generate on-site stationary noise from HVAC equipment and pool/amenity activities. However, potential stationary source noise impacts would be less than significant.

REFERENCES

Airport Land Use Commission. 2008. *Airport Environs Land Use Plan for John Wayne Airport*. April 17.

California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September.

City of Newport Beach. 2006. General Plan. Chapter 12 Noise Element.

_____. 2006. City of Newport Beach General Plan 2006 Update. April.

_____. 1995. Municipal Code. Chapter 10.26 Community Noise Control, and Section 10.28.040 Construction Activity—Noise Regulations.

Federal Highway Administration (FHWA). 2006. *Highway Construction Noise Handbook*. Roadway Construction Noise Model, FHWA-HEP-06-015. DOT-VNTSC-FHWA-06-02. NTIS No. PB2006-109012. August.

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*. Office of Planning and Environment. Report No. 0123. September.

Harris, Cyril M., ed. 1991. *Handbook of Acoustical Measurements and Noise Control*. Third Edition.

John Wayne Airport (JWA). 2021. John Wayne Airport 2021 Third Quarter 65 dB CNEL Contour. Website: https://www.ocair.com/about/administration/access-noise/reports-resources/.

LSA Associates, Inc. (LSA). 2022. *Air Quality and Greenhouse Gas Impact Analysis for the Ritz-Carlton Residences Project*. January.

MVE+Partners. 2021. *Ritz-Carlton Residences, Overall Site Plan (AO.2).* October.

Pirzadeh & Associates. 2022. *Newport Beach Marriott Hotel and Spa – Trip Generation Revised Letter*. January 26.

United States Environmental Protection Agency (EPA). 1978. *Protective Noise Levels, Condensed Version of EPA Levels Document*, EPA 550/9-79-100. November.

Western Electro-Acoustic Laboratory. 2013. *Sound Transmission Loss Test Report No. TL13-758 Rev-1*. December 17.

APPENDIX A

LONG-TERM AND SHORT-TERM NOISE MEASUREMENT SHEETS

Project Number: NCH2101
Project Name: Ritz-Carlton Residences
Test Personnel: Corey Knips

LSA
LSA Associates, Inc.

Noise Measurement Survey

Site Number: ST-1 Date: 1/6/22 Time: From 12:51 p.m. To 1:11 p.m

Site Location: 900 Newport Center Drive, on parking structure, 17 feet west of hedge, and across the street from the corner of Nordstroms

Primary Noise Sources: Traffic on Newport Center Drive, construction activities (very quiet for first ~7 minutes, then boom lift running / back up alarm, power saw?, a different back up alarm (unseen)

Measurement Results

	dBA
L_{eq}	56.4
L_{max}	68.5
L_{min}	47.8
L_{peak}	102.7
L_2	63.8
L_8	61.1
L_{25}	56.7
L_{50}	53.1
L_{90}	49.7
L_{99}	48.3
SEL	87.2

Comments: Filtered out aircraft taking off (several events)

Equipment: Larson Davis 831 SLM Stored File: .513

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	Comments
3.6	1.1	73.0	48.0	

Project Number: ~~Ritz-C~~ NCH2101
Project Name: Ritz-Carlton Residences
Test Personnel: Corey Knips

LSA
LSA Associates, Inc.

Noise Measurement Survey

Site Number: ST-2 Date: 1/6/22 Time: From 12:17 p.m. To 12:37 p.m.

Site Location: 900 Newport Center Drive, on parking structure, 17 feet west of hedge, and across the street from Cocina enoteca

Primary Noise Sources: Light traffic on Newport Center Drive, distant leaf blowers, a few vehicles driving slowly by on top of the parking structure

Measurement Results

	dBA
L_{eq}	56.9
L_{max}	70.0
L_{min}	46.9
L_{peak}	94.7
L_2	64.6
L_8	61.0
L_{25}	57.5
L_{50}	54.2
L_{90}	49.3
L_{99}	48.1
SEL	87.8

Comments: Filtered out aircraft taking off (several events)

Equipment: Larson Davis 831 SLM Stored File: .512

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	Comments
3.0	0.9	70.0	61.8	

Project Number: NCH2101
Project Name: Ritz-Carlton Residences
Test Personnel: Corey Knips

LSA
LSA Associates, Inc.

Noise Measurement Survey

Site Number: ST-3 Date: 1/6/22 Time: From 1:24 p.m. To 1:44 p.m.

Site Location: Cocina enoteca, approximately 10 feet north of the northeast corner of the building, on sidewalk between outdoor patio area and valet area.

Primary Noise Sources: Light traffic on Newport Coast Drive, ~1-2 vehicles per minute on street to the east of COCINA enoteca, faint construction noise, aircraft (filtered out take-off events)

Measurement Results

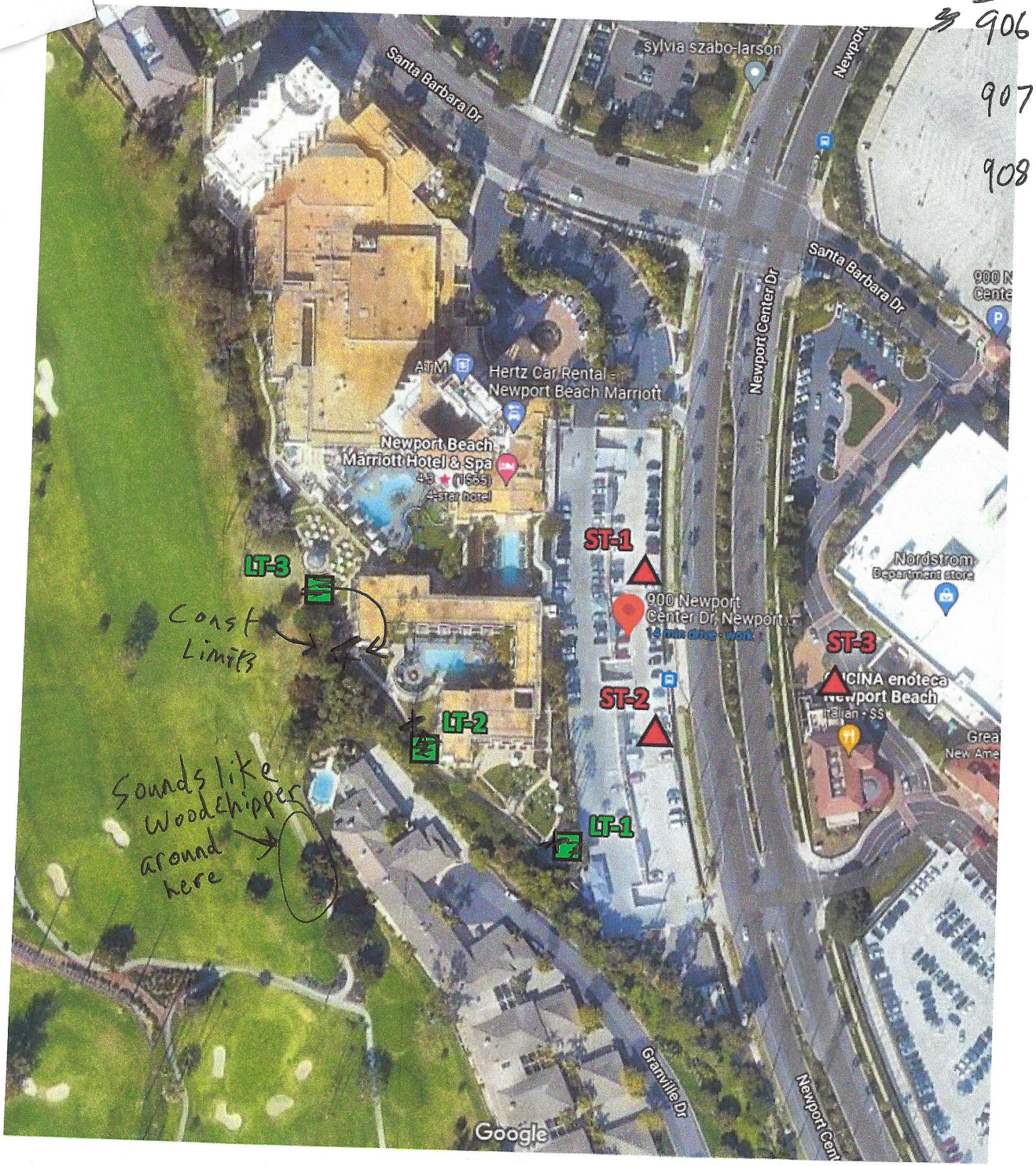
	dBA
L_{eq}	57.7
L_{max}	74.2
L_{min}	52.2
L_{peak}	100.8
L_2	62.7
L_8	60.7
L_{25}	57.7
L_{50}	55.9
L_{90}	53.6
L_{99}	52.5
SEL	88.5

Comments: Filtered out aircraft taking off (several events) and semi driving by on street to the east of ST-3. Valet area is closed off (with large pots) to vehicles but doesn't appear to be used for outdoor eating area. Probably left over from Covid - outdoor eating only period

Equipment: Larson Davis 831 SLM Stored File: .514

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	Comments
5.4	1.4	71.0	73.5	



SN

906 LT-1 Light pole 9' high

907 LT-2 Tree ~10' high

908 LT-3 Fence ~6' high
const limits

Noise: Aircraft (one takeoff @ ~11:57
one at 12:34
one at 12:36 on Thurs)
Woodchipper? (can't see, very loud)
On Golf course

Several aircraft; I only wrote down ones I had the exact time for:

11:57 12:34, 12:36, 12:38, 12:50,
or 11:59? 12:59 1:01, 1:06, 1:08* 1:12
1:35 1:38, 1:40

at ST-1 and ST-2, these events were ~65 to 70 dBA

* loudest one

APPENDIX B

CONSTRUCTION NOISE CALCULATIONS

Construction Calculations

Ritz-Carlton Residences at northern condos

Demolition

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
saws	78	4	50	0.5	78	64
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
dozer	80	40	50	0.5	80	76
				Combined at 50 feet	**90**	**86.3**
				Combined at Receptor 600 feet	**69**	**64.7**

Phase: Site Preparation

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Grader	85	8	50	0.5	85	74
Scraper	88	40	50	0.5	88	84
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**91.0**	**85.2**
				Combined at Receptor 600 feet	**69.4**	**63.6**

Phase: Grading

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
grader	85	8	50	0.5	85	74
Dozer	80	40	50	0.5	80	76
Backhoe	85	16	50	0.5	85	77
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**90**	**82**
				Combined at Receptor 600 feet	**69**	**61**

Phase:Building Construstion

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Crane	83	16	50	0.5	83	75
Forklift	75	20	50	0.5	75	68
Forklift	75	20	50	0.5	75	68
Generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
				Combined at 50 feet	**89**	**83**
				Combined at Receptor 600 feet	**67**	**61**

Phase: Paving

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Concrete Mixer	85	40	50	0.5	85	81
Paver	89	10	50	0.5	89	79
generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Roller	80	20	50	0.5	80	73
Roller	80	20	50	0.5	80	73
				Combined at 50 feet	**92.3**	**85.6**
				Combined at Receptor 600 feet	**70.7**	**64.0**

Phase: Architectural Coating

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Compressor	81	100	50	0.5	81	81
				Combined at 50 feet	**81**	**81**
				Combined at Receptor 600 feet	**59**	**59**

Sources: Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (USEPA

[1]- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Construction Calculations

Ritz-Carlton Residences at northern condos

Demolition

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
saws	78	4	50	0.5	78	64
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
dozer	80	40	50	0.5	80	76
				Combined at 50 feet	**90**	**86.3**
				Combined at Receptor 650 feet	**68**	**64.0**

Phase: Site Preparation

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Grader	85	8	50	0.5	85	74
Scraper	88	40	50	0.5	88	84
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**91.0**	**85.2**
				Combined at Receptor 650 feet	**68.7**	**62.9**

Phase: Grading

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
grader	85	8	50	0.5	85	74
Dozer	80	40	50	0.5	80	76
Backhoe	85	16	50	0.5	85	77
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**90**	**82**
				Combined at Receptor 650 feet	**68**	**60**

Phase:Building Construstion

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Crane	83	16	50	0.5	83	75
Forklift	75	20	50	0.5	75	68
Forklift	75	20	50	0.5	75	68
Generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
				Combined at 50 feet	**89**	**83**
				Combined at Receptor 650 feet	**66**	**60**

Phase: Paving

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Concrete Mixer	85	40	50	0.5	85	81
Paver	89	10	50	0.5	89	79
generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Roller	80	20	50	0.5	80	73
Roller	80	20	50	0.5	80	73
				Combined at 50 feet	**92.3**	**85.6**
				Combined at Receptor 650 feet	**70.0**	**63.3**

Phase: Architectural Coating

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Compressor	81	100	50	0.5	81	81
				Combined at 50 feet	**81**	**81**
				Combined at Receptor 650 feet	**59**	**59**

Sources: Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (USEPA

[1]- Percentage of time that a piece of equipment is operating at full power

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Construction Calculations

Ritz-Carlton Residences at restaurant to the east

Demolition

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
saws	78	4	50	0.5	78	64
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
dozer	80	40	50	0.5	80	76
				Combined at 50 feet	**90**	**86.3**
				Combined at Receptor 330 feet	**74**	**69.9**

Phase: Site Preparation

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Grader	85	8	50	0.5	85	74
Scraper	88	40	50	0.5	88	84
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**91.0**	**85.2**
				Combined at Receptor 330 feet	**74.6**	**68.8**

Phase: Grading

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
grader	85	8	50	0.5	85	74
Dozer	80	40	50	0.5	80	76
Backhoe	85	16	50	0.5	85	77
Backhoe	85	16	50	0.5	85	77
				Combined at 50 feet	**90**	**82**
				Combined at Receptor 330 feet	**74**	**66**

Phase:Building Construstion

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Crane	83	16	50	0.5	83	75
Forklift	75	20	50	0.5	75	68
Forklift	75	20	50	0.5	75	68
Generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
				Combined at 50 feet	**89**	**83**
				Combined at Receptor 330 feet	**72**	**66**

Phase: Paving

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Concrete Mixer	85	40	50	0.5	85	81
Paver	89	10	50	0.5	89	79
generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Roller	80	20	50	0.5	80	73
Roller	80	20	50	0.5	80	73
				Combined at 50 feet	**92.3**	**85.6**
				Combined at Receptor 330 feet	**75.9**	**69.2**

Phase: Architectural Coating

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
					Lmax	Leq
Compressor	81	100	50	0.5	81	81
				Combined at 50 feet	**81**	**81**
				Combined at Receptor 330 feet	**65**	**65**

Sources: Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (USEPA

[1]- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Construction Calculations

Ritz-Carlton Residences at nearest condo southwest

Demolition

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
saws	78	4	50	0.5	78	64
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
excavator	85	40	50	0.5	85	81
dozer	80	40	50	0.5	80	76
			Combined at 50 feet		**90**	**86.3**
			Combined at Receptor 105 feet		**84**	**79.8**

Phase: Site Preparation

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Grader	85	8	50	0.5	85	74
Scraper	88	40	50	0.5	88	84
Backhoe	85	16	50	0.5	85	77
			Combined at 50 feet		**91.0**	**85.2**
			Combined at Receptor 105 feet		**84.6**	**78.7**

Phase: Grading

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
grader	85	8	50	0.5	85	74
Dozer	80	40	50	0.5	80	76
Backhoe	85	16	50	0.5	85	77
Backhoe	85	16	50	0.5	85	77
			Combined at 50 feet		**90**	**82**
			Combined at Receptor 105 feet		**84**	**76**

Phase:Building Construstion

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Crane	83	16	50	0.5	83	75
Forklift	75	20	50	0.5	75	68
Forklift	75	20	50	0.5	75	68
Generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
Welder	74	40	50	0.5	74	70
			Combined at 50 feet		**89**	**83**
			Combined at Receptor 105 feet		**82**	**76**

Phase: Paving

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Concrete Mixer	85	40	50	0.5	85	81
Paver	89	10	50	0.5	89	79
Generator	78	100	50	0.5	78	78
Backhoe	85	16	50	0.5	85	77
Roller	80	20	50	0.5	80	73
Roller	80	20	50	0.5	80	73
			Combined at 50 feet		**92.3**	**85.6**
			Combined at Receptor 105 feet		**85.8**	**79.1**

Phase: Architectural Coating

Equipment	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Compressor	81	100	50	0.5	81	81
			Combined at 50 feet		**81**	**81**
			Combined at Receptor 105 feet		**75**	**75**

Sources: Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (USEPA

[1]- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level